



Share Your Vision

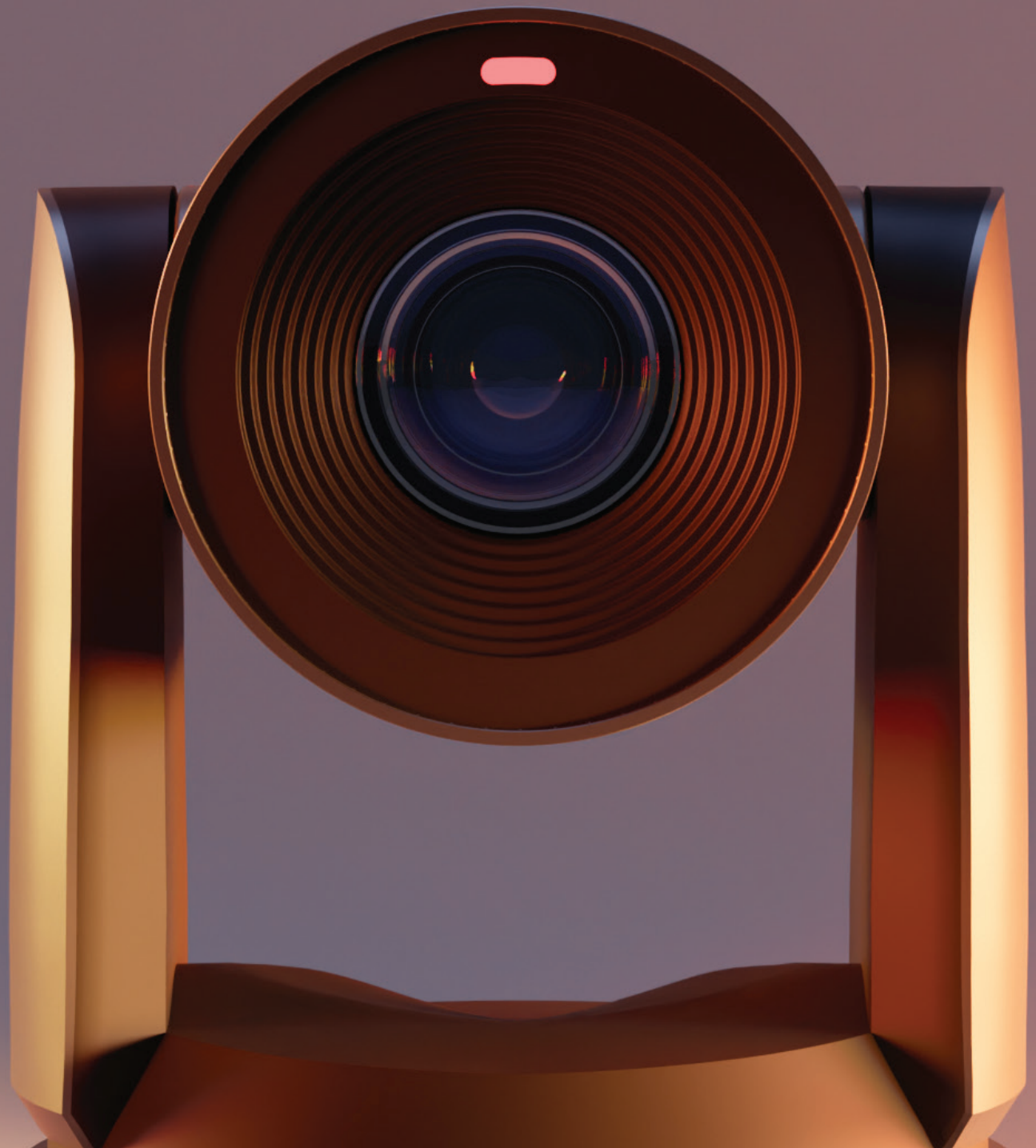
PTZOptics Move 4K User Manual

MODEL No.

PT12X-4K-GY, PT12X-4K-WH

PT20X-4K-GY, PT20X-4K-WH

PT30X-4K-GY, PT30X-4K-WH



| | |
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Preface

Before installation and usage, please read the manual thoroughly. If you have any questions or issues with this process, please contact our [Support Team](#).

Precautions

- Do not subject the camera to rain or moisture.
- Do not remove the cover. Removal of the cover will void the camera's warranty and may cause an electric shock. For any abnormal operation, please contact support@ptzoptics.com.
- Never operate outside of the specified operating temperature range or humidity.
- The power supply included in the box is the only power supply to be used with this camera. To purchase a replacement, please visit ptzoptics.com/where-to-buy/.
- Please use a soft cloth to clean the unit. If the unit is very dirty, clean it with diluted neutral detergent; do not use solvents which may damage the surface.

Warning

- Electrical safety
Installation must be in accordance with national and local electric safety standards.
- Polarity of Power Supply
The power supply output for this product is 12V DC with a maximum current supply of 2A. The polarity of the power supply plug is critical and is as follows:



- Handling
 - Avoid subjecting the camera to stress, vibration, or moisture during transportation, storage, installation, and operation.
 - Do not lift or move the camera by grasping the camera head. To avoid mechanical damage, do not turn the camera head by hand.
 - Do not expose the camera to any corrosive solid, liquid, or gas.
 - Please make sure that there are no obstacles in the pan or tilt ranges of the camera lens.
 - After installation is complete, power on the camera.
 - Do not dismantle the camera - PTZOptics is not responsible for any unauthorized modification or dismantling.

- This is an FCC Class-A product. In a domestic environment, this camera may cause radio interference. In the event of radio interference, the user may be required to adequately mitigate it.
- **Remote Control Battery Safety Information:**
- Store batteries in a cool and dry place.
- Do not throw away used batteries in the trash. Properly dispose of used batteries through specially approved disposal methods.
- Remove the batteries if they are not in use for long periods. Battery leakage and corrosion can damage the remote control.
- Do not use old batteries with new batteries.
- Do not mix and use different types of batteries: alkaline, standard (carbon-zinc), or re-chargeable (nickel-cadmium).
- Do not dispose of batteries in a fire. Do not attempt to short-circuit the battery terminals.

Packing List

Please make sure the items below are included in your camera box:

- **Camera**
- **AC Power Supply**
- **USB A-A Cable**
- **RS-232C Cable**
- **Quick Start Guide**
- **IR Remote**
- **2 AA Batteries**

Warranty

PTZOptics includes a limited parts & labor warranty for all PTZOptics manufactured cameras. The warranty is valid only if PTZOptics receives proper notice of such defects during the warranty period. PTZOptics, at its option, will repair or replace products that prove to be defective. PTZOptics manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices.

[Here is the link](#) to the PTZOptics Hardware Warranty Documentation. This product has a 5-year warranty.



Covered by one or more claims of the HEVC patents listed at patentlist.accessadvance.com.



FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. Operation is subject to the following two conditions: This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Copyright Notice

The entire contents of this manual / guide, whose copyright belongs to PTZOptics, may not be cloned, copied, or translated in any way without the explicit permission of the company. The product specifications referred to in this document are for reference only and as such are subject to updating at any time without prior notice.

Features

- **Automatic Tracking**

Advanced algorithms to enable auto-tracking in various scenarios such as education, conferences, and live broadcasts.

- **12X, 20X, 30X Optical Zoom Models**

8 million pixel ultra-high resolution 4K telephoto lens in 12X, 20X, or 30X optical zoom.

- **4K Ultra HD**

Next generation SONY UHD CMOS sensor for shooting high quality 4K video at 60 FPS, with the flexibility to adjust numerous other resolutions and frame rates.

- **HDMI 2.0**

HDMI 2.0, can directly output 4K uncompressed digital video.

- **Low Light**

CMOS image sensor with ultra-high SNR can reduce image noise in low light.

- **3D Noise Reduction**

Produces a clean, clear image even in low light with a signal-to-noise ratio as high as 55db.

