

PTZ-12G and PTZ-NDI Cameras

Technical Manual

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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

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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 and PTZ-NDI cameras

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Company Address and Contact Information



Ross Video Limited
8 John Street
Iroquois, Ontario
Canada, K0E 1K0

Ross Video Incorporated
P.O. Box 880
Ogdensburg, New York
USA 13669-0880

General Business Office: (+1) 613 • 652 • 4886

Fax: (+1) 613 • 652 • 4425

Toll Free Technical Support: 1-844-652-0645 (North America)

+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>

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Welcome

Welcome to the Technical Manual for Ross Video PTZ-12G and PTZ-NDI cameras.

This manual provides a general overview of the PTZ-12G and PTZ-NDI cameras, 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 and PTZ-NDI cameras.

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>

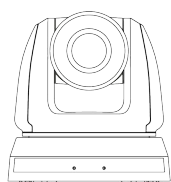
Product Introduction

This section introduces PTZ-12G and PTZ-NDI 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:



Camera



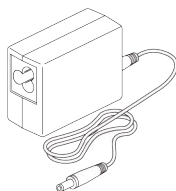
Quick Start Guide



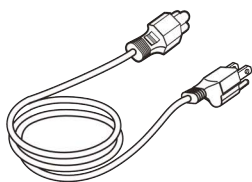
Serial Connections Guide
(for RS-232 / RS-422)



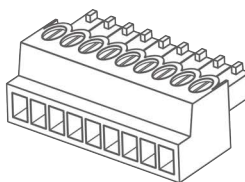
Packing List



Power
Adapter



AC Power Cord
Appearance may vary
by country/region



RS-422
Connector

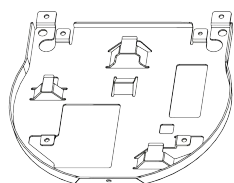


Remote
Control

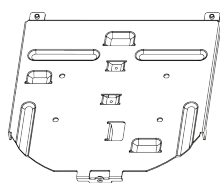


Thank-You
Letter

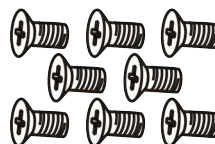
Plates and Screws for Mounting the Camera on a Ceiling



Metal Plate A
(attaches to camera)



Metal Plate B
(attaches to ceiling)



M3 Screws - 8 pcs.
(silver color)



M3 Screws - 2 pcs.
(black)

Figure 1 - Packing List for PTZ-12G and PTZ-NDI cameras

Front View

Figure 2 shows the front of the camera.

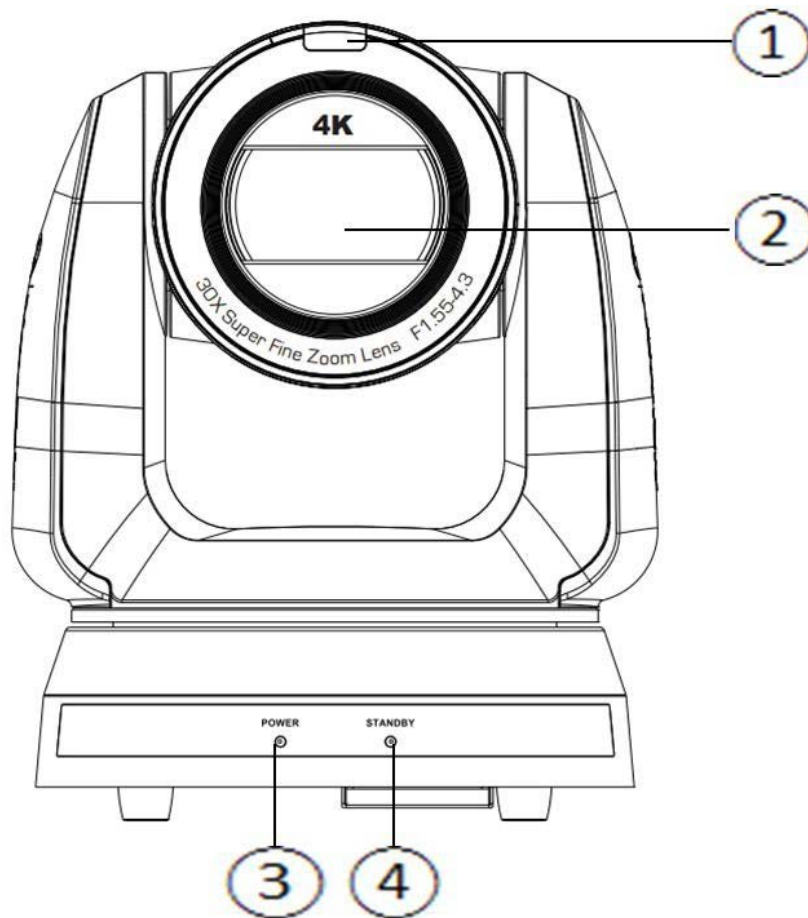


Figure 2 - Front View

NO.	Item	Description
1	Tally indicator light	<p>Tally light is controlled through VISCA commands: Tally Mode: 8x 01 7E 01 0A 01 0p FF</p> <ul style="list-style-type: none"> • 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	<p>Displays the Power status of the camera:</p> <ul style="list-style-type: none"> • during startup (initialization): green • during use: green • when in Standby mode: OFF
4	Standby LED indicator	<p>Displays the Standby status of the camera:</p> <ul style="list-style-type: none"> • 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.

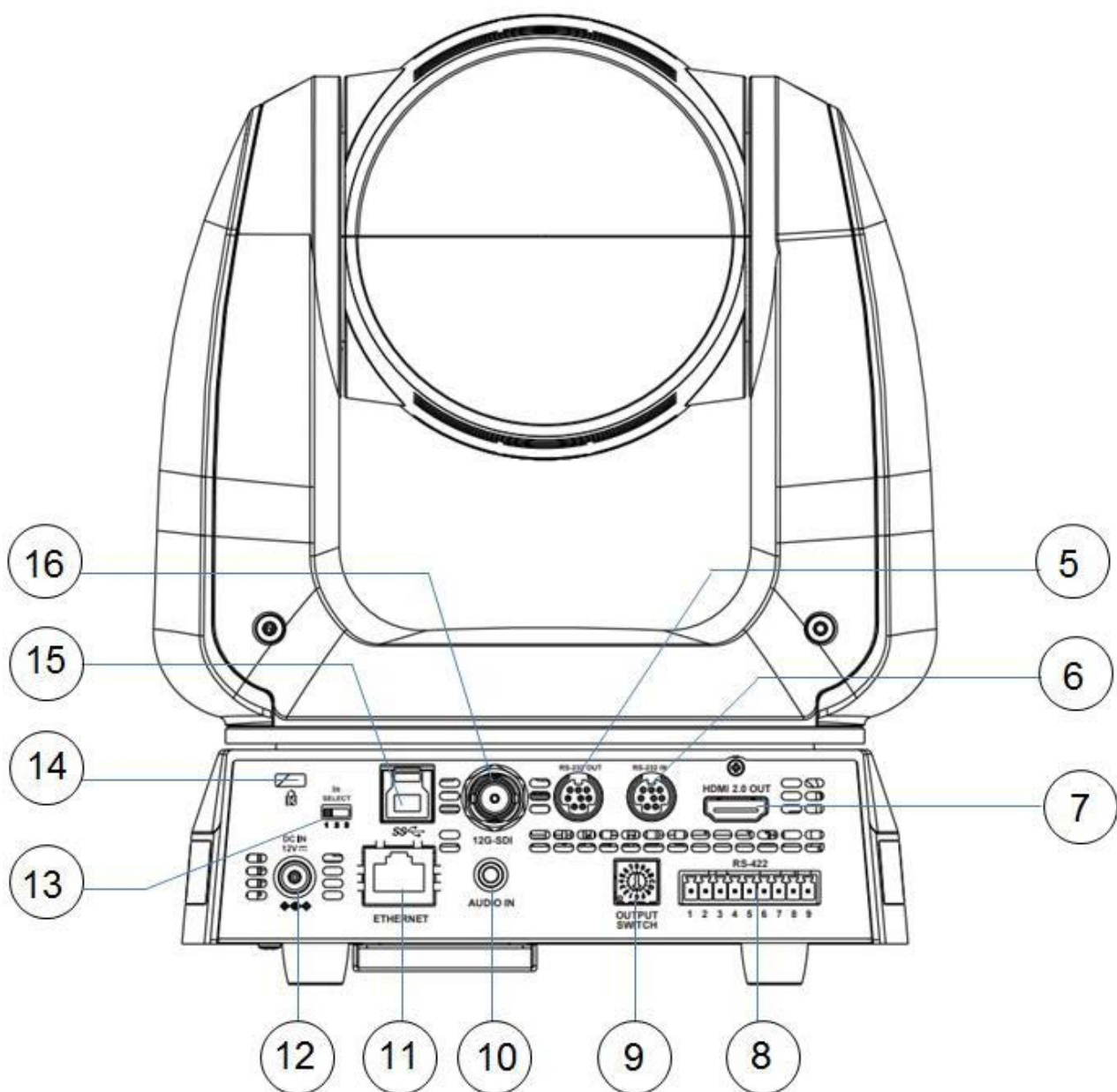


Figure 3 - Rear View

NO.	Item	Description
5	RS-232 output	RS-232 serial output port. You can cascade (daisy-chain) up to seven cameras.
6	RS-232 input	RS-232 serial input port. You can cascade (daisy-chain) up to seven cameras.
7	HDMI 2.0 output	HDMI 2.0 output (Audio output supported)
8	RS-422 port	RS-422 connecting port. You can cascade (daisy-chain) up to seven cameras.

NO.	Item	Description
9	OUTPUT SWITCH	<p>Adjusts video output format. The default format is 3840 x 2160/59.94p</p> <p>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.</p>
10	Audio input	Support Line In/Mic In
11	Network port	Network port, supporting routers or hubs with power supply: PoE++ (IEEE802.3bt)
12	12 VDC power connector	<p>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).</p>
13	IR SELECT	<p>Assigns a number (1, 2, or 3) to the camera for IR (infra-red) remote control.</p> <p>This enables you to use a single remote control unit to control up to three cameras in an area.</p> <p>When using the remote control unit, you press a Camera select button (1, 2, or 3) to specify which camera you want to control.</p> <p>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 65, and the <i>User Manual for PTZ Camera Control Plugin (8351DR-015)</i>.</p>
14	Kensington lock hole	Safety lock slot
15	USB 3.0 port	<p>USB port for UVC (USB Video Class) video output. PTZ-12G and PTZ-NDI cameras support MJPEG and H.264 streaming formats.</p>
16	12G-SDI output	<p>Standard BNC connector for 12G-SDI video output, including audio.</p> <p>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.</p>

Bottom View

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

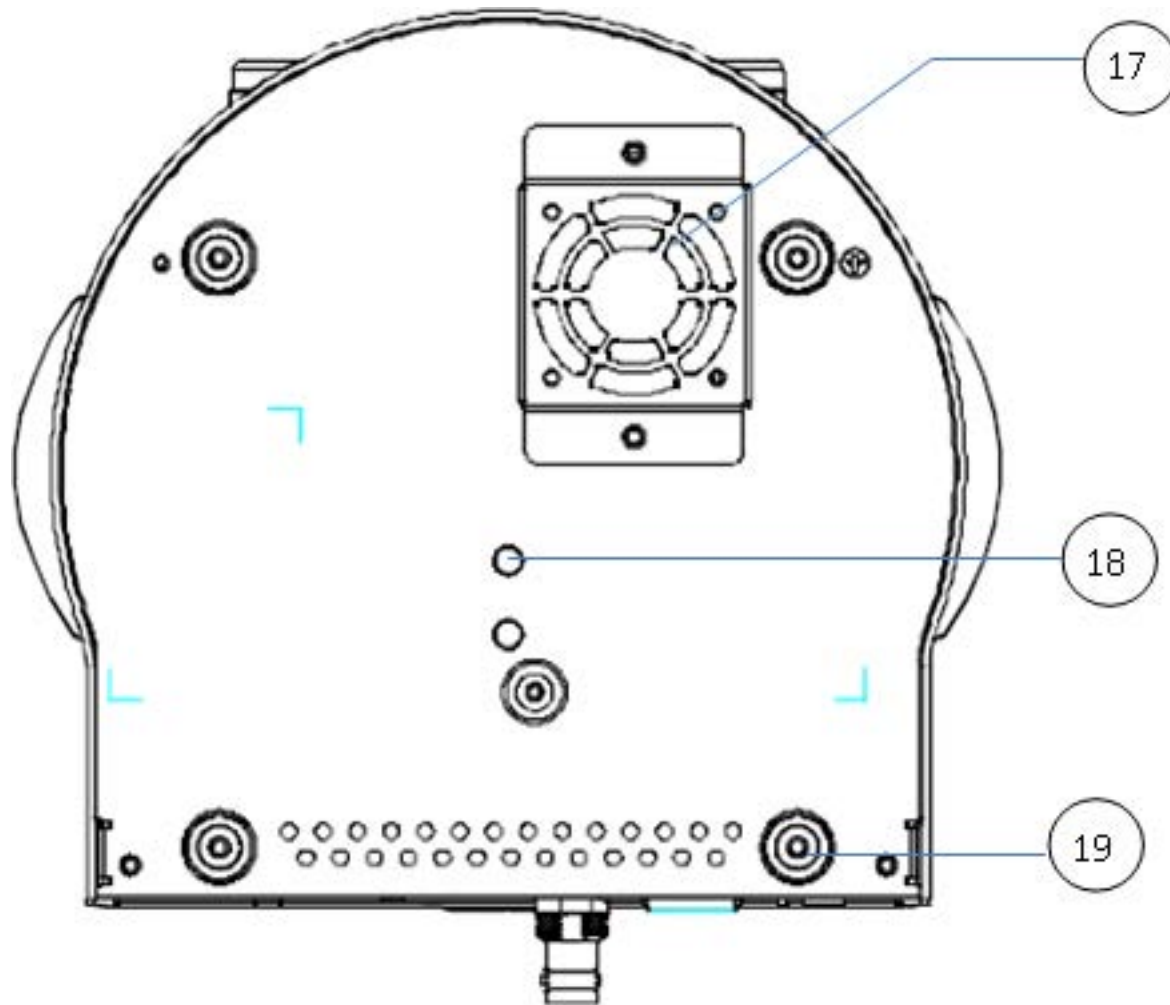


Figure 4 - Bottom View

NO.	Item	Description
17	Quiet cooling fan	Fan speed adjusts automatically for optimal cooling.
18	Tripod mounting hole (threaded)	Standard 1/4 - 20 UNC hole for mounting to tripod.
19	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).

