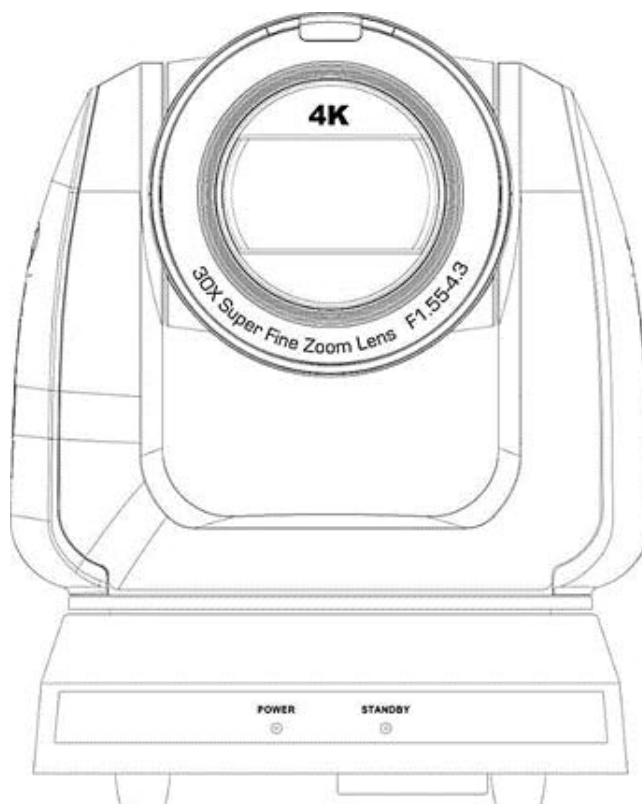




PTZ-12G+ Cameras

Technical Manual

Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology. Our mission is to:

1. Provide a Superior Customer Experience
 - offer the best product quality and support
2. Make Cool Practical Technology
 - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at solutions@rossvideo.com.



David Ross
CEO, Ross Video
dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

Technical Manual for PTZ-12G+

- Ross Part Number: **5000DR-363-03**
- Publication Date: January 24, 2025

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Welcome

Welcome to the Technical Manual for Ross Video PTZ-12G+.

This manual provides a general overview of the PTZ-12G+, and describes how to set up and operate them.

This section of the manual includes the following topics:

- “**Related Documents**” on [page 5](#)
- “**Text Formatting Conventions**” on [page 5](#)
- “**Safety Instructions**” on [page 6](#)
- “**Regulatory Compliance Notices**” on [page 7](#)
- “**Contacting Technical Support**” on [page 7](#)

Related Documents

The following document contains additional information you may find useful:

- **User Manual for PTZ Camera Control Plugin (8351DR-015-xx)**

The PTZ Camera Control Plugin is a DashBoard application that enables you control select PTZ cameras, including PTZ-12G+.

The **User Manual for PTZ Camera Control Plugin (8351DR-015-xx)**, DashBoard, and the **DashBoard User Guide (8351DR-004)** are all available as free downloads from Ross Video. They are available at the following location:

<http://www.rossvideo.com/control-systems/dashboard/index.html>

Text Formatting Conventions

Special text formats are used in this Technical Manual to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Text Format	Meaning
Bold text	Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example: In the Presets panel, click ADD .
<code>Courier text</code>	Courier text is used to identify text that a user must type. For example: In the IP Address box, type <code>localhost</code> .
<i>Italic text</i>	Italic text is used to identify the titles of referenced guides, manuals, or documents. For example: For more information, refer to the <i>DashBoard User Guide (8351DR-004)</i>
>	Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads, “ Display > Widgets ,” you would click the Display menu and then click Widgets .

Safety Instructions

Always follow these safety instructions when using the product:

1. Operation

- Use the product in the recommended operating environment only, away from water or sources of heat.
- Do not place the product in tilted position or on unstable trolley, stand, or table.
- Ensure the product's power plug is clean and dry prior to use. Do not insert the power plug into a multi-socket power bar.
- Do not block the slots and openings in the case of the product. They provide ventilation and prevent the product from overheating.
- Do not open or remove covers. Otherwise you may be exposed to dangerous voltages and other hazards. Refer all servicing to licensed service personnel.
- Unplug the product from the wall outlet and refer servicing to licensed service personnel when the following situations happen:
 - › If the power cords are damaged or frayed
 - › If liquid is spilled into the product or the product has been exposed to rain or weather

2. Installation

- Ensure that the installation conforms to all local laws and safety standards. Ensure that the mounting surface and all mounting hardware and fasteners are suitable and are load-rated for the application. Ensure that installation personnel are qualified to install the product safely.

3. Storage

- Do not place the product where the cord can be stepped on as this may result in fraying or damage to the lead or the plug.
- Unplug the product during thunderstorms or if it is not going to be used for an extended period.
- Do not place the product or accessories on top of vibrating equipment or heated objects.

4. Cleaning

- Disconnect all the cables prior to cleaning and wipe the surface with a dry cloth. Do not use alcohol or volatile solvents for cleaning.

5. Batteries (for products or accessories with batteries)

- When replacing batteries, please only use the same type of batteries.
- When disposing of batteries or products, please adhere to the relevant instructions in your country or region for disposing of batteries or products.

Safety Symbols

	This symbol indicates that this equipment may contain dangerous voltage which could cause electric shock. Do not remove the cover (or back). No user-serviceable parts inside. Refer servicing to licensed service personnel.		This symbol indicates that there are important operating and maintenance instructions in the Manual for this unit.
---	---	--	--

Regulatory Compliance Notices

The following regulatory compliance notices apply to this product:

- **FCC Warning**

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.

Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- **IC Warning**

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus" ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par l'Industrie.

- **EN55032 CE Warning**

Operation of this equipment in a residential environment could cause radio interference.

- **KC Warning**

This equipment is industrial (Class A) electromagnetic wave suitability equipment and seller or user should take notice of it, and this equipment is to be used in places except for home.

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.

Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel.

During business hours (Eastern time), technical support personnel are available by telephone any time. Emergency after hours calls are answered by an answering service (live person) who will patch your call to the on-call support specialist. In the event that the on-call person is assisting another customer, the answering service will contact the back-up support specialist.

Our team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Toll Free Technical Support 24/7:** 1-844-652-0645 (North America), or +800 1005 0100 (International)
- **Technical Support:** (+1) 613-652-4886
- **E-mail for Technical Support:** techsupport@rossvideo.com
- **ROSS VIDEO | HELP CENTER:** <https://support.rossvideo.com/hc/en-us>
- **E-mail for General Information:** solutions@rossvideo.com
- **Ross Video Website:** <http://www.rossvideo.com>

Product Introduction

This section introduces PTZ-12G+ cameras. It includes the following topics:

- “**Package Contents**” on [page 8](#)
- “**Front View**” on [page 9](#)
- “**Rear View**” on [page 10](#)
- “**Bottom View**” on [page 12](#)
- “**Camera Weight and Dimensions**” on [page 13](#)

Package Contents

The product package includes the following items:

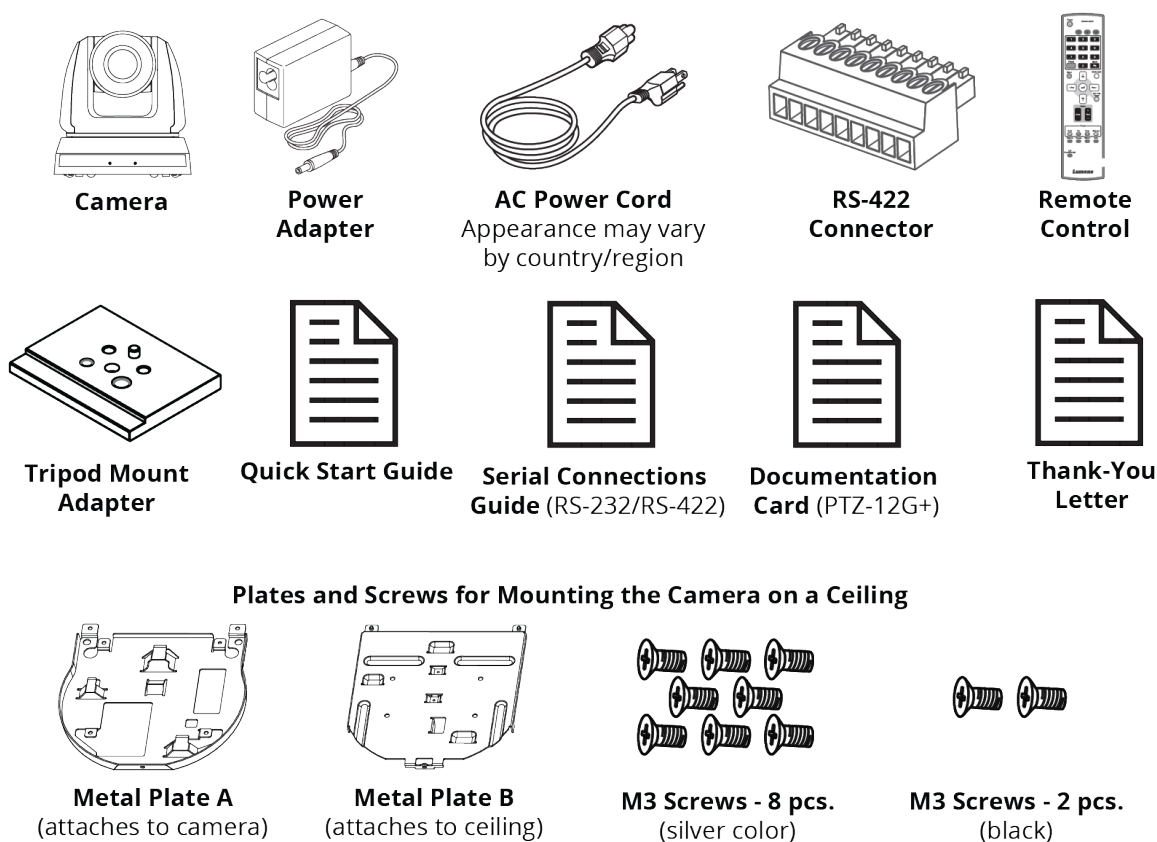


Figure 1 - Packing List for PTZ-12G+ cameras

Front View

Figure 2 shows the front of the camera.

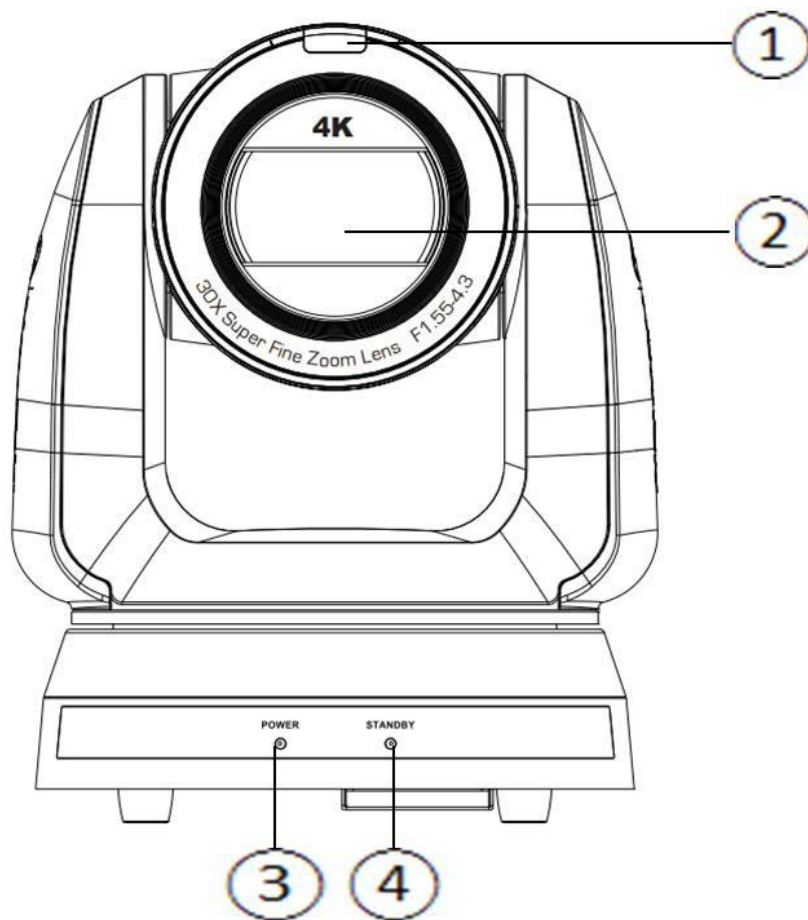


Figure 2 - Front View

NO.	Item	Description
1	Tally indicator light	Tally light is controlled through VISCA commands: Tally Mode: 8x 01 7E 01 0A 01 0p FF • p = 0: OFF • p = 4: Red light (half-brightness) • p = 5: Red light (full-brightness) • p = 6: Green light (full-brightness) • p = 7: Orange light (full-brightness)
2	Camera Lens	30x HD camera lens
3	Power LED indicator	Displays the Power status of the camera: • during startup (initialization): green • during use: green • when in Standby mode: OFF
4	Standby LED indicator	Displays the Standby status of the camera: • during startup (initialization): orange • during use: OFF • when in Standby mode: orange

Rear View

Figure 3 shows the rear of the camera, including the connection panel.

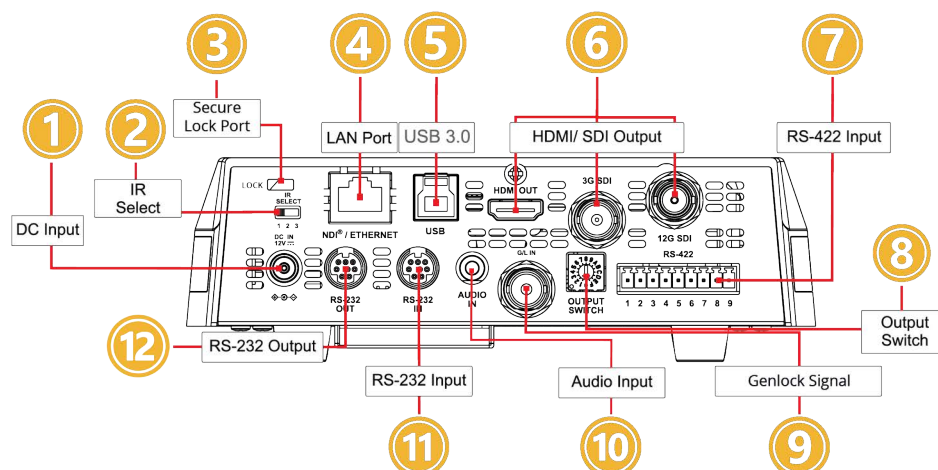


Figure 3 - Rear View

NO.	Item	Description
1	DC Input	12V DC power input from AC Power Adapter (included). Alternatively, the camera can be powered through the network port if the network is capable of PoE++ (IEEE802.3bt).
2	IR SELECT	Assigns a number (1, 2, or 3) to the camera for IR (infra-red) remote control. This enables you to use a single remote control unit to control up to three cameras in an area. When using the remote control unit, you press a Camera select button (1, 2, or 3) to specify which camera you want to control. Tip: Using the DashBoard PTZ Camera Control plugin, you can disable remote control IR reception to prevent accidental changes being made by remote control. IR is automatically re-enabled when the camera is powered off/on. For more information, see “ DashBoard Control ” on page 71 , and the User Manual for PTZ Camera Control Plugin (8351DR-015) .
3	Secure Lock port	Safety Kensington lock slot.
4	LAN port	Network port, supporting routers or hubs with power supply: PoE++ (IEEE802.3bt)
5	USB 3.0 port	USB port for UVC (USB Video Class) video output. PTZ-12G+ cameras support MPEG and H.264 streaming formats.

NO.	Item	Description
6	HDMI/SDI output	HDMI 2.0 Output HDMI 2.0 output (Audio output supported). 3G-SDI output 3G-SDI output (Audio output supported). 12G-SDI output Standard BNC connector for 12G-SDI video output, including audio. Note: For 4K video, you must use 12G-capable, 4K UHD Video Cable. Lower-standard cables are not capable of transmitting a 4K video signal reliably.
7	RS-422 port	RS-422 connecting port. You can cascade (daisy-chain) up to seven cameras.
8	Output switch	Adjusts video output format. The default format is 2160p/59.94 Note: The switch position may not reflect the current output format. Resolution settings in the On-Screen Display menu, the web interface, and DashBoard PTZ Camera Control override the Output Switch.
9	Genlock Signal	Standard BNC connector for Genlock Sync input.
10	Audio input	Support Line In/Mic In.
11	RS-232 input	RS-232 serial input port. You can cascade (daisy-chain) up to seven cameras.
12	RS-232 output	RS-232 serial output port. You can cascade (daisy-chain) up to seven cameras.

Bottom View

[Figure 4](#) shows the bottom of the camera.

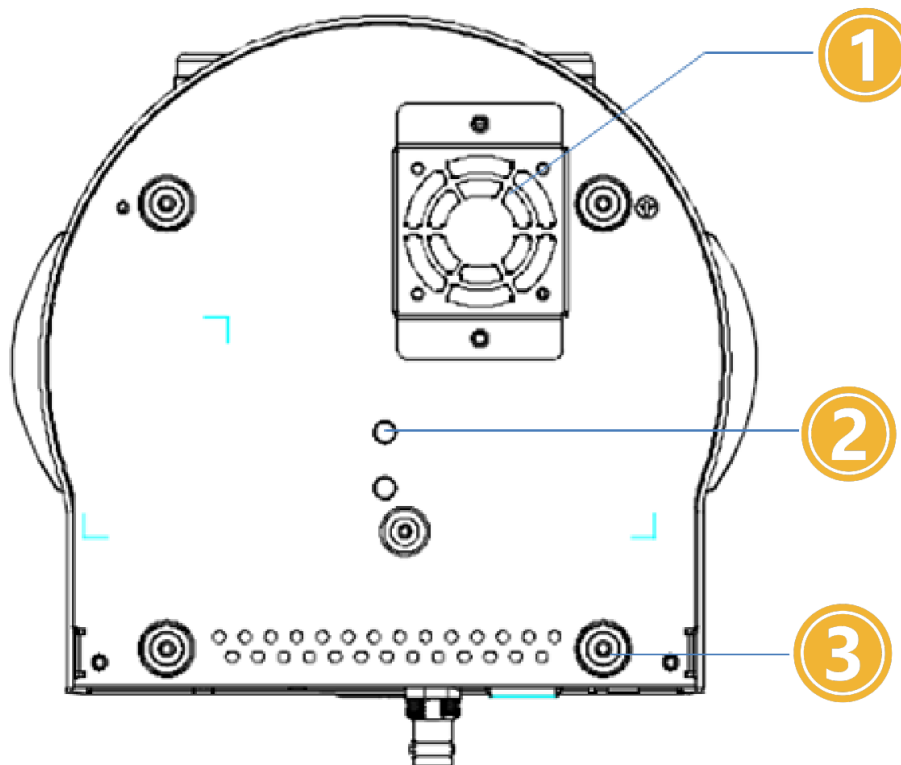


Figure 4 - Bottom View

NO.	Item	Description
1	Quiet cooling fan	Fan speed adjusts automatically for optimal cooling.
2	Tripod mounting hole (threaded)	Standard 1/4 - 20 UNC hole for mounting to tripod.
3	Removable feet	Removable feet are suitable for table-top use. If the camera is to be attached to a mounting plate or mounting bracket, removal of the feet may be necessary. Rotate feet counter-clockwise to remove.

Camera Weight and Dimensions

The camera weighs approximately 3kg (6.1 lbs), excluding ceiling mounting plates.

Approximate dimensions of the camera are as follows:

- Total height, including removable feet — 232mm (9.1")
- Total width — 188mm (7.4")
- Width of base — 174mm (6.9")
- Total depth — 189mm (7.4")

[Figure 5](#) shows the front of the camera, with dimensions (in millimeters).

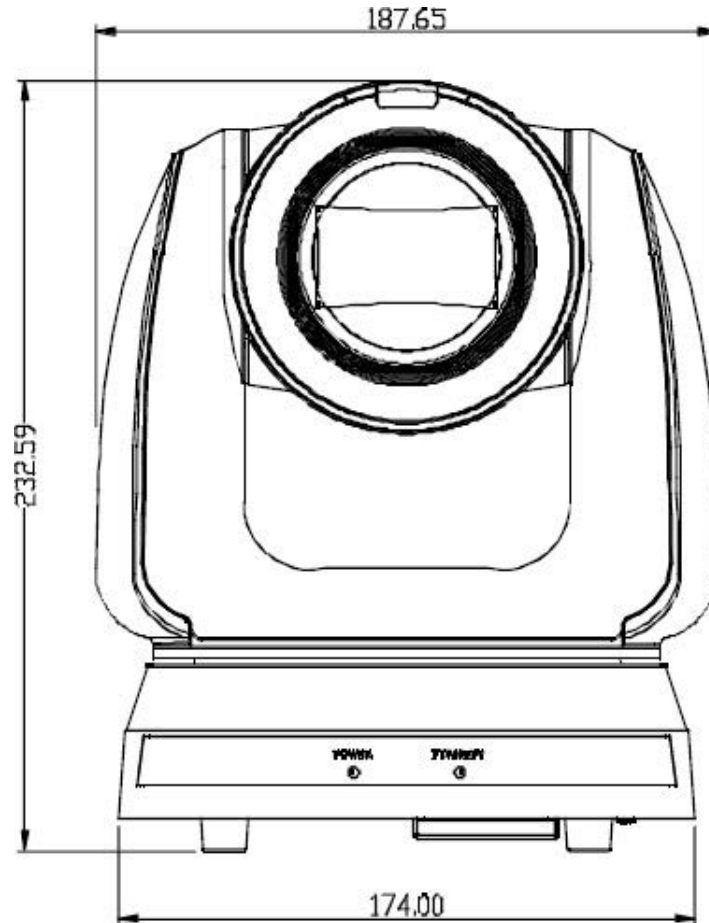


Figure 5 - Front View of Camera, with Dimensions (in millimeters)

[Figure 6](#) shows the side of the camera, with dimensions (in millimeters).