- **Built in Gravity Sensor**

Built in automatic image flip function, convenient for installation.

- **Multiple Interfaces**

Supports Simultaneous USB 2.0, HDMI 2.0 / 3G-SDI / IP streaming (SRT, RTSP, RTMP) (HDMI & SDI are not simultaneous)

- **Multiple Control Options**

Controllable via IR remote, network connection, RS-232, RS-485, and the USB port.

- **Tally Light**

Features a built-in tally light that shines GREEN to indicate when the camera is in preview mode. The light shines RED when the camera is on-air. The tally light illuminates when it's being used with NDI-compatible video mixing software.

PTZ Features

- **Camera Control**



Auto-Tracking with Extended Options: This feature lets the camera automatically follow a moving person in its view. The extended options include selecting where the camera will pick up the next target and selecting between multiple targets on the fly.



Video Templates: The PTZOptics team is making it easy to select the best performance IP video streams for your project by providing easily selectable video templates for NDI, Dante, and IP streaming.

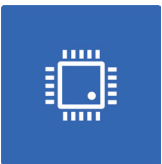


White Balance Modes: This feature helps in adjusting the color balance in your images, specifically focusing on the color white. Different lighting conditions can change the color of white, which may alter other colors in the image. White balance modes can help correct for different types of light like sunlight, shade, tungsten, fluorescent, etc. so that the white in your image remains true and other colors are displayed correctly.



Exposure Modes: This refers to the different methods the camera uses to decide the correct combination of aperture, shutter speed, and ISO to achieve the perfect exposure. Different modes could include manual (where you control everything), auto (the camera decides), or other modes that allow control over one aspect (like shutter priority, where you control the shutter speed and the camera adjusts the other settings)

- **Additional Updates**



On-Camera Firmware Updates: This feature allows you to update the camera's firmware directly from the camera itself. Firmware is the low-level software that controls the hardware of your camera. Being able to update it directly on the camera simplifies the process and ensures you can easily have the latest features and bug fixes.



Profiles: PTZOptics cameras now feature multiple profiles that allow you to quickly set up your camera for different shooting situations. For example, you might have one profile for indoor shooting, another for outdoor shooting, and another for low light situations. Each profile would have different settings for things like white balance, exposure, frame rate, etc.

- **Networking**



Simple Network Discovery: This is a feature that allows the camera to be easily discovered and connected to a network. PTZOptics cameras can now be found by simply entering <http://ptzoptics.local/> into any web-browser. The IP address can then easily be changed through the user interface.



NTP for NDI sync: Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks. This can be used to ensure that the timestamps on the Network Device Interface (NDI) streams from your cameras are accurate and synchronized, ensuring that your video streams are in sync with each other and with any other networked devices.



Multicast/Unicast: This feature refers to the method of data transmission over a network. In multicast, data is sent to multiple recipients at the same time. In unicast, data is sent from one sender to one receiver. Depending on your network setup and the requirements of your video stream, you might want to use one or the other.

Technical Specifications

| | |
|---------------------------|--|
| Model | PT12X-4K-GY-G3, PT12X-4K-WH-G3 PT20X-4K-GY-G3, PT20X-4K-WH-G3 PT30X-4K-GY-G3, PT30X-4K-WH-G3 |
| Type | PTZOptics Move 4K |
| Description | 4K60 PTZ camera with video auto tracking & HDMI, SDI, USB, NDI & IP video outputs |
| Resolution & Frame Rate | HDMI: 3840x2160p-60/59.94/50/30/29.97/25, 1920x1080p 60/59.94/50/30/29.97/25, 1920x1080i-60/59.94/50, 1280x720p-60/59.94 |
| | SDI: 1920x1080p-60/59.94/50/30/29.97/25, 1920x1080i-60/59.94/50, 1280x720p-60/59. |
| Sensor | (12X) Sony 1/2.5 inch, CMOS, Effective pixels: 8.51M |
| | (20X) Sony 1/1.8 inch, CMOS, Effective pixels: 8.42M |
| | (30X) Sony 1/1.8 inch, CMOS, Effective pixels: 8.42M |
| Scanning Mode | Progressive |
| Lens | (12X) f = 4.4mm ~ 52.8mm, F1.8 ~ F2.6 |
| | (20X) f = 6.25mm ~ 125mm, F1.58 ~ F3.95 |
| | (30X) f = 7.1mm ~ 210mm, F1.61 ~ F5.19 |
| Digital Zoom | Off (3840x2160), 2X (1920x1080), 3X (1280x720), 4X (960x540), 8X (480x270), 16X (256x144) |
| Video Based Auto-Tracking | Supported |
| Minimum Illumination | 0.5 Lux @ (F1.8, AGC ON) |
| Shutter | 1/30s ~ 1/10000s |
| White Balance | Auto, Indoor, Outdoor, One Push, Manual, VAR |
| Backlight Compensation | Supported |
| Digital Noise Reduction | 3D Digital Noise Reduction |

| | |
|------------------------------|---|
| Video Signal Noise Reduction | ≥55dB |
| Horizontal Field of View | (12X)..... 6.9° ~ 72.5° (20X)..... 3.5° ~ 60.7° (30X)..... 2.5° ~ 59.2° |
| Vertical Field of View | (12X)..... 3.9° ~ 44.8° (20X)..... 1.9° ~ 34.1° (30X)..... 1.4° ~ 34.6° |
| Horizontal Rotation Range | ±170° |
| Vertical Rotation Range | -30° ~ +90° |
| Pan Speed Range | 1.7°/s ~ 100°/s |
| Tilt Speed Range | 1.7°/s ~ 69.9°/s |
| Image Flip | Supported (built-in gravity sensor) |
| Image Mirror | Supported |
| Image Freeze | Supported |
| POE+ | Supported |
| USB Specifications | |
| Operating System | Windows 7 / 8.1 / 10 / 11 / Mac OS, Linux, Android |
| Color System/Compression | YUY2 / MJPEG / H.264 / H.265 |
| Video Format | <ul style="list-style-type: none"> ▪ YUY2: Max resolution: 3840x2160pp@5 ▪ MJPEG: Max resolution: 3840x2160p@30 ▪ H.264 AVC: Max resolution: 3840x2160p@30 ▪ H.265: Max resolution: 3840x2160p@30 |
| USB Audio | Supported |
| UVC Version | UVC 1.1 ~ 1.5 |
| UVC Control | Supported |

| IP Video Specifications | |
|-------------------------------------|--|
| Video Compression | H.264, H.265, MJPEG |
| Video Stream | First Stream, Second Stream |
| First Stream Resolutions | 3840x2160, 1920x1080, 1280x720, 1024x576, 720x480, 720x408, 640x480, 640x360 |
| Second Stream Resolutions | 720x480, 720x408, 640x480, 640x360, 480x320, 320x240 |
| Video Bitrate | First Stream: 32kbps ~ 102400kbps Second Stream: 32kbps ~ 20480kbps |
| Bit Rate Type | Constant Bit Rate (CBR), Variable Bit Rate (VBR) |
| Frame Rate | 50Hz: 1 ~ 50 fps 60Hz: 1 ~ 60 fps |
| Audio Compression | AAC |
| Audio Bit Rate | 96kbps, 128kbps |
| Supported Protocols | TCP/IP, UDP, HTTP, RTSP, RTMP/RTMPS, ONVIF, SRT, Multicast, etc. |
| Input & Output Interface | |
| HD Output | <ul style="list-style-type: none"> ▪ 1x RJ45: 10/100/1000M Adaptive Ethernet Port ▪ 1x HDMI: version 2.0 ▪ 1x USB 2.0: type A ▪ 1x 3G-SDI: BNC type, 800mVP-p, 75Ω, Along to SMPTE 424M standard |
| Audio Interface | <ul style="list-style-type: none"> ▪ 1x 3.5mm Line level Input ▪ 1x 3.5mm Line level Output |