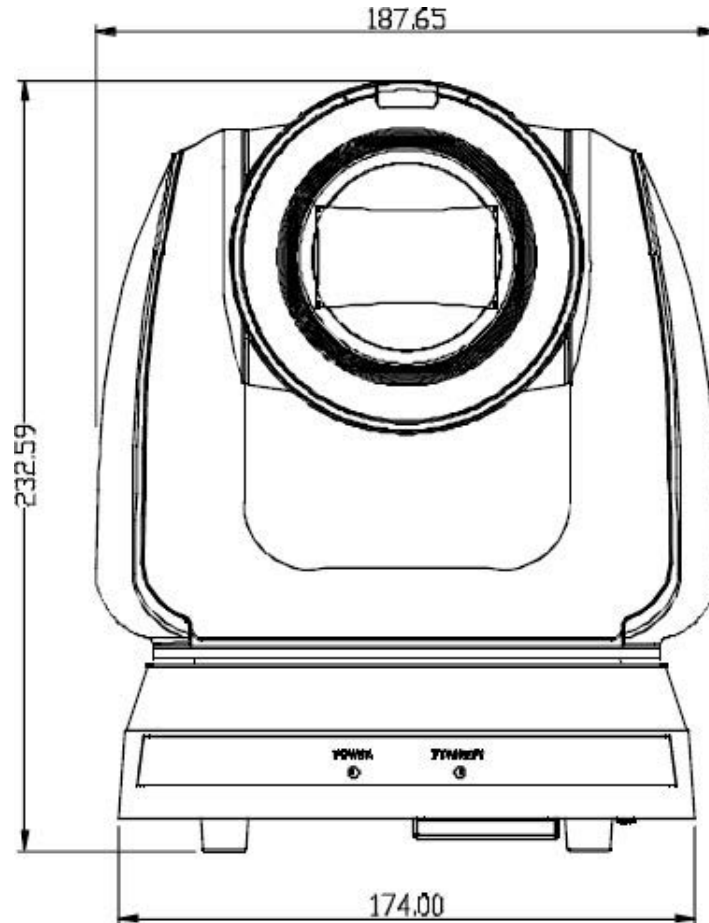


Figure 5 - Front View of Camera, with Dimensions (in millimeters)

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

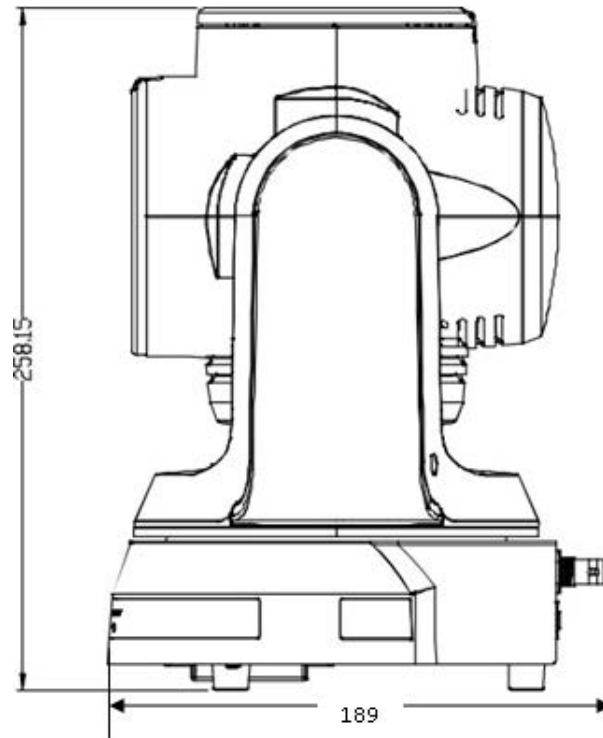


Figure 6 - Side View of Camera, with Dimensions (in millimeters)

Camera Installation

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

For information about upgrading firmware on a camera that is already operational, see “**Maintenance: Firmware Upgrade Page**” on [page 57](#).

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 24](#)

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](#)).

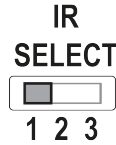


Figure 7 - The IR Select Switch on the Back of a Camera

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](#)).

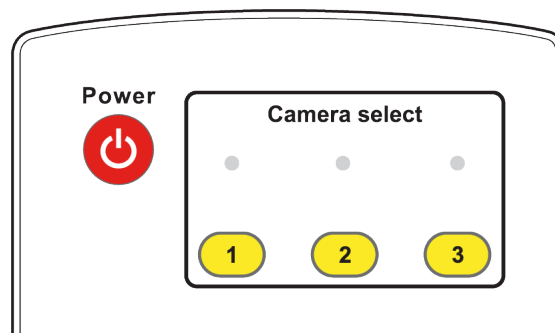


Figure 8 - Remote Control Unit, showing Camera select buttons (1, 2, 3)

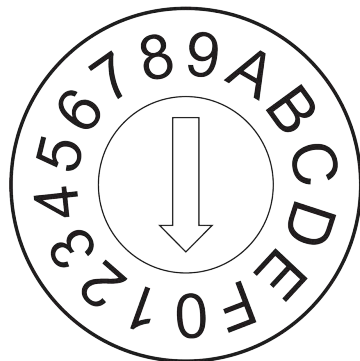
Tip: Using the DashBoard PTZ Camera Control plugin, you can disable remote control reception to prevent accidental changes being made by remote control. For more information, see “**DashBoard Control**” on [page 65](#), and the **User Manual for PTZ Camera Control Plugin (8351DR-015)**.

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 and PTZ-NDI 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.

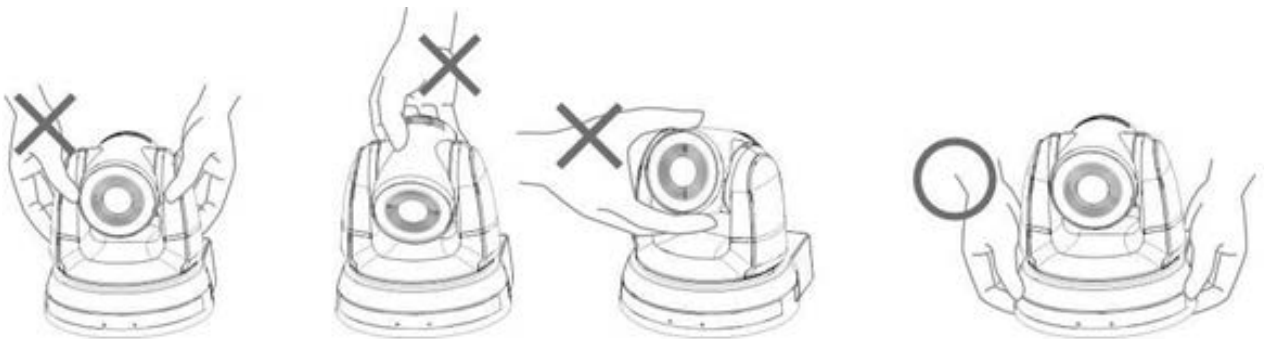


Figure 10 - Proper Handling of the Camera

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 20](#)
- “**Mount the Camera to a Wall**” on [page 23](#)

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.

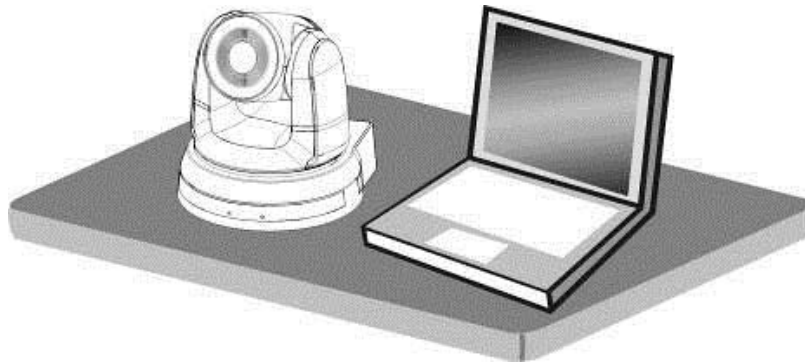


Figure 11 - Installing the Camera on a Desk or Table

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](#)).

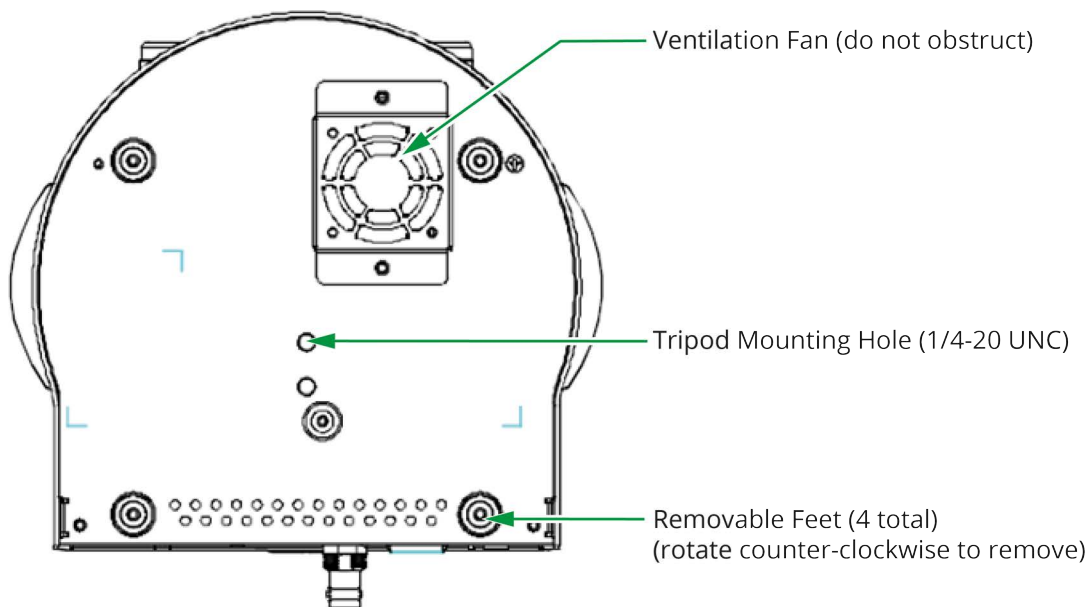


Figure 12 - Mounting the Camera on a Tripod

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 13](#)).

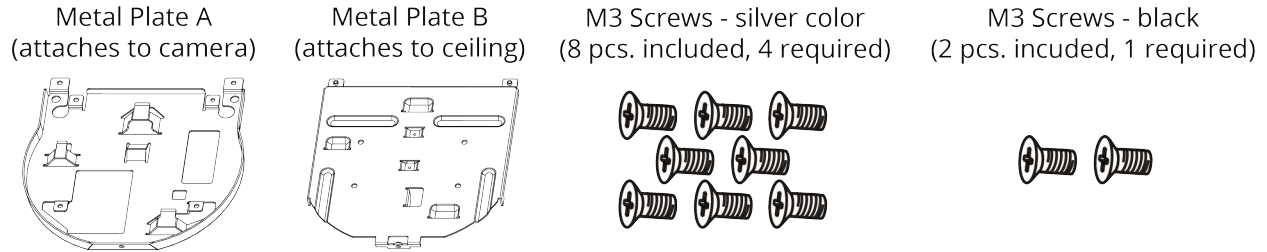


Figure 13 - Ceiling Mounting Hardware Included with the Camera

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 14](#)).
Store the feet for future use.

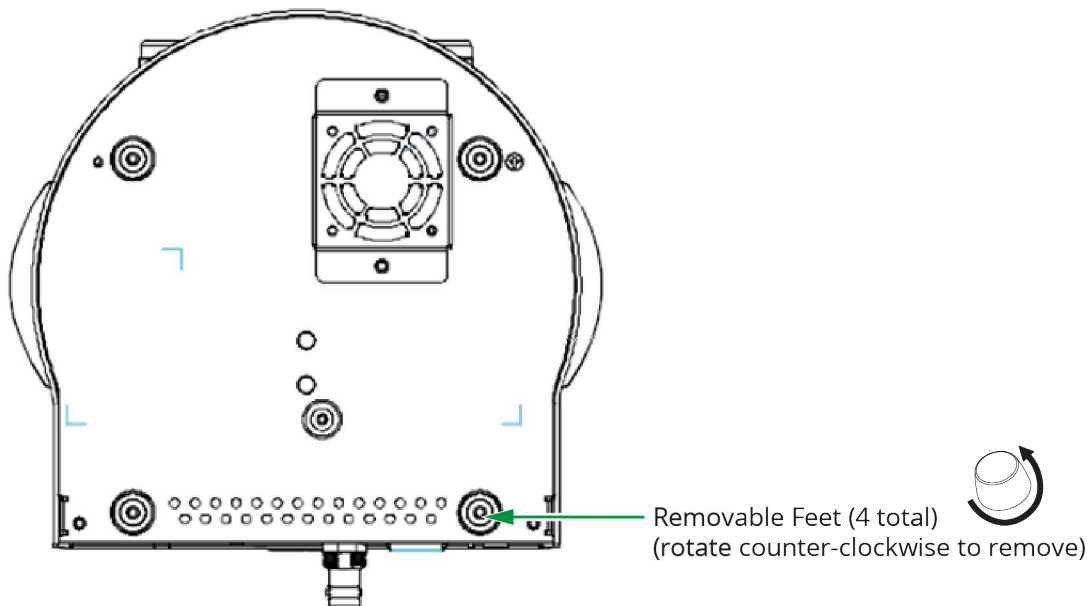


Figure 14 - Bottom View of Camera, showing Removable Feet (4pcs)

2. Using four silver M3 screws (included), fasten **Metal Plate A** to the base of the camera ([Figure 15](#)).

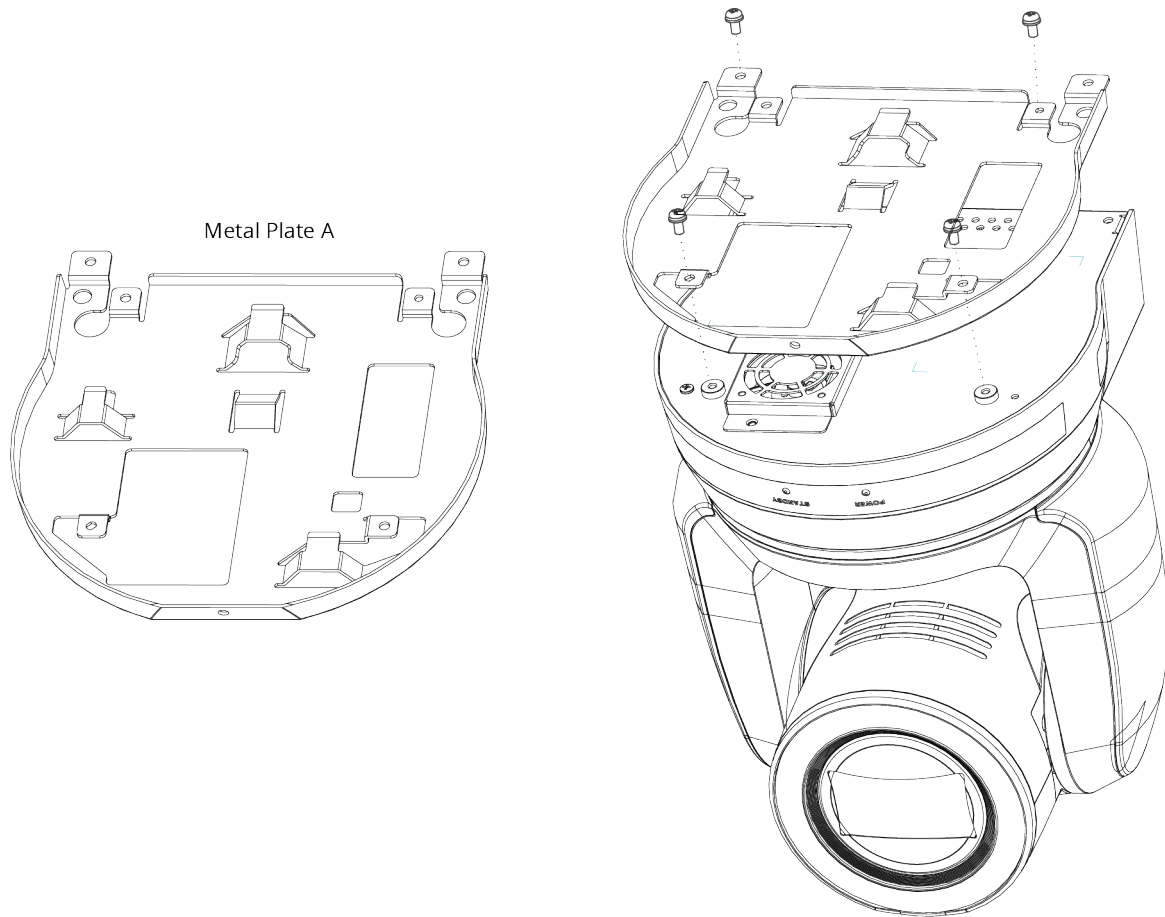


Figure 15 - Attaching Metal Plate A to the Base of the Camera (4 silver M3 screws - included)

3. Mount **Metal Plate B** on the ceiling, using suitable fasteners ([Figure 16](#)).

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").