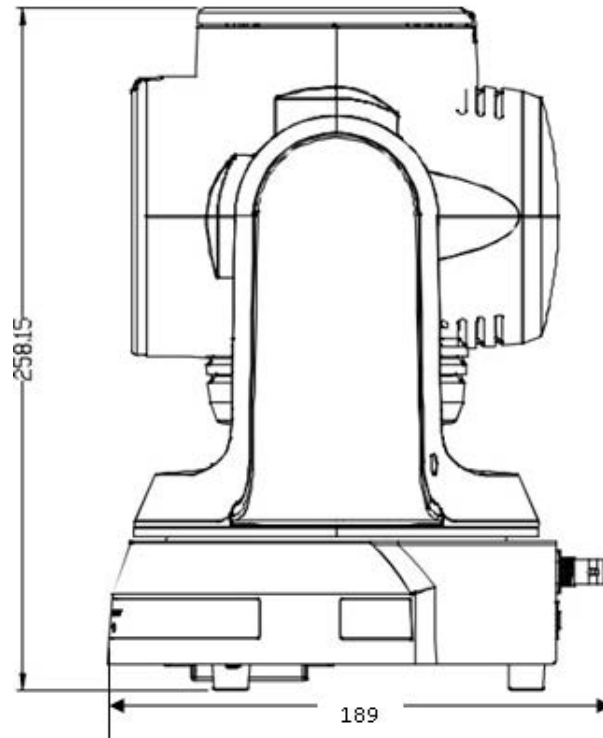


Figure 6 - Side View of Camera, with Dimensions (in millimeters)

Camera Installation

This section describes how to install PTZ-12G+ cameras.

For information about upgrading firmware on a camera that is already operational, see “**Maintenance Page**” on [page 64](#).

Before you begin:

1. Read the safety instructions. See “**Safety Instructions**” on [page 6](#).
2. Determine the installation location:
 - a. The camera can be placed on a stable horizontal surface or tripod, mounted to a ceiling (inverted), or mounted to a wall (special wall-mount bracket **PTZ-WB-BLACK** is required).
 - b. The camera base must be horizontal, and not on an angle.
 - c. The camera must be positioned an appropriate distance from the subject (minimum 2m (79”). The lens field of view is 3° (tele) to 63° deg (wide).
 - d. The camera must be positioned away from other lights sources that might interfere with the video image.
 - e. The installation location must provide adequate space for connecting cables to the back of the camera.
 - f. Ensure that the installation location conforms to the safety instructions. See “**Safety Instructions**” on [page 6](#)
3. Ensure that you have the necessary knowledge and skills:
 - a. If the camera is to be fastened to a wall or ceiling, you need to select and install appropriate fastening hardware, and possibly work at heights.
 - b. Configuring the camera requires basic computer networking skills, such as configuring IP connections.

Perform all procedures in the order presented.

The main installation steps described in this section are as follows:

1. “**Set the IR Select Switch**” on [page 16](#)
2. “**Set the Video Output Switch**” on [page 17](#)
3. “**Configure Network Settings**” on [page 17](#)
4. “**Mount the Camera**” on [page 18](#)
5. “**Connect Power and Network Cables**” on [page 25](#)

Set the IR Select Switch

The remote control unit uses infra-red (IR) signals to communicate with cameras. A single remote control unit can control up to three cameras in an area.

The **IR SELECT** switch on the back of the camera assigns a **Camera select** number (**1**, **2**, or **3**) to the camera ([Figure 7](#)).

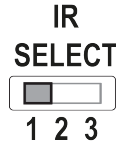


Figure 7 - The IR Select Switch on the Back of a Camera

To assign Camera select numbers for remote control:

- For each camera in an area, set the **IR SELECT** switch to a different number (**1**, **2**, or **3**).
Tip: If there are more than three cameras in an area, assign different numbers to cameras that are near each other.

When you later use the remote control unit, you can press a **Camera select** button (**1**, **2**, or **3**) to specify which camera you want to control ([Figure 8](#)).

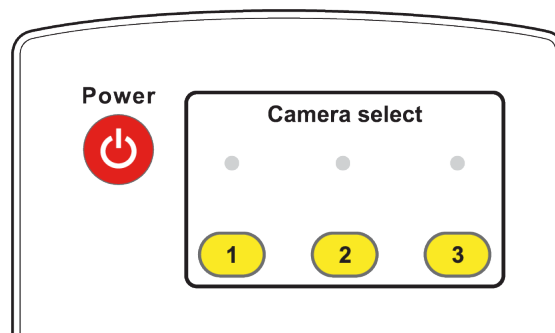


Figure 8 - Remote Control Unit, showing Camera select buttons (1, 2, 3)

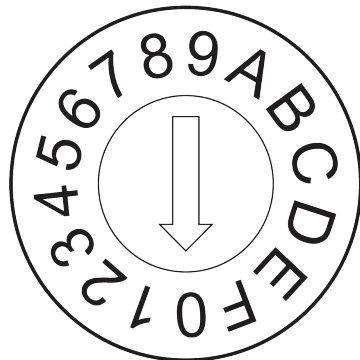
Tip: Using the DashBoard PTZ Camera Control plugin, you can disable remote control reception to prevent accidental changes being made by remote control. For more information, see “**DashBoard Control**” on [page 71](#), and the **User Manual for PTZ Camera Control Plugin (8351DR-015)**.

Set the Video Output Switch

If you know which video format you want the camera to output, set the **OUTPUT SWITCH** (dial) on the back of the camera.

To set the video output switch:

- Use a small slot screwdriver to gently rotate the **OUTPUT SWITCH** until the arrow points to the letter that represents the desired video format. (Figure 9).



Setting	Video Format
0	2160p/59.94
1	2160p/50
2	2160p/29.97
3	2160p/25
4	1080p/59.94
5	1080p/50
6	1080p/29.97
7	1080p/25
8	720p/59.94
9	720p/50
A	720p/29.97
B	720p/25
C	1080i/59.94 (if NDI output, 1080p/59.94)
D	1080i/50 (if NDI output, 1080p/50)
E	Reserved
F	Reserved

Figure 9 - OUTPUT SWITCH Settings and Video Formats

The factory-set default position is **0 — 2160p/59.94**.

Tip: Alternatively, you can set the video output format later using the remote control unit, the web interface, or the DashBoard PTZ Camera Control plugin.

Note: The switch position may not reflect the current output format. Resolution changes made in the On-Screen Display menu, the web interface, or the DashBoard PTZ Camera Control plugin override the **Output Switch**.

Configure Network Settings

Each device on an IP network must have a unique IP address.

All PTZ-12G+ cameras are shipped in DHCP mode, and with the same default static IP address assigned (**192.168.100.100**).

You can use the cameras in DHCP mode, or configure a unique static IP address for each camera.

Using DHCP mode requires a DHCP server on the network, with enough available IP addresses for the number of cameras.

If you are installing multiple cameras, we suggest you use the remote control unit and On-Screen Display menu to configure network settings for each camera before you install them.

Tip: For each camera, ensure the IP address is accessible to computers and other devices that will control that camera.

Tip: To avoid accidentally configuring multiple cameras identically, ensure that any other cameras that have the same **Camera select** number (**1, 2, or 3**) are either powered off or not within range of the IR signal of the remote control unit.

To configure network settings:

1. Place the camera on a desk or table.
2. Connect the camera's video output (HDMI or SDI) to a video monitor.
3. Connect power to the camera.
The camera initializes and moves to its home position.
Video from the camera appears on the video monitor.
Tip: Some monitors cannot render all video output formats. If video does not appear on the monitor within 30 seconds, adjust the **Output Switch** on the back of the camera to a format the monitor can render.
4. On the remote control unit, press the appropriate **Camera select** button (**1, 2, or 3**).
5. Press the **Menu** button.
The menu appears on the monitor.
Tip: Press the up and down arrow buttons to navigate through the menu options.
6. Navigate to the **Ethernet** menu option.
7. Press the center **Home - Enter** button.
Network settings appear.
8. Use the arrow buttons on the remote control unit to configure the network settings as required.
9. Press the **Menu** button to return to the main menu, and then press it again to close the menu.

Mount the Camera

You can install the camera on a desk or table, on a tripod, on a ceiling, or on a wall.

IMPORTANT: When handling the camera, lift it by the base only. Never handle or rotate the camera head. Handling or rotating the camera head by hand can permanently damage the camera.

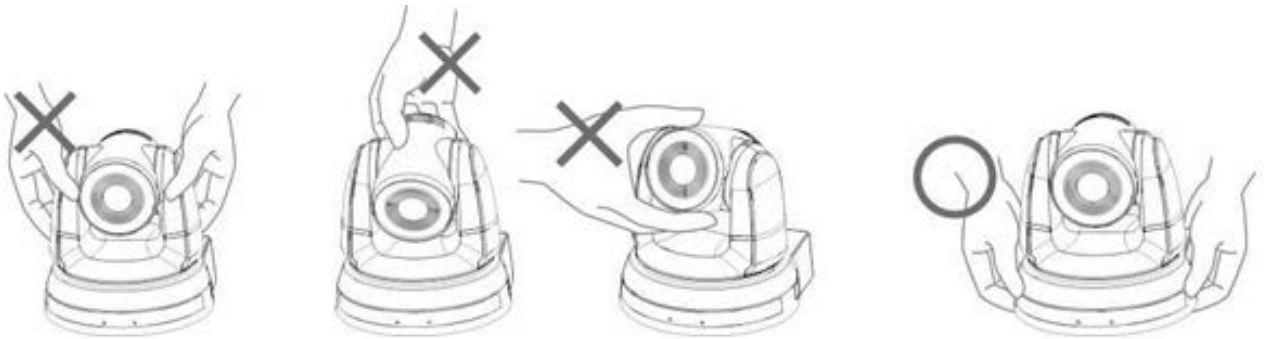


Figure 10 - Proper Handling of the Camera

This section includes the following topics:

- **"Place the Camera on a Desk or Table"** on [page 19](#)
- **"Mount the Camera on a Tripod"** on [page 19](#)
- **"Mount the Camera on a Ceiling"** on [page 21](#)
- **"Mount the Camera to a Wall"** on [page 24](#)

Tip: After you install the camera, you can attach a Kensington lock for security purposes.

Place the Camera on a Desk or Table

Place the camera on a stable, flat, horizontal surface such as a desk or table.

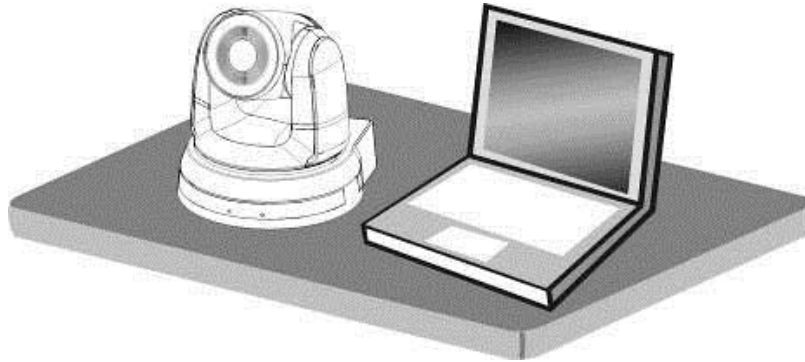


Figure 11 - Installing the Camera on a Desk or Table

Mount the Camera on a Tripod

The camera base has a standard 1/4-20 UNC hole for mounting the camera on a tripod ([Figure 12](#)).

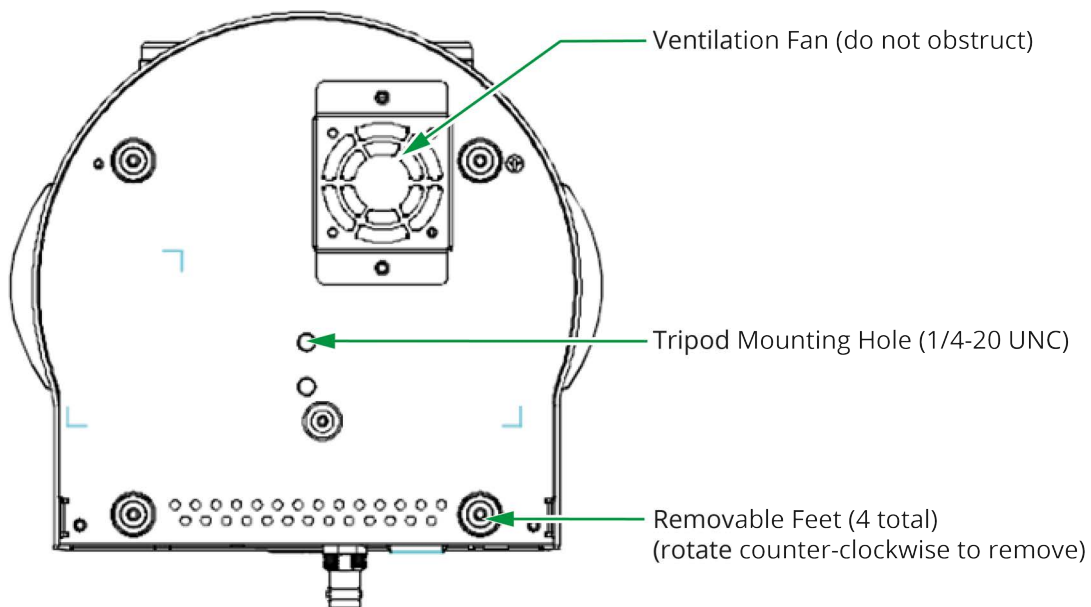


Figure 12 - Mounting the Camera on a Tripod

A tripod mount adapter is required to secure the camera to the tripod ([Figure 12](#)).

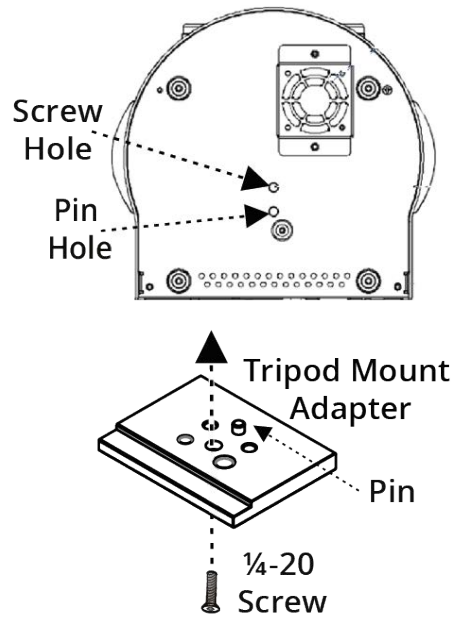


Figure 13 - Mounting the Camera on a Tripod

When mounting the tripod mount adapter on the camera:

- Screw the tripod mount adapter onto the camera with the 1/4-20 UNC screw.
- Align the threaded hole on the bottom of the adapter with the tripod screw and tighten.

When mounting the camera on a tripod:

- Ensure that the tripod is stable and level.
- Use only a standard 1/4-20 UNC tripod screw. Do not over-tighten.
- Ensure that the ventilation fan on the bottom of the camera is not obstructed.

Mount the Camera on a Ceiling

You can invert the camera and mount it on a ceiling.

IMPORTANT: The camera must be mounted horizontally. Do not mount it on a sloped ceiling.

The camera package includes hardware for mounting the camera on a ceiling ([Figure 14](#)).

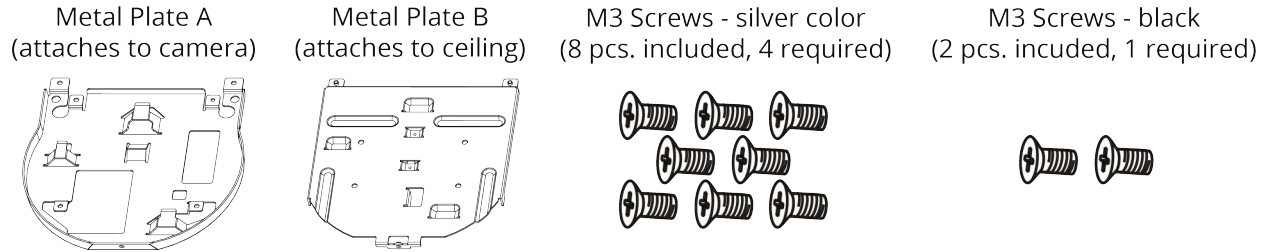


Figure 14 - Ceiling Mounting Hardware Included with the Camera

To mount the camera, you fasten **Metal Plate A** to the camera, and mount **Metal Plate B** to the ceiling (additional fasteners required). You then fasten the two metal plates together.

This section provides instructions for mounting the camera to a ceiling. Read all steps before you begin.

To mount the camera on a ceiling:

1. Remove the feet (4 pcs) from the bottom of the camera by rotating them counter-clockwise ([Figure 15](#)).
Store the feet for future use.

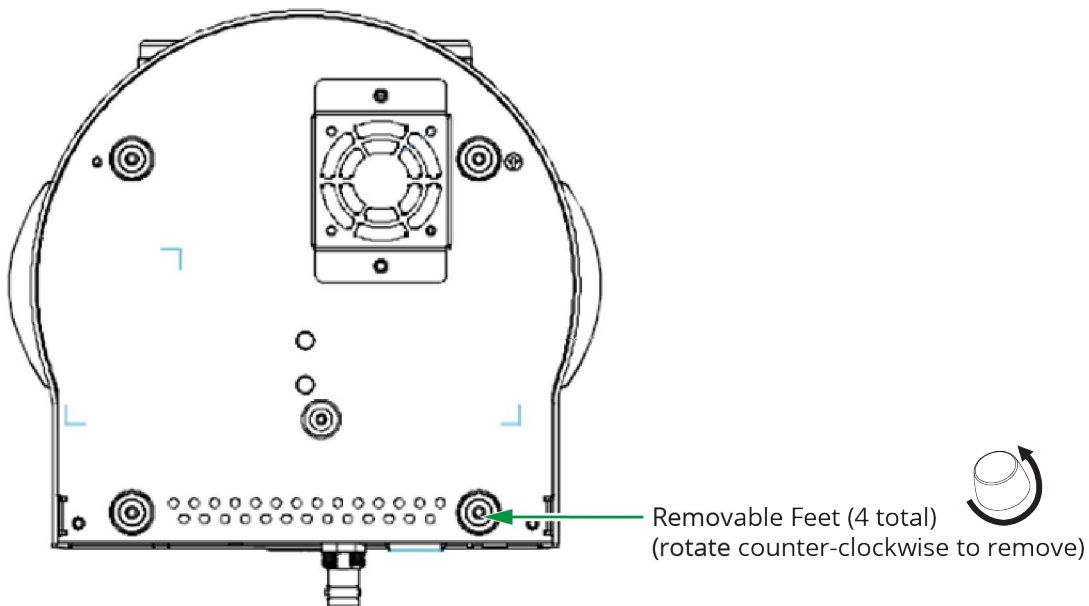


Figure 15 - Bottom View of Camera, showing Removable Feet (4pcs)

- Using four silver M3 screws (included), fasten **Metal Plate A** to the base of the camera ([Figure 16](#)).

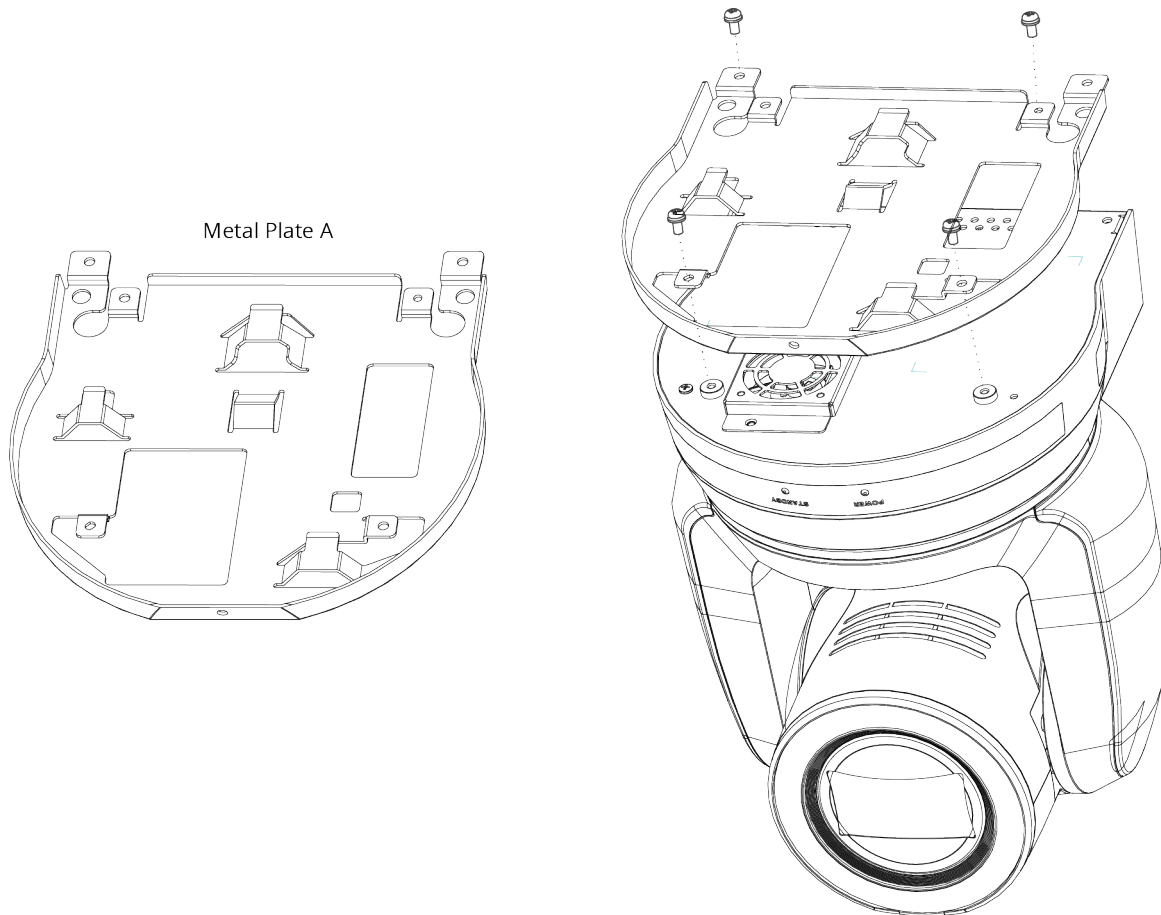


Figure 16 - Attaching Metal Plate A to the Base of the Camera (4 silver M3 screws - included)

3. Mount **Metal Plate B** on the ceiling, using suitable fasteners ([Figure 17](#)).

Note: Fasteners are not included. Use only fasteners that are suitable for the mounting surface and for the weight of the camera (approximately 3kg (6.6 lbs)). The diameter of the mounting holes on **Metal Plate B** is 4.5mm (5/32").