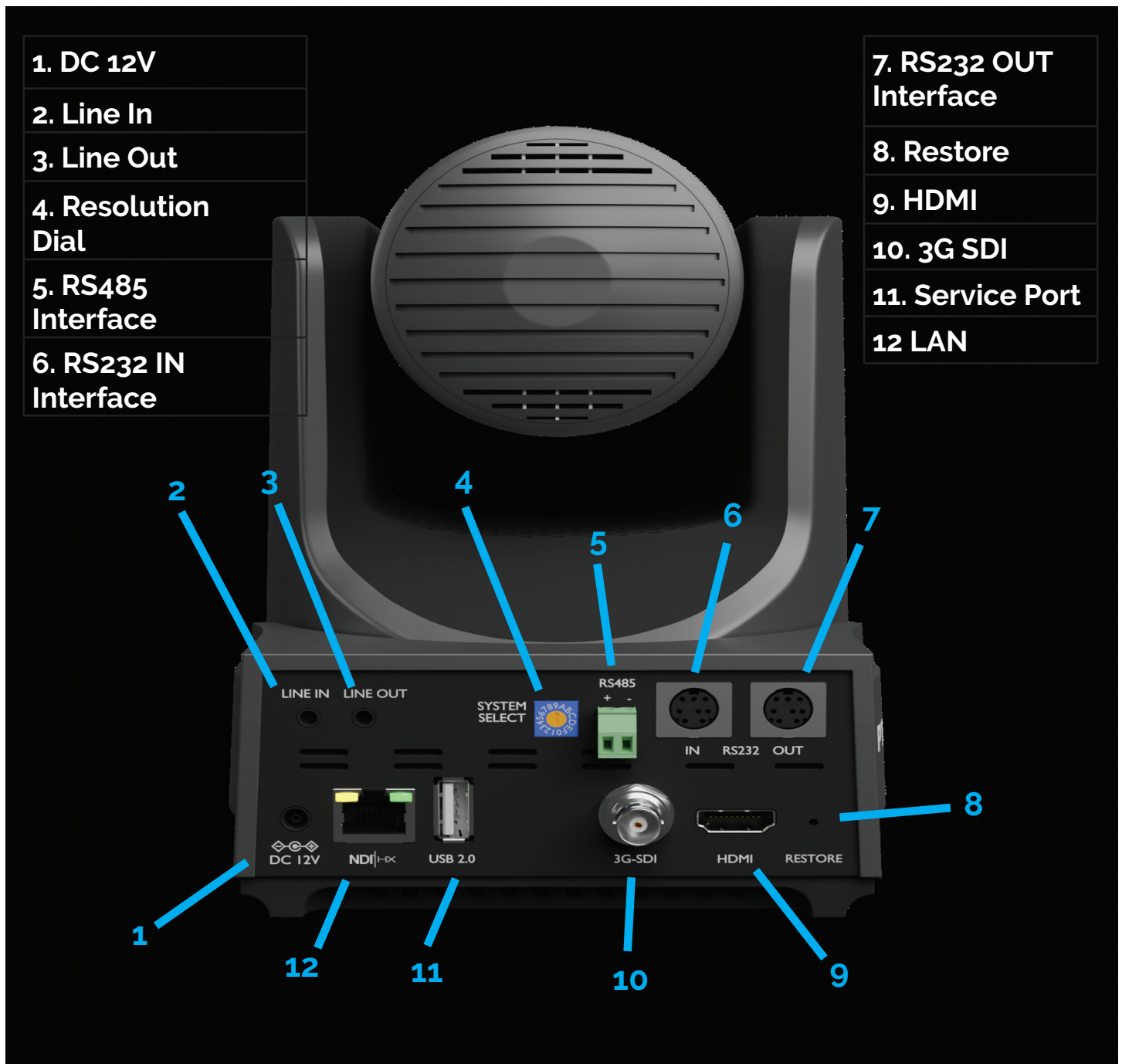
| | |
|-------------------------|---|
| Communication Interface | <ul style="list-style-type: none"> 1x 8-pin Mini DIN RS232 Input, Max distance: 98.5ft / 30m, Protocol: VISCA / Pelco-D / Pelco-P 1x 8-pin Mini DIN RS232 Output, Max distance: 98.5ft / 30m, Protocol: VISCA / Pelco-D / Pelco-P 1x 2-pin Phoenix port RS485 Input / Output, Max distance: 3.937ft / 1200m, Protocol: VISCA / Pelco-D / Pelco-P |
| IR | 4x IR Addresses, Max distance 30ft / 9m |
| Power Jack | JEITA Type (DC IN 12V) |

| Physical Parameter | |
|-----------------------|---|
| Input Voltage | DC 12V / PoE+(802.3af) |
| Current Consumption | Max 2A |
| Operating Temperature | 14°F ~ 104°F (-10°C ~ 40°C) |
| Storage Temperature | -40°F ~ 140°F (-40°C ~ 60°C) |
| Humidity Range | 10% - 80% |
| Power Consumption | Max 18W |
| Size in. (W x D x H) | (12X) 5.57" W x 5.94" (6.65 including SDI) D x 6.93" (7.91" with tilt up) H |
| | (20X) 5.57" W x 5.94" (6.65 including SDI) D x 6.93" (7.91" with tilt up) H |
| | (30X) 6.69" W x 7.12" (7.75 with SDI) D x 8.98" (10.5" with tilt up) H |
| Size mm. (W x D x H) | (12X) 141.5 W x 151 (169 including SDI) D x 176 (201 with tilt up) H mm |
| | (20X) 141.5 W x 151 (169 including SDI) D x 176 (201 with tilt up) H mm |
| | (30X) 170 W x 181 (196.85 including SDI) D x 228 (266.7 with tilt up) H mm |
| Camera Weight | (12X) 3.25 lbs 1.47 kg |
| | (20X) 3.25 lbs 1.47 kg |
| | (30X) 4.41 lbs 2.0 kg |

| Tracking Distances | | | | |
|--------------------|---------------|--|---|------------------------------------|
| Tracking Data | Maximum Range | Minimum Acquisition Range at "Home" Position | Recommended Pickup Range from "Home" Position | Maximum Recommended Tracking Range |
| PT12X-Move4K | 230' | 0-50' | 0-44' | 202' |
| PT20X-Move4K | 300' | 50' | 0-44' | 264' |
| PT30X-Move4K | 380' | 50' | 0-44' | 334' |

Connection Guide

1. To start your camera, please connect the power adapter to the DC-12V power connector port on the back of the camera, ensuring all connections are correct and secure.
2. The power indicator on the front panel of the camera will illuminate.
3. Once powered on, the camera will initialize. During this phase, it will rotate to the left and right limit positions, then both horizontal and vertical limit positions. After these limit checks, it will stop at the center position. Once the camera has stopped moving, the initialization will be complete.
(Note: If preset 0 is saved, The camera will stop at preset 0)