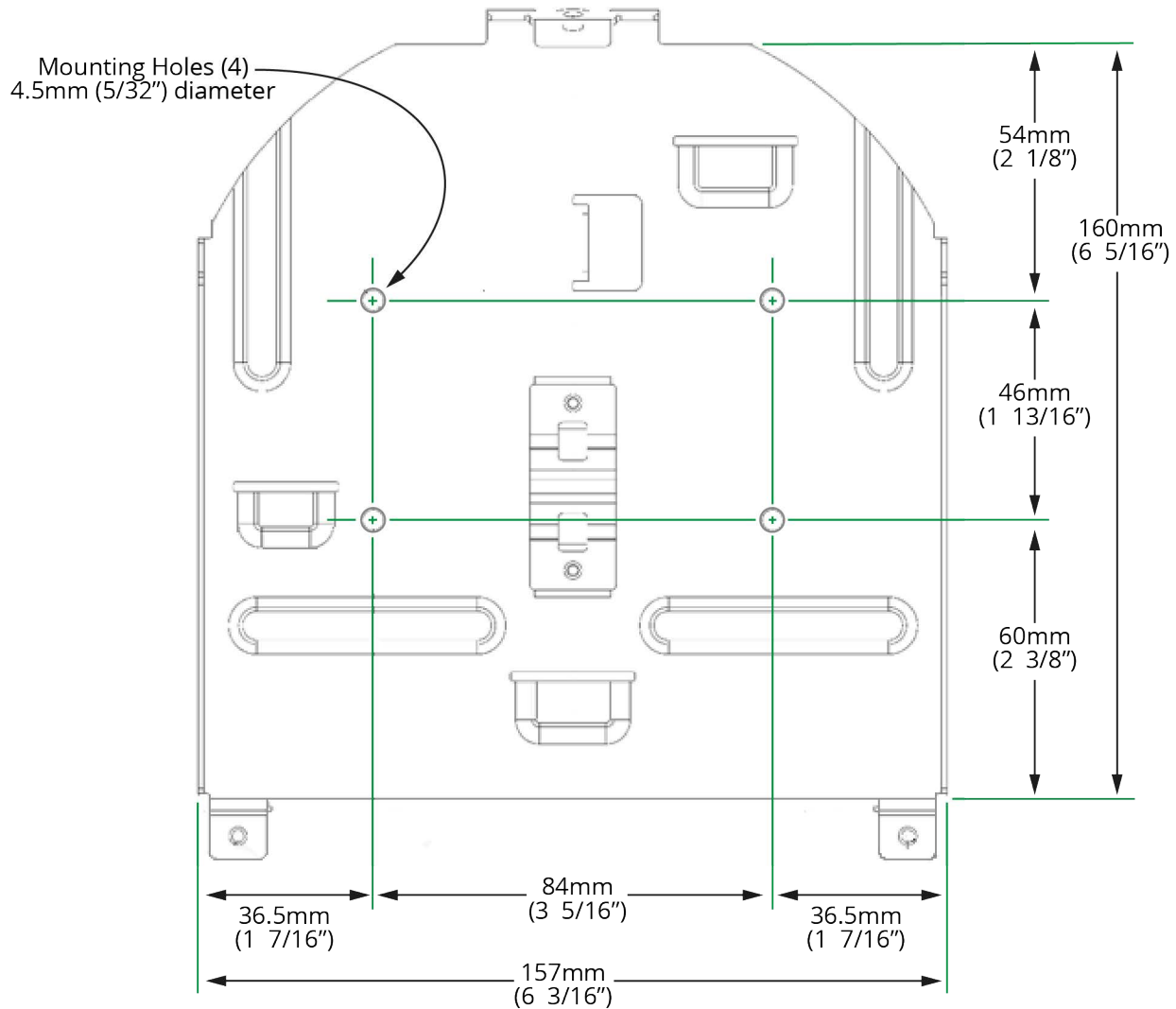


Figure 16 - Metal Plate B, showing Mounting Holes

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 17](#).

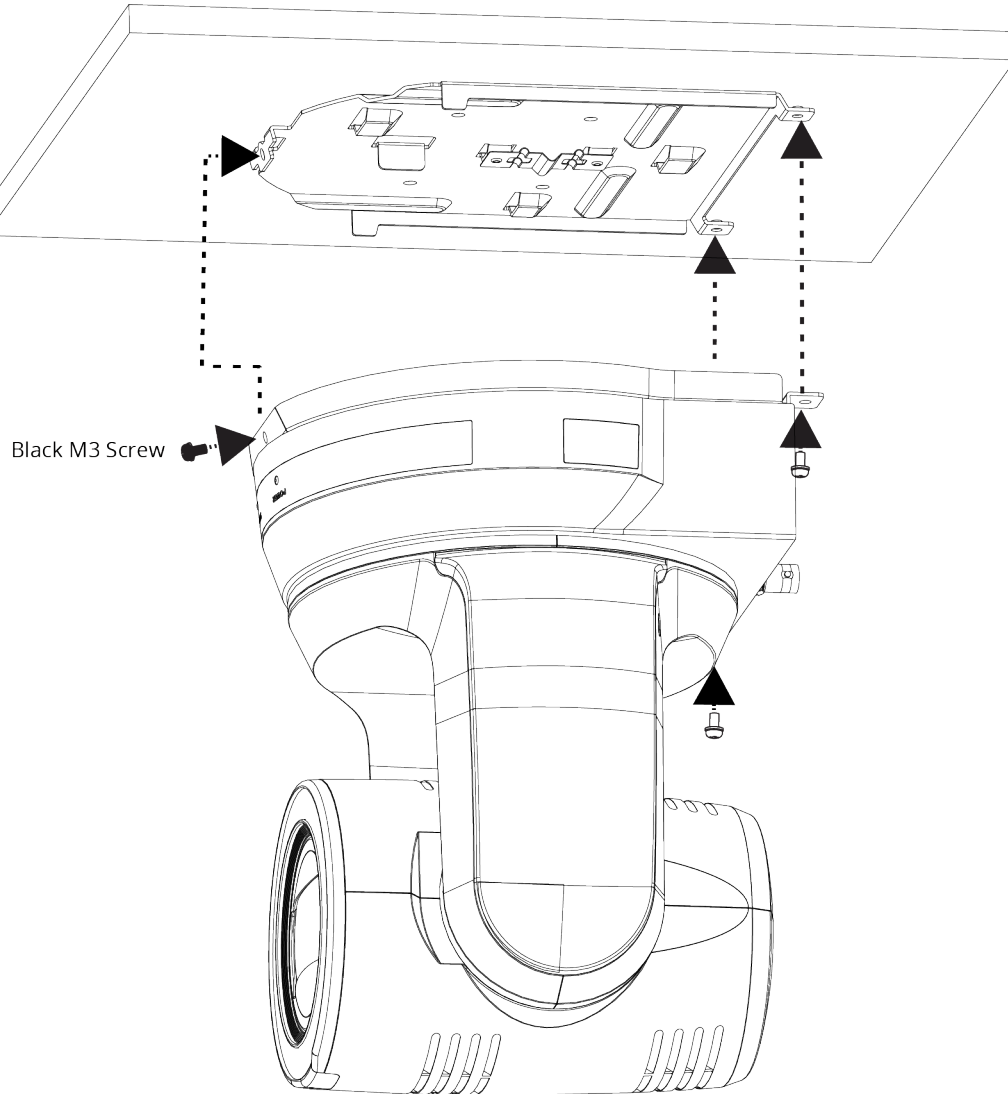


Figure 17 - Fastening Mounting Plates Together, to Mount the Camera to the Ceiling

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 18](#) shows cable connectors on the back of the camera.

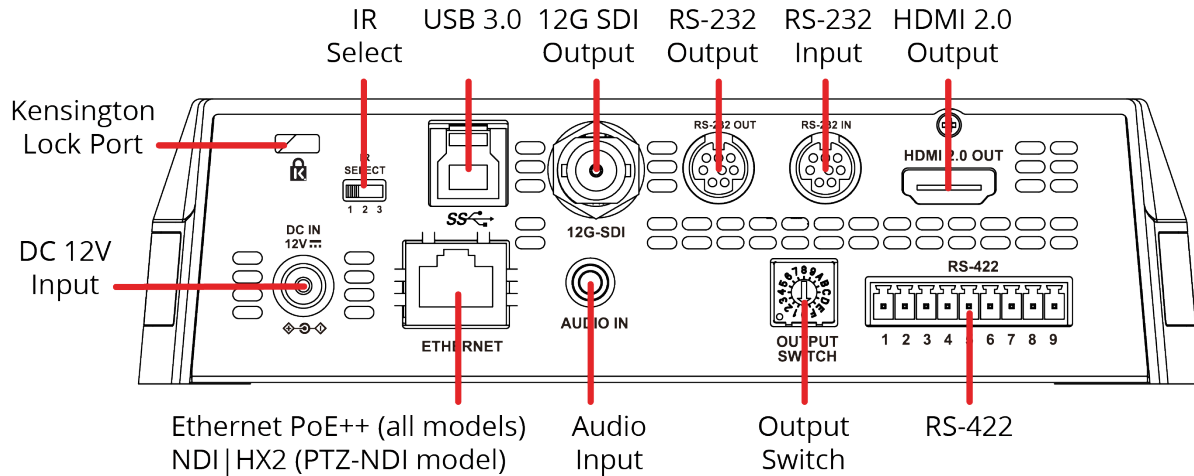


Figure 18 - Rear View of the Camera, showing Connectors

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

- Connect the provided 12 VDC 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 “**5000DR-353-05Appendix: Serial Connections**” on [page 71](#).

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 “**5000DR-353-05Appendix: Serial Connections**” on [page 71](#).

Connect Video Output

Connect cables to video output connectors as required (see [Figure 18](#) on **page 24**):

- **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 both PTZ-12G and PTZ-NDI cameras, and for streaming NDI|HX2 video from PTZ-NDI cameras.

Connect Audio Input (optional)

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

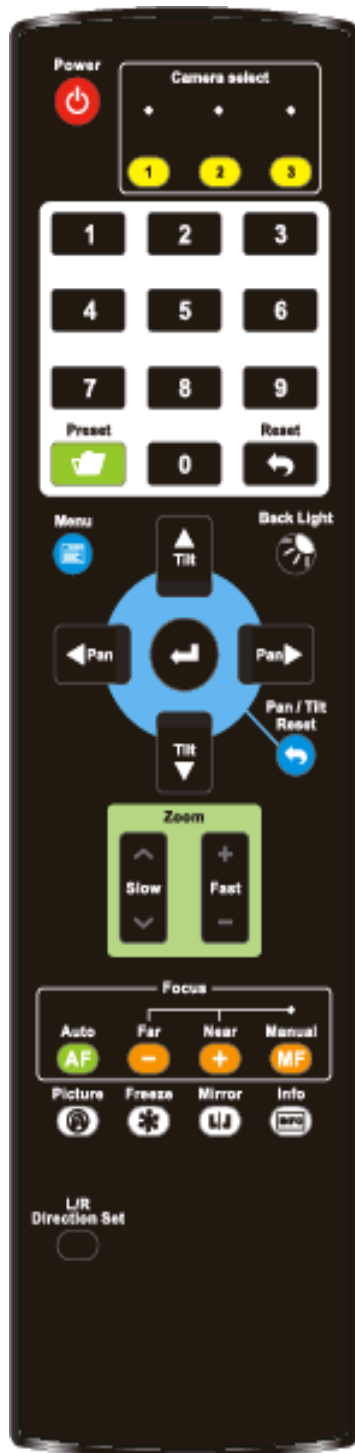
Connect the audio source to the 3.5mm **AUDIO IN** jack on the back of the camera.

Note: You must enable audio input in the web interface or in the DashBoard PTZ Camera Control plugin. For more information, see “**Settings: Audio Settings Page**” on [page 52](#), or the ***User Manual for PTZ Camera Control Plugin (8351DR-015)***.

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	This setting can be adjusted only when Exposure mode is set to Iris Priority .	
		1/4	1/3		
		1/2	1/2		
		1/1	1/1		
	Iris Pri	F1.6			
		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		
			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	
		F11	
	WDR	Off	Wide Dynamic Range
		1	
		2	
		3	
White Balance	Mode	Auto	Select the color temperature mode: • Auto — 4000k - 7000k
		Indoor	• Indoor — 3200k

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
White Balance		Outdoor	• Outdoor — 5800k
		One Push WB	• One Push WB — 1700k - 10,000k
		ATW	• ATW — 1700k - 10,000k
		Manual	• Manual — Custom
		Sodium Lamp 3000 K 4300 K 5000 K 6500 K 8000 K	<ul style="list-style-type: none"> • Sodium Lamp — 2800 K • Preset temperatures of xxxx K
		Preset Values	This option modifies the color temperature of the White Balance in Kelvins.
	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	
	Sharpness	0 - 14	
	2D NR	Off 1 2 3	2D digital noise reduction
	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 Limit	On / off	When On , pan and tilt limits apply.
	Pan Tilt Zoom		

1st Menu Level	2nd Menu Level	3rd Menu Level (values)		Description
Pan Tilt Zoom	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 near, the Pan and Tilt axes move more slowly. When Zoom is far, 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 3480x2160 59.94/ 50.
	PTZ Motion Sync			This feature allows smoother movement between camera presets by synchronizing pan, tilt, and zoom speeds.
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 Area Full Area Auto		Auto Focus frame setting. When set to Center Area , Auto Focus is based on the center of the screen. When set to Full Area , Auto Focus is calculated based on the full screen.
	PTZ Assist	On / Off		When PTZ Assist is enabled and PTZ control is in operation, the focus performs only once upon immediate execution. The is not triggered afterward when the scene changes. This setting can be adjusted only when Auto Focus is Off .

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
	SMART AF	On / <i>Off</i>	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 / <i>Off</i>	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/ <i>Off</i>	Triggers one-time focus, which uses the same frame settings as Auto Focus. When On , it initiates Auto Focus by 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 .
Ethernet	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 / <i>Off</i>	Turns audio output On or Off .
	Audio Volume	0 - 10	Volume setting
	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 on PTZ-NDI cameras with NDI 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 on PTZ-NDI cameras with NDI disabled.
	Encode Type	AAC G.711	Set encode type. This setting is only available on PTZ-NDI cameras with NDI 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 on PTZ-NDI cameras with NDI disabled.

1st Menu Level	2nd Menu Level	3rd Menu Level (values)	Description
System	Prompt	On / Off	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: <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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 and when connecting DashBoard to the camera, 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 / Off	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 and PTZ-NDI 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 .
	Output Mode	3840 x 2160/59.94p 3840 x 2160/50p 3840 x 2160/29.97p 3840 x 2160/25p 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: For PTZ-NDI cameras, 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 Usernames/Passwords are unaffected. To perform a hard reset and reset passwords, refer to “ Hard Reset ” on page 70 in the Troubleshooting section.
	Status		Displays the current setting status.

Web Interface

You can connect to PTZ-12G and PTZ-NDI cameras over an IP network to configure them and to view live video (only for PTZ-12G or PTZ-NDI with NDI disabled).