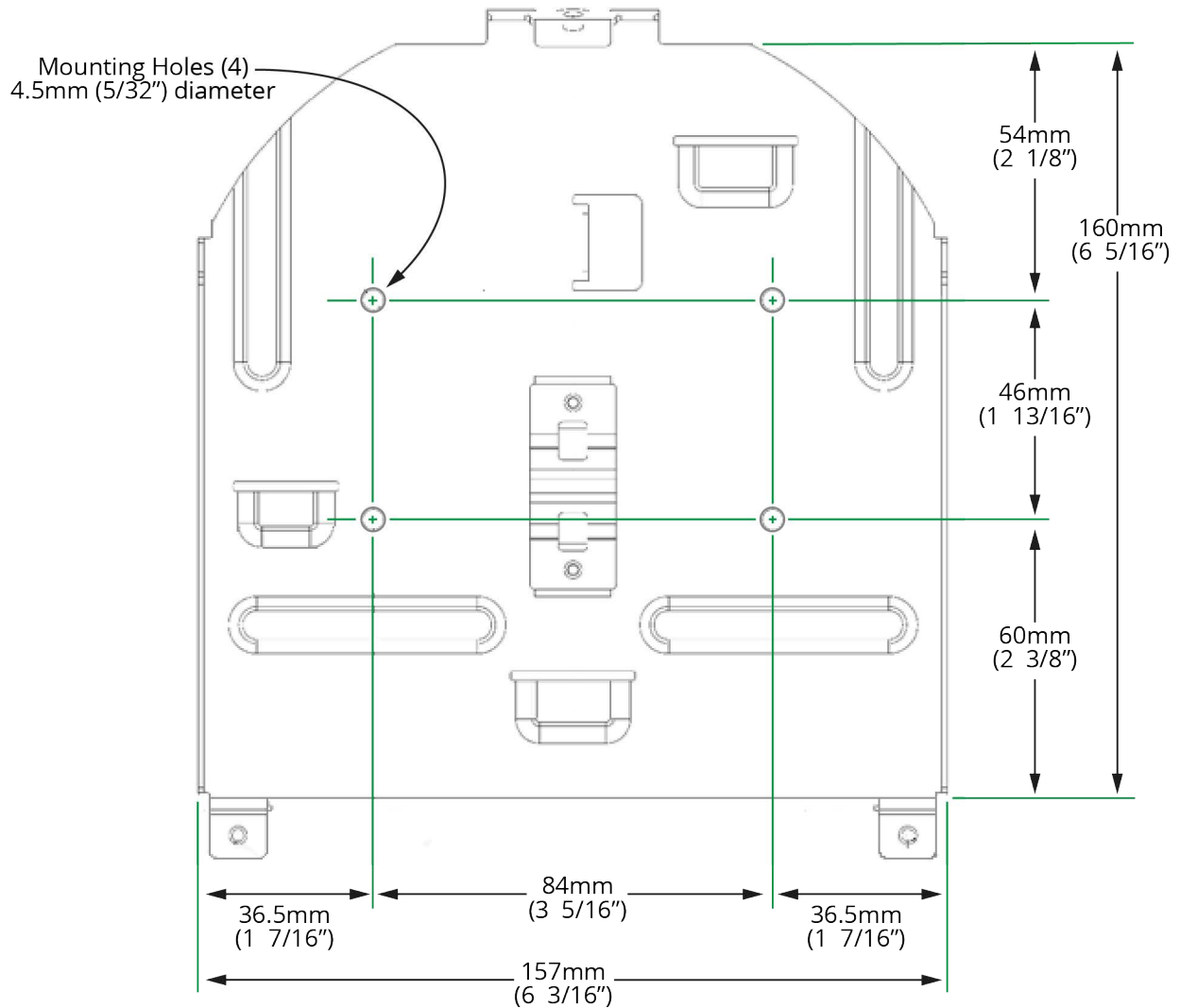


Figure 17 - Metal Plate B, showing Mounting Holes

4. Align the two metal plates and then fasten them together using two silver M3 screws (back) and one black M3 screw (front). Screws are included. See [Figure 18](#).

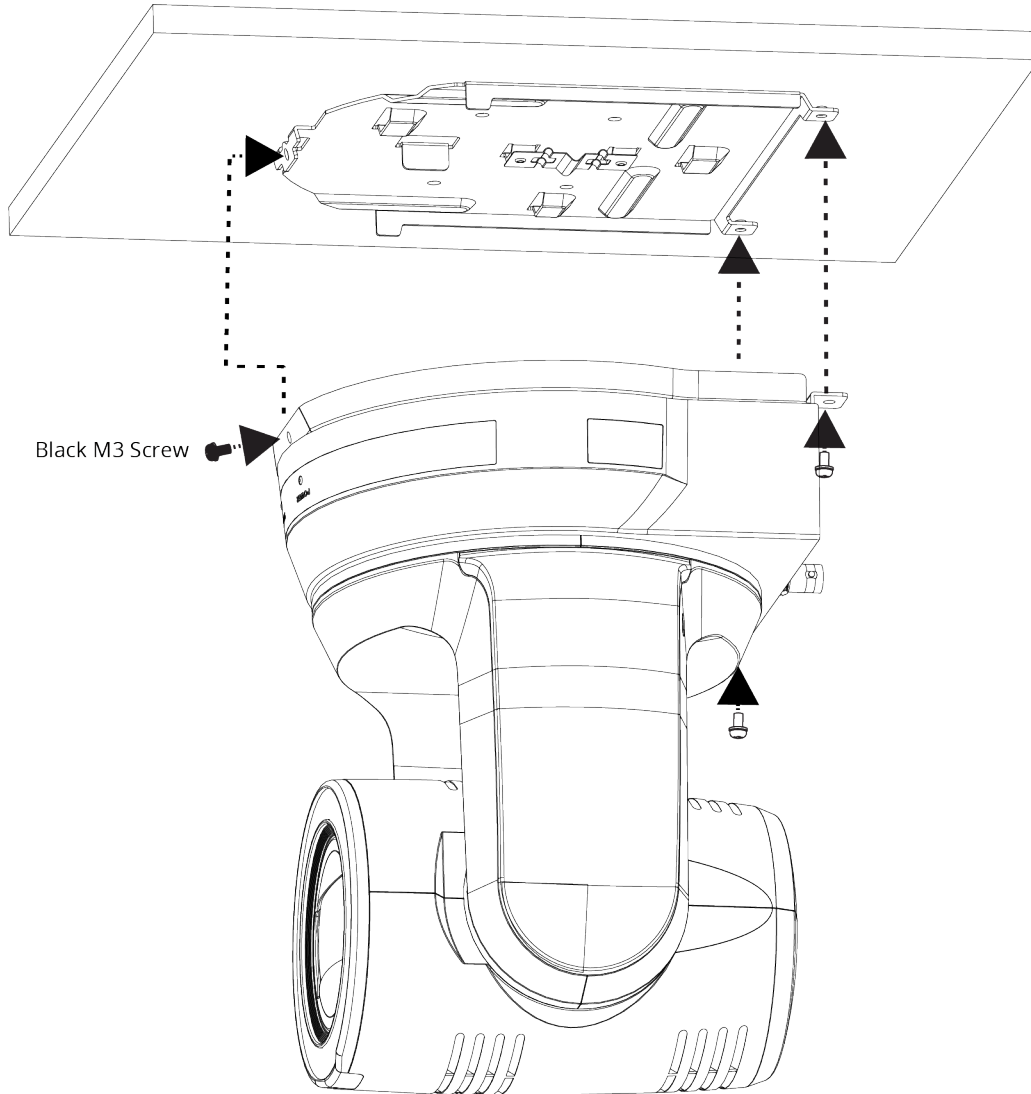


Figure 18 - Fastening Mounting Plates Together, to Mount the Camera to the Ceiling

Mount the Camera to a Wall

Mounting the camera to a wall requires a special wall-mount bracket, available from Ross Video (**PTZ-WB-BLACK**).

The wall must be sturdy and the mounting surface must be capable of supporting the weight of the camera (approximately 3kg (6.6 lbs) plus wall-mount bracket).

IMPORTANT: The camera must be mounted horizontally. Do not mount it directly on a wall.

For more information, contact Ross Video.

Connect Power and Network Cables

You can power the camera using the provided 12 VDC power supply unit, or by connecting the camera to a network connection that supports Power over Ethernet (PoE++).

You can control the camera over an Ethernet connection or a serial connection (RS-232 or RS-422).

[Figure 19](#) shows cable connectors on the back of the camera.

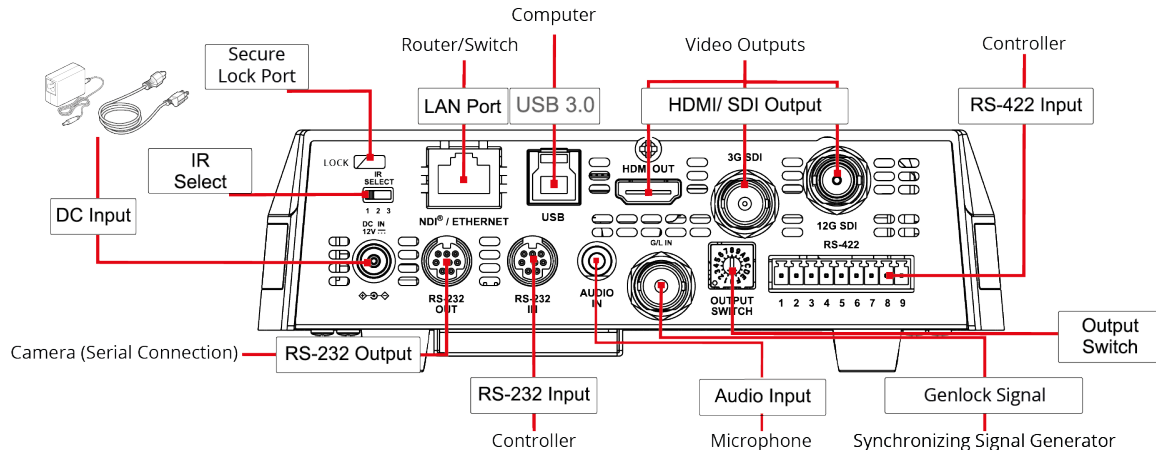


Figure 19 - Rear View of the Camera, showing Connectors

To provide power to the camera, do one of the following:

- Connect the provided 12 V DC power supply unit to the **DC IN** connector on the camera.
- Using CAT6 network cable, connect the **Ethernet** port of the camera to a network router or hub that supports Power over Ethernet (PoE).
The camera requires PoE++ (IEEE802.3bt).

To control the camera over Ethernet:

- Connect the **Ethernet** port of the camera to a network router or hub.

To control the camera over serial RS-232:

- Connect a serial cable to the **RS-232 IN** port on the back of the camera.

Tip: You can cascade (daisy-chain) one serial RS-232 control line to as many as seven cameras. To cascade serial RS-232 control, connect a serial cable from the **RS-232 OUT** port of the current camera to the **RS-232 IN** port of the next camera.

For information about pin assignments for serial RS-232 control, see “**Appendix A: Serial Connections**” on [page 78](#).

To control the camera over serial RS-422:

- Create an RS-422 control cable and then connect it to the RS-422 connector on the back of the camera.

Tip: You can cascade (daisy-chain) one serial RS-422 control line to as many as seven cameras.

For information about pin assignments for serial RS-422 control, and about creating an RS-422 control cable, see “**Appendix A: Serial Connections**” on [page 78](#).

Connect Video Output

Connect cables to video output connectors as required (see [Figure 19](#) on **page 25**):

- **12G SDI output** — Standard BNC connector.
- **HDMI 2.0 output** — HDMI video.
- **USB 3.0** — USB 3.0 Type B connector. Use for live-streaming UVC video over USB.
- **Ethernet** — RJ45 connector. Use for streaming video from PTZ-12G+ cameras.
- **3G-SDI output** — 3G-SDI output (Audio output supported).

Connect Genlock Source

For setups requiring synchronization, connect a Genlock source to the Genlock Input. Refer to the Genlock specifications table for detailed setup ("**Genlock Input Support**" on [page 83](#)).

Connect Audio Input (optional)

You can connect a microphone or audio output from another device.

Connect the audio source to the 3.5mm **AUDIO IN** jack on the back of the camera.

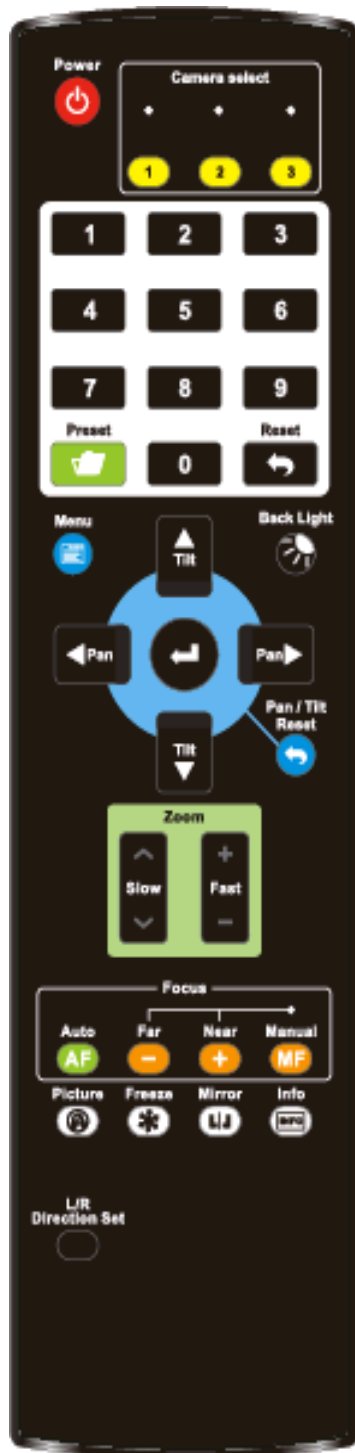
Note: You must enable audio input in the web interface or in the DashBoard PTZ Camera Control plugin. For more information, see "**Audio Settings Page**" on [page 46](#), or the ***User Manual for PTZ Camera Control Plugin (8351DR-015)***.

Note: Audio input can also be enabled and configured using the remote and on-screen device (OSD).

Remote Control

This section describes the buttons on the remote control unit and settings that can be accessed through the On-Screen Display menu.

Buttons on the remote control unit are as follows:



Button	Description
 	Pan left and right. When the On-Screen Menu is active, these button navigate up and down through the menu.
 	Tilt up and down. When the On-Screen Menu is active, these buttons change the current setting.
Back Light	Turns backlight compensation On / Off
Focus-Manual / Far / Near	The Manual button turns on manual focus. When manual focus is on, the Far and Near buttons adjust the focus.
Auto AF	Turn on auto focus
Freeze	Freeze / unfreeze video
Home-Enter	Returns the camera to its home position. When the On-Screen Menu is active, this button selects the current menu item.
Info	Shows camera status information.
L/R Direction Set	Reverses the direction that the camera moves when you pan. Use this feature if the camera is inverted.
Menu	Shows the On-Screen Display menu. If the menu is already shown, pressing the Menu button steps up a level in the menu hierarchy or hides the menu.
Mirror	Flips and rotates the image.
Pan/Tilt Reset	Recalibrates the pan and tilt axes, to correct any positional error. The camera moves to a home position, and then returns. Positional error may be caused by accidental bumping of the camera. NEVER pan or tilt the camera by hand! Handle the camera by the base only.
Picture	Switch image effect (OFF / Neg / B&W)
Power	Power On / Standby
Preset	To record a preset, hold the Preset button and press the preset number (0-9). Tip: You can use the Web UI or another control application to save up to 256 presets on the camera (preset numbers 0-255)
Reset	To clear a preset, hold the Reset button and press the preset number (0-9).
Zoom-Fast	Zooms quickly.
Zoom-Slow	Zooms slowly.

On-Screen Display Menu Settings

The following table describes settings that can be accessed through the **On-Screen Display** menu. Default values appear as ***bold italicized*** text.

To access the menu, press the **Menu** button on the remote control unit.

Alternatively, you can access the **On-Screen Display** menu from the DashBoard PTZ Camera Control plugin. For more information, see ***User Manual for PTZ Camera Control Plugin (8351DR-015)***.

1st Menu Level	2nd Menu Level	3rd Menu Level (values)		Description
Exposure	Mode	<i>Full Auto</i> Shutter Pri Iris Pri Manual		Exposure mode setting
	Exposure Comp.	On / <i>Off</i>		AE Level
	Exposure Comp. Level	-5 - <i>0</i> - 5		This setting can be adjusted only when Exposure Compensation is On .
	Spot Light	On / <i>Off</i>		Turns spot light On / Off .
	Spot Light Position	X(0-6), Y(0-4)		Defines what area of the video frame is analyzed for auto exposure. Press the up, down, left, and right arrows to position the spot light on the screen. This setting can be adjusted only when Spot Light is On .
	Shutter Pri	<u>60/30 mode:</u>	<u>50/25 mode:</u>	This setting can be adjusted only when Exposure mode is set to Shutter Priority .
		1/10000	1/10000	
		1/5000	1/5000	
		1/3000	1/3000	
		1/2500	1/2500	
		1/2000	1/1750	
		1/1500	1/1250	
		1/1000	1/1000	
		1/725	1/600	
		1/500	1/425	
		1/350	1/300	
		1/250	1/215	
		1/180	1/150	
		1/120	1/120	
		1/100	1/100	
		1/90	1/75	
		<i>1/60</i>	<i>1/50</i>	
		1/30	1/25	
		1/15	1/12	

1st Menu Level	2nd Menu Level	3rd Menu Level (values)		Description
Exposure		1/8	1/6	
		1/4	1/3	
		1/2	1/2	
		1/1	1/1	
	Iris Pri	F1.6		This setting can be adjusted only when Exposure mode is set to Iris Priority .
		F2		
		F2.2		
		F2.7		
		F3.2		
		F3.8		
		F4.5		
		F5.4		
		F6.3		
		F7.8		
		F9		
		F11		
		F13		
		F16		
		F18		
		Close		
Manual Gain	0 dB		Manually set the gain. This setting can be adjusted only when Exposure mode is set to Manual .	
	3 dB			
	6 dB			
	9 dB			
	12 dB			
	15 dB			
	18 dB			
	21 dB			
	24 dB			
	27 dB			
	30 dB			
	33 dB			
	36 dB			
	39 dB			
	42 dB			
	45 dB			

1st Menu Level	2nd Menu Level	3rd Menu Level (values)		Description
Exposure	Manual Speed	<u>60/30 mode:</u>	<u>50/25 mode:</u>	Manually sets the shutter speed. This setting can be adjusted only when Exposure mode is set to Manual .
		1/10000	1/10000	
		1/5000	1/5000	
	Manual Speed	1/3000	1/3000	Manually sets the shutter speed. This setting can be adjusted only when Exposure mode is set to Manual .
		1/2500	1/2500	
		1/2000	1/1750	
		1/1500	1/1250	
		1/1000	1/1000	
		1/725	1/600	
		1/500	1/425	
		1/350	1/300	
		1/250	1/215	
		1/180	1/150	
		1/120	1/120	
		1/100	1/100	
		1/90	1/75	
		1/60	1/50	
		1/30	1/25	
		1/15	1/12	
		1/8	1/6	
		1/4	1/3	
		1/2	1/2	
		1/1	1/1	
	Manual Iris	F1.6		Manually sets the iris. This setting can be adjusted only when Exposure mode is set to Manual .
		F2		
		F2.2		
		F2.7		
		F3.2		
		F3.8		
		F4.5		
		F5.4		
		F6.3		
		F7.8		
		F9		

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
Exposure		F11	
		F13	
		F16	
		F18	
	Manual Iris	Close	Manually sets the iris. This setting can be adjusted only when Exposure mode is set to Manual .
	Gain Limit	9 dB	Maximum limit of electron gain. This setting can be adjusted only when Exposure mode is set to Iris Priority , Shutter Priority , or Full Auto .
		12 dB	
		15 dB	
		18 dB	
		21 dB	
		24 dB	
		27 dB	
		30 dB	
		33 dB	
		36 dB	
		39 dB	
		42 dB	
		45 dB	
	Iris Limit	F3.2	Maximum limit of iris. This setting can be adjusted only when Exposure mode is set to Shutter Priority or Full Auto .
		F3.8	
		F4.5	
		F5.4	
		F6.3	
		F7.8	
		F9	
	D-WDR	<i>Off / Normal</i>	Digital Wide Dynamic Range Enhances the image quality by adjusting the gamma value to brighten dark areas. Set the level of Digital Wide Dynamic Range (D-WDR) in order to obtain better images. Note: Set to Normal for Black Level Adjustment .
		1	
		2	