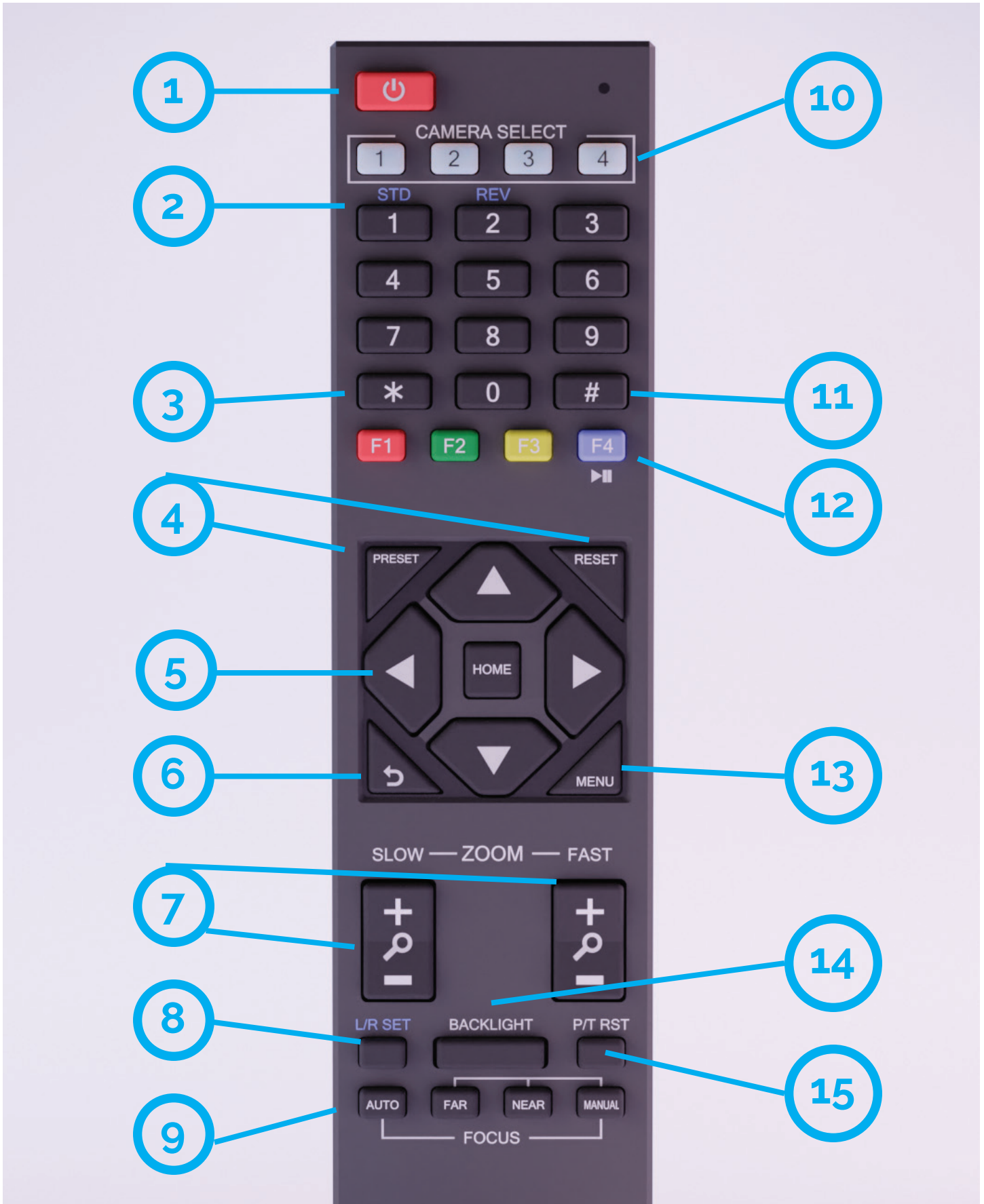


System Select Resolution Dial



| Resolution Dial | | | |
|-----------------|--------------|-----|-------------|
| HDMI | | SDI | |
| 0 | 1080p 60 | 0 | 1080p 60 |
| 1 | 1080p 50 | 1 | 1080p 50 |
| 2 | 1080i 60 | 2 | 1080i 60 |
| 3 | 1080i 50 | 3 | 1080i 50 |
| 4 | 1080p 30 | 4 | 1080p 30 |
| 5 | 720p 60 | 5 | 720p 60 |
| 6 | 1080p 29.97 | 6 | 1080p 29.97 |
| 7 | 1080in 59.94 | 7 | 1080i 59.94 |
| 8 | 1080p 29.97 | 8 | 1080p 29.97 |
| 9 | 720p 59.94 | 9 | 720p 29.97 |
| A | 2160p 29.97 | A | 1080p 29.97 |
| B | 2160p 59.94 | B | 1080p 59.94 |
| C | 2160p 25 | C | 1080p 25 |
| D | 2160p 30 | D | 1080p 30 |
| E | 2160p 50 | E | 1080p 50 |
| F | 2160p 60 | F | 1080p 60 |

IR Remote Controller Guide



1. Standby Button

Press this button to enter standby mode. Press it again to enter normal mode.

Note: Power consumption in standby mode is approximately half of the normal mode.

2. Number Keys

Press to set or call preset camera position or input a number.

3. * Button

Used predominantly when calling shortcuts.

4. Set / Clear Presets

To Set a Preset: save a camera position, press [PRESET] + any number zero through nine.

To Clear a Preset: erase a camera position, press [RESET] + any number zero through nine. To erase all presets, press [*] + [#] + [RESET]

5. Pan / Tilt Control Buttons

Press the [LEFT or RIGHT] arrow to pan. Press the [UP or DOWN] arrow to tilt. Press the [HOME] button to return the camera to the front facing home position.

6. Return Button

Press the [RETURN] button to go back to a previous menu within the on screen display (OSD)

7. Zoom Buttons

Press [+] to zoom in (Slow and fast speed)

Press [-] to zoom out (Slow and fast speed)

8. L / R Set Buttons

Set the Left & Right directional buttons for the remote. *Press the following buttons simultaneously.*

Press [L/R SET] + [1]: Buttons function normally

Press [L/R SET] + [2]: Buttons function inverted

9. Focus Buttons

Adjust camera focus.

[AUTO]: focuses the image on the center object.

[Manual]: Manually control focus. Press [FAR] to focus on a far object. Press [NEAR] to focus on a near object.

10. Camera Select Buttons

Press a number to select the corresponding camera you want to operate.

11. # Button

For multiple functions. Typically used when calling shortcuts

12. Multiple Function Buttons.

Function 1: Auto Tracking Control

- **[F1]:** Enable video-based auto-framing (nonfunctional)
- **[F2]:** Enable audio-based auto-tracking (nonfunctional)
- **[F3]:** Enable video-based auto-tracking
- **[F4]:** Disable auto-tracking

Function 2: For setting camera IR address.

Press these 3 keys one after another to set the camera IR address as follows:

- [*] > [#] > [F1]:** Address 1
- [*] > [#] > [F2]:** Address 2
- [*] > [#] > [F3]:** Address 3
- [*] > [#] > [F4]:** Address 4

Function 4: Image Freeze

- **[#] > [*] > [F4]:** Freeze the video feed. Repeat to unfreeze.

13. Menu Button

Press to enter the camera's On Screen Menu (OSD)

[MENU]: Open or close the On Screen

Display menu

14. Backlight Button

Use to enable or disable backlight compensation.

Note: Only effective in auto exposure mode.

Note: If there is light behind the subject, they may appear darker. In this case, use Backlight Compensation to enhance image.

15. P / T RST Button

Perform camera self-calibrate pan and tilt movement. (PTZ Cameras Only)

Shortcut Functions

[*] > [#] > [1]: Display OSD menu in English

[*] > [#] > [3]: Display OSD menu in Chinese

[*] > [#] > [4]: Show IP address

[*] > [#] > [6]: Quickly restore the default settings

[*] > [#] > [8]: Show the camera version

[*] > [#] > [9]: Quickly set mount mode (flip / normal)

[#] > [*] > [7]: OnePush White Balance Trigger (Camera must be in OnePush White Balance)

[*] > [#] > [AUTO] Performs the "Startup Dance" on repeat

Resetting the IP address of your camera from the remote:

[*] > [#] > [MANUAL]: Resets IP information to default

[#] > [*] > [4]: Enable Dynamic IP address

| | |
|---|----------------|
| [#] > [*] > [#] > [1]: Sets IP address to | 192.168.100.81 |
| [#] > [*] > [#] > [2]: Sets IP address to | 192.168.100.82 |
| [#] > [*] > [#] > [3]: Sets IP address to | 192.168.100.83 |
| [#] > [*] > [#] > [4]: Sets IP address to | 192.168.100.84 |
| [#] > [*] > [#] > [5]: Sets IP address to | 192.168.100.85 |
| [#] > [*] > [#] > [6]: Sets IP address to | 192.168.100.86 |
| [#] > [*] > [#] > [7]: Sets IP address to | 192.168.100.87 |
| [#] > [*] > [#] > [8]: Sets IP address to | 192.168.100.88 |
| [#] > [*] > [#] > [9]: Sets IP address to | 192.168.100.89 |
| [#] > [*] > [#] > [0]: Sets IP address to | 192.168.100.80 |

On-Screen Display

Main Menu

There are many ways to adjust the camera's On-Screen Display (OSD) Menu. The following instructions will go over the OSD Menu while using the included IR remote.