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 36](#)
- “**Web Interface Features**” on [page 39](#)
- “**Viewing RTSP Video Stream (PTZ-12G or PTZ-NDI with NDI disabled)**” on [page 62](#)

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 19](#)).

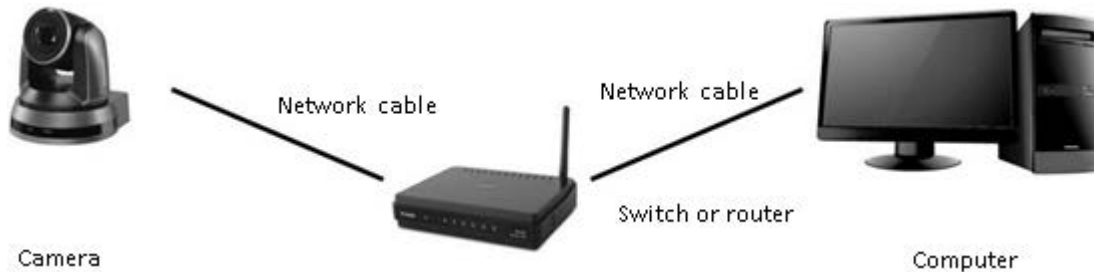


Figure 19 - Connecting over an IP Network

To connect directly, using a network cable:

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

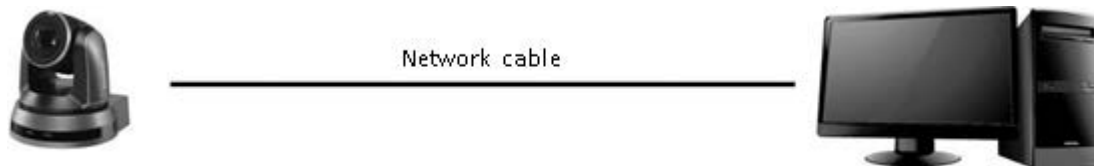


Figure 20 - Connecting Directly using a Network Cable

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 21](#)).

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.

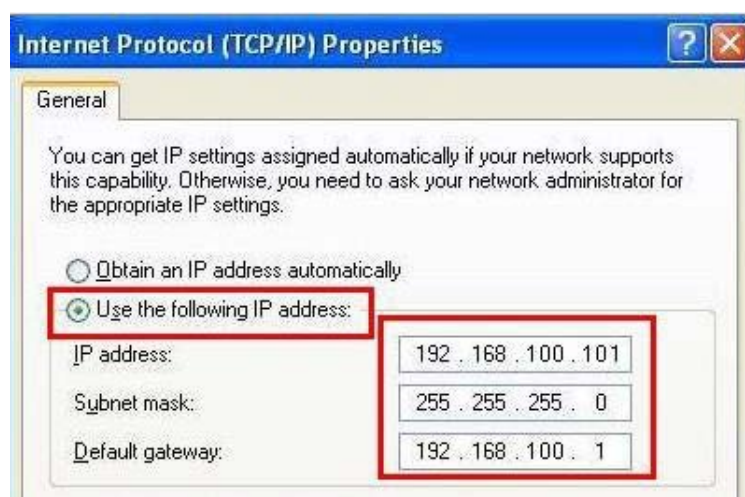


Figure 21 - Configuring the IP Address, Subnet mask, and Default gateway

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 page appears.

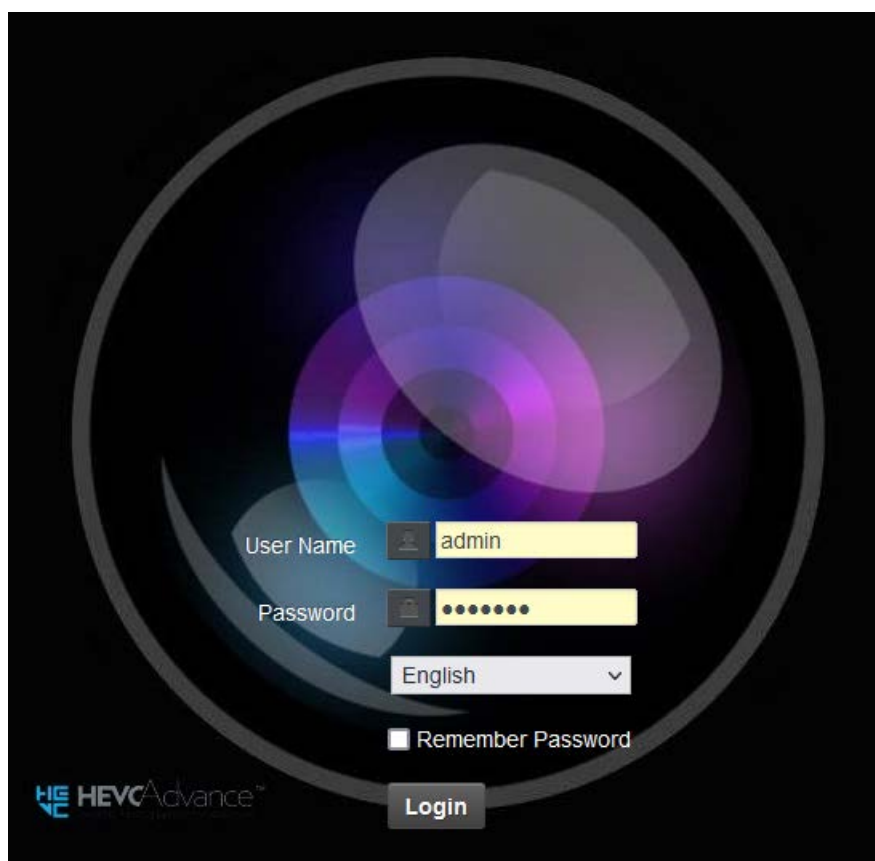


Figure 22 - Login Page

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

Tip: The default **User Name** 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 23](#)).

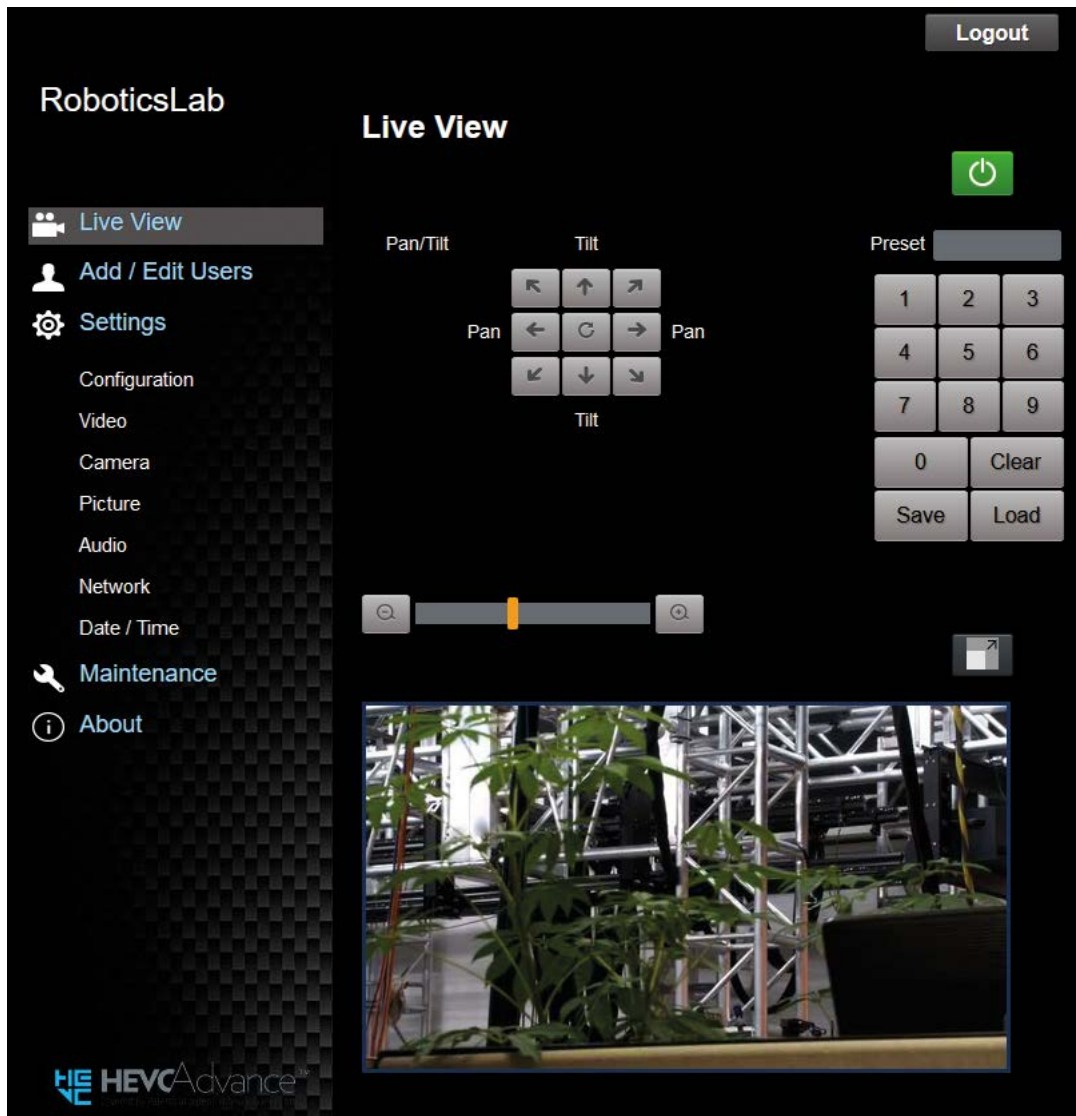


Figure 23 - Web Interface for a PTZ-12G Camera

Note: Live video in the web interface is available only for PTZ-12G or PTZ-NDI with NDI disabled. To view live video from a PTZ-NDI camera, 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 and PTZ-NDI cameras.

It includes the following topics:

- “**Login Page**” on [page 39](#)
- “**Live View Page**” on [page 40](#)
- “**Add / Edit Users Page**” on [page 41](#)
- “**Settings: Configuration Page**” on [page 42](#)
- “**Settings: Video Page**” on [page 44](#)
- “**Settings: Camera Page**” on [page 47](#)
- “**Settings: Picture Settings Page**” on [page 51](#)
- “**Settings: Audio Settings Page**” on [page 52](#)
- “**Settings: Network Settings Page**” on [page 54](#)
- “**Settings: Date / Time Page**” on [page 57](#)
- “**Maintenance: Firmware Upgrade Page**” on [page 57](#)
- “**Maintenance: Error Log Page**” on [page 58](#)
- “**Maintenance: Security Page**” on [page 59](#)
- “**Maintenance: System Service Page**” on [page 60](#)
- “**Maintenance: Reboot Page**” on [page 61](#)

Login Page

This section describes features available on the **Login** page ([Figure 24](#)).



Figure 24 - Login Page

No.	Item	Function Descriptions
1	User Name	Enter user account (default: admin)
2	Password	Enter user password (default: 9999) If this is the first login, you are prompted to change the password, and the Add / Edit Users page appears. For more information, see “ Add / Edit Users Page ” on page 41 .
3	Language selection	Sets the language for the web interface. Options include English , Traditional Chinese and Simplified Chinese .
4	Remember Password	Saves user account name and password to the browser. When you log in next time, there is no need to re-enter them.
5	Login button	Logs in to the web interface.

Live View Page

This section describes features available on the **Live View** page ([Figure 25](#)).

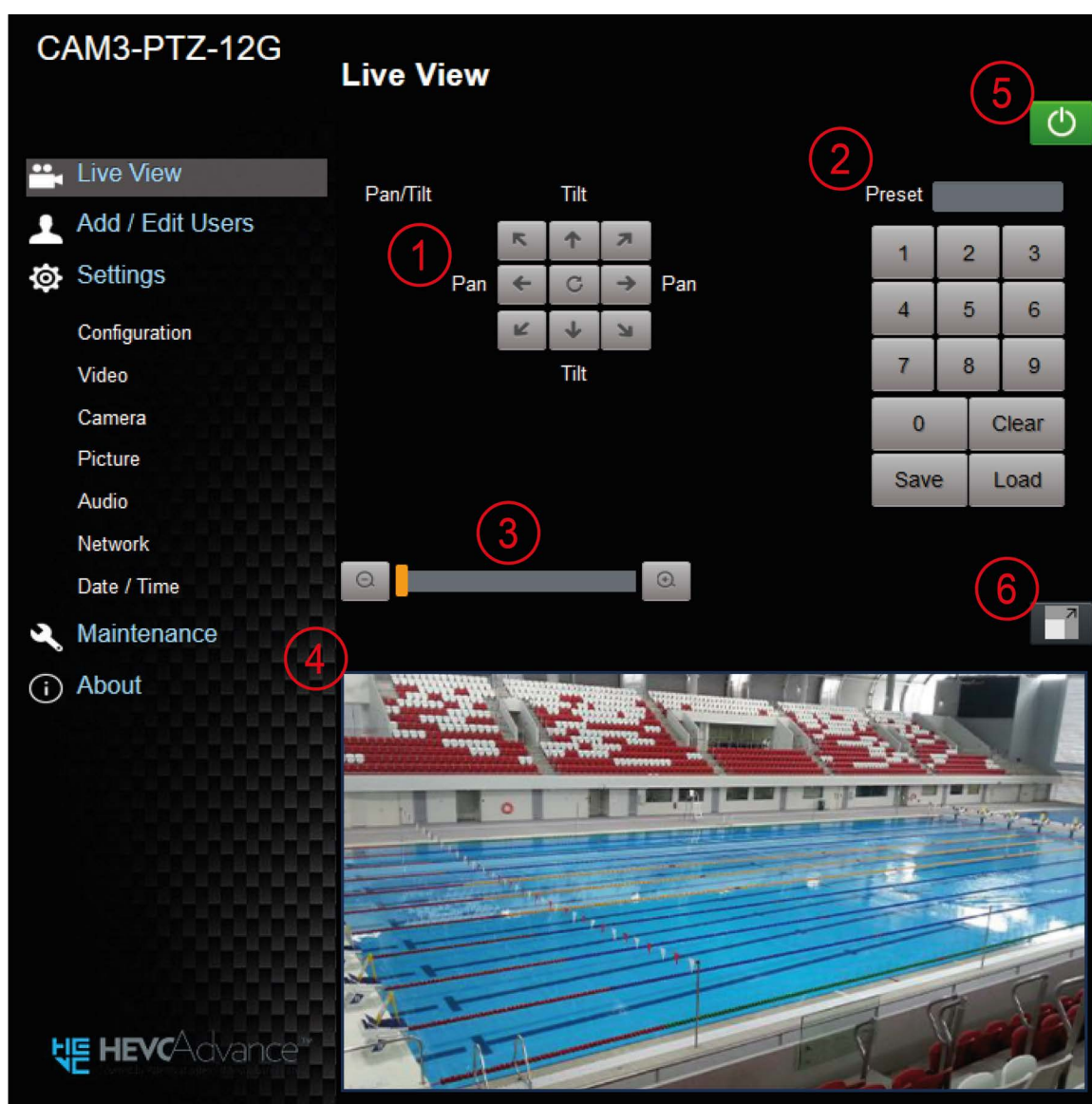


Figure 25 - Live View Page

No	Item	Function Descriptions
1	Pan / Tilt setting	Adjust the Pan/Tilt position of the camera.
2	Preset setting	Type or select a preset number, and then do one of the following: <ul style="list-style-type: none"> To save the current camera position as the preset, click Save. To recall the preset, click Load. To delete the preset, click Clear.
3	Zoom ratio	Adjusts the zoom position of the camera lens.
4	Preview window	Shows live video from the camera (only for PTZ-12G or PTZ-NDI with NDI disabled).
5	Power button	Turns camera power On or places it in Standby mode.
6	Switch to Full Screen	Switches the preview window to full screen (only for PTZ-12G or PTZ-NDI with NDI disabled).