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
	Smart AE	3 On/Off	Smart AF must be turned on. Smart AE (auto exposure) is disabled when camera is set to manual exposure.
White Balance	Mode	Auto	Select the color temperature mode: • Auto — 4000k - 7000k
		Indoor	• Indoor — 3200k
		Outdoor	• Outdoor — 5800k
		One Push WB	• One Push WB — 1700k - 10,000k
		ATW	• ATW — 1700k - 10,000k
		Manual	• Manual — Custom
		Sodium Lamp	• Sodium Vapor Lamp — 2000k
		Preset Values 3000 K 4300 K 5000 K 6500 K 8000 K	Preset White Balance options in degrees Kelvin
	One-Push Trigger	Press the Home-Enter button	Performs one-time white balance. This option is available only when White Balance mode is set to One Push Trigger .
	Manual Red	0 - 128	This option is available only when White Balance mode is set to Manual .
	Manual Blue	0 - 128	This option is available only when White Balance mode is set to Manual .
Picture	Picture Effect	Off Neg B&W	
	Black Level Mode	Auto / Manual	Set to Manual to expose Black Level values, which is the menu option below Black Level Mode . Note: Black Level Mode works independently of Image Mode on the On Screen Display . In Image Mode , the Default setting hides Image Mode Load, Brightness, Hue, Saturation, and Gamma .
	Black Level Values	0 - 10	Each increment raises the black level. Use a waveform monitor to view black levels in the video and adjust accordingly.
	Sharpness	0 - 14	
	2D NR	Off 1 2 3	2D digital noise reduction

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
	3D NR	Off 1 2 3	3D digital noise reduction
	Image Mode	Default Custom	The user can customize the desired image mode.
	Image Mode Load	Press the Home-Enter button	Adjustable when the Image mode is set to Custom . After selected, the corresponding Image mode parameters are read and applied to Custom
	Brightness	0 - 15	Adjustable when the Image mode is set to Custom .
	Hue	0 - 15	Adjustable when the Image mode is set to Custom .
	Saturation	0 - 15	Adjustable when the Image mode is set to Custom .
	Gamma	0 - 3	Adjustable when the Image mode is set to Custom .
Pan Tilt Zoom	Pan/Tilt Limit	On / Off	When On , pan and tilt limits apply.
	Pan Right Limit	0 - 170	Sets the right Pan limit. Adjustable only when Pan/Tilt Limit is On .
	Pan Left Limit	-170 - 0	Sets the left Pan limit. Adjustable only when Pan/Tilt Limit is On .
	Tilt Up Limit	0 - 90	Sets the upper Tilt limit. Adjustable only when Pan/Tilt Limit is On .
	Tilt Down Limit	-30 - 0	Sets the lower Tilt limit. Adjustable only when Pan/Tilt Limit is On .
	Pan Flip	On / Off	Reverses the Pan axis direction.
	Tilt Flip	On / Off	Reverses the Tilt axis direction.
	Preset Speed	5 deg/sec 25 deg/sec 50 deg/sec 80 deg/sec 120 deg/sec 160 deg/sec 200 deg/sec 300 deg/sec	Sets the rotation speed of the cradle head when a Preset is recalled.
	PTZ Speed Comp	On / Off	When On , the Pan and Tilt speed varies based on the Zoom position. When Zoom is TELE, the Pan and Tilt axes move more slowly. When Zoom is WIDE, the Pan and Tilt axes move more quickly.
	D-Zoom Limit	x1 - x12	Sets the digital zoom limit. Note: Digital zoom is not available when resolution is set to 2160p 59.94/ 50.
	PTZ Motion Sync	On / Off	This feature allows smoother movement between camera presets by synchronizing pan, tilt, and zoom speeds.

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
Dig-Effect	Mirror	Off Mirror Flip Mirror + Flip	Sets the orientation of the video image. Mirroring reverses the image horizontally. Flipping reverses the image vertically.
Auto Focus	AF Sensitivity	Low Middle High	For AF triggering speed, the higher the speed is, the faster AF is triggered.
	AF Frame	Center Full Auto	Auto Focus frame setting. When set to Center , Auto Focus is based on the center of the screen. When set to Full , Auto Focus is calculated based on the full screen.
	PTZ Assist	On / Off	When focus is set to manual and PTZ Assist is enabled, a One-Push auto focus is performed after PTZ axis adjustment stops. The camera remains in manual focus mode afterward.
	Smart AF	On / Off	Turns Smart Auto Focus On or Off . When On , AF detects and focuses on a face in the image. Note: When you change this setting, the video feed is temporarily interrupted.
	Zoom Tracking	On / Off	Turns Zoom Tracking On or Off . When On , AF maintains focus as the camera zooms in/out. When Off , the camera enables curve tracking, where the focus is automatically corrected based on a calibration curve when the camera zooms. Note: When you change this setting, the video feed is temporarily interrupted.
	One Push Focus	On/ Off	Triggers one-time focus, which uses the same frame settings as Auto Focus. When On , it initiates Auto Focus corresponding to the AF Frame and Sensitivity settings in AF Mode . Once established, AF turns off.
Ethernet	DHCP	On / Off	Enables/Disables DHCP (On or Off).
	IP Address	192.168.100.100	Sets the IP Address of the camera. This setting can be adjusted only when DHCP is set to Off .
	Subnet Mask	255.255.255.0	Sets the Subnet Mask of the camera. This setting can be adjusted only when DHCP is set to Off .
	Gateway	192.168.100.254	Sets the Gateway of the camera. This setting can be adjusted only when DHCP is set to Off .
Audio	Audio In	Line In /Mic In	Selects audio input type.
	Audio Enable	On / Off	Turns audio output On or Off .
	Audio Volume	0 - 10	Volume setting

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
	Audio Delay	On / <i>Off</i>	When audio and video are out of sync, enable this feature to set the audio delay time. This setting is only available with NDI HX disabled.
	Audio Delay Time (ms)	-1 to -500ms	Sets audio delay time, in milliseconds (ms). This setting can be adjusted only when Audio Delay is On . This setting is only available with NDI HX disabled.
	Encode Type	AAC G.711	Set encode type. This setting is only available with NDI HX disabled.
	Encode Sample Rate	48 kHz (AAC) 44.1 kHz (AAC) 16 kHz (AAC) 16 kHz (G.711) 8 kHz (G.711)	Sets the encode type and sample rate. Note: For SDI video, only 48 kHz output is supported. This setting is only available with NDI HX disabled.
System	Prompt	On / <i>Off</i>	Turns On/Off the prompt information on the display.
	IR Receive	On / Off	When Off , the camera does not respond to commands from the remote control unit. To turn IR Receive On , do one of the following: • Disconnect power to the camera, wait 20 seconds, and then reconnect power. • Use the DashBoard PTZ Control plugin to access the On-Screen Menu and turn IR Receive On.
	Tally Lamp	On / Off	Select to enable or disable Tally Lamp function. • Note: When Tally Lamp is disabled, it cannot receive VISCA commands to enable or disable it.
	Tally CMMD Mode	Normal / Link	Impacts how the camera handles tally commands from a VISCA controller. Use normal operation when connecting DashBoard to the camera, and for other controllers unless otherwise specified by the controller software manufacturer.
	Language	English / Chinese	
	Initial Position	Last MEM / 1st Preset	Sets whether the camera returns to the last operated position (Last MEM) or to the first preset position (1st Preset) when the camera powers on. The first preset is preset 0 .
	Control Device	Encoder / Controller	Control Device setting for external non-Ross controllers.
	Motionless Preset	On / <i>Off</i>	When On , video freezes while a preset is being recalled. Video resumes when the camera reaches the preset position.
	Control Port	RS-232 /RS-422	Choose whether the serial control interface used is RS-232 or RS-422

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
System	Protocol	VISCA / PELCO D	Control signal protocol. Note: To control PTZ-12G+ cameras using the DashBoard PTZ Camera Control Plugin, Protocol must be set to VISCA .
	Baud Rate	9600 /38400	Choose the correct transmission speed for the control signal. VISCA typically uses 9600 baud.
	VISCA Address	0 - 7	Sets the VISCA address of the camera when the camera is controlled over serial RS-232 or RS-422. This setting is available only when Protocol is set to VISCA .
	PELCO D Address	1 - 255	Sets the Pelco D address of the camera. This setting is available only when Protocol is set to PELCO D .
	Genlock - Hor. Phase	-100 — +100	Adjusts the video output horizontal timing when a genlock signal is input to the unit
	Genlock - Ver. Phase	-16 — +16	Adjusts the video output vertical line timing when a genlock signal is input to the unit
	Output Mode	2160p/59.94 2160p/50 2160p/29.97 2160p/25 1080p/59.94 1080i/59.94 1080p/50 1080i/50 1080p/29.97 1080p/25 720p/59.94 720p/50	Sets the video output resolution, overriding the value set by the Output Switch on the camera. If the Output Switch on the camera moves, the Output Mode also changes. Note: If HDMI/SDI output is set to 1080i mode, NDI HX2 output is 1080p.
	Factory Reset	On / off	When turned On , the camera resets picture settings to factory defaults, and restarts. Network settings, presets, and User Names/Passwords are unaffected. To perform a hard reset and reset passwords, refer to “ Hard Reset ” on page 77 in the Troubleshooting section.
Status			Displays the current setting status.

Web Interface

You can connect to PTZ-12G+ cameras over an IP network to configure them and to view live video.

This section describes how to connect to a camera, and describes the camera's built-in web interface. It also provides information about viewing an RTSP video stream.

Topics include the following:

- “**Connecting to the Web Interface**” on [page 37](#)
- “**Web Interface Features**” on [page 40](#)
- “**Viewing RTSP Video Stream**” on [page 67](#)

Connecting to the Web Interface

You can connect to a camera via a network switch or router, or by connecting a network cable directly from the camera to your computer.

Note: Network cable type must be CAT6 (minimum).

To connect via a network switch or router:

1. Connect a network cable between the camera and the network switch or router ([Figure 20](#)).

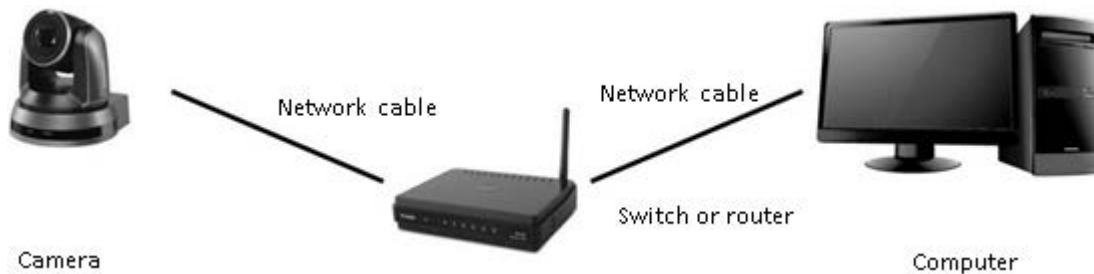


Figure 20 - Connecting over an IP Network

To connect directly, using a network cable:

1. Connect a network cable between the camera and your computer.

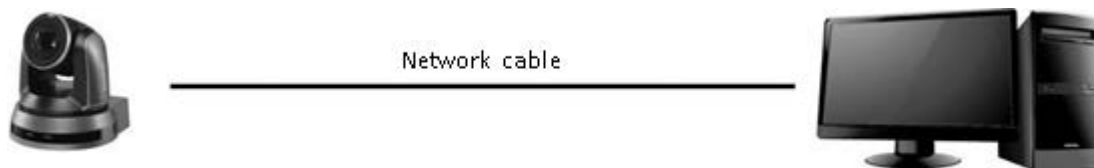


Figure 21 - Connecting Directly using a Network Cable

2. Configure the **IP address**, **Subnet mask**, and **Default gateway** on your computer so it is on the same network segment as the camera ([Figure 22](#)).

Tip: The camera's factory-set default IP address is **192.168.100.100**. Each device on the network must have a unique IP address.

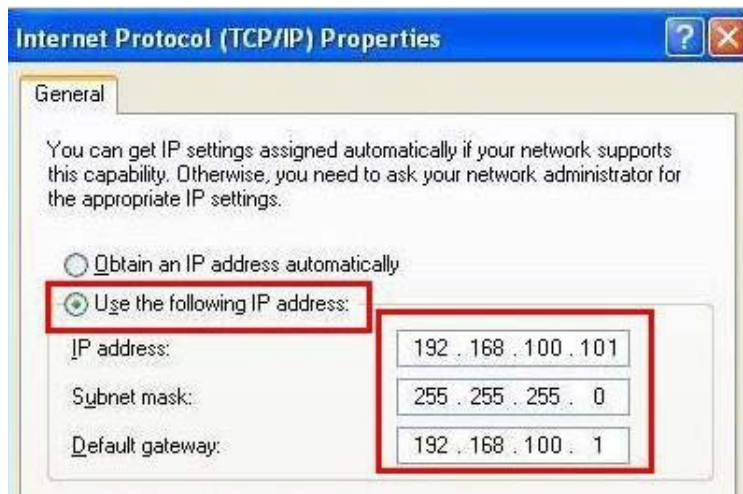


Figure 22 - Configuring the IP Address, Subnet mask, and Default gateway

To Access the Web Interface:

1. In a web browser, navigate to the IP address of the camera.

Tip: The factory-set default IP address is **192.168.100.100**. Each device on the network must have a unique IP address.

The login window appears.

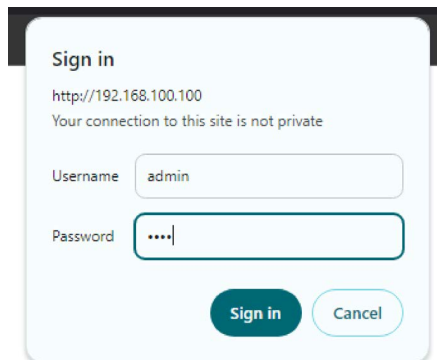


Figure 23 - Login Window

2. Type a valid **Username** and **Password**, and then click the **Login** button.

Tip: The default **Username** is **admin**. The default **Password** is **9999**. If this is the first login, you are prompted to change the password.

The web interface appears ([Figure 24](#)).



Figure 24 - Web Interface for a PTZ-12G+ Camera

Note: Live video in the web interface is available only with NDI|HX disabled. For NDI|HX, you can use the NDI® **Studio Monitor** tool, which is part of a free NDI Tools package available through <https://ndi.tv/tools>.

Web Interface Features

This section describes the web interface for PTZ-12G+ cameras.

It includes the following topics:

- “**Login Window**” on [page 40](#)
- “**Live View Page**” on [page 41](#)
- “**Settings: Camera Page**” on [page 42](#)
- “**Audio Settings Page**” on [page 46](#)
- “**Stream Page**” on [page 48](#)
- “**System: Device**” on [page 54](#)
- “**System: Output**” on [page 55](#)
- “**System: Network**” on [page 57](#)
- “**System: Security**” on [page 60](#)
- “**System: Date & Time**” on [page 61](#)
- “**System: User**” on [page 62](#)
- “**System: Control**” on [page 63](#)
- “**Maintenance Page**” on [page 64](#)
- “**Maintenance: Reboot**” on [page 66](#)
- “**About Page**” on [page 67](#)

Login Window

This section describes features available on the **Login** window ([Figure 25](#)).

Figure 25 - Login Window

No.	Item	Function Descriptions
1	Username	Enter username (default: admin)
2	Password	Enter user password (default: 9999) If this is the first login, you are prompted to change the password, and the Edit Users page appears. For more information, see “ System: User ” on page 62 .
5	Sign In button	Logs in to the web interface.

Live View Page

This section describes features available on the **Live View** page ([Figure 26](#)).

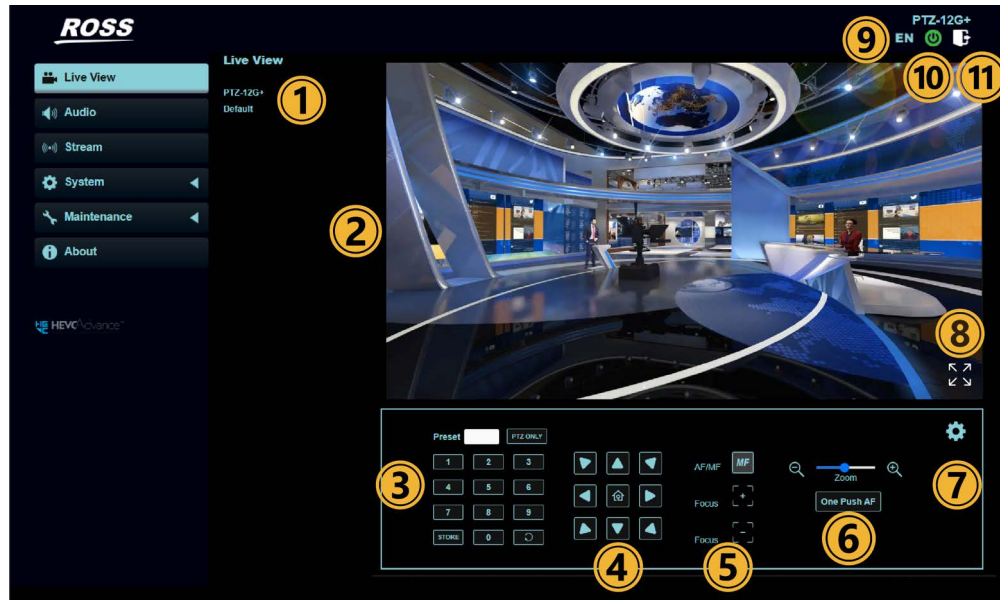


Figure 26 - Live View Page

No	Item	Function Descriptions
1	Camera ID/ location	Displays the camera ID location, which can be customized.
2	Preview window	Shows live video from the camera. Note: Not available when ND HX2 or ND HX3 are enabled.
3	Preset setting	Type or select a preset number, and then do one of the following: - To save the current camera position as the preset, click Store. - To recall the preset, enter the preset number and select the circular arrow. Note: When PTZ Only is selected, only Pan/Tilt/Zoom are recalled. Exposure and white balance settings saved to the preset are ignored.
4	Pan / Tilt setting	Adjust the Pan/Tilt position of the camera.
5	Auto/Manual Focus	Switch to Auto /Manual Focus and adjust Focus in Manual Focus mode. Note: Use the +/- buttons to manually focus.
6	Zoom	Adjusts the zoom position of the camera lens.
	One Push AF	When Manual Focus Mode is On, select to perform one Auto Focus.
7	Camera Setting	Refer to “ Settings: Camera Page ” on page 42 for relevant settings
8	Switch to Full Screen	Switches the preview window to full screen. Note: Not available when ND HX2 or ND HX3 are enabled.
9	Language	Supports English/Traditional Chinese/Simplified Chinese
10	Power button	Turns camera power On or places it in Standby mode.
11	Logout	Log out of the web UI.

Settings: Camera Page

This section describes features available on the **Settings > Camera** page ([Figure 27](#)).

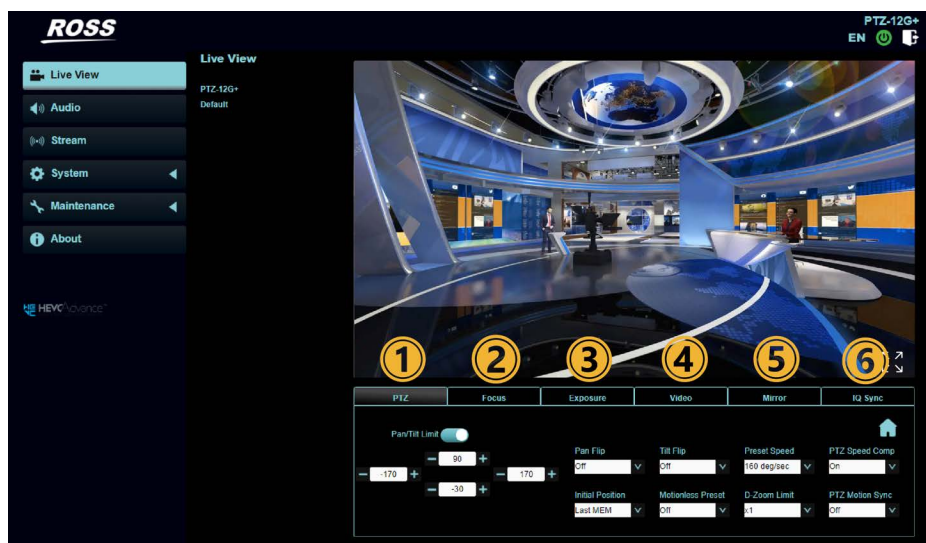
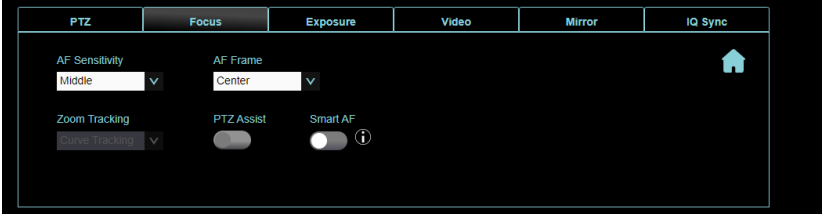
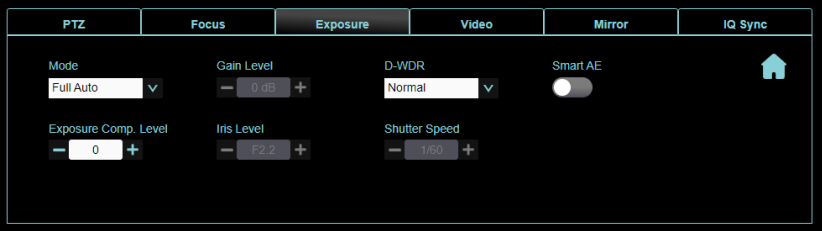


Figure 27 - Settings > Camera Page

No	Item	Function
1	PTZ	• Pan/Tilt Limit: Enables / disables customized Pan and Tilt limits: • Pan Right Limit — Limits movement to the right (0° to 170°) • Pan Left Limit — Limits movement to the left (0° to -170°) • Tilt Up Limit — Limits upward movement (0° to 90°) • Tilt Down Limit — Limits downward movement (0° to -30°) • Pan Flip: Inverts the joystick controls for the pan axis. • Tilt Flip: Inverts the joystick control for the tilt axis. • Preset Speed: Sets the preset recall speed. • PTZ Speed Comp: When On, the Pan and Tilt velocity varies based on the Zoom position. When Zoom is Tele, the Pan and Tilt axes move more slowly. When Zoom is Wide, the Pan and Tilt axes move more quickly. • Initial Position: Sets the camera lens to return to the last operated position (Last MEM) or the first preset position (1st Preset) after POWER ON. Tip: The first preset position is number 0. • Motionless Preset: When the function is enabled, the screen freezes while a preset is being recalled. Freeze is released after preset is completed. • D-Zoom Limit: Sets the maximum digital zoom limit (x1 - x12). This affects the range of the zoom slider on the Live View page. • PTZ Motion Sync: When On, the velocity of the Pan, Tilt, and Zoom axes during preset recall are scaled to make them all arrive at their destinations simultaneously.