Press the [Menu] button to display the OSD Menu. Use the arrow buttons to navigate the OSD menu, the [Home] button to make selections, and the [Return] button to go back a sub menu.

| | Menu |
|--|---------------------|
| | Exposure |
| | Color |
| | Image |
| | P / T / Z |
| | Noise Reduction |
| | Setup |
| | Communication Setup |
| | Restore Defaults |
| | [Enter] Select |
| | [Menu] Exit |

Exposure

Move the cursor to the "Exposure" option and press the [Home] button to enter the Exposure page, as shown in the figure below.

| | Exposure |
|--------------|-------------|
| Mode | Auto |
| Exp-CompMode | On |
| ExpComp | -3 |
| Backlight | Off |
| Gain Limit | 5 |
| Anti-Flicker | 60Hz |
| Meter | Average |
| DRC | 3 |
| | [Menu] Back |

(Exposure) Mode: Auto, Manual, SAE, AAE, Bright

ExpCompMode: On, Off (Effective only in Full Auto mode).

Exp-Comp: -7 ~ +7 (Effective only when ExpCompMode is On).

Backlight: Toggle Backlight Compensation. Options include: On, Off (Only available in Full Auto mode).

Bright: 0 ~ 17 (Effective only in AAE, Bright mode).

Gain Limit: 0 ~ 15 (Effective only in Full Auto, AAE, Bright mode).

Anti-Flicker: Off, 50Hz, 60Hz (Effective only in Full Auto, AAE, Bright mode).

Iris: F1.8, F2.0, F2.4, F2.8, F3.4, F4.0, F4.8, F5.6, F6.8, F8.0, F9.6, F11.0, Close (Effective only in Manual, AAE mode).

Meter: Average, Center, Smart, Top. (Available only in Full Auto, SAE, AAE, & Bright)

Shutter: 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/750, 1/1000, 1/1500, 1/2000, 1/3000, 1/4000, 1/6000, 1/10000 (Effective only in Manual, SAE mode).

Gain: 0 ~ 7 (Effective only in Manual mode).

DRC: 0 ~ 8

Color

Move the cursor to the “Color” option and press the [Enter] button to enter the Color page, as shown in the figure below.

| Color | |
|-------------|------|
| WB Mode | Auto |
| RG Tuning | -2 |
| BG Tuning | 3 |
| Saturation | 90% |
| Hue | 8 |
| [Menu] Back | |

WB Mode: Auto, Indoor, Outdoor, One Push, Manual, VAR

R. Gain: Camera Red Gain value. Options include: 0 ~ 255 (Only available in Manual modes).

B. Gain: Camera Blue Gain value. Options include: 0 ~ 255 (Only available in Manual modes).

Color Temp: 2500K ~ 8000K (Effective only in VAR mode).

RG Tuning: -10 ~ +10 (Effective only in Auto, One Push, VAR mode).

BG Tuning: -10 ~ +10 (Effective only in Auto, One Push, VAR mode).

Saturation: Camera Saturation value. Options include: 20% - 200%

Hue: Camera Hue value. Options include: 0 ~ 14

Image

Move the main menu cursor to [Image], and press [HOME] key enter the Image page, as shown in the following figure.

| Image | |
|-------------|---------|
| Luminance | 8 |
| Contrast | 9 |
| Sharpness | 9 |
| Flip-H | Off |
| Flip-V | Off |
| B&W-Mode | Off |
| Style | Default |
| [Menu] Back | |

Luminance: Brightness value. Options include: 0 ~ 14

Contrast: Contrast value. Options include: 0 ~ 14

Sharpness: Sharpness value. Options include: Auto, 0 ~ 11

Flip-H: Flip image horizontally. Options include: On, Off

Flip-V: Flip image vertically. Options include: On, Off

B&W Mode: Toggle Black & White mode. Options include: On, Off

Style: Default, Norm, Bright, PC

P / T / Z

Move the main menu cursor to [Focus], and press [HOME] key enter the Focus page as shown in the following figure:

| P/T/Z | |
|-------------------|---------|
| SpeedByZoom | On |
| AF-Zone | Center |
| AF Sense | Normal |
| L/R Set | STD |
| Preset Freeze | Off |
| Zoom Mode | Optical |
| Magnification | Off |
| Call Preset Speed | 12 |
| Pre Zoom Speed | 5 |
| [Menu] Back | |

SpeedByZoom: On, Off

AF Zone: Front, Top, Center, Bottom

AF Sense: High, Normal, Low

L/R Set: STD, REV

Preset Freeze: On, Off

Zoom Mode: Digital, Optical, Hybrid

Magnification: available only in Digital
Zoom Mode: 2x, 4x, 8x, 16x

Call Preset Speed: 1~24

Pre Zoom Speed: 0~7

Noise Reduction

Move the main menu cursor to [Noise Reduction], and press [HOME] key enter the Noise reduction page, as shown in the following figure.

| Noise Reduction | |
|-----------------|---|
| NR3D | 7 |
| [Menu] Back | |

Setup

Move the main menu cursor to [Setup], and press [HOME] key enter the Setup page, as shown in the following figure.

| Setup | |
|--------------|-----|
| Language | EN |
| Auto Focus L | Off |
| OSD TimeOut | Off |
| Motion Sync | |
| Focus Limit | |
| Auto Inspect | |
| Video Mode | |
| Other | |
| [Menu] Back | |

Language: Options include: English, Chinese

Auto Focus L: Lock the focus in the current position. Options include: Off, On

OSD TimeOut: Auto close OSD Menu. Options include: Off, 2.5min

Motion Sync: Synchronize pan, tilt, and zoom to arrive at the preset simultaneously.

Options include: Off, On (Can be reached by entering the Setup > Motion Sync).

Max Speed: The maximum speed Motion Sync will use when calling presets.

Options include: 185 ~ 230 (increments of 5)

Focus Limit: Define a range the camera can focus within. Options include: Off, On (Can be reached by entering Setup > Focus Limit).

- **Furthest Pos:** Define the farthest focus position. Options include: INF, 1m ~ 20m
- **Nearest Pos:** Define the nearest focus position. Options include: INF, 1m ~ 20m

Video Mode: Configure assorted video output settings.

SDI-3G Mode: Set the SDI level. Options include: Level-A, Level-B

Video Output: Set the video output to SDI or HDMI. Options include: HDMI, SDI

DVI Mode: define HDMI Data Transfer type.
Options include: HDMI, DVI

Other:

Auto Inversion: Toggle auto inversion.
Options include: Off, On

Tally Mode: Toggle ability to acknowledge Tally Light command. Options include: Off, On

USB Audio: Toggle USB audio embedding. Options include: Off, On

USB2.0 Function: Define how the USB port is used. Options include: UVC, Host

Display Info: The ability to display OSD message overlays on the video output.