Add / Edit Users Page

This section describes features available on the **Add / Edit Users** page ([Figure 26](#)).

The screenshot shows the 'Add / Edit Users' interface. It includes input fields for 'User Name', 'Password', and 'Confirm Password' (grouped by callout 1). Below these is an 'Authority' section with radio buttons for 'Admin', 'Operator', and 'Viewer' (grouped by callout 2). There are 'OK' and 'Cancel' buttons (grouped by callout 3). At the bottom, a table lists existing users with columns for 'User Name', 'Authority', and an 'Edit' button (grouped by callout 4).

User Name	Authority	
admin	Administrator	Edit

Figure 26 - Add / Edit Users Page

No	Item	Function Descriptions
1	User Name Password Confirm Password	Enter a user name and password to add a new user. Use only letters and numbers. No symbols.
2	Permission setting	All user types can view live video (for PTZ-12G or PTZ-NDI with NDI disabled). Operators can also modify settings. Administrators (Admin) can modify settings and manage users.
3	Applying settings	Click OK to apply the user settings, or click Cancel to cancel changes.

No	Item	Function Descriptions
4	List of accounts	Edit — Enables you to modify the user password and user permissions. Delete — Deletes the user account

Settings: Configuration Page

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

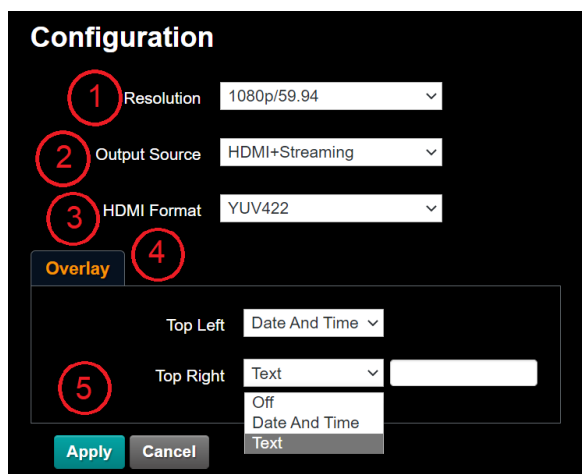


Figure 27 - Settings > Configuration Page

No.	Item	Function Descriptions
1	Resolution	<p>Sets the resolution of the camera.</p> <p>Supported resolutions are as follows:</p> <ul style="list-style-type: none"> • 3840 x 2160/59.94p (default) • 3840 x 2160/50p • 3840 x 2160/29.97p • 3840 x 2160/25p • 1080p/59.94 • 1080i/59.94 • 1080p/50 • 1080i/50 • 1080p/29.97 • 1080p/25 • 720p/59.94 • 720p/50 <p>After switching to the resolution, the camera restarts. Refresh the browser view.</p> <p>Note: For PTZ-NDI cameras, if resolution is to 1080i/59.94 or 1080i/50, NDI HX2 output is 1080p.</p>
2	Output Source	<p>Options for PTZ-12G and PTZ-NDI with NDI disabled:</p> <ul style="list-style-type: none"> • HDMI + Streaming • HDMI + UVC via USB port <p>Options for PTZ-NDI with NDI enabled:</p> <ul style="list-style-type: none"> • HDMI + NDI (NDI HX2 protocol) • HDMI + UVC via USB port <p>Note: For UVC output, only 3840 x 2160 29.97p or lower resolutions are supported.</p>

No.	Item	Function Descriptions
3	HDMI Format	Select YUV422 / YUV420 / RGB Note: YUV420 is exposed and supported when set to a 4K formats.
4	Overlay	Sets the content at the top left and top right of the screen. The supported options are as follows: <ul style="list-style-type: none"> • Off • Date and Time • Text Note: For text selections, a fillable text field populates to the right of the drop down menu. Enter desired text here.
5	Apply	After the setting has been modified, click this button to apply the setting.

Settings: Video Page

This section describes features available on the **Settings > Video** page ([Figure 28](#)).

Video

1 Camera ID Camera2

2 Location Default

3 NDI|HX Off

4 **Stream 1** Stream 2 Stream 3

☒ Enable Stream1

5 Codec H.265

Resolution 1080P

Frame Rate 59.94 fps

Bit Rate 15000 kbps


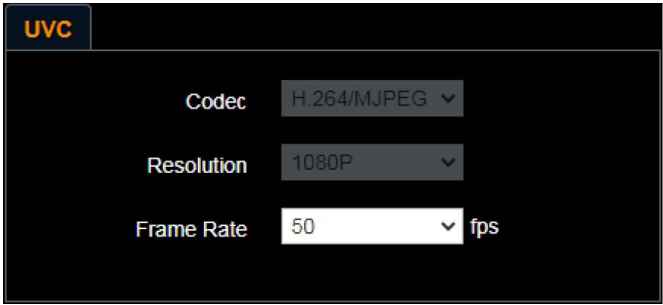
Rate Control CBR

IP Ratio 30

6 Apply Cancel

Figure 28 - Settings > Video Page for a PTZ-12G Camera

No	Item	Function Descriptions
1	Camera ID	Modify the camera name <ul style="list-style-type: none">• 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	Camera Location	Modify the location of the camera, such as Meeting Room 1 <ul style="list-style-type: none">• 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.

No	Item	Function Descriptions
3	NDI HX	<p>Modify the NDI HX connection by selecting On or Off. This setting is only available on PTZ-NDI.</p> <p>Note: When NDI HX is On, the Group Name text box appears.</p>  <p><i>Figure 29 - NDI HX Set to On</i></p> <p>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.</p>
4	Stream 1 Stream 2 Stream 3	<p>Click a Stream tab to configure the associated RTSP video stream.</p> <p>Note: The Stream tabs are available only when Settings > Configuration > Output Source is set to HDMI + Streaming. Streams are available on PTZ-NDI when NDI HX is turned off.</p> <p>For information about settings on each Stream tab, see “Streaming Parameter Settings” on page 45.</p>
5	Enable Stream	<p>Enables / Disables the streaming channel.</p> <p>This setting is available on PTZ-12G or PTZ-NDI with NDI disabled.</p>
6	Apply	Apply any changes made.
7	UVC	<p>Note: The UVC tab is available only when Settings > Configuration > Output Source is set to HDMI + UVC.</p>  <p><i>Figure 30 - UVC Tab</i></p> <p>Encode (Codec) Format:</p> <ul style="list-style-type: none"> • 3840 x 2160 29.97 / 25 fps — H.264 • Less than 1080p (inclusive) — H.264/MJPEG <p>Resolution is based on Settings > System Settings > Resolution.</p> <p>Note: For 3840 x 2160 resolution, UVC is supported for only for a frame rate of 29.97 fps or lower.</p>

Streaming Parameter Settings

The following table describes video streaming settings available on the three **Stream** tabs. Video streaming is available on PTZ-12G or PTZ-NDI with NDI disabled.

Function		Stream 1	Stream 2	Stream 3
Encode Format		H.265	H.264	
Resolution		4K/1080p/720p	1080/p720p	640 x 360
Frame Rate		Setting according to the supported resolution		
Bit Rate (kbps)	Range	2,000 - 20,000	2,000 - 20,000	512 - 5,000
	Factory Default	7,000	7,000	1,000
Rate Control		CBR / VBR		
IP Ratio		Setting according to the supported resolution		

Settings: Camera Page

This section describes features available on the **Settings > Camera** page [\(Figure 31\)](#).

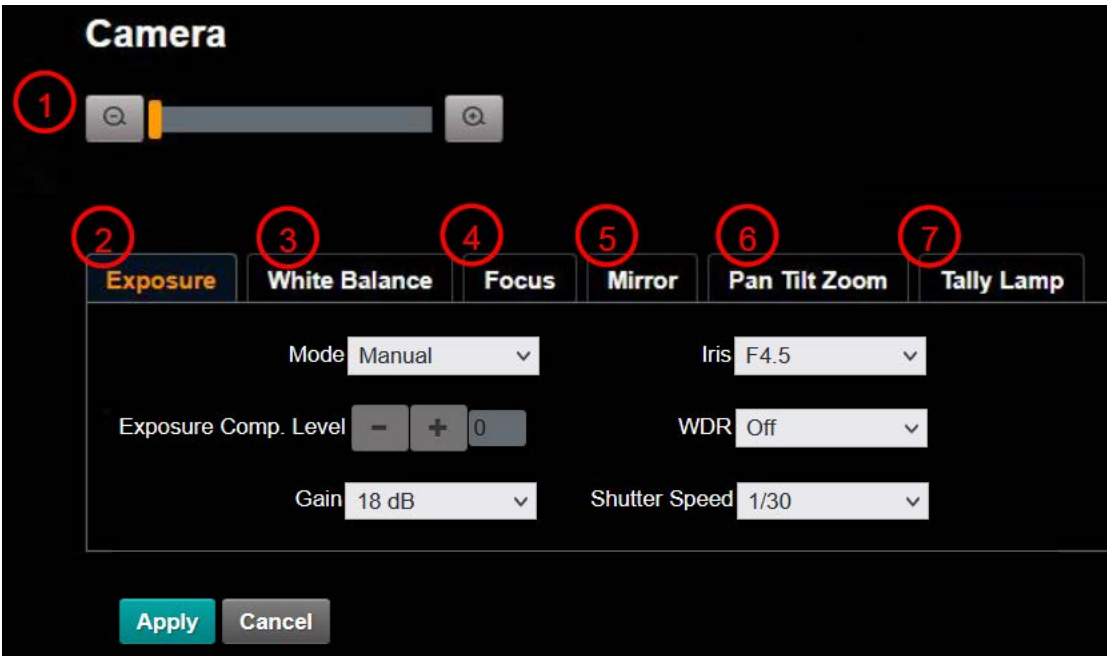


Figure 31 - Settings > Camera Page

No	Item	Function
1	Zoom ratio	Adjusts the zoom-in or zoom-out ratio.
2	Exposure	<div><div><div>Exposure</div><div>White Balance</div><div>Focus</div><div>Mirror</div><div>Pan Tilt Zoom</div><div>Tally Lamp</div></div><div><div>Mode</div><div>Manual</div><div></div><div>Iris</div><div>F4.5</div><div></div></div><div><div>Exposure Comp. Level</div><div>-</div><div>+</div><div>0</div><div></div><div>WDR</div><div>Off</div><div></div></div><div><div>Gain</div><div>18 dB</div><div></div><div>Shutter Speed</div><div>1/30</div><div></div></div><div><div>Apply</div><div>Cancel</div></div></div>

Figure 32 - Exposure Tab

- **Mode:** Select exposure mode (Automatic/Shutter Priority/Aperture Priority/Manual).
- **Exposure Comp. Level:** Select exposure compensation level.
- **Gain:** The gain limit 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 **Aperture Priority**.
- **WDR:** Set the level of wide dynamic range (WDR) in order to obtain better images
- **Shutter Speed:** The shutter speed is adjustable when the exposure mode is set to **Manual** or **Shutter Priority**.

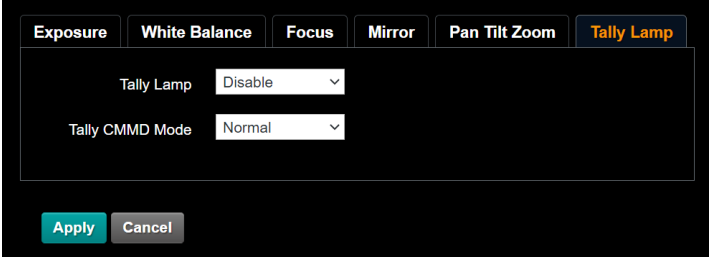
No	Item	Function
3	White Balance	<div> <div>ExposureWhite BalanceFocusMirrorPan Tilt ZoomTally Lamp</div> <div> <div>ModeAuto</div> <div>One Push Trigger</div> <div>Manual Red-+64</div> <div>Manual Blue-+127</div> <div>ApplyCancel</div> </div> </div> <p>Figure 33 - White Balance Tab</p> <ul style="list-style-type: none"> • Mode: Select the color temperature mode <ul style="list-style-type: none"> • Auto • Indoor • Outdoor • One Push WB • ATW • Manual • Sodium Lamp • 3000 K • 4300 K • 5000 K • 6500 K • 8000 K • Open Push WB: One push color temperature is adjustable when the white balance mode is set to One Push WB. • Manual Red/Blue: Manually adjust blue/red color temperature

No	Item	Function
4	Focus	<div><div>ExposureWhite BalanceFocusMirrorPan Tilt ZoomTally Lamp</div><div><div>ModeManual</div><div>Focus Range-+1273</div><div>AF SensitivityMiddle</div><div>AF FrameFull Frame</div><div>Zoom TrackingOn</div><div>PTZ AssistOff</div><div>Smart AFOff</div><div>One Push AF</div><div>ApplyCancel</div></div></div> <div><p>Figure 34 - Focus Tab</p><ul style="list-style-type: none">• Mode: Select manual/automatic focus• Focus Range: The focusing range is adjustable when the focus mode is set to Manual.• AF Sensitivity: Set automatic focus sensitivity• AF Frame: Set automatic focus range• 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.• PTZ Assist: Set Auto Focus in manual 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.</div>
5	Mirror	<div><div>ExposureWhite BalanceFocusMirrorPan Tilt ZoomTally Lamp</div><div><div>MirrorOff</div><div>ApplyCancel</div></div></div> <div><p>Figure 35 - Mirror Tab</p><ul style="list-style-type: none">• Mirror: Set automatic flip mode• [Off / Mirror / Flip / Mirror + Flip]</div>

No	Item	Function
6	Pan Tilt Zoom	<div> <div>Exposure</div> <div>White Balance</div> <div>Focus</div> <div>Mirror</div> <div>Pan Tilt Zoom</div> <div>Tally Lamp</div> </div> <div> <div>Pan/Tilt Limit</div> <div>On</div> </div> <div> <div>Pan Right Limit</div> <div>-</div> <div>+</div> <div>170</div> </div> <div> <div>Pan Left Limit</div> <div>-</div> <div>+</div> <div>-170</div> </div> <div> <div>Tilt Up Limit</div> <div>-</div> <div>+</div> <div>90</div> </div> <div> <div>Tilt Down Limit</div> <div>-</div> <div>+</div> <div>-30</div> </div> <div> <div>Pan Flip</div> <div>Off</div> </div> <div> <div>Tilt Flip</div> <div>Off</div> </div> <div> <div>Preset Speed</div> <div>160 deg/sec</div> </div> <div> <div>PTZ Speed Comp</div> <div>Off</div> </div> <div> <div>Initial Position</div> <div>Last MEM</div> </div> <div> <div>Motionless Preset</div> <div>Off</div> </div> <div> <div>D-Zoom Limit</div> <div>x1</div> </div> <div> <div>PTZ Motion Sync</div> <div>On</div> </div> <div> <div>Apply</div> <div>Cancel</div> </div>

Figure 36 - Pan Tilt Zoom Tab

- **Pan/Tilt Limit:** Enables / disables customized Pan and Tilt limits:
 - **Pan Right Limit** — Limits panning to the right (0° to 170°)
 - **Pan Left Limit** — Limits panning to the right (0° to -170°)
 - **Tilt Up Limit** — Limits upward panning (0° to 90°)
 - **Tilt Down Limit** — Limits downward panning (0° to -30°)
- **Pan Flip:** Reverses video image horizontally
- **Tilt Flip:** Reverses video image vertically
- **Preset Speed:** Sets the maximum rotation speed of the cradle head when a preset is recalled
- **PTZ Speed Comp:** When **On**, the Pan and Tilt velocity varies based on the Zoom position. When Zoom is near, the Pan and Tilt axes move more slowly. When Zoom is far, 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 and **Settings: Camera** 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.