Figure 28 - Pan Tilt Zoom Tab

No	Item	Function
2	Focus	 Figure 29 - Focus Tab • AF Sensitivity: Set automatic focus sensitivity • Zoom Tracking: Maintains focus while zooming in or out in MF mode. When On, AF maintains focus as the camera zooms in/out. When Off, the camera enables curve tracking, where the focus is automatically corrected based on a calibration curve when the camera zooms. • Note: When you change this setting, the video feed is temporarily interrupted. • AF Frame: Auto Focus frame setting. When set to Center Frame, Auto Focus is based on the center of the screen. When set to Full Frame, Auto Focus is calculated based on the full screen. Auto Focus Settings for Optimal Performance: To prioritize people as subjects and minimize focus errors on background objects, complete the following: • Set focus Mode to Auto • Set AF Sensitivity to Middle • Set AF Frame to Center • Set Smart AF to On • PTZ Assist: Initiates an auto focus operation when axes movement stops when in manual focus mode. • Smart AF: Turn on this function and AF will mainly focus on the face. Note: Changing this setting causes a temporary interruption of video output.
3	Exposure	 Figure 30 - Exposure Tab • Mode: Select exposure mode (Full Auto/Shutter Priority/Iris Priority/ Manual). • Exposure Comp. Level: Select exposure compensation level. • Gain Level: The gain level is adjustable when the exposure mode is set to Manual. • Iris: The size of aperture is adjustable when the exposure mode is set to Manual or Iris Priority. • D-WDR: Set the level of Digital Wide Dynamic Range (D-WDR) in order to obtain better images. Set to Normal for Black Level Adjustment. • Shutter Speed: The shutter speed is adjustable when the exposure mode is set to Manual or Shutter Priority. • Smart AE: Enables/Disables Smart Auto Exposure, which automatically adjusts exposure to ensure the face is properly lit, preventing overexposure or underexposure. Available when Focus - SMART AF is on and Auto Exposure Mode is not set to Manual.

No	Item	Function
	Video	Figure 31 - Video Tab • Picture Effect: Set picture effect, Off/Neg/Black and White • 2D NR settings: 2D noise reduction settings • 3D NR settings: 3D noise reduction settings • Brightness: Brightness adjustment; Adjustable only when Image Mode is set to Custom. • Gamma: Adjustable when Image Mode is set to Custom. • Black: Adjusts the Black level in the picture when the Image mode is set to Custom. Options include: • Auto (sets level automatically) • Range from 0-10 Note: Every increment raises the black level. Use waveform monitor to view black levels and adjust accordingly. • Note: This setting is accessible only when D-WDR is set to Normal. • Hue: Adjustable when Image Mode is set to Custom • Saturation: Saturation adjustment of the image; Adjustable only when Image Mode is set to Custom. • Sharpness: Adjust the sharpness of the image • Open Push: One push white balance adjustment. Only available when the white balance mode is set to One Push. • Image Mode: Set to Custom to adjust image settings (brightness, gamma, hue, saturation, sharpness). • Image Mode load: Click Default to reset picture settings to factory defaults. • Gamma: Gamma Level adjustment; Adjustable only when Image Mode is set to Custom. • White Balance: Select the white balance mode: • Auto • Indoor • Outdoor • One Push WB • ATW • Manual • Sodium Lamp • 3000 K • 4300 K • 5000 K • 6500 K • 8000 K • Manual Red/Blue: Manually adjust red/blue color levels. Available only when White Balance mode is set to Manual.

No	Item	Function
5	Mirror	 <i>Figure 32 - Mirror Tab</i> • Mirror: Mirrors the image. • Flip: Flips the image on the horizontal axis.
	IQ Sync	 <i>Figure 33 - IQ Sync Tab</i> • IQ Sync Leader: Sets the camera as the IQ Sync Leader. Select the + to add the Slave IP address of other cameras. Doing so synchronizes the Exposure and White Balance values of the host camera to any slave cameras added. Note: This option is available when Exposure and White Balance are set to Auto. • Serial Output: Set IQ Sync data to be sent over a serial connection (when VISCA is set up in serial mode). • IP Output: Set the destination IP addresses of the slave cameras. • Follower IP: Input the follower cameras' IP addresses. The + button will allow user to add more IP addresses when Serial is selected.

Audio Settings Page

This section describes features available on the **Audio** page ([Figure 34](#)).

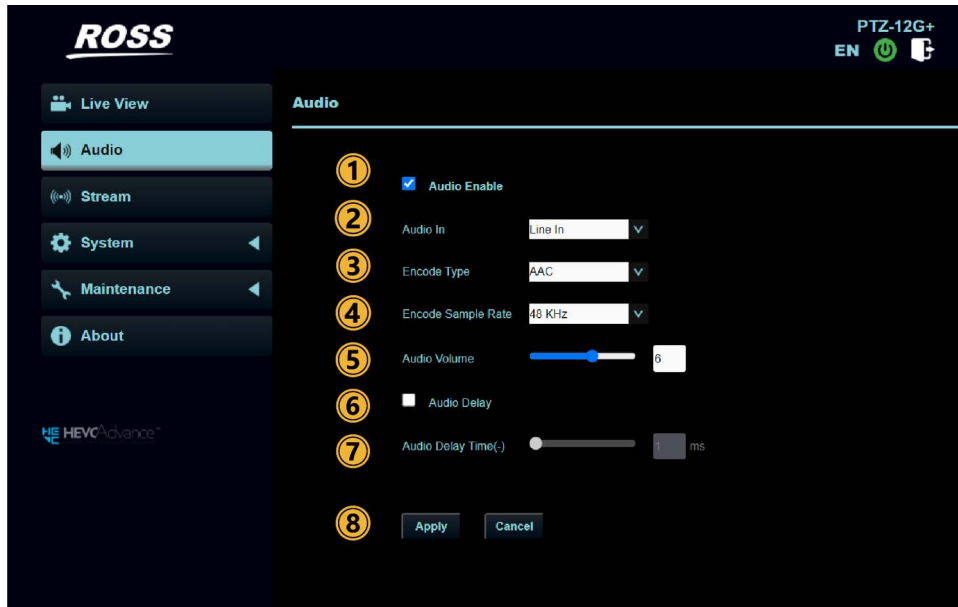


Figure 34 - Audio Page

Function Descriptions		
No	Item	
1	Audio Enable	Enables or disables the Audio Input port on the camera.
2	Audio Input setting type	Sets MIC In/Line In
3	Encode Type	AAC / G.711 Available with NDI HX disabled.

Function								
No	Item	Descriptions						
4	Encode sample rate	Set Encode sample rate						
		• 48 KHz (AAC) • 44.1 KHz (AAC) • 16 KHz (AAC) • 16 KHz (G.711) • 8 KHz (G.711)						
		Available with NDI HX disabled.						
			IP Stream			HDMI Full NDI		USB 3.0
	Audio Encode	RTSP	RTMP/ RTMPS	MPEG-TS	SRT		SDI	
	48 KHz(AAC)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	44.1 KHz(AAC)	Yes	Yes	Yes	Yes	Yes	No	Yes
	16 KHz(AAC)	Yes	No	Yes	Yes	No	No	Yes
	16 KHz(G.711)	Yes	No	No	No	No	No	No
	8 KHz(G.711)	Yes	No	No	No	No	No	No
5	Audio Volume	Adjusts Volume						
6	Audio Delay	Turns on / off Audio Delay. Available with NDI HX disabled.						
7	Audio Delay Time (ms)	Set Audio Delay Time (-1~500ms) Available with NDI HX disabled.						
8	Apply/ Cancel	Select Apply to save changes.						

Stream Page

This section describes features available on the **Stream** page ([Figure 35](#)).

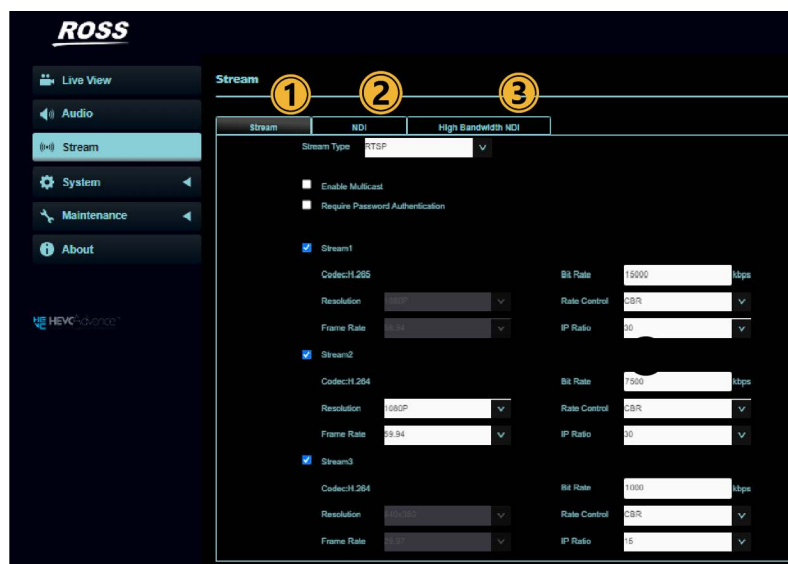


Figure 35 - Stream Page

There are 3 tabs within the stream page, they are:

- Stream Tab
- NDI Tab
- High Bandwidth NDI Tab

Refer to the tables below for detailed overviews of each.

Stream Page > Stream Tab

Refer to the table below for the **Stream** tab options on the **Stream** page.

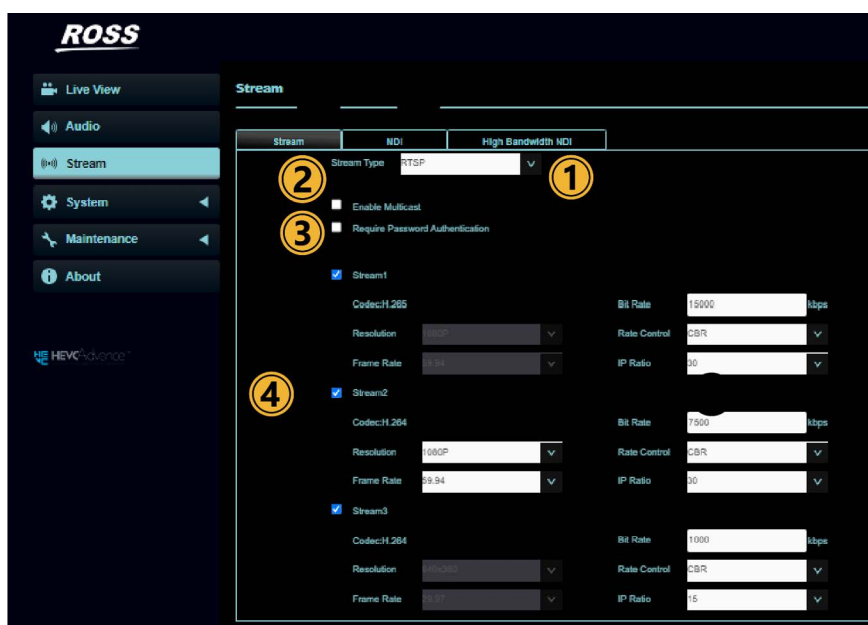


Figure 36 - Stream Tab

Tab	No	Item	Function Descriptions
	1	Stream Type	Support types: MPEG-TS/RTMP/RTMPS/RTSP/SRT MPEG-TS Setting 1) Set MPEG-TS format. 2) Select Stream Source 1 or 2. 3) Enter the MPEG-TS IP address. 4) Enter port number, which must be set in the range above 1024 with a maximum value of 9999. IMPORTANT: Avoid using the following port numbers, as they are used by the camera: 3702, 5353, 8080, 9090, 8554, 8556, 8557, 52380, 52381. Available when the ND HX stream is disabled. MPEG-TS is supported only over UDP. RTMP/RTMPS Setting Copy the RTMP web address provided by the RTMP service platform and paste it to the RTMP URL to publish the camera images on the RTMP service platform. You must also enter the Stream Key, and optionally select the Require Password Authentication check box to input an Account and Password. Tip: Before you can start live streaming to YouTube, audio must be enabled. For more information, see "Settings: Audio Settings Page" on page 52). Note: RTMP and RTMPS are available with ND HX disabled. RTSP Setting Enable/Disable Multicast. It is suggested to enable Multicast when the number of users online watching the live image simultaneously is more than four. RTSP is available with ND HX disabled. • RTSP Streaming 1 (4K@H.265)=> rtsp://camera IP:8554/hevc • RTSP Streaming 2 (1080P@H.264)=> rtsp://camera IP:8557/h264 • RTSP Streaming 3 (720P@H.264)=> rtsp://camera IP:8556/h264 If password authentication is enabled use the following: • rtsp://Username:Password@Camera IP address:port/hevc • rtsp://Username:Password@Camera IP address:port/h264 SRT Setting 1) Set the field of SRT and then check the item to open SRT streaming. After the SRT streaming is opened, it will be connected automatically upon startup. 2) Select the Connection Mode as either Caller or Listener. 3) Enter the URL and port number, which must be set in the range above 1024 with a maximum value of 9999. IMPORTANT: Avoid using the following port numbers, as they are used by the camera: 8554, 8556, 8557, 8080. 4) Enter the Stream ID. 5) Delay time is for 20 to 8000 microseconds. The default value is 120 microseconds SRT is available when the ND HX stream is disabled.
	2	Enable Multicast	Enable Multicast when more than 4 users online watch the image simultaneously.

Tab	No	Item	Function Descriptions
	3	Require Password Authentication	If password authentication is enabled, the RTSP connection address is as follows: - RTSP Streaming 1: rtsp://Username:Password@VC IP address:port/hevc - RTSP Streaming 2/ 3 rtsp://Username:Password@VC IP address:port/h264
	4	Stream 1/2/3 Parameter Settings	Click a Stream tab to configure the associated RTSP video stream. Note: The Stream tabs are available only when Settings > Configuration > Output Source is set to HDMI + Streaming. Streams are available when NDI HX is turned off. For information about settings on each Stream tab, see “Stream Page” on page 48. Stream 1 Functions Encode Format: H.265 Resolution: 4K Frame Rate: Setting according to the supported resolution Bit Rate (kbps): 2,000~20,000 Range, 15,000 Factory Default Rate Control: CBR/VBR IP Ratio: Setting according to the supported resolution Stream 2 Functions Encode Format: H.266 Resolution: 1080p/720p/1080i Frame Rate: Setting according to the supported resolution Bit Rate (kbps): 2,000~20,000 Range, 7,500 Factory Default Rate Control: CBR/VBR IP Ratio: Setting according to the supported resolution Stream 3 Functions Encode Format: H.266 Resolution: 640x360 Frame Rate: Setting according to the supported resolution Bit Rate (kbps): 512~5,000 Range, 1,000 Factory Default Rate Control: CBR/VBR IP Ratio: Setting according to the supported resolution
	5	Enable Stream	Enables / Disables the streaming channel. This setting is available with NDI HX disabled.

Stream Page > NDI Tab

Refer to the table below for the **NDI** tab options on the **Stream** page.

Figure 37 - Stream: NDI Tab

Tab	No	Item	Function Descriptions
	1	Camera ID	The camera ID, which can be set in the System> Device page.
	2	Camera Location	The camera location, which can be set in the System > Device page.
	3	Group Name	The group name can be modified here and set with Access Manager - Receive in NDI Tool • If no group is assigned, the machine belongs to Public. As the default of Access Manager includes Public, Studio Monitor can discover this machine. • If a group is assigned, but this group is not added into Access Manager, Studio Monitor cannot discover this machine. • If a group is assigned and this group is added into Access Manager, Studio Monitor can discover this machine. Note: The name can contain commas (,) to distinguish different groups Example: “default, 123, abc” means this machine belongs to three groups at the same time (default / 123 / abc)
	4	NDI HX	Modify the NDI HX connection by selecting HX2, HX3 or Off. Note: Enabling NDI HX will disable Streamed video. Note: When NDI HX is On, the Group Name text box appears. The default setting is Public, which leaves the stream exposed to anyone with access to the network. To set a unique group name, create the same group name in NDI Tools > NDI Access Manager.
	5	Encode Format	Encode format is reported here and is always H.264/Resolution/FrameRate.
	6	Genlock Source	NDI Genlock synchronizes multiple NDI sources (video streams) by creating a “genlock clock” attached to any NDI sender on the network. This ensures that all NDI streams are correctly timed with each other.

7	Multicast	Enable Multicast when more than 4 users online watch the image simultaneously. • IP Setting — Configures the device with the multicast IP address to receive multicast traffic. • Netmask — Defines the network portion of the multicast IP address.
8	Discovery Server	Facilitates the automatic detection of the camera on the network. • Server IP — specifies the address of the server managing camera discovery
9	Apply/Cancel	Select Apply to save changes.

Stream Page > High Bandwidth NDI Tab

Refer to the table below for the **High Bandwidth NDI** tab options on the **Stream** page.

Figure 38 - Stream: High Bandwidth NDI Tab

Tab	No	Item	Function Descriptions
	1	On/Off	Enable / Disable High Bandwidth NDI.
	2	Camera ID	Displays ID according to System Settings > Device settings.
	3	Location	A separate label to the Location set on the System > Device page, unique to the High bandwidth NDI.

4	Group Name	Set the NDI group or groups for the NDI stream. To view the NDI stream, the group must also be added by Access Manager in the NDI Tools. • If no group is assigned, the machine belongs to Public. As the default of Access Manager includes Public, Studio Monitor can discover this machine. • If a group is assigned, but this group is not added into Access Manager, Studio Monitor cannot discover this machine. • If a group is assigned and this group is added into Access Manager, Studio Monitor can discover this machine. Note: The name can contain commas (,) to distinguish different groups Example: “default, 123, abc” means this machine belongs to three groups at the same time (default / 123 / abc)
5	DHCP	IP setting for High Bandwidth NDI.
6	Multicast	Enable Multicast when more than 4 users online watch the image simultaneously. • IP Setting — Configures the device with the multicast IP address to receive multicast traffic. • Netmask — Defines the network portion of the multicast IP address. • Time to Live — Number of seconds to live.
7	Discovery Server	Check to enter the Server IP address

System: Device

This section describes features available on the **System: Device** page ([Figure 39](#)).

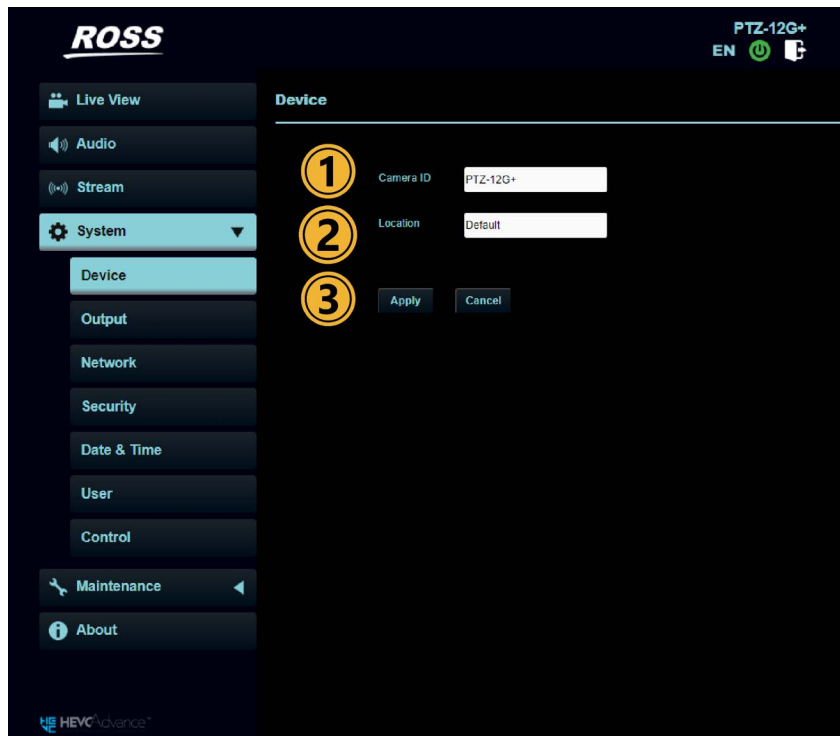


Figure 39 - System: Device Page

No	Item	Function Descriptions
1	Camera ID	Set the camera name • Camera names are limited to 1 - 12 characters • Characters are limited to uppercase and lowercase letters or numbers. Slashes (/), spaces, and special symbols are not allowed.
2	Location	Modify the location of the camera, such as Room 1 • Camera location is limited to 1 - 12 characters • Characters are limited to uppercase and lowercase letters or numbers. Slashes (/), spaces, and special symbols are not allowed.
3	Apply/Cancel	Select Apply to save changes.