Communication Setup

Move the main menu cursor to [Communication Setup] and press the [HOME] key enter the Communication Setup page, as shown in the following figure.

| Communication Setup | |
|---------------------|--------|
| Protocol | VISCA |
| V_Address | 1 |
| V-AddrFix | Off |
| Net Mode | Serial |
| Baudrate | 9600 |
| [Menu] Back | |

Protocol: Control protocol Options include: VISCA, PELCO-D, PELCO-P, Auto

V_Address: VISCA protocol camera address
Options include: 1 ~ 7

V-AddrFix: When enabled, the Visca address will not change. Options include: Off, On

Net Mode: Control type Options include: Serial, Parallel

Baudrate: Baudrate control speed Options include: 2400, 4800, 9600, 38400

P_D_Address: Pelco-D protocol address Options include: 0 ~ 254

P_P_Address: Pelco-P protocol address Options include: 0 ~ 31

Restore Default

Move the cursor to the "Restore Default" option and press the [Enter] button to enter the Restore Default page, as shown in the figure below.

| Restore Default | |
|-----------------|---------|
| P/T Limit | Reset |
| Press [Enter] | Confirm |
| Press [Back] | Cancel |
| Select [Enter] | |
| [Menu] Back | |

Note: Press the [Enter] button to confirm. All camera parameters will return to default, including IR remote & VISCA Addresses.

Serial Communication Guide

RS-232 Interface

| No. | Function |
|-----|----------|
| 1 | DTR |
| 2 | DSR |
| 3 | TXD |
| 4 | GND |
| 5 | RXD |
| 6 | GND |
| 7 | IR OUT |
| 8 | NC |



For Initial Connection

| Camera | Windows DB-9 |
|-----------|--------------|
| 1. DTR | 1. CD |
| 2. DSR | 2. RXD |
| 3. TXD | 3. TXD |
| 4. GND | 4. DTR |
| 5. RXD | 5. GND |
| 6. Unused | 6. DSR |
| 7. Unused | 7. Unused |
| 8. Unused | 8. Unused |
| 9. Unused | 9. Unused |

For Daisy Chain Control

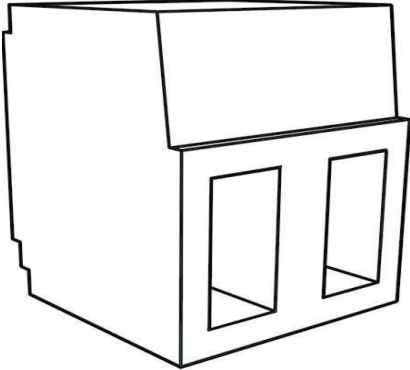
| Camera | Mini DIN |
|-----------|-----------|
| 1. DTR | 1. DTR |
| 2. DSR | 2. DSR |
| 3. TXD | 3. TXD |
| 4. GND | 4. GND |
| 5. RXD | 5. RXD |
| 6. Unused | 6. Unused |
| 7. Unused | 7. Unused |
| 8. Unused | 8. Unused |

RS232 Communication Control

This camera can be controlled vis RS-232. The parameters for RS-232C are as follows:

Baud Rate: 2400, 4800, 9600 or 38400 bps
 Start Bit: 1 bit
 Data Bit: 8 bits
 Stop Bit: 1 bit
 Parity Bit: None

RS-485 Interface



The left phoenix connector port is Positive (+)

The right phoenix connector port is Negative (-)

The camera can be controlled via RS-485, Half-duplex mode, with support for VISCA, Pelco-D, or Pelco-P protocol. The parameters of RS485 are as follows:

RS-485 Communication Control

Baud rate: 2400/4800/9600/38400;

Starting position: 1 bit

Data bit: 8 bits

Stop bit: 1 bit

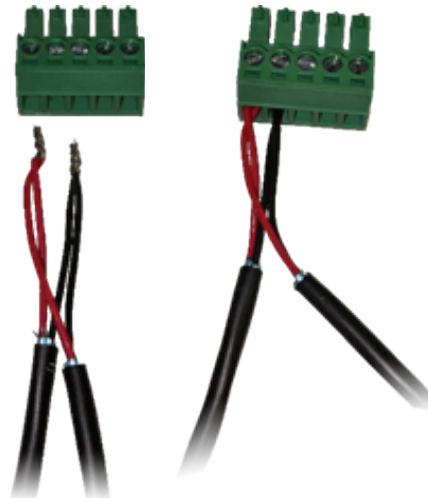
Check digit: None

To utilize an RS-485 connection, you will need an unterminated two-conductor cable.

1. Connect the positive (red) wire to the camera's positive phoenix connector port (left).
2. Connect the negative (black) wire to the camera's negative phoenix connector port (right).
3. Connect the positive and negative wires to the positive and negative ports on your joystick controller.
 - o To connect multiple cameras, you have the option to connect via daisy-chain or home run.
4. In either method, multiple wires will be connected to a single phoenix connector port.



RS-485 Daisy-Chain Connection



RS-485 Home Run Connection

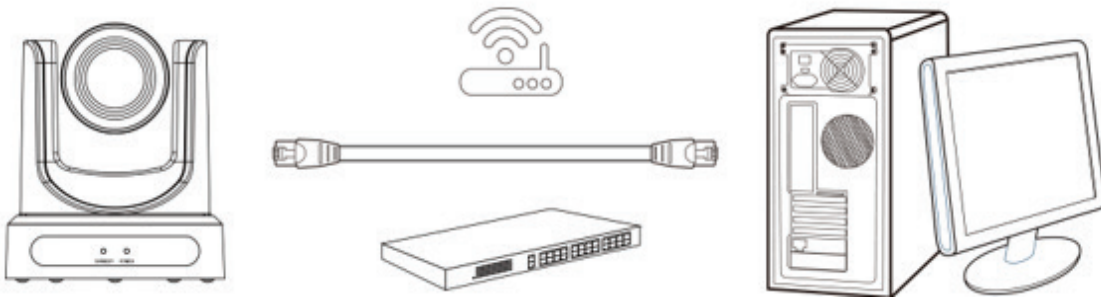
Network Connection

Operating Environment

- Operating System: Windows 7 / 8.1 / 10 / 11, Mac OS X, Linux, Android
- Network Protocol: TCP/IP
- Client PC: P4 / 128M RAM / 40G HDD / supported scaled graphics card, support for DirectX 8.0+.

Equipment Installation

1. To connect your camera to your network, run a CAT 5 or CAT 6 cable from the camera directly into a network switch.
2. Turn on power.
3. If successful, the orange network light will illuminate and the green light will start flashing.



Picture 1.2 Connections to LAN via patch cable to LAN wall jack or LAN Switch

Finding the camera's IP Address

The camera will automatically acquire an IP address when connected to the network. If the network cannot assign an IP address, the camera will default to "192.168.100.88". If you don't know the camera IP, please do one of the following:

Method 1: Use a Internet browser and type in "http://ptzoptics.local/" to reach the camera's web interface. The username and password are both "admin" by default. The Network Settings page will allow you to make adjustments to the camera's network settings.

Method 2: Use the IR remote shortcut [*] > [#] > [4] to display the camera's IP address.

Note: If you are setting up multiple cameras, it's recommended to do so one at a time. Assign a unique Device ID to each camera from the Device Info page. This will allow you to reach each camera's web interface without needing to memorize an IP address.

For example, "http://camera1.local/" and "http://camera2.local/".

Discovering your Network Info

To discover your IP address range/scheme, Subnet Mask, Gateway, & First DNS, follow the instructions below for Windows or Mac OS. You may need to talk with your IT department to obtain this information.