No	Item	Function
7	Tally Lamp	 <p>Figure 37 - Tally Lamp Tab</p> <ul style="list-style-type: none"> • Tally Lamp: Enables /Disables the Tally Lamp. <p>Note: When Tally Lamp is disabled, it cannot receive VISCA commands to enable or disable it.</p> <p>Tally CMMD Mode: Impacts how the camera handles tally commands from a VISCA controller. Use normal operation and when connecting DashBoard to the camera, unless otherwise specified by the controller software manufacturer.</p>

Settings: Picture Settings Page

This section describes features available on the **Settings > Picture** page ([Figure 38](#)).

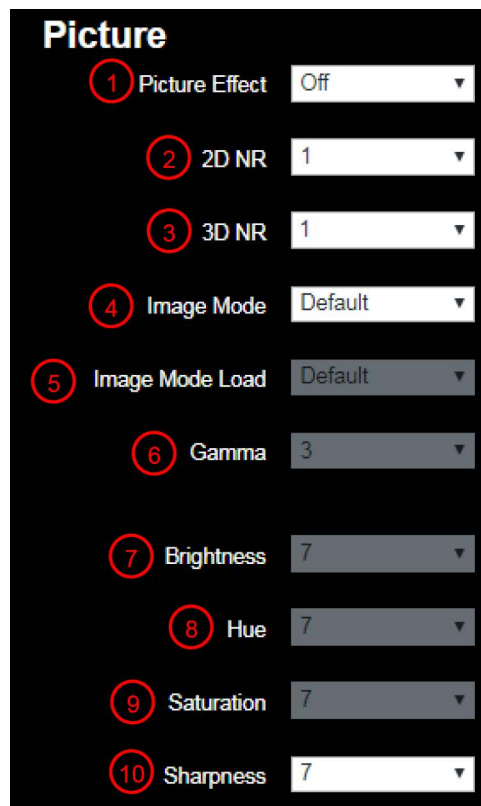


Figure 38 - Settings > Picture Page

No	Item	Function Descriptions
1	Picture Effect	Set picture effect, Off/Neg/Black and White
2	2D NR settings	2D noise reduction settings
3	3D NR settings	3D noise reduction settings

No	Item	Function Descriptions
4	Image mode	Enables you to customize the image mode.
5	Image mode load	Click Default to reset picture settings to factory defaults.
6	Gamma	Gamma Level adjustment; Adjustable only when Image Mode is set to Custom .
7	Brightness	Brightness adjustment; Adjustable only when Image Mode is set to Custom .
8	Contrast	Contrast adjustment; Adjustable only when Image Mode is set to Custom .
9	Saturation	Saturation adjustment of the image; Adjustable only when Image Mode is set to Custom .
10	Sharpness	Adjust the sharpness of the image

Settings: Audio Settings Page

This section describes features available on the **Settings > Audio** page ([Figure 39](#)).

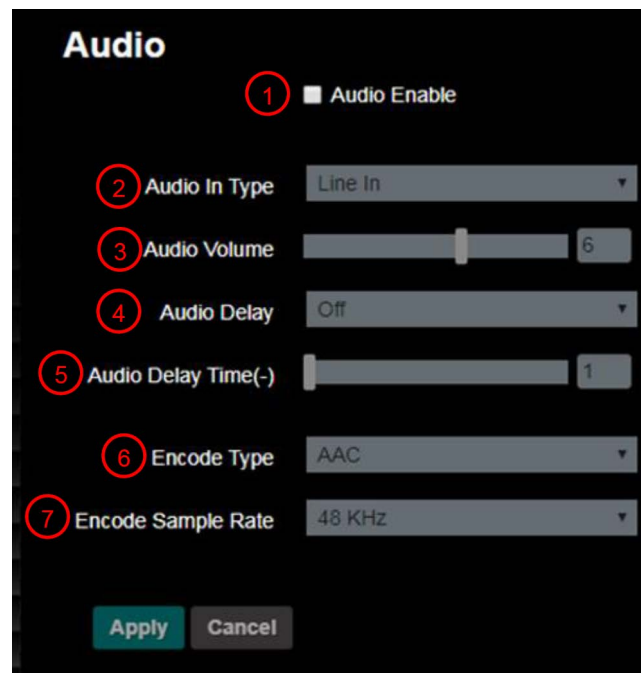


Figure 39 - Settings > Audio Page

No	Item	Function Descriptions
1	Open audio	Turns on/off sound
2	Audio Input setting type	Sets MIC In/Line In
3	Audio Volume	Adjusts Volume
4	Audio Delay	Turns on / off Audio Delay. Available only on PTZ-12G or PTZ-NDI with NDI disabled.
5	Audio Delay Time (ms)	Set Audio Delay Time (-1~500ms) Available only on PTZ-12G or PTZ-NDI with NDI disabled.
6	Encode Type	AAC / G.711 Available on PTZ-12G or PTZ-NDI with NDI disabled.

No	Item	Function Descriptions
7	Encode sample rate	Set Encode sample rate <ul style="list-style-type: none"> • 48 KHz (AAC) • 44.1 KHz (AAC) • 16 KHz (AAC) • 16 KHz (G.711) • 8 KHz (G.711) Available on PTZ-12G or PTZ-NDI with NDI disabled.

Settings: Network Settings Page

This section describes features available on the **Settings > Network** page ([Figure 40](#)).

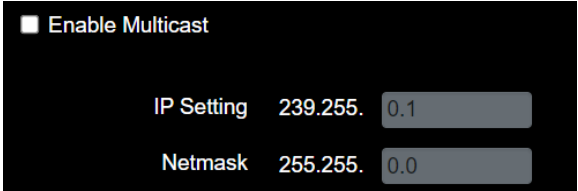
The screenshot shows the 'Network' settings page with the following sections and callouts:

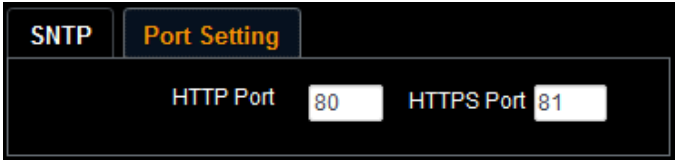
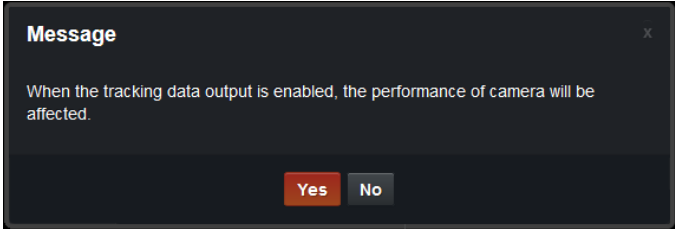
- 1** **Network**: DHCP (Off), IPv4 Address (10.65.113.121), IPv4 Netmask (255.255.254.0), IPv6 Address (xxx.xxx.xxx.xxx), IPv6 Netmask (xxx.xxx.xxx.xxx), Gateway (10.65.112.1), DNS (10.0.0.69), MAC Address (dc:e2:ac:02:b0:ab), and an Apply button.
- 2** **RTMP / RTMPS**: Publish to Server (checked), Video encoder type (H.264@7500Kbps), Audio encoder type (AAC(48Khz)), Resolution format (1080P(59.94)), Chunk size (1412), RTMP Server Status (RTMP disable), RTMP URL, Stream Key, and Require Password Authentication (checked) with Account and Password fields.
- 3** **RTSP**: Enable Multicast (checked) and Require Password Authentication (checked).
- 4** **MPEG-TS**: Enable MPEG-TS (checked), Stream Source (Stream 2), and MPEG-TS IP and Port (0) fields.
- 5** **SRT**: Enable SRT Streaming (checked), Stream Source (Stream 2), Connection Mode (Caller), URL and Port (0) fields, Stream ID, Latency (120 ms), Encryption (None), Passphrase, and Connect Status (SRT Disable).
- 6** **SNTP** **Port Setting**: SNTP Server (pool.ntp.org).
- 7** **Tracking Data Output(FreeD)**: Enable (checked), Serial Output (selected), IP Output (deselected), and Destination IP (0.0.0.0) and Port (0) fields.

At the bottom, there are Apply and Cancel buttons.

Figure 40 - Settings > Network Page

No	Item	Function Descriptions
1	Network	Network settings of camera. Change of setting is available when DHCP function is Off .

No	Item	Function Descriptions
2	RTMP Setting	<p>Copy the RTMP web address provided by the RTMP service platform and paste it to the RTMP connection address 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.</p> <p>Tip: Before you can start live streaming to YouTube, audio must be enabled. For more information, see “Settings: Audio Settings Page” on page 52).</p> <p>Note: RTMP and RTMPS are available on PTZ-12G or PTZ-NDI with NDI disabled.</p>
3	RTSP Setting	<p>Enable/Disable Multicast. It is suggested to enable Multicast when the number of users online watching the live image simultaneously is more than four.</p> <p>RTSP is available on PTZ-12G or PTZ-NDI with NDI disabled.</p> <p>Note: When PTZ-NDI has NDI enabled, the Enable Multicast check-box has two fields associated with it: IP Setting and Netmask.</p>  <p>Figure 41 - Enable Multicast fields</p>
4	MPEG-TS Setting	<ol style="list-style-type: none"> 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. <p>IMPORTANT: Avoid using the following port numbers, as they are used by the camera: 8554, 8556, 8557, 8080, 80, 81, 9090, 23.</p> <p>MPEG-TS is available on PTZ-12G or PTZ-NDI with NDI disabled.</p>
5	SRT Setting	<ol style="list-style-type: none"> 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. <p>IMPORTANT: Avoid using the following port numbers, as they are used by the camera: 8554, 8556, 8557, 8080, 9090, 1935.</p> <ol style="list-style-type: none"> 4) Enter the Stream ID. 5) Delay time is for 20 to 8000 microseconds. The default value is 120 microseconds <p>SRT is available on PTZ-12G or PTZ-NDI with NDI disabled.</p>

No	Item	Function Descriptions
6	SNTP Setting Tab and Port Setting Tab	<p>SNTP Tab: Set SNTP Server IP.</p> <p>Port Setting Tab (Figure 42): Set the HTTP Port number (default is 80) Set the HTTPS Port number (default is 81) Note: Port numbers can be changed only when DHCP is Off.</p>  <p><i>Figure 42 - Port Settings Tab</i></p>
7	Tracking Data Out	<p>Configures output method and destination for FREED position tracking data:</p> <ul style="list-style-type: none"> • Enable — enables/disables output of FREED tracking data. When tracking data is enabled, a warning message appears (Figure 43). To enable tracking data output, click Yes.  <p><i>Figure 43 - Enable Tracking - Warning Message</i></p> <p>Note: Only FREED type D1 message structures are supported.</p> <p>Note: Generation of FREED tracking data puts a high processing load on the camera. When tracking is used in conjunction with video streaming and VISCA control, the timing of the FREED data transmission may be adversely affected. No other aspects of camera performance should be impacted.</p> <p>Note: Tracking data is temporarily interrupted by some camera actions, such as changing video output resolution or mode, changing the audio or video configuration, and opening the on-screen menu.</p> <ul style="list-style-type: none"> • Serial Output — Tracking data transmitted as serial data • IP Output — Tracking data transmitted over IP: <ul style="list-style-type: none"> • Destination IP: Specify IP address of destination device • Port: Specify port number of destination device

Settings: Date / Time Page

This section describes features available on the **Settings > Date / Time** page ([Figure 44](#)).

Figure 44 - Settings > Date / Time Page

No	Item	Function Descriptions
1	Time in Camera	Displays the current date and time of the camera.
2	Set Time	<ul style="list-style-type: none">• Set Manually — Enables you to manually set the date and 24-hour time.• Synchronize with Computer Time — Sets the camera time according to the computer time.• Synchronize with SNTP Server — Sets the camera time synchronously with the SNTP server. For information about setting the SNTP server address, see “Settings: Network Settings Page” on page 54.

Maintenance: Firmware Upgrade Page

This section describes features available on the **Maintenance > FW Upgrade** page ([Figure 45](#)).

Figure 45 - Maintenance > FW Upgrade Page

Item	Function Description
Choose File and Upgrade	When you upgrade camera firmware, user credentials and presets are retained. IMPORTANT: Before you upgrade, contact Ross Video Technical Support for the latest upgrade file and for instructions. Use firmware upgrade files provided by Ross Video only.

Maintenance: Error Log Page

This section describes features available on the **Maintenance > Error Log** page ([Figure 46](#)).

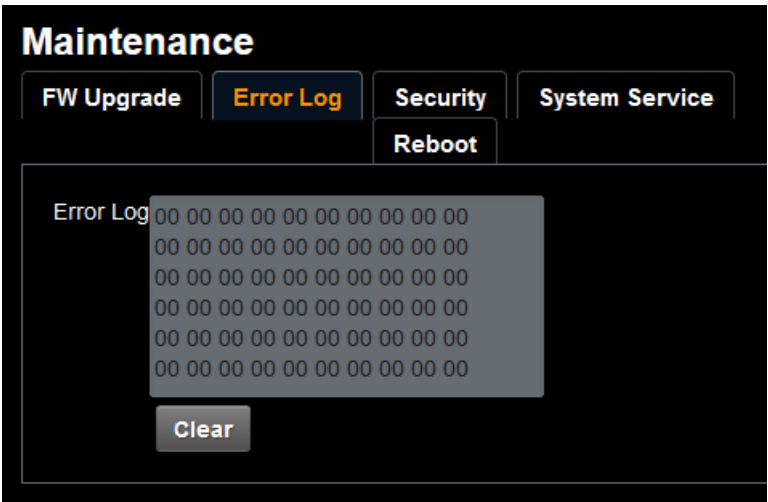


Figure 46 - Maintenance > Error Log Page

Item	Function Descriptions
Error Log	If the camera encounters an error, an error code appears in the log. After you review the log, click the Clear button to reset the log.

Maintenance: Security Page

This section describes features available on the **Maintenance > Security** page ([Figure 47](#)).