System: Output

This section describes features available on the **System: Output** page ([Figure 40](#)).

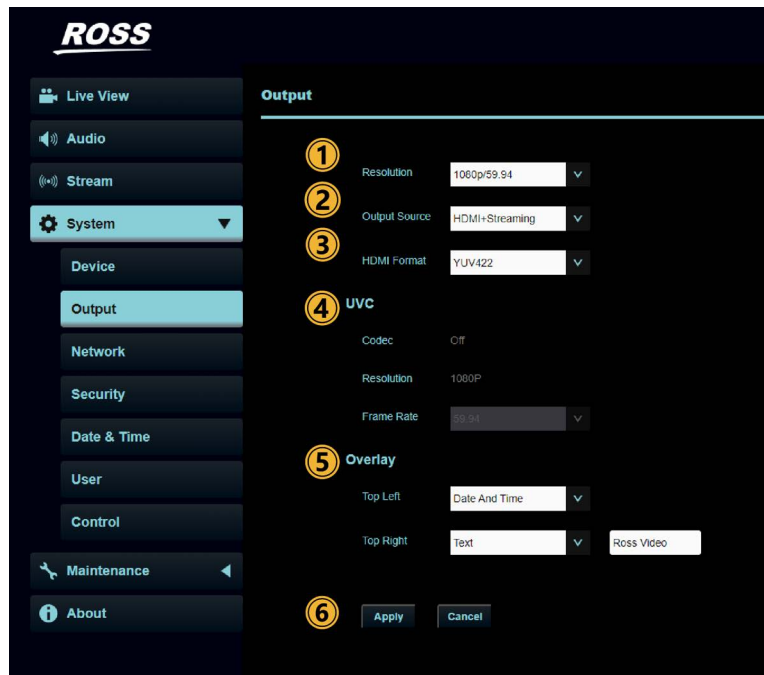


Figure 40 - System: Output Page

No	Function	Function Descriptions
1	Resolution	Set the resolution of the camera After switching the resolution, the camera will restart. Please refresh the browser
2	Output Source	Choices vary depending on whether NDI HX is enabled in the Stream->NDI HX page. • When NDI HX is enabled, options are HDMI+NDI and HDMI + UVC. • When NDI HX is disabled, options are HDMI + Streaming and HDMI + UVC Tip: NDI HX option is available in Output Source when selecting 2160p/59.94 or 2160p/50. Setting output to HDMI + UVC will disable streaming and NDI HX. UVC output only supports resolutions of 2160p/29.97 or lower.
3	HDMI Format	Select YUV422 / YUV420 / RGB YUV420 is only available for 2160p at 59.94 and 50 fps.
4	UVC	Note: The UVC tab is available only when Settings > Configuration > Output Source is set to HDMI + UVC . Encode (Codec) Format: • 2160p 29.97 / 25 fps — H.264 • Less than 1080p (inclusive) — H.264/MPEG Note: For 2160p resolution, UVC is supported for only a frame rate of 29.97 fps or lower.

No	Function	Function Descriptions
5	Overlay	Set the stream to display “date and time” or “custom content” and to display location at two positions in the frame: • Top Left • Top Right Displays over SDI video output but not HDMI.
	Apply/Cancel	Select Apply to save changes.

System: Network

This section describes features available on the **System** page (Figure 41).

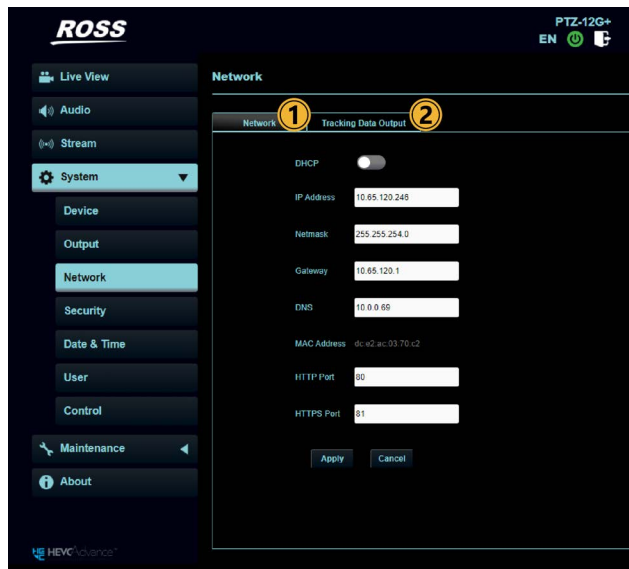
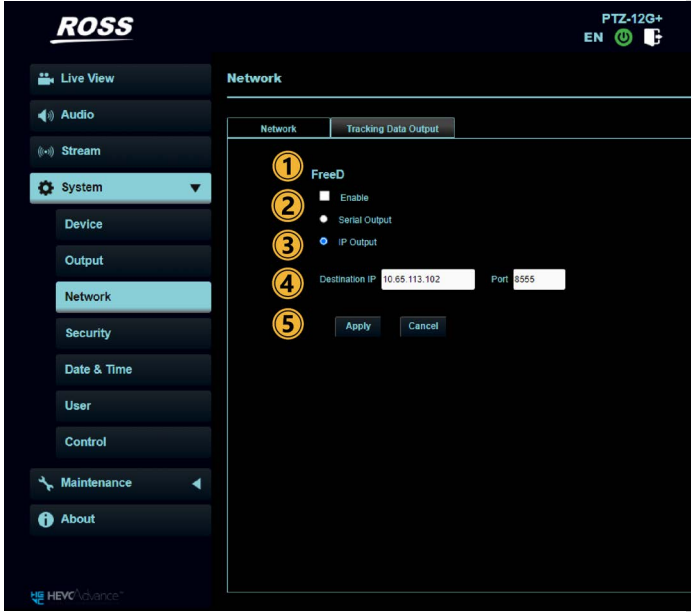


Figure 41 - System Page

Tab	No	Item	Function Descriptions
Network			Figure 42 - System: Network Page
	1	DHCP	Dynamic Host Configuration Protocol. A network management protocol used to automatically assign IP addresses and other network configuration parameters (such as subnet mask, default gateway, DNS servers, etc.) to devices on a network. Change of setting is available when DHCP function is disabled.
	2	IP Address	IP Address for camera when DHCP is disabled.
	3	Netmask	Defines the range of IP addresses within the same network

Tab	No	Item	Function Descriptions
	4	Gateway	Sets the Gateway of the camera.
	5	DNS	DNS — IP address of the DNS server
	6	MAC Address	A MAC (Media Access Control) address is a unique identifier assigned to network-connected devices. It consists of a 12-digit number in hexadecimal format. This identifier is embedded in your device's Network Interface Card (NIC) during manufacturing, ensuring each device on a network can be uniquely identified.
	7	HTTP Port	Set HTTP port. The default Port value is 80. Note: Must be 80 or greater than 1024 and not 3702, 5353, 8080, 8554, 8556, 8557, 52380, 52381.
	8	HTTPS Port	Set HTTPS port. The default Port value is 81. Note: HTTPS Port must be set to 81 or greater than 1024 and can't use 3702, 5353, 8080, 8554, 8556, 8557, 52380, 52381.
	9	Apply/Cancel	Select Apply to save changes made.
Tracking Data Output			 Figure 43 - System: Network Page
	1	Enable	When enabled, the camera will send PTZ position information using the FreeD protocol to the provided IP address and port.
	2	Serial Output	For serial FreeD data, the protocol must be set to VISCA with a baud rate of 38400 using the System > Control page.
	3	IP Output	Send the FreeD data to the Destination IP address and Port set below.
	4	Destination IP & Port	Enter the destination IP address and port Note: When Tracking Data Output is enabled, the camera performance may be affected. Note: There is no warning if multiple devices are streaming FreeD data to the same IP address and port. Tracking Data Output port must be set greater than 1024 and can't use 3702, 5353, 8080, 8554, 8556, 8557, 52380, 52381

Tab	No	Item	Function Descriptions
	5	Apply/ Cancel	Select Apply to save changes.

System: Security

This section describes features available on the **System: Security** page ([Figure 44](#)).

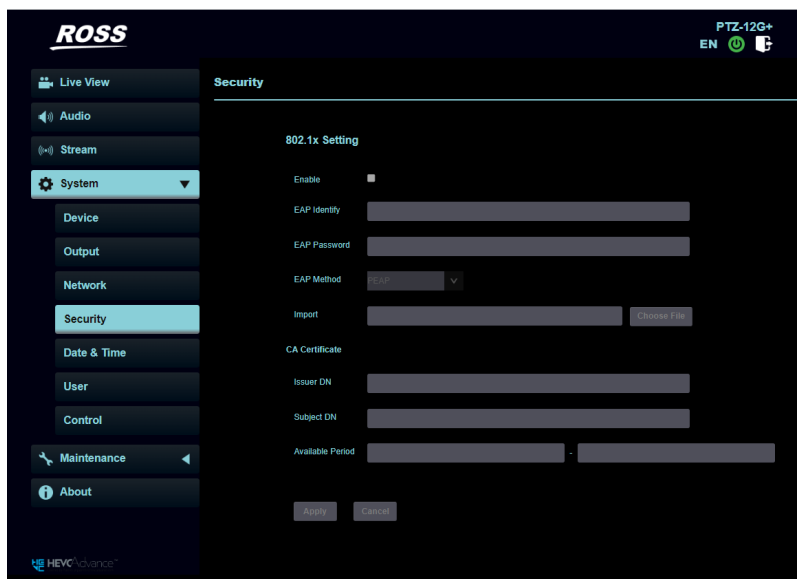


Figure 44 - System: Security Page

Function Descriptions

Enable/Disable 802.1x Protocol. Other settings can be changed when **Enable** is set.

Note: For the activation and modification of settings, it is necessary for the network to have support for the **IEEE 802.1X** protocol and to be configured for Extensible Authentication Protocol (EAP).

System: Date & Time

This section describes features available on the **System: Date & Time** page [\(Figure 45\)](#).

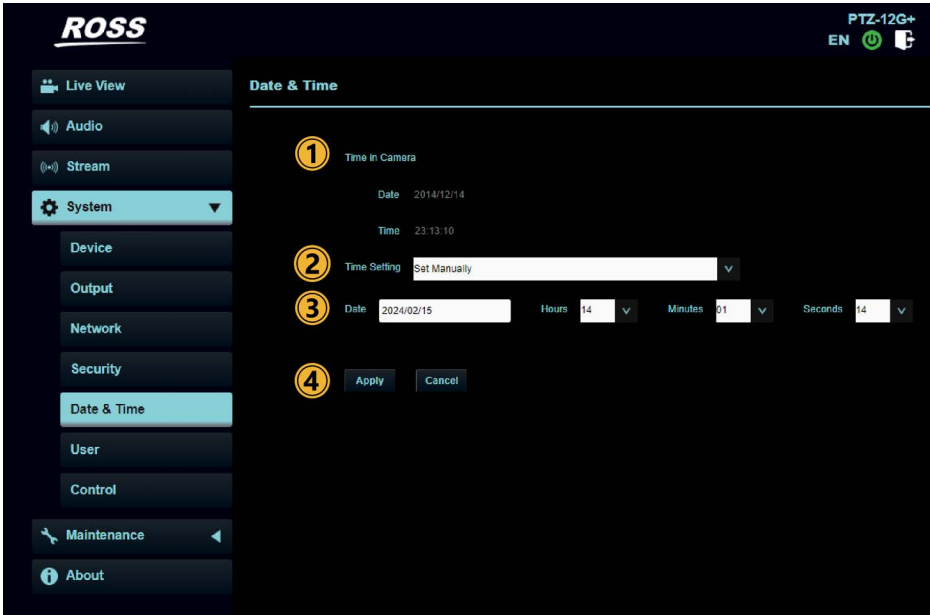


Figure 45 - System: Date & Time Page

No	Item	Function Descriptions
1	Time in Camera	Displays Date and Time currently set.
2	Time Setting	Set Manually or Automatically .
3	Date/Hours/Minutes/Seconds	Manually enter the date and time.
4	Apply/Cancel	Select Apply to save changes.

System: User

This section describes features available on the **System: User** page ([Figure 46](#)). This allows you to add user accounts and assign permissions to them.

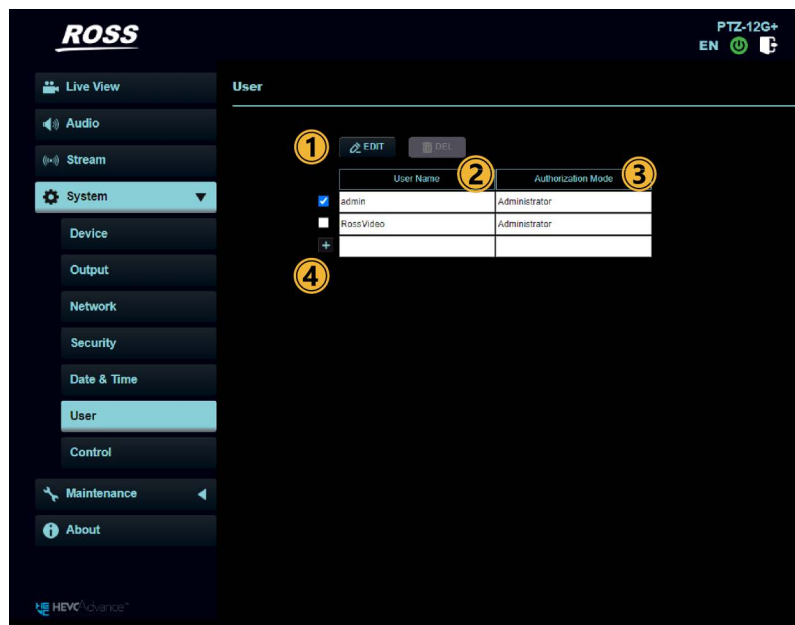


Figure 46 - System: User Page

No	Item	Function Descriptions
1	Edit/Delete User	Select Edit to open the Edit User Page: Figure 47 - Edit User Page Note: Select the check box beside the row you wish to edit or delete before selecting Edit. • User Name • Administrator Password: Provide the password of any Administrator account on the camera to authorize the change. • New Password: Provide the new password for the user. • Confirm Password • Authorization Mode: Determines what permissions are assigned to the user - see Authorization Mode in item 3 below. Note: Passwords cannot contain special characters and must be between 4 and 32 characters in length.

No	Item	Function Descriptions
2	User Name	Shows all authorized users. Use the + to add a new user or Edit button to edit an existing user. Note: Use only letters and numbers. No symbols.
3	Authorization Mode	All authorization modes can view live video (available with NDI HX disabled.). • Viewer — can view live video. • Operator — can view live video and modify operational settings but not system and network settings. • Administrator — can view live video, modify all settings and manage users.
4	+ (Add user)	Select + to add a new user. A page will open to let you set the User Name , Password and Authorization mode for the new user.

System: Control

This section describes features available on the **System: Control** page ([Figure 48](#)).

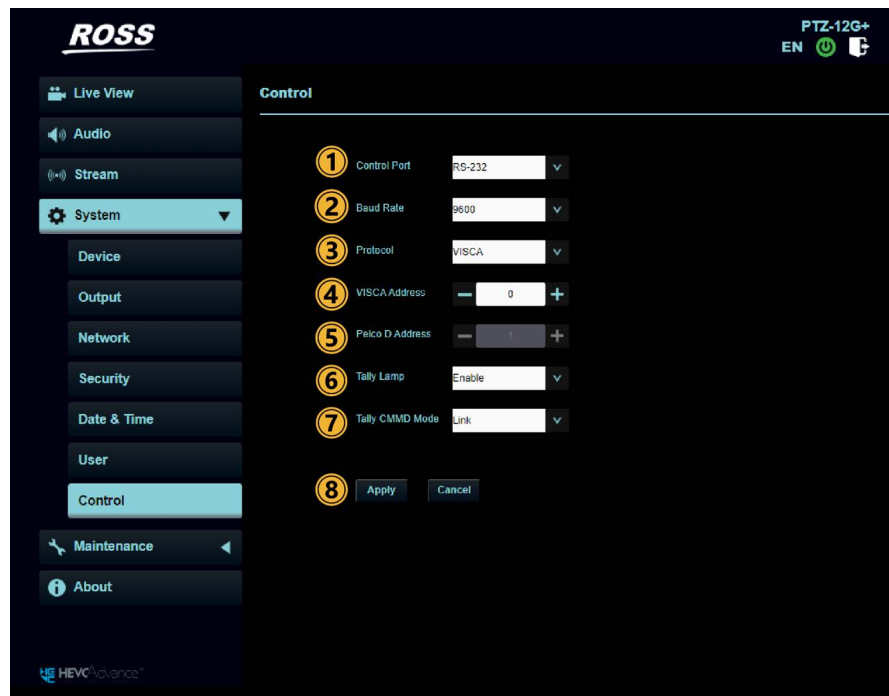


Figure 48 - System: Control Page

No	Item	Function Descriptions
1	Control Port	Control Port is only used when cameras are connected using serial cables (RS-232 or RS-422).
2	Baud Rate	Choose the transmission speed of the control signal. VISCA typically uses 9600 baud.
3	Protocol	VISCA / Pelco D Note: To control PTZ-12G+ cameras using the DashBoard PTZ Camera Control Plugin, Protocol must be set to VISCA.

No	Item	Function Descriptions
4	VISCA Address	The camera ID address 0 ~ 7 can be assigned. Note: The VISCA Address for serial has no impact on IP VISCA.
5	Pelco D Address	The camera ID address 1 ~ 255 can be assigned.
6	Tally Lamp	Enable/Disable Tally Lamp
7	Tally CMMD Mode	Impacts how the camera handles tally commands from a VISCA controller. Use normal operation, unless otherwise specified by the controller software manufacturer. • Normal: option should be used when connecting DashBoard to the camera.
8	Apply/Cancel	Select Apply to save changes.

Maintenance Page

This section describes features available on the **Maintenance** page ([Figure 49](#)).

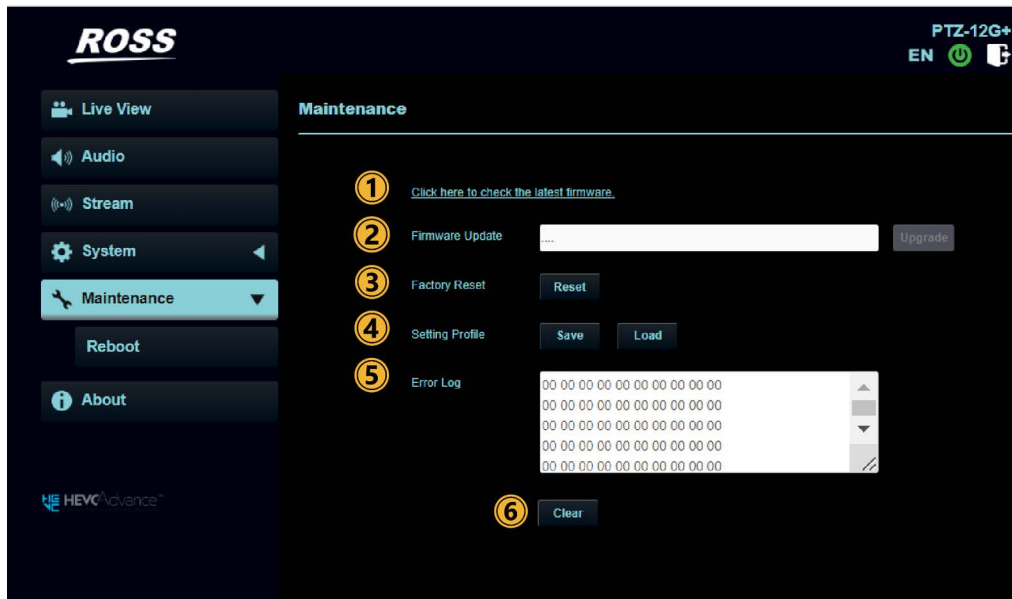


Figure 49 - Maintenance Page

Number	Item	Function Description
1	Click here to check the latest firmware	This link will take you to the Ross website where you can check for the latest available firmware. The currently running version can be found on the About page in the camera web UI.
2	Firmware Update	Click in the text field to open a browser that will let you navigate to the correct firmware file. Select Upgrade to update the firmware. Note: Update takes about 2 - 3 minutes Important: Do not operate or turn off the power of the device during the update to avoid firmware update failure

Number	Item	Function Description
3	Factory Reset	All Network Settings reset to DHCP including High Bandwidth NDI & FreeD. • Users — Removed • Admin — Set to default password • Camera ID — No change • Location — Default • NDI Group — Default • High Band NDI — Default • Output Resolution — Default • VISCA Address — No change • Overlay — Default
4	Setting Profile	Save and load camera settings from file.
5	Error Log	If the camera encounters errors, an error code log will be established.
6	Clear	When an error code appears, please try to click Clear to make sure whether the issue has occurred repetitively.