Windows

1. Open the Start menu and type "CMD" into the search bar.
2. Once the Command Prompt is open, type in "ipconfig" and press the Enter key.
3. Scroll down to the section titled "Ethernet adapter Ethernet" or "Ethernet adapter Wireless Network Connection".
4. Locate the "IPv4 Address" in that section. This is your computers local IP address.
5. In the example above, the PC's local address is "192.168.15.117", making the network range "192.168.15.xxx".



```
Command Prompt
Microsoft Windows [Version 10.0.19042.985]
(c) Microsoft Corporation. All rights reserved.

C:\Users\[PC]>ipconfig

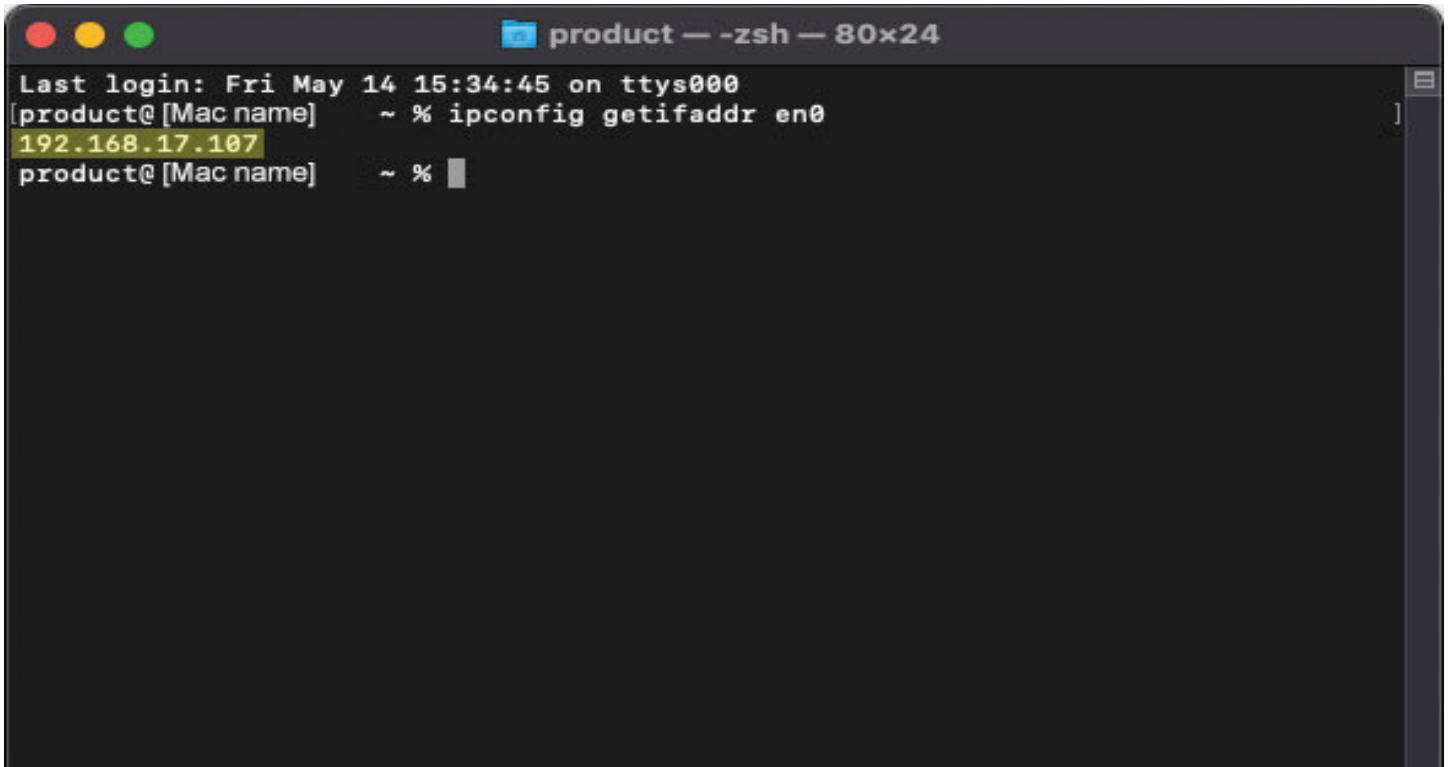
Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : localdomain
    Link-local IPv6 Address . . . . . : fe80::a4a0:e4a6:6b03:f206%8
    IPv4 Address. . . . . : 192.168.15.117
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.15.1
```

Mac

1. Open a new Finder window and go to the Applications folder.
2. Open the Utilities folder and select the Terminal program.
3. Once the Terminal program is open, type in "ipconfig getifaddr en0" and press the Enter key.



```
product — -zsh — 80x24
Last login: Fri May 14 15:34:45 on ttys000
[product@[Mac name] ~ % ipconfig getifaddr en0
192.168.17.107
product@[Mac name] ~ % █
```

4. In the example above, the Mac's local address is "192.168.17.107", making the network range "192.168.17.xxx".

NDI®|HX 3 Connection

The NDI®|HX connection allows you to connect and control your camera through any NDI compatible hardware or software on your Local Area Network. Once your camera is setup on a LAN, you can utilize the NDI®|HX connection.

NDI®|HX 3 Setup

1. Download and install the latest NDI®|HX Tools from <https://www.ndi.tv/tools>.
2. Configure your camera settings from the NDI Config tab in the camera's web interface.
3. Select your camera within the NDI®|HX compatible device.
4. Select your camera. The NDI feed will utilize the camera's device friendly name.

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Setting & Calling Presets

The PTZOptics **Move 4K**, the **Move SE**, and the **Link 4K** cameras all utilize the same newly upgraded camera presets system, and in this section, we will explain how to get the most out of presets and how to properly use them.

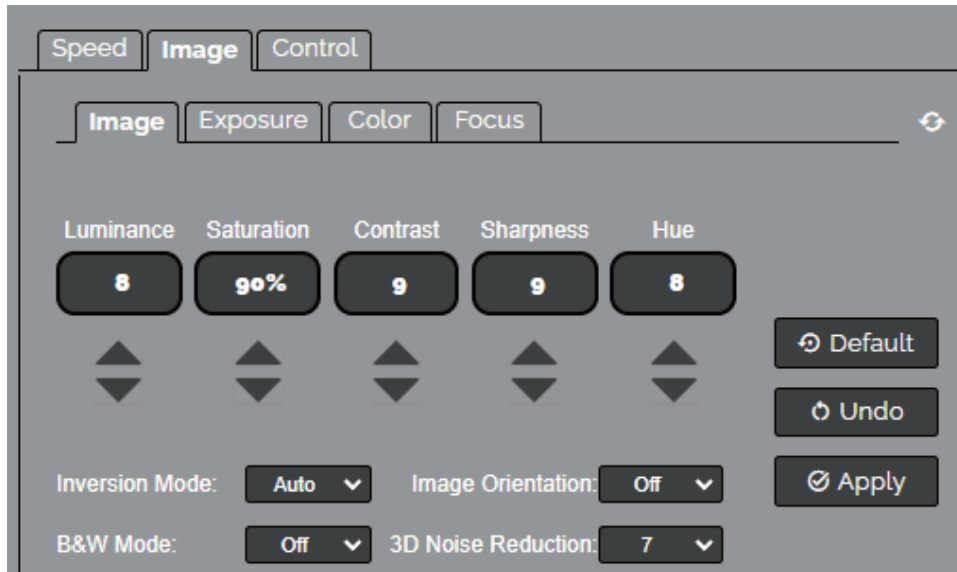
If you have already attempted setting presets and noticed the image settings changing when moving the camera or switching between presets, please read through the instructions below.

- 1. Lighting:** Before adjusting the camera's settings and saving presets, it is extremely important that you are satisfied with the lighting in the area you plan to operate the camera. (**Tip:** The easiest lighting to work with, is often referred to as "flat lighting", meaning the lighting is as evenly dispersed as possible throughout the scene.)
- 2. Web UI:** Once you have determined that the lighting setup is complete, type the camera's IP address into your web browser to open up the camera's web UI. If you are not familiar with how to do this, please see the Web UI section on page 29.
- 3. Default:** We recommend setting all of the camera's image settings, exposure settings, color settings, and focus settings to default before setting up presets. The default settings are shown on page 27 and page 28.