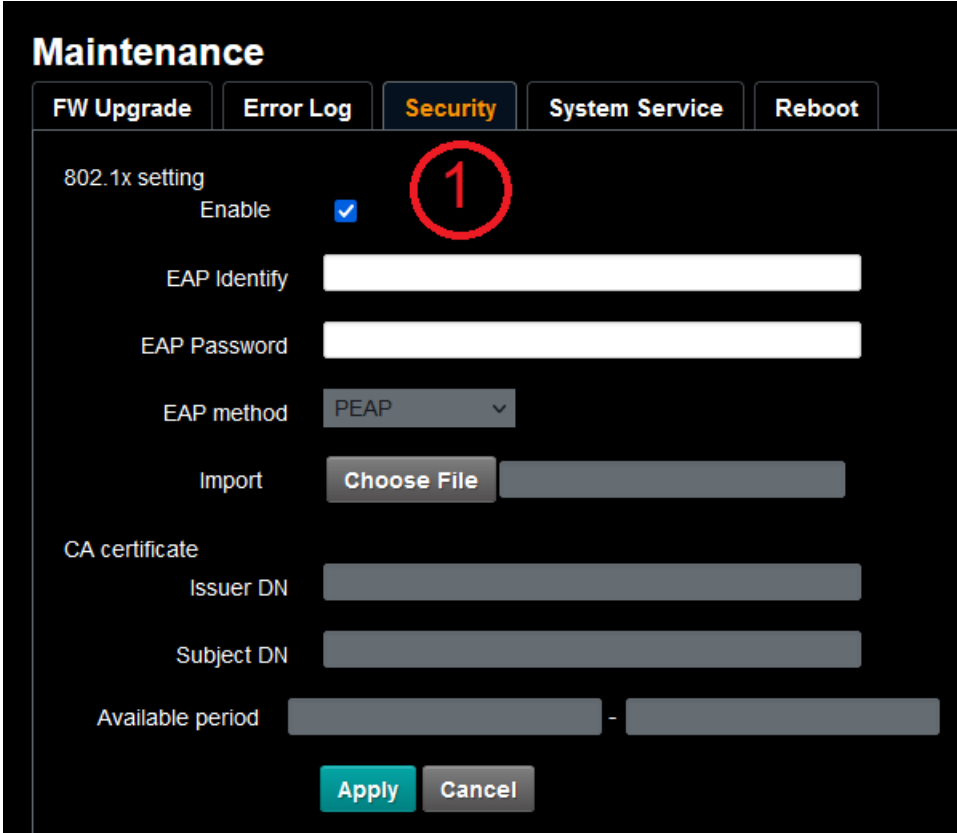


Figure 47 - Maintenance > Security Page

No	Item	Function Descriptions
1	802.1x Setting	Enable/Disable 802.1x Protocol. Setting can be made after enabling. In order to enable this function, the network router must support 802.1x Protocol.

Maintenance: System Service Page

This section describes features available on the **Maintenance > System Service** page ([Figure 48](#)).

Maintenance

FW Upgrade Error Log Security **System Service** Reboot

Factory Reset

Factory Reset Reset ①

Setting Profile

Load Save ②

Control Port Protocol Baud Rate VISCA Address Pelco D Address

Control Port RS-232 ③

Apply

Figure 48 - Maintenance > System Service Page

No	Item	Function Descriptions
1	Factory Reset Reset to the default	<p>To apply factory default settings, click the Reset button, and then click Yes to confirm.</p> <p>Settings are applied as follows:</p> <ul style="list-style-type: none">Ethernet:<ul style="list-style-type: none">DHCP is turned On.IP address is set to 192.168.100.100. <p>Tip: After reset, use the remote control unit to turn DHCP off or to set the IP address.</p> <ul style="list-style-type: none">Picture settings revert to factory defaults.FREED position tracking data is turned off.Presets are retained.User Names and Passwords for the web interface revert to a single default user profile:<ul style="list-style-type: none">User Name: adminPassword: 9999 <p>Note: Only users with Administrator authority can perform a factory reset.</p>
2	Setting	<p>The web page setting parameters can be exported from the computer and imported/applied to another camera.</p>
3	Control Port Setting	<p>Communication protocol related settings for connection with RS-232/RS422 communication.</p> <p>Note: To control PTZ-12G and PTZ-NDI cameras using the DashBoard PTZ Camera Control Plugin, Protocol must be set to VISCA.</p>

Maintenance: Reboot Page

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

Maintenance

FW Upgrade Error Log Security System Service **Reboot**

Reboot ①

☐ Disable ②

☐ Daily Reboot ③

00:00 ▾

☐ Timed Reboot ④

1 HR ▾

Apply Cancel

Figure 49 - Maintenance > Reboot Page

No	Item	Function Descriptions
1	Reboot	Reboots immediately.
2	Disable	Disables the reboot settings.
3	Daily reboot	Sets a daily reboot time. Synchronize the camera's clock with an SNTP server to set daily reboot. For more information, see "Settings: Date / Time Page" on page 57 .
4	Timed Reboot	Set the reboot time, and then click Apply .

About Page

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

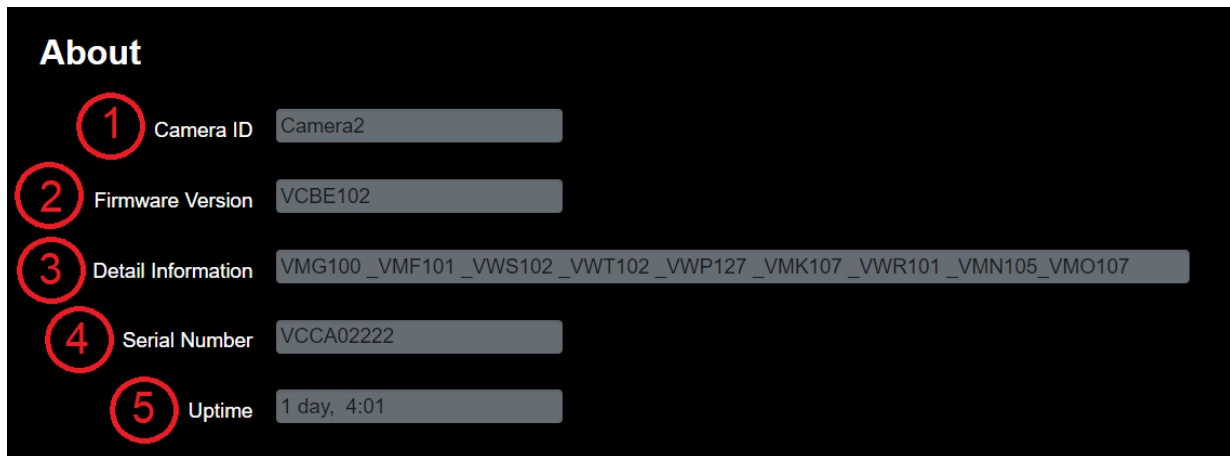


Figure 50 - About Page

No	Item	Function Descriptions
1	Camera ID	Displays the camera name.
2	Firmware Version	Displays the firmware version installed on the camera.
3	Detail Information	Displays list of individual firmware components included in the installed firmware version.
4	Serial No.	Displays the camera serial number.
5	Uptime	Displays the amount of time the camera has been on.

Viewing RTSP Video Stream (PTZ-12G or PTZ-NDI with NDI disabled)

The PTZ-12G and PTZ-NDI with NDI disabled output an RTSP video stream. 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 > Configuration**.
2. Set the resolution.
3. Set the **Output Source** to **HDMI + Streaming**.
4. Navigate to **Settings > Video**.
The **Video** page appears ([Figure 51](#)).

Video

Camera ID

Location

NDI|HX

Stream 1 **Stream 2** **Stream 3**

☒ Enable Stream1

Codec

Resolution

Frame Rate fps

Bit Rate kbps

Rate Control

IP Ratio

Apply **Cancel**

Figure 51 - The Settings > Video 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** — PTZ-12G or PTZ-NDI with NDI disabled:
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 52](#) and [Figure 53](#) 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**.

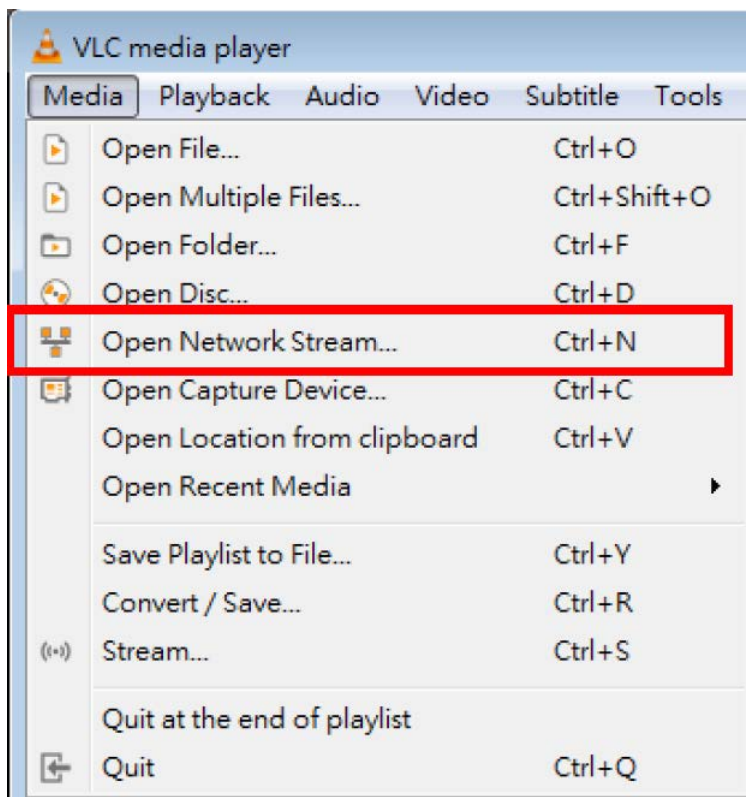


Figure 52 - Opening a Network Stream in VLC Media Player

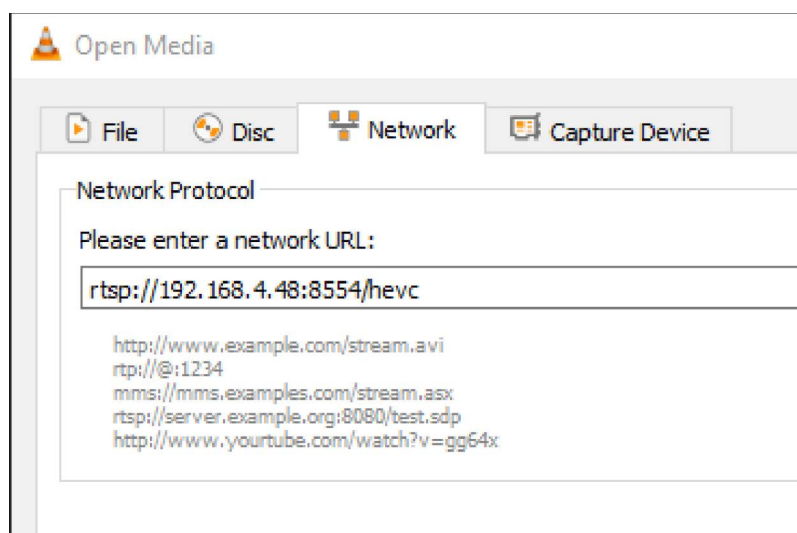


Figure 53 - Specifying a Stream URL in VLC Media Player

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 and PTZ-NDI 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.

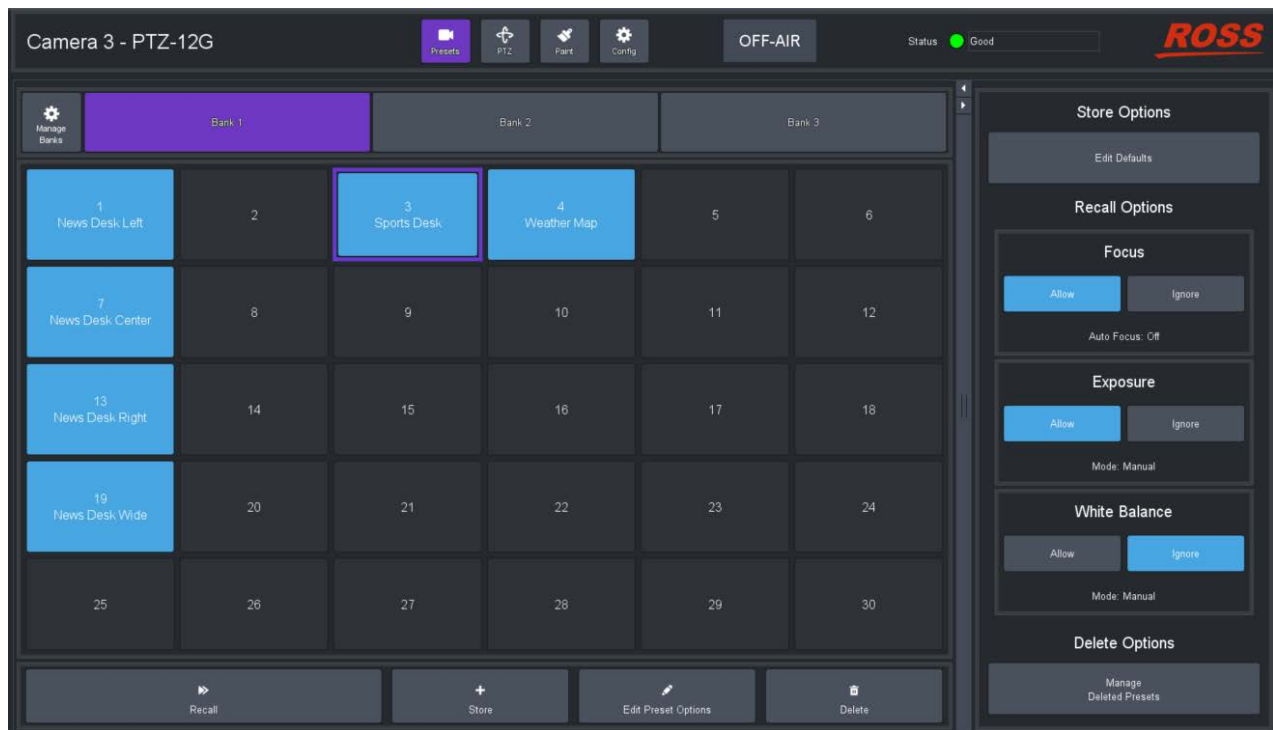


Figure 54 - DashBoard PTZ Control Plugin

IMPORTANT: To control PTZ-12G and PTZ-NDI cameras, the control protocol of the camera must be set to **VISCA** (not **Pelco D**). In the web interface, the **Protocol** setting is at **Maintenance > System Service > Protocol**. For more information, see “**Maintenance: System Service Page**” on [page 60](#).

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 and PTZ-NDI cameras, DashBoard v9.2.2 (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 66](#)
- “**Firmware Update**” on [page 67](#)
- “**Troubleshooting**” on [page 69](#)

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 more information, refer to “**To Access the Web Interface:**” on [page 37](#).

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/>.

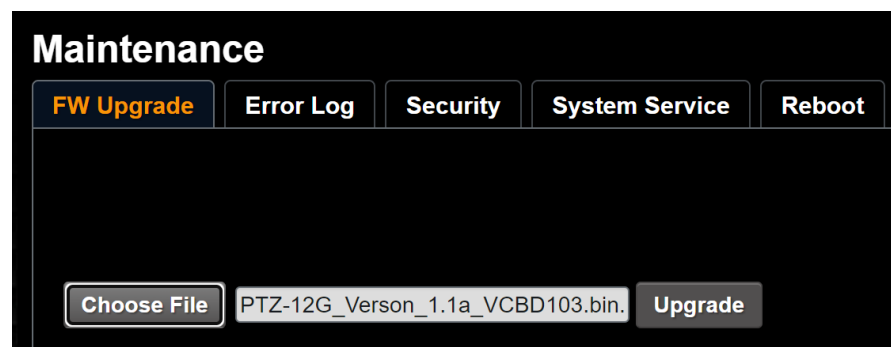
Note: If the camera already has the latest firmware version, no update is required.

To upgrade the firmware version:

1. Select **Maintenance** from menu options in the Web Interface.
2. Select the **Choose File** button in the **FW Upgrade** tab.
3. Upload the .bin file for your PTZ-12G or PTZ-NDI camera, respectively.