Maintenance: Reboot

This section describes features available on the **Maintenance > Reboot** page ([Figure 50](#)).

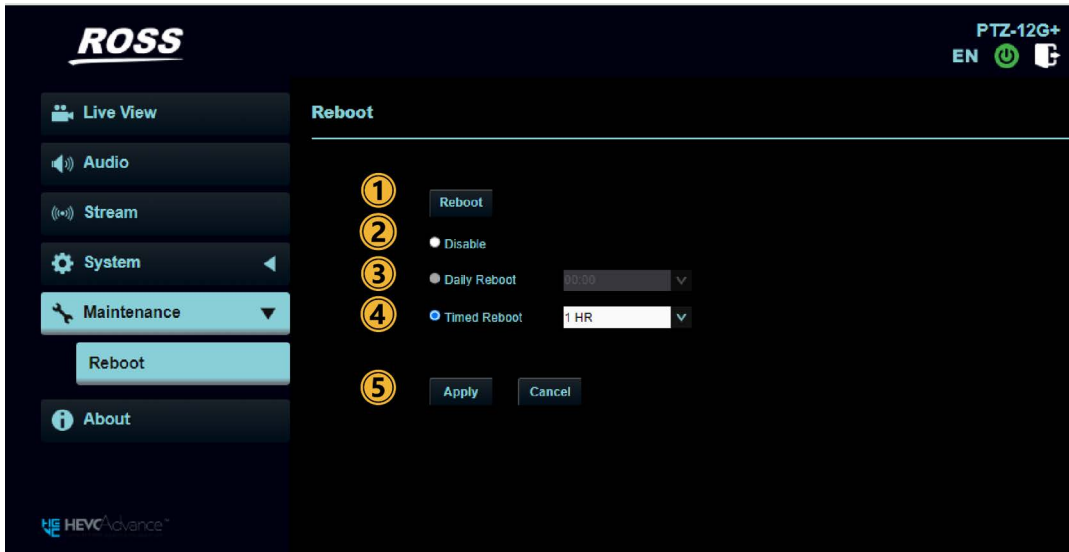


Figure 50 - Maintenance > Reboot Page

Number	Item	Function Descriptions
1	Reboot	Reboots the PTZ camera.
2	Disable	Disable the reboot settings.
3	Daily Reboot	Set the daily reboot time. Note: Daily reboot only available when Time Setting on the System > Date & Time page is set to Synchronized with SNTP server .
4	Timed Reboot	Select Timed Reboot to reboot the camera at regular intervals.
5	Apply/Cancel	Select Apply to save changes.

About Page

This section describes features available on the **About** page (Figure 51).

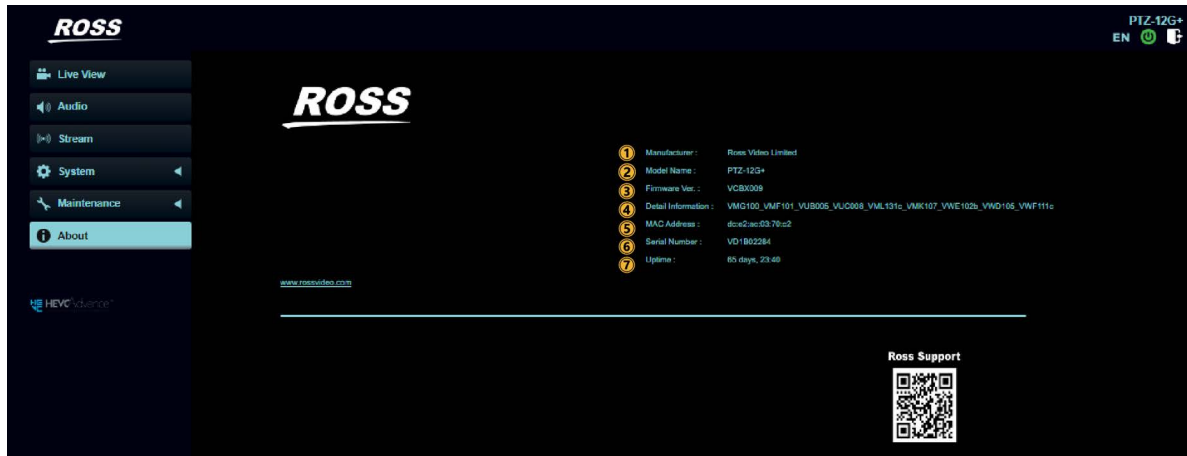


Figure 51 - About Page

No	Item	Function Descriptions
1	Manufacturer	Displays the manufacturer name.
2	Model Name	Displays the device model name.
3	Firmware Version	Displays the firmware version installed on the camera.
4	Detail Information	Displays list of individual firmware components included in the installed firmware version.
5	MAC Address	A MAC address is a unique identifier assigned to network-connected devices. It consists of a 12-digit number in hexadecimal format.
6	Serial No.	Displays the camera serial number.
7	Uptime	Displays the amount of time since the last power cycle.

Viewing RTSP Video Stream

IMPORTANT: NDI|HX2 or HX3 must be disabled to use this setting.
High Bandwidth NDI can be used at the same time as video streaming.

You can view this video output in an RTSP-compatible playback application such as VLC media player.

To view the RTSP stream in VLC media player:

1. In the camera's web interface, navigate to **Settings > Output**.
2. Set the resolution.
3. Set the **Output Source** to **HDMI + Streaming**.
4. Navigate to **Stream**.
The **Video** page appears (Figure 52).

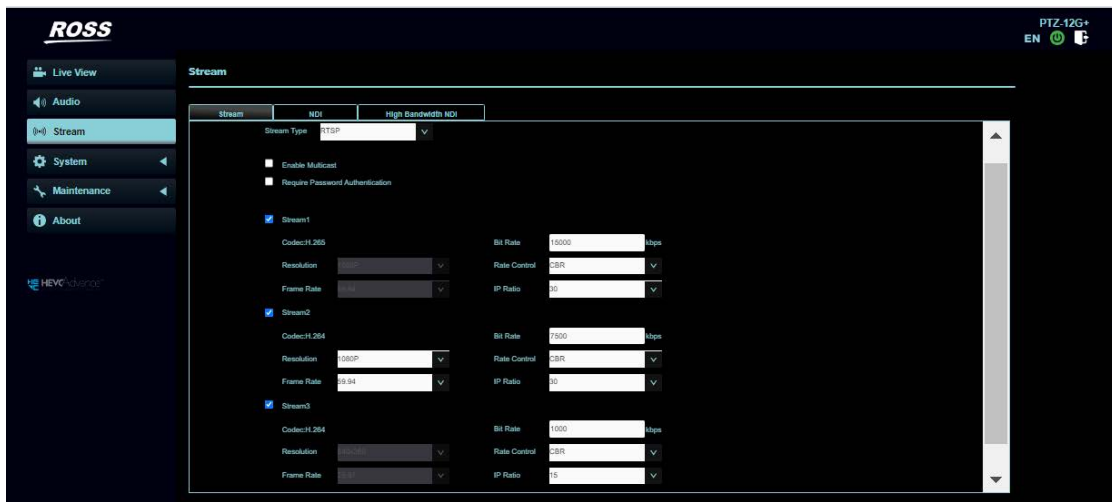


Figure 52 - Stream Page

5. Configure settings for each video stream (1, 2, 3), as required
 6. In VLC media player, open a network stream, and specify the URL for the stream:
 - **Stream 1** — Main Streaming (@H.265) — `rtsp://camera_IP:8554/hevc`
 - **Stream 2** — Sub1 Streaming (@H.264) — `rtsp://camera_IP:8557/h264`
 - **Stream 3** — Sub2 Streaming (@H.264) — `rtsp://camera_IP:8556/h264`
- Note:** In the paths listed above, replace **camera_IP** with the IP address of the PTZ camera.

Figure 53 and Figure 54 show how to open a network stream and specify the URL for **Stream 1**, based on a camera with an IP address of **192.168.4.48**.

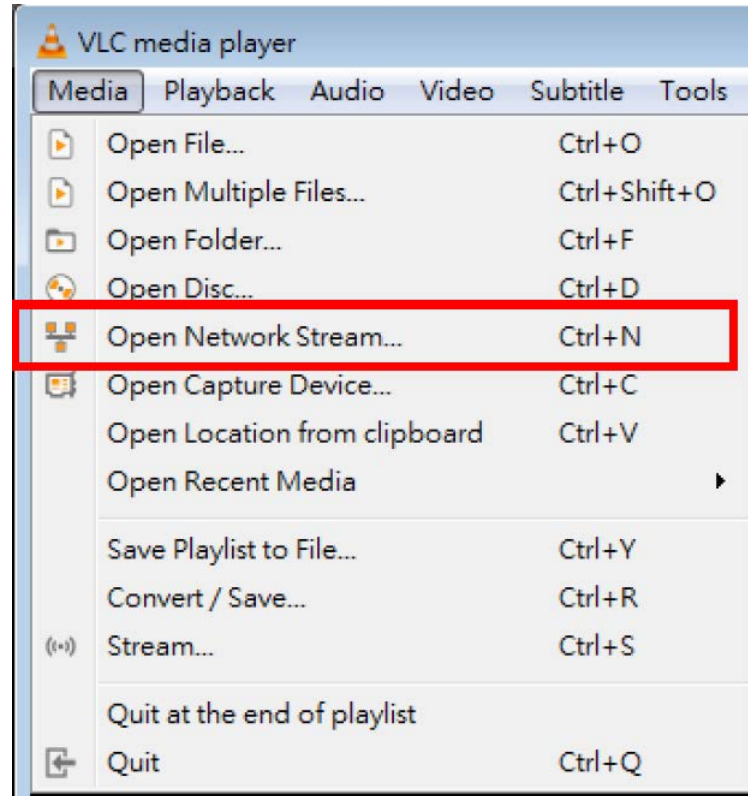


Figure 53 - Opening a Network Stream in VLC Media Player

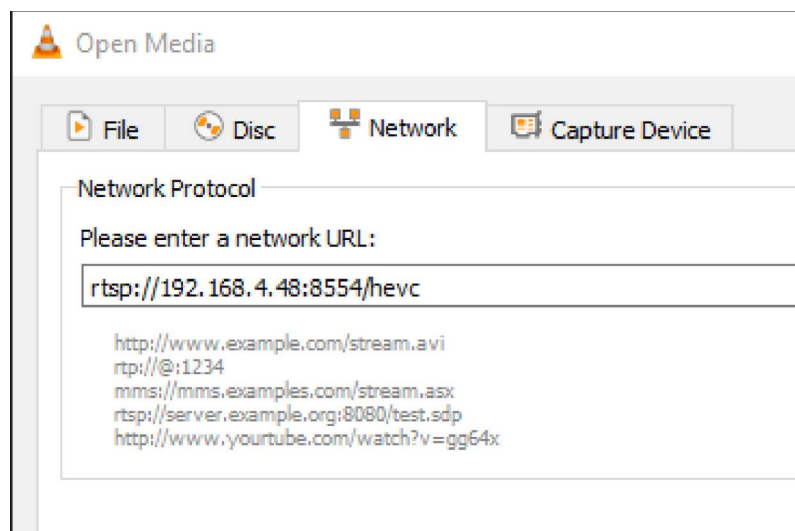


Figure 54 - Specifying a Stream URL in VLC Media Player

Specifications

Item	Specification
Image Sensor	1/1.8 inch, 9.17Mpixel, RS CMOS
Video Output	HDMI : V2.0 4K 60p Ethernet, USB3.0 3G-SDI, 12G-SDI: 4K 60p
IP Stream	HEVC: 4K 60p NDI & RTSP H.264: 640X360 29.97fps NDI H.264: 1080p59.94fps RTSP H.264: 640X360 29.97fps RTSP
Video Output	Ethernet / 12G-SDI / 3G-SDI / HDMI2.0 / USB 3.0
Video Output connections	HDMI2.0 X1, BNC X2
Optical Zoom	30x
Digital Zoom	12x
Horizontal Viewing Angle	63° (Wide) to 3.7° (Tele)
Vertical Viewing Angle	35.4° (Wide) to 2.1° (Tele)
Panning speed	0.01°~300°/sec
Panning Angle	+170° ~ -170°
Tilting Angle	+90° ~ -30°
Tilting Speed	0.01°~300°/sec
Lens Focal length	6.5mm ~ 202mm
Lens Aperture	F1.6 @ 6.5mm ~ F4.8 @ 202mm
Shutter Speed	1/1 ~ 1/10,000 sec
Minimum Object Distance	1.5m (Wide / Tele)
Minimum Illumination	0.05 lux (F1.6, 50IRE, 30fps)
Video S/N Ratio	>50dB
Focus System	Auto, Manual, Smart AF
Gain Control	Auto / Manual
White Balance	Auto / Manual
Exposure Control	Auto / Manual / Smart AE
Digital WDR	Yes
3D NR	Yes
Image Flip	Yes
Preset position memories	256 (on-board) Unlimited with DashBoard or SmartShell control system
Audio Compression Format	IP: G.711, USB: PCM
Control Protocols	VISCA / VISCA IP / PELCO-D / NDI / UVC/ UAC
Serial Control	RS-232 or RS-422
Tally Indicator	Yes: Front
PoE	High Power PoE++ (IEEE802.3bt)
Network Streaming Protocols	Full NDI / NDI HX3 / NDI HX2 / RTSP / RTMP / RTMPS / MPEG-TS / SRT
Video Compression types	HEVC/H.265: 2160p 60 H.264: 2160p 30 MPEG: 1080p 30
Audio Input	Line In/MIC In, 3.5mm x1
IR Pass-through	No
IR Receiver	Yes
IR Remote Control	Yes
IQ Sync	Yes
Color Space	Standard
Genlock	VBS, TLS
AR/VR data out	FreeD, IP or Serial data
Storage temperature	-20°C to +60°C (-4°F to 140°F)
Operating temperature	0°C to 40°C (32°F to 104°F)
Power Consumption	DC: ≤31W , PoE++: ≤33W
Weight	6.6 lbs. (3 kg)
Dimensions	9.1" x 7.4" x 7.4" (232 x 188 x 189mm)

DashBoard Control

The PTZ Camera Control Plugin is a DashBoard plugin application that enables you to configure and control supported PTZ cameras, including PTZ-12G+ cameras. You can control cameras manually, store and recall presets, and configure camera settings. The PTZ Camera Control Plugin is included as part of Ross Video DashBoard.

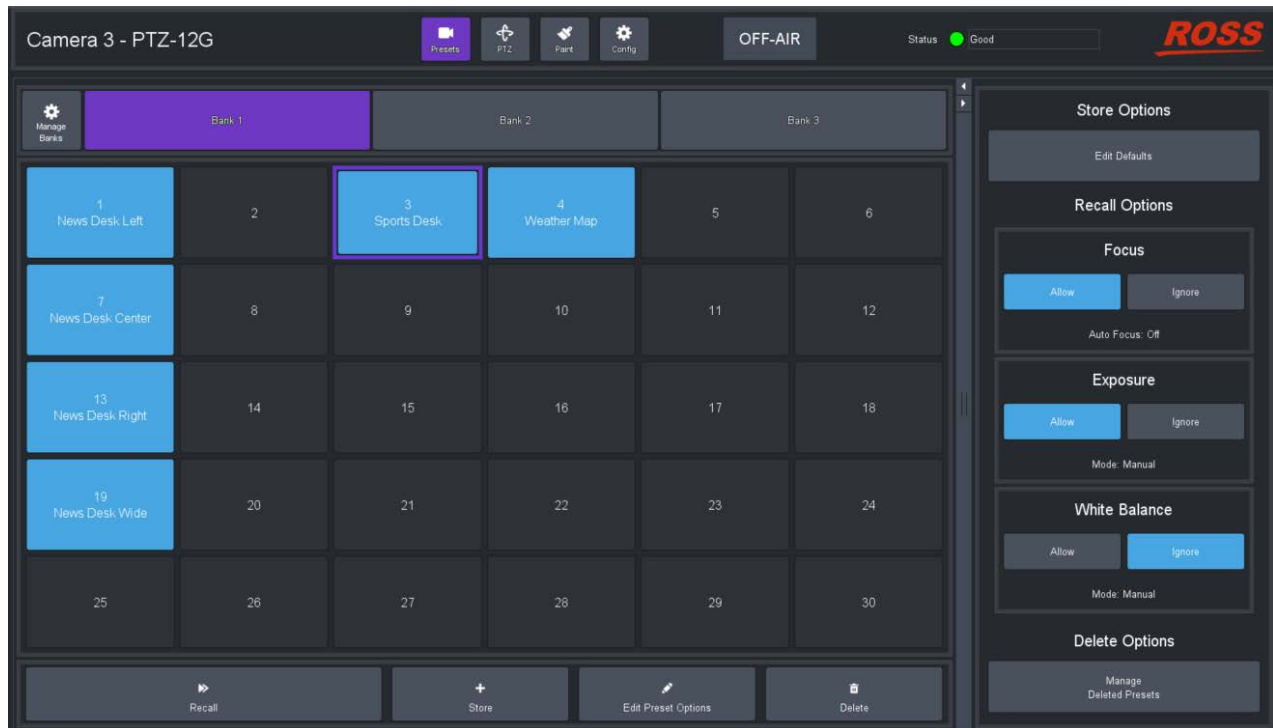


Figure 55 - DashBoard PTZ Control Plugin

IMPORTANT: To control PTZ-12G+ cameras, the control protocol of the camera must be set to **VISCA** (not **Pelco D**). In the web interface, the **Protocol** setting is at **System > Control**. For more information, see “**System: Control**” on [page 63](#).

For optimal control of your PTZ cameras, you can add an off-the-shelf USB joystick (or other game controller) to DashBoard. A USB controller enables you to perform pan/tilt/zoom movements with a joystick, and select a different camera at the push of a button.

For more information about the PTZ Camera Control Plugin, see the **User Manual for PTZ Camera Control Plugin (8351DR-015)**.

Ross Video DashBoard, the **DashBoard User Guide (8351DR-004)**, and the **User Manual for PTZ Camera Control Plugin (8351DR-015)**, are all available as free downloads from the Ross Video website at www.rossvideo.com/dashboard. To control PTZ-12G+ cameras, DashBoard v9.10 (or higher) is required.

Maintenance and Troubleshooting

This section describes regular maintenance tasks and provides troubleshooting information. It includes the following topics:

- “**Regular Maintenance**” on [page 72](#)
- “**Firmware Update**” on [page 73](#)
- “**Firmware Update**” on [page 73](#)
- “**Troubleshooting**” on [page 76](#)

For information about obtaining product assistance, see “**Contacting Technical Support**” on [page 7](#).

Regular Maintenance

Perform the following maintenance tasks periodically:

1. Check that the camera is properly secured.
2. Check that all cables that run to the camera are properly connected, are undamaged, and are properly dressed to prevent possible snags.
3. Check that the cooling fan on the bottom of the camera is unobstructed. Use a vacuum cleaner to remove dust from the fan area. Do **NOT** use any liquids to clean the camera!

Firmware Update

Perform the following firmware update steps when new upgrades are available from:
<https://www.rossvideo.com/support/product-documentation/ptz-documentation/>.

To access the web interface:

1. Enter the IP address of the camera into the address bar of your web browser.
2. Enter a valid **User Name** and **Password** for a user with **Administrator** authorization.
For more information, refer to “**To Access the Web Interface:**” on [page 38](#).

To check current firmware version:

1. Select **About** the menu options in the Web Interface.
2. Locate the **Firmware Version** field on the **About** page.

After you check the firmware version number on the camera, compare it to the firmware version numbers listed in the Release Notes, which are available as a PDF file in the firmware update package. The Release Notes are also available for download at
<https://www.rossvideo.com/support/product-documentation/ptz-documentation/>.

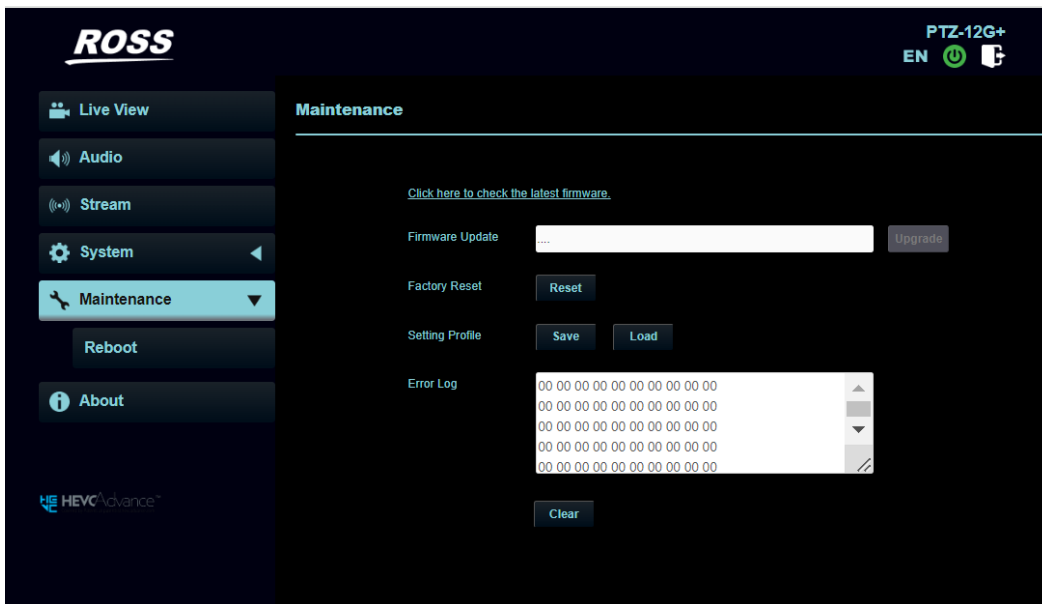
Note: If the camera already has the latest firmware version, no update is required.