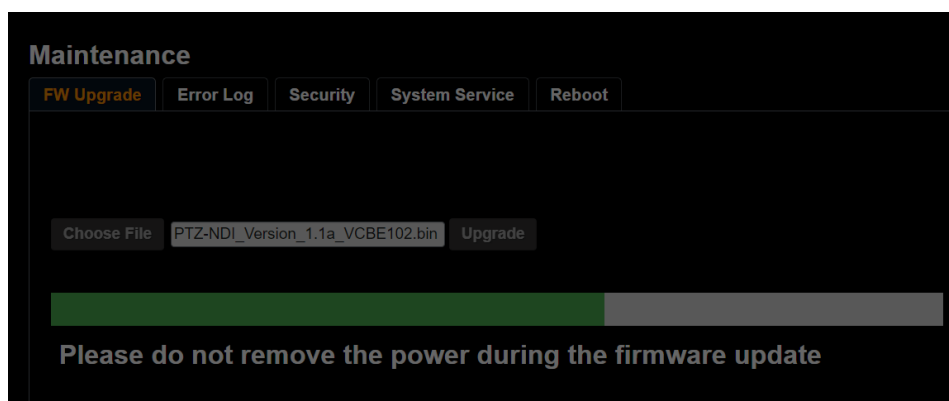
The .bin file is available in the firmware upgrade package at
<https://www.rossvideo.com/support/product-documentation/ptz-documentation/>.

Note: For PTZ-12G, upload the PTZ-12G_Version_XXX_VCBDxxx.bin file. For PTZ-NDI, upload the PTZ-NDI_Version_XXX_VCBExxx.bin file.

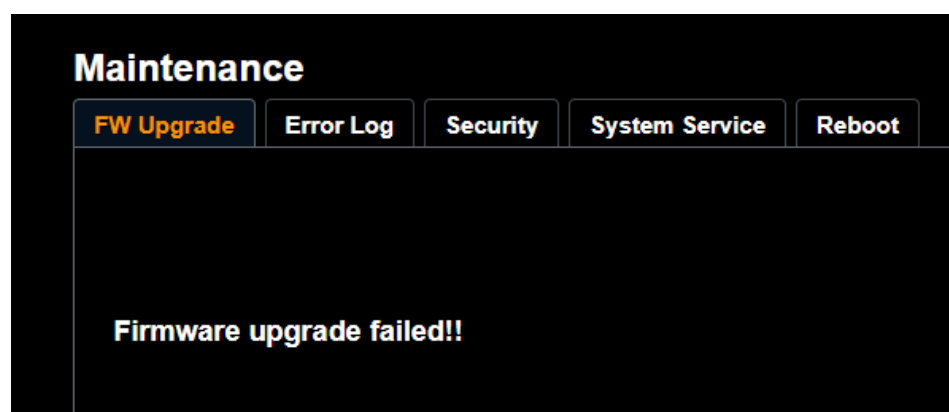


4. Select the **Upgrade** button.

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



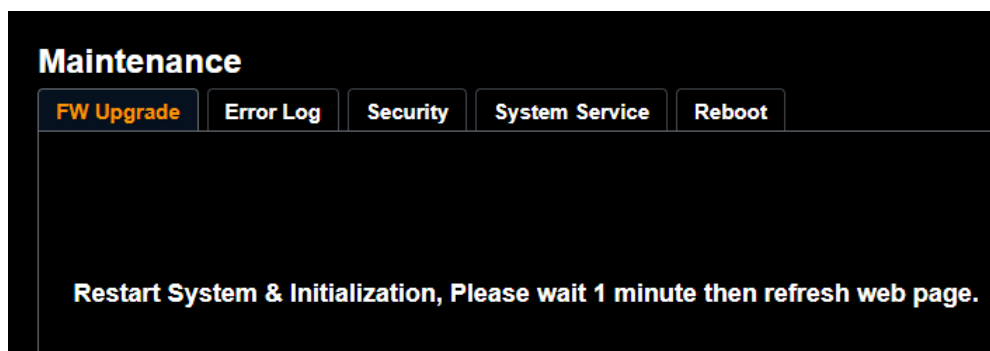
IMPORTANT: If your update is blocked, the firmware update has failed. This can happen if you upload the wrong firmware update file (i.e. using the PTZ-12G file for a PTZ-NDI camera, or vice versa).



If this error occurs, refresh the page and upload the correct file.

To perform a power cycle:

IMPORTANT: Do not power cycle your camera until the upgrade finishes. Refer to the following image for confirmation of a successful firmware upgrade:



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.

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 39 for the Internet usage
ONVIF software cannot locate the machine	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 to PTZ-12G and PTZ-NDI 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: <ul style="list-style-type: none"> • Using the On-Screen Menu, (remote control unit), go to System > Tally Lamp. • Using the web interface, go to Settings > Camera > Tally Lamp.
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: <ul style="list-style-type: none"> • 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.

Problem	Possible Solution
<p>Forgot password for web interface and cannot log in</p>	<p style="text-align: center;">Hard Reset</p> <p>A Hard Reset enables password resetting.</p> <p>WARNING: This process resets all camera, network, and login credential settings, restoring defaults.</p> <p>To perform a Hard Reset, complete a power cycle by disconnecting and reconnecting the camera's power, then complete the following:</p> <p>1) Using the remote, press the following buttons in this precise sequence: + 886464 > Enter.</p>  <p style="text-align: center;"><i>Figure 55 - Location of plus (+) button</i></p> <p>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.</p> <p>Settings are applied as follows:</p> <p>Ethernet:</p> <ul style="list-style-type: none"> • DHCP is turned On. • IP address is set to 192.168.100.100. <p>Tip: After reset, use the remote control unit to turn DHCP off or to set the IP address.</p> <p>User Names and Passwords for the web interface revert to a single default user profile:</p> <ul style="list-style-type: none"> • User Name: admin • Password: 9999 <p>2) Using the web interface, select Add/Edit Users > Edit > enter the New Password > Confirm Password > Apply to assign a new password.</p> <p>Note: Symbols are not recognized in passwords.</p> <p>For further assistance, refer to “Contacting Technical Support” on page 7.</p>
<p>Unable to add camera in DashBoard</p>	<p>Ensure that the control protocol on the camera is set to VISCA.</p> <p>There are two ways to access the Protocol setting:</p> <ul style="list-style-type: none"> • In the web interface, the Protocol setting is at Maintenance > System Service > Protocol. For more information, refer to “Maintenance: System Service Page” on page 60. • 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 27.

5000DR-353-05Appendix: Serial Connections

This appendix provides information about pin assignments for controlling PTZ-12G and PTZ-NDI 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 71](#)
- “**RS-422 Serial Connections**” on [page 73](#)

[Figure 56](#) shows the RS-232 and RS-422 connectors on the back of the camera.

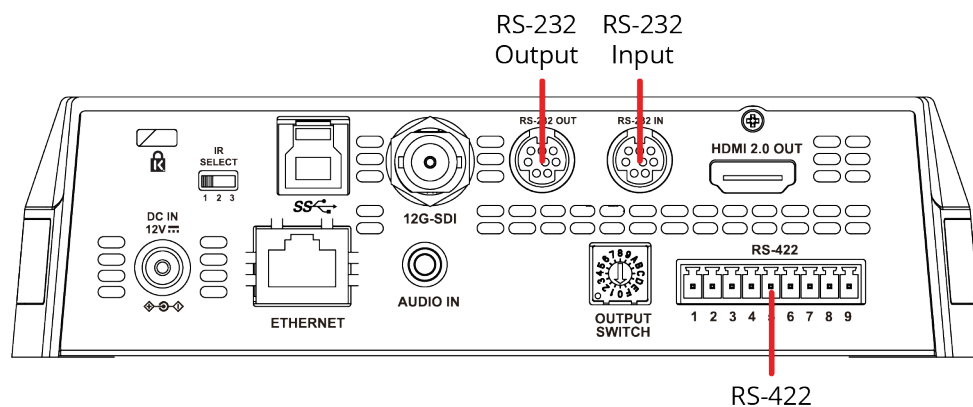


Figure 56 - Serial RS-232 and RS-422 Connectors

RS-232 Serial Connections

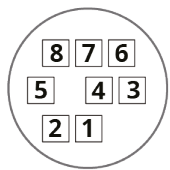
This section describes connections for serial control of PTZ-12G and PTZ-NDI cameras over RS-232.

It includes the following topics:

- “**RS-232 IN — Pin Assignments**” on [page 72](#)
- “**RS-232 OUT — Pin Assignments**” on [page 72](#)
- “**RS-232 — Connecting Camera to Computer**” on [page 72](#)
- “**RS-232 — Cascading Camera Connections**” on [page 73](#)

RS-232 IN — Pin Assignments

[Figure 57](#) details the pin assignments for the RS-232 IN connector on the camera.

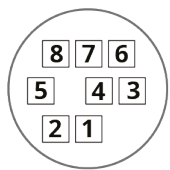


NO	Pins	Signal
1	DTR	Data Transmission Read
2	DSR	Data Set Read
3	TXD	Transmit Data
4	GND	Ground
5	RXD	Receive Data
6	GND	Ground
7	IR OUT	IR Commander Signal
8	N.C.	No connection

Figure 57 - Pin Assignments for RS-232 IN Connector

RS-232 OUT — Pin Assignments

[Figure 58](#) 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 58 - Pin Assignments for RS-232 OUT Connector

RS-232 — Connecting Camera to Computer

[Figure 59](#) details pin connections required between the camera and a computer that controls it over serial RS-232.

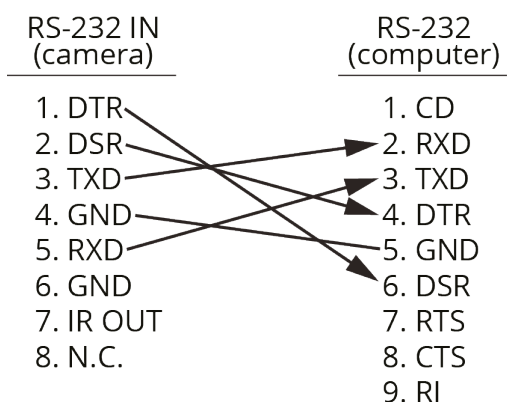


Figure 59 - Connecting Camera to Control Computer for RS-232 Control

RS-232 — Cascading Camera Connections

[Figure 60](#) 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 “**Maintenance: System Service Page**” on [page 60](#).

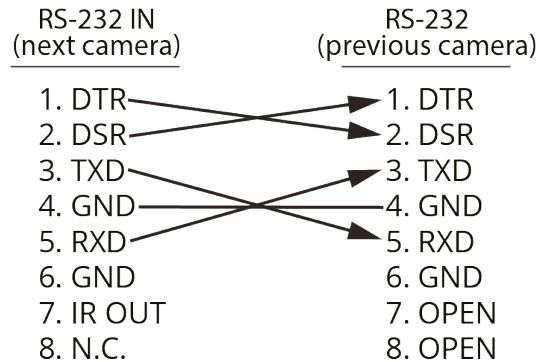


Figure 60 - Cascading Camera Control over RS-232

RS-422 Serial Connections

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

It includes the following topics:

- “**Making RS-422 Pin Connections**” on [page 73](#)
- “**RS-422 Connector — Pin Assignments**” on [page 74](#)
- “**RS-422 — Cascading Camera Connections**” on [page 75](#)

Making RS-422 Pin Connections

The camera comes with an RS-422 connector that mates with the RS-422 connector on the camera ([Figure 61](#)). The connector accepts AWG 28 to AWG 18 wire.

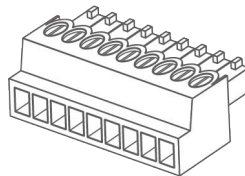


Figure 61 - RS-422 Connector (included)

To wire the RS-422 connector:

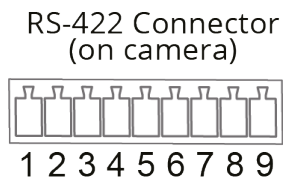
- For each connection:
 - a. Strip the wire insulation to expose 6mm (1/4”) of bare wire.
 - b. Insert the bare wire into the correct terminal hole.
 - c. Use a small slot screwdriver to tighten the terminal screw to secure the wire.

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.



Pin	Function
1	RXD OUT -
2	RDX OUT +
3	TDX OUT -
4	TDX OUT +
5	GND
6	RDX IN -
7	RDX IN +
8	TDX IN -
9	TDX IN +

Figure 62 - Pin Assignments for RS-422 Connector

RS-422 — Cascading Camera Connections

Figure 63 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 “**Maintenance: System Service Page**” on [page 60](#).

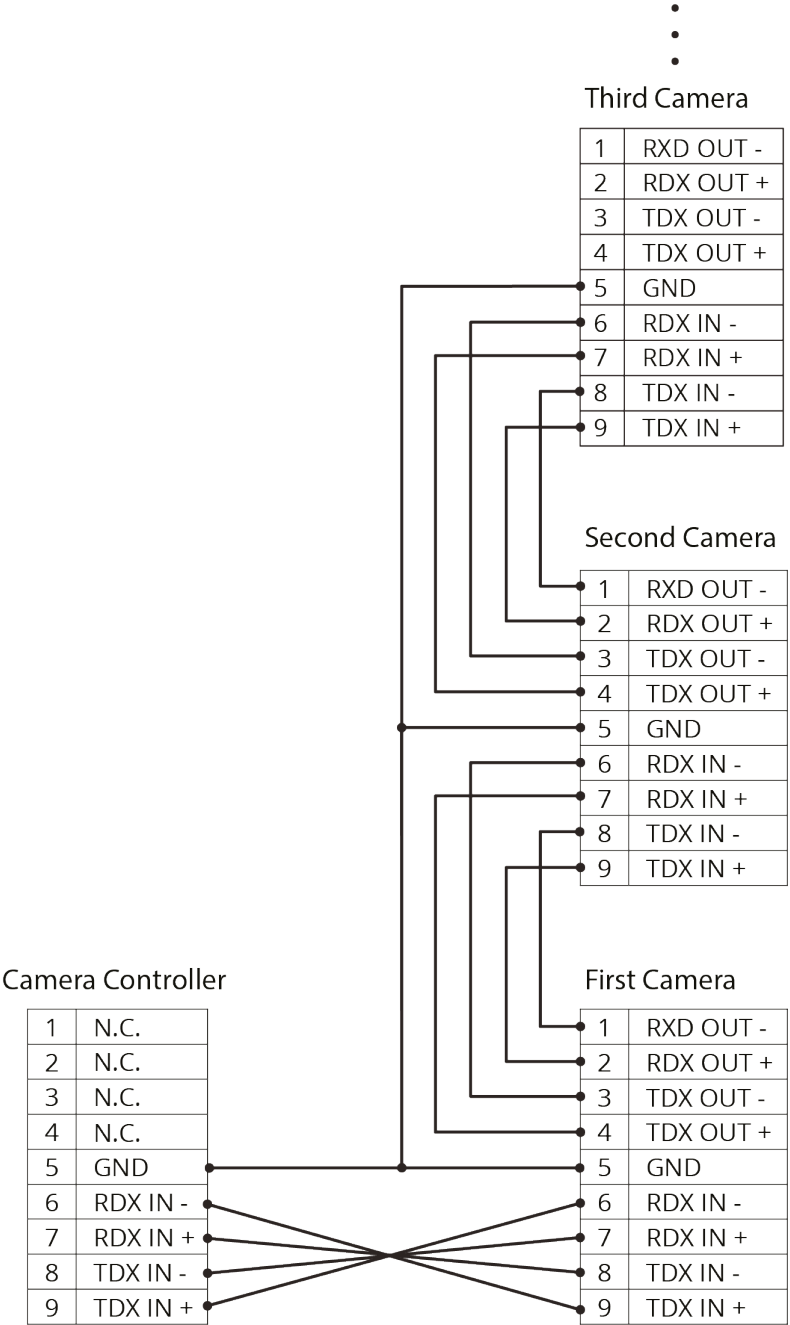


Figure 63 - Cascading Camera Control over RS-422