Manufacturer :	Ross Video Limited
Model Name :	PTZ-12G+
Firmware Ver. :	VCBX020
Detail Information :	VMG100_VMF101_VUB012_VUC019_VML133k_VMK107_VWE104a_VWD105_VWF112q
MAC Address :	dc:e2:ac:03:70:c2
Serial Number :	VD1B02284
Uptime :	1 day, 21:32

To upgrade the firmware version:

1. Select **Maintenance** from menu options in the Web Interface.
2. Click in the **Firmware Upgrade** text field to open a file browser and navigate to the .bin file for the new firmware.

The .bin file is available in the firmware upgrade package at
<https://www.rossvideo.com/support/product-documentation/ptz-documentation/>.



3. Select the **Upgrade** button.

Note: The firmware upgrade takes approximately 2 minutes to complete. Do not remove power during this time.

Once the upgrade is complete:

IMPORTANT: Do not power cycle your camera until the upgrade finishes.

1. Disconnect the power cable from the camera.
2. Wait 60 seconds, then reconnect the camera's power.
3. Log in to the Web Interface with your account credentials.

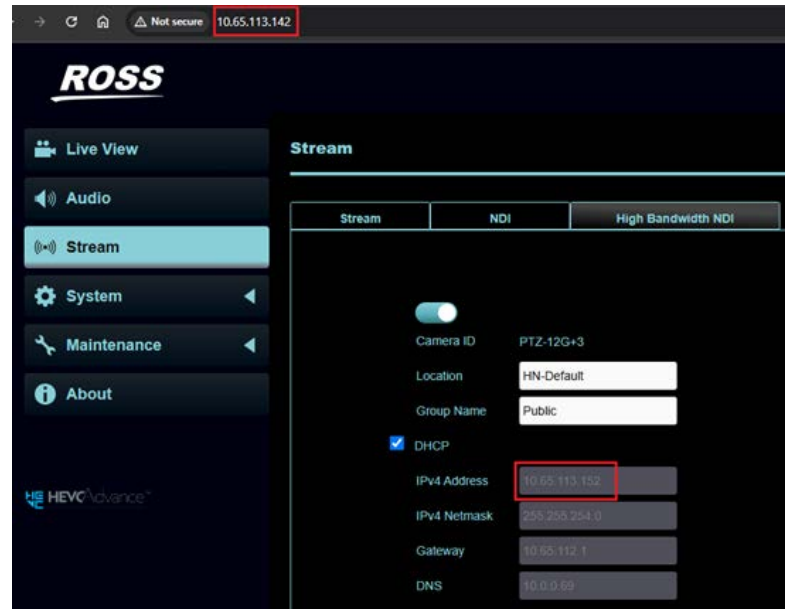
Note: Network settings and user credentials are unaffected by the firmware upgrade process.

Tip: Refer to the **About** page to confirm your firmware version has upgraded.

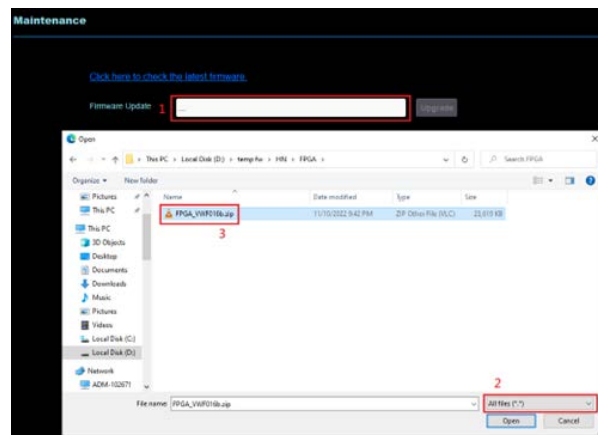
FPGA Firmware Upgrade

The FPGA (Field-Programmable Gate Array) firmware upgrade updates the chip that manages hardware functions, such as video processing and synchronization. This process is separate from general firmware updates and is performed to address specific hardware improvements or fixes.

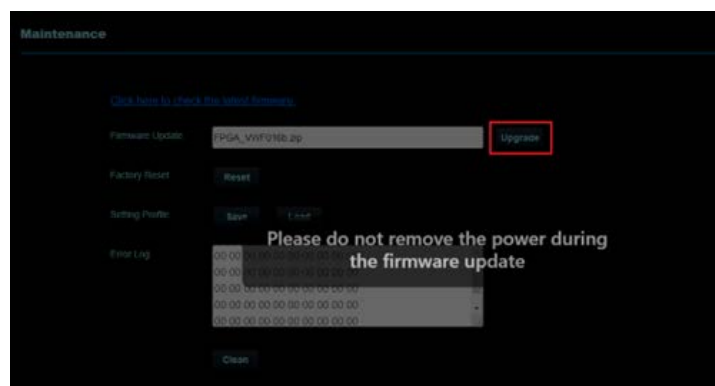
1. Confirm the **Master** and **high-bandwidth NDI** networks are in the same subnet.



2. Go to the **Maintenance** page and select the **Firmware Update** textbox.
3. Select the **All files (*.*)** file type and the **VWFxxxx.zip** file.



4. Select **Upgrade** and wait for 10 minutes.

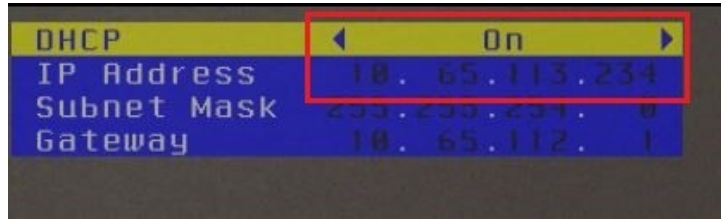


5. After upgrading FPGA firmware, the camera restarts.

Important: If the FPGA Firmware upgrade fails, complete the following:

- a. Set the **IP address** to use **DHCP**.

- b. Use the remote control and on-screen display to find the assigned **IP address**.
- c. Access the device through the web UI using the newly assigned **IP address**.
- d. Upgrade the FPGA firmware following the steps in this section.
- e. Manually set the **IP address** after the upgrade is complete.



Troubleshooting

This section describes problems you may encounter, and provides possible solutions.

Problem	Possible Solution
Boot without power signal	1) Make sure you have plugged in the power cord. 2) When using a PoE connection, ensure that the power supply supports PoE+ / PoE++ hubs. The camera requires PoE++ (IEEE802.3bt).
There is no video image output.	1) Check the power supply or PoE supply functions. 2) Confirm the output signals are in streaming output. 3) Confirm whether the camera resolution can be used together with the monitor equipment. If 4k output, confirm the monitor equipment supports 4K output. 4) Replace the cables and make sure they are not faulty. Transport of 4K video requires 12G 4K UHD rated video cables.
RS-232 cannot be controlled	1) Confirm the connection is correct (RS-232 In/ Out) 2) Please make sure the Baud rate setting is the same as the control equipment
Unable to connect to camera after changing network settings (IP address, gateway, netmask)	Power cycle the camera: Disconnect camera power, wait 20 seconds, and then reconnect power. Wait until camera initializes, and then try connecting to it again.
Whether the Internet can be used for operation	Please refer to " Web Interface Features " on page 40 for the Internet usage
ONVIF software cannot locate the machine	Unable to connect to Camera after change IP's 2 slots above In the web interface, use only English letters and numbers for Settings > Video > Camera_ID and Settings > Video > Location . Using special characters and/or pressing the space bar will cause the ONVIF software to be unable to locate the machine. This applies only with NDI disabled.
Tally lamp is not working when applying VISCA setting	Ensure that the Tally Lamp function is enabled. Do one of the following to access the Tally Lamp on/off setting: • Using the On-Screen Menu, (remote control unit), go to System > Tally Lamp. • Using the web interface, go to Settings > Camera > Tally Lamp.

Problem	Possible Solution
The camera does not save the relevant parameters (PTZ, AWB, etc) after reboot	Check that Initial Position setting is set to Last MEM. Do one of the following to access the Initial Position setting: - Using the On-Screen Menu, (remote control unit), go to System > Initial Position. - Using the web interface, go to Settings > Camera > Pan Tilt Zoom > Initial Position.
Forgot password for web interface and cannot log in	Hard Reset A Hard Reset enables password resetting. WARNING: This process resets all camera, network, and login credential settings, restoring defaults. To perform a Hard Reset, complete a power cycle by disconnecting and reconnecting the camera's power, then complete the following: 1) Using the remote, press the following buttons in this precise sequence: + 886464 > Enter. <i>Figure 56 - Location of plus (+) button</i> Note: Use the On Screen Display to turn Prompt On when selecting between numbers. When entering the numerical sequence, wait until the screen prompts OK before entering the next number. Settings are applied as follows: Ethernet: - DHCP is turned On. - IP address is set to 192.168.100.100. Tip: After reset, use the remote control unit to turn DHCP off or to set the IP address. User Names and Passwords for the web interface revert to a single default user profile: - User Name: admin - Password: 9999 2) Using the web interface, select Add/Edit Users > Edit > enter the New Password > Confirm Password > Apply to assign a new password. Note: Symbols are not recognized in passwords. For further assistance, refer to “Contacting Technical Support” on page 7.
Unable to add camera in DashBoard	Ensure that the control protocol on the camera is set to VISCA. There are two ways to access the Protocol setting: - In the web interface, the Protocol setting is at System > Control. For more information, refer to “System: Control” on page 63. - In the On-Screen Display menu, the Protocol setting is at System > Protocol. For more information, refer to “On-Screen Display Menu Settings” on page 28.

Appendix A: Serial Connections

This appendix provides information about pin assignments for controlling PTZ-12G+ cameras over serial RS-232 and serial RS-422.

Note: The DashBoard PTZ Camera Control plugin does not support serial connections. DashBoard communicates with PTZ cameras via VISCA over IP.

Topics include the following:

- “**RS-232 Serial Connections**” on [page 78](#)
- “**RS-422 Serial Connections**” on [page 80](#)

[Figure 57](#) shows the RS-232 and RS-422 connectors on the back of the camera.

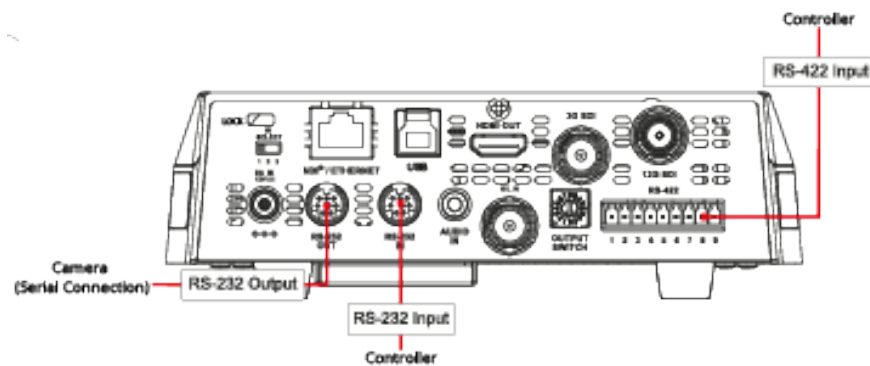


Figure 57 - Serial RS-232 and RS-422 Connectors

RS-232 Serial Connections

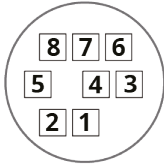
This section describes connections for serial control of PTZ-12G+ cameras over RS-232.

It includes the following topics:

- “**RS-232 IN — Pin Assignments**” on [page 79](#)
- “**RS-232 OUT — Pin Assignments**” on [page 79](#)
- “**RS-232 — Connecting Camera to Computer**” on [page 79](#)
- “**RS-232 — Cascading Camera Connections**” on [page 80](#)

RS-232 IN — Pin Assignments

[Figure 58](#) details the pin assignments for the RS-232 IN connector on the camera.

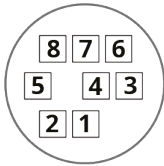


NO	Pins	Signal
1	DTR	Data Transmission Read
2	DSR	Data Set Read
3	TXD	Transmit Data
4	GND	Ground
5	RXD	Receive Data
6	GND	Ground
7	IR OUT	IR Commander Signal
8	N.C.	No connection

Figure 58 - Pin Assignments for RS-232 IN Connector

RS-232 OUT — Pin Assignments

[Figure 59](#) details the pin assignments for the RS-232 OUT connector on the camera.



NO	Pins	Signal
1	DTR	Data Transmission Read
2	DSR	Data Set Read
3	TXD	Transmit Data
4	GND	Ground
5	RXD	Receive Data
6	GND	Ground
7	OPEN	Reserved
8	OPEN	Reserved

Figure 59 - Pin Assignments for RS-232 OUT Connector

RS-232 — Connecting Camera to Computer

[Figure 60](#) details pin connections required between the camera and a computer that controls it over serial RS-232.

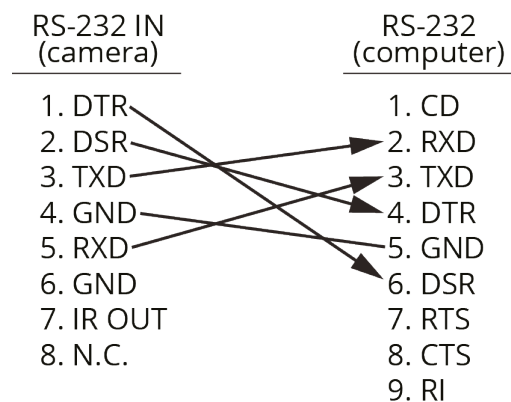


Figure 60 - Connecting Camera to Control Computer for RS-232 Control

RS-232 — Cascading Camera Connections

[Figure 61](#) details pin connections required to cascade (daisy-chain) up to seven cameras for control over serial RS-232.

Note: If you plan to control the cameras using DashBoard, the control **Protocol** on each camera must be set to **VISCA**, and the **VISCA Address** setting on each camera must be unique. For information about accessing these settings using the web interface, see “**System: Control**” on [page 63](#).

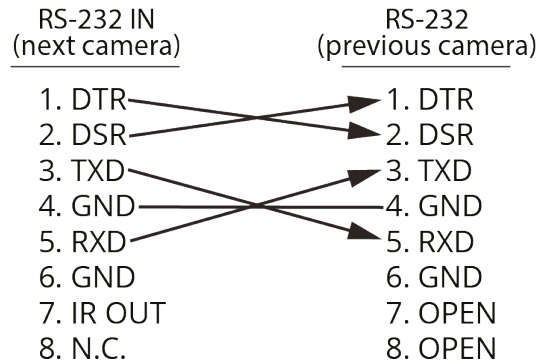


Figure 61 - Cascading Camera Control over RS-232

RS-422 Serial Connections

This section describes connections for serial control of PTZ-12G+ cameras over RS-422.

It includes the following topics:

- “**Making RS-422 Pin Connections**” on [page 80](#)
- “**RS-422 Connector — Pin Assignments**” on [page 81](#)
- “**RS-422 — Cascading Camera Connections**” on [page 82](#)

Making RS-422 Pin Connections

The camera comes with an RS-422 connector that mates with the RS-422 connector on the camera ([Figure 62](#)). The connector accepts AWG 28 to AWG 18 wire.

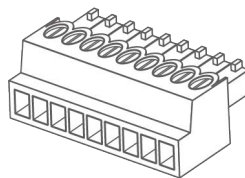


Figure 62 - RS-422 Connector (included)

To wire the RS-422 connector:

- For each connection:
 - a. Strip the wire insulation to expose 6mm (1/4”) of bare wire.
 - b. Insert the bare wire into the correct terminal hole.
 - c. Use a small slot screwdriver to tighten the terminal screw to secure the wire.

To attach the RS-422 connector to the camera:

- 1. Hold the camera base securely.
IMPORTANT: Never handle or rotate the camera head. Handling or rotating the camera head by hand can permanently damage the camera.
- 2. Align the connector with the RS-422 connector on the camera.
Tip: The terminal screws face upwards, towards the top of the camera.
- 3. Press the connector firmly into the camera.

RS-422 Connector — Pin Assignments

This section details the pin assignments for the RS-422 connector on the back of the camera.

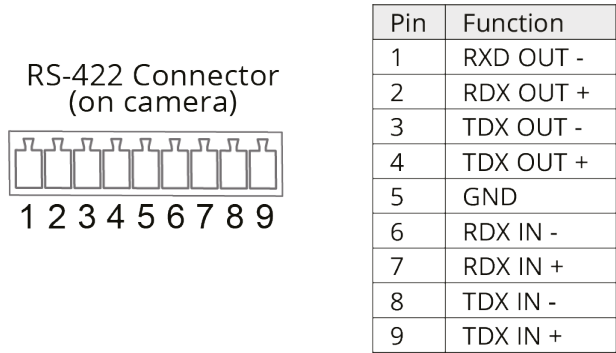


Figure 63 - Pin Assignments for RS-422 Connector

RS-422 — Cascading Camera Connections

[Figure 64](#) details pin connections required to cascade (daisy-chain) up to seven cameras for control over serial RS-422.

Note: If you plan to control the cameras using DashBoard, the control **Protocol** on each camera must be set to **VISCA**, and the **VISCA Address** setting on each camera must be unique. For information about accessing these settings using the web interface, see “**System: Control**” on [page 63](#).

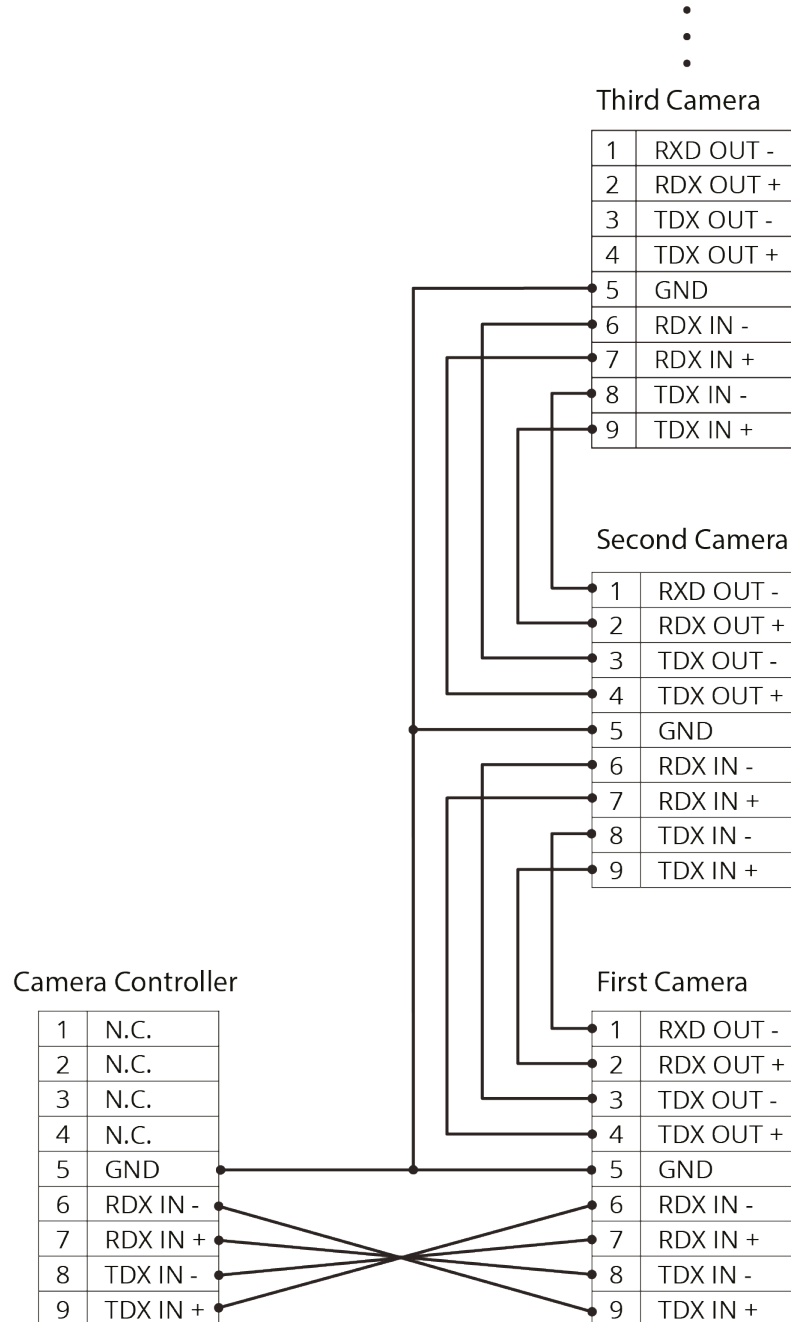


Figure 64 - Cascading Camera Control over RS-422

Appendix B: Genlock Input Support

Genlock Input Support

This section describes the Genlock Input support signal formats.

Table 1 - Genlock Input Support Formats

Signal Output Format		Genlock External Sync Signal Input Format Tri-level Sync
2160P	59.94	480i@59.94
		1080i@59.94
	50	576i@50
		1080i@50
	29.97	480i@59.94
		1080i@59.94
	25	576i@50
		1080i@50
1080P	59.94	480i@59.94
		1080i@59.94
	50	576i@50
		1080i@50
	29.97	480i@59.94
		1080i@59.94
	25	576i@50
		1080i@50

Table 1 - Genlock Input Support Formats

Signal Output Format		Genlock External Sync Signal Input Format Tri-level Sync
720P	59.94	480i@59.94
		1080i@59.94
	50	576i@50
		1080i@50
	29.97	480i@59.94
		1080i@59.94
	25	480i@50
		1080i@50
1080i	59.94	480i@59.94
		1080i@59.94
	50	576i@50
		1080i@50