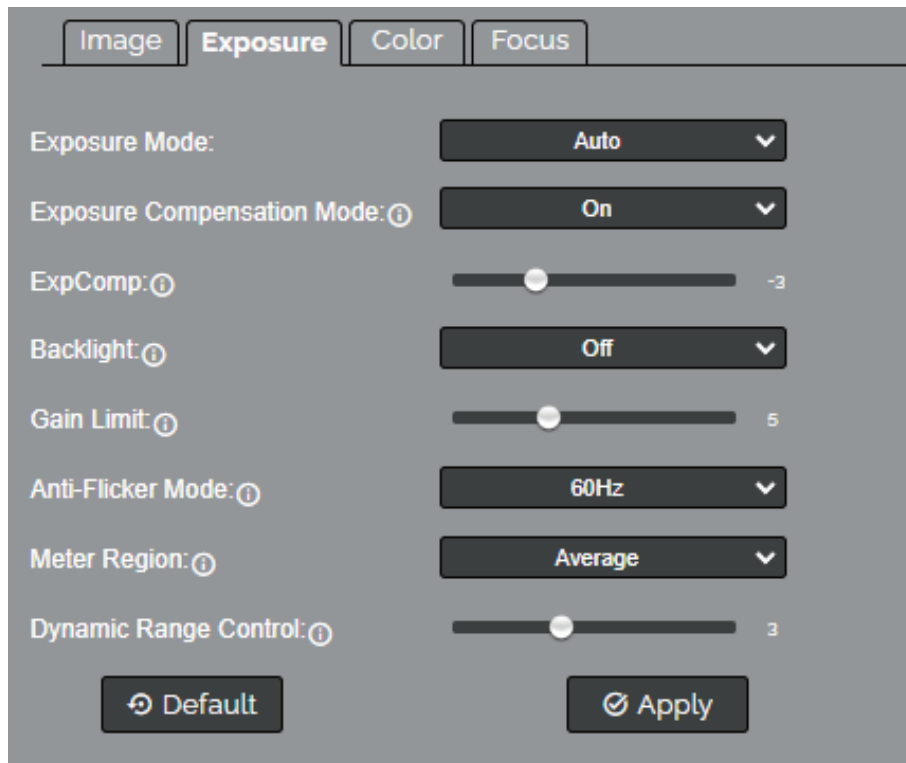
(**Note:** When you save a preset, not only are you saving the position the camera is in, but you are also saving all the image settings it had at that exact time. When panning, tilting, and zooming the camera, all image settings will stay set to their last applied/saved values.)

- 4. Preset Zero:** With all the image settings defaulted, the first preset you need to establish is Preset Zero. This preset, will essentially serve as your baseline reference point. Follow the steps below to establish preset zero.

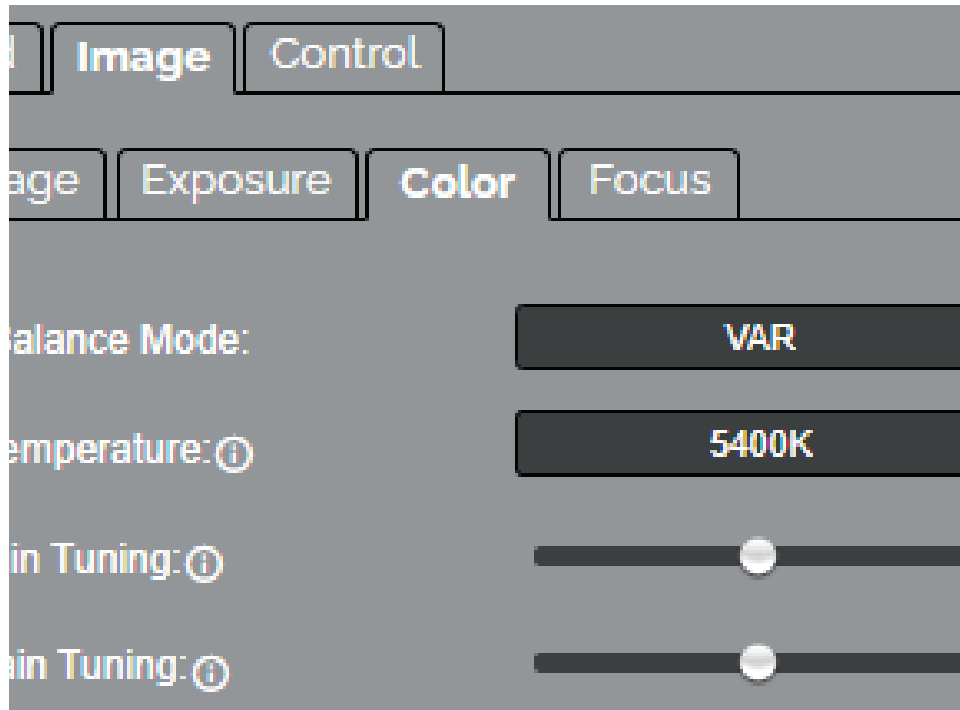
Image Tab Default Settings



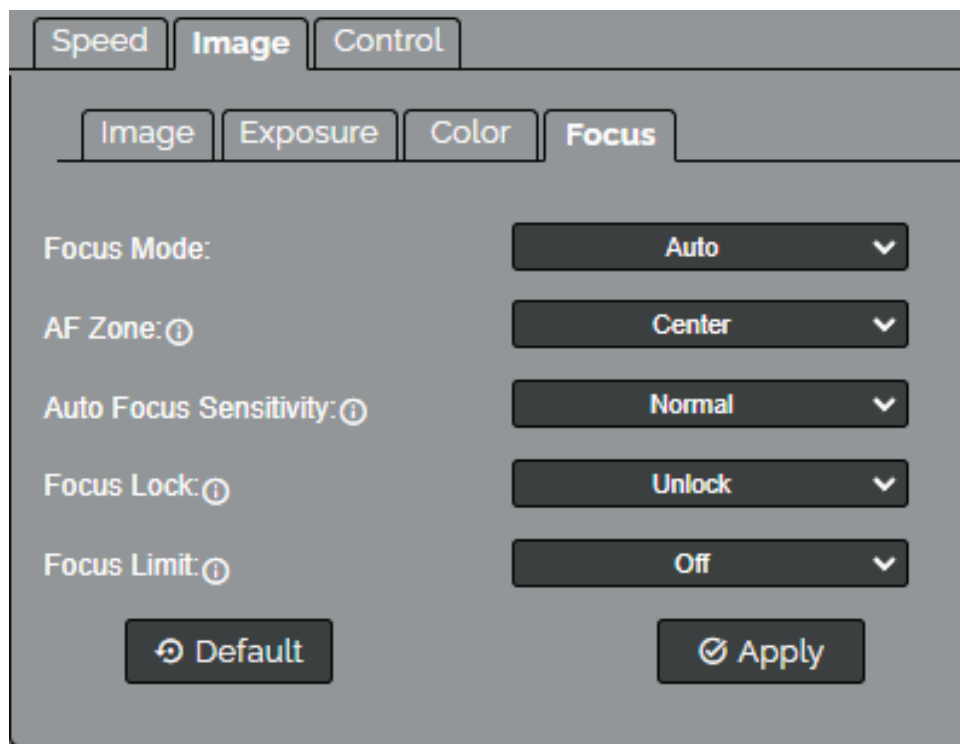
Exposure Tab Default Settings



Color Tab Default Settings



Focus Tab Default Settings



1. Zoom the camera all the way out and point it at the center-most location in the scene.
2. Adjust any of the camera's image settings until you are happy with the look/style of the image. Image settings include any setting in one of the four images shown on the previous page.
3. Move your cursor over to the preset control area on the right-hand side of the window. Click the drop down tab and select the number "0". Now click "Set".

(Note: A preset will save all of the camera's image settings and their values, when you click set.)

4. Preset zero is now saved.

(Note: Whenever you enable auto-tracking, the camera will call Preset Zero and utilize the image settings saved to preset Zero. For example, if you have saved preset zero and the exposure compensation was set to -3, when you enable auto-tracking the exposure compensation will automatically be set to -3. No matter what image settings you are using before you begin auto-tracking, those image settings will switch to the settings saved to preset zero when auto tracking is turned on.)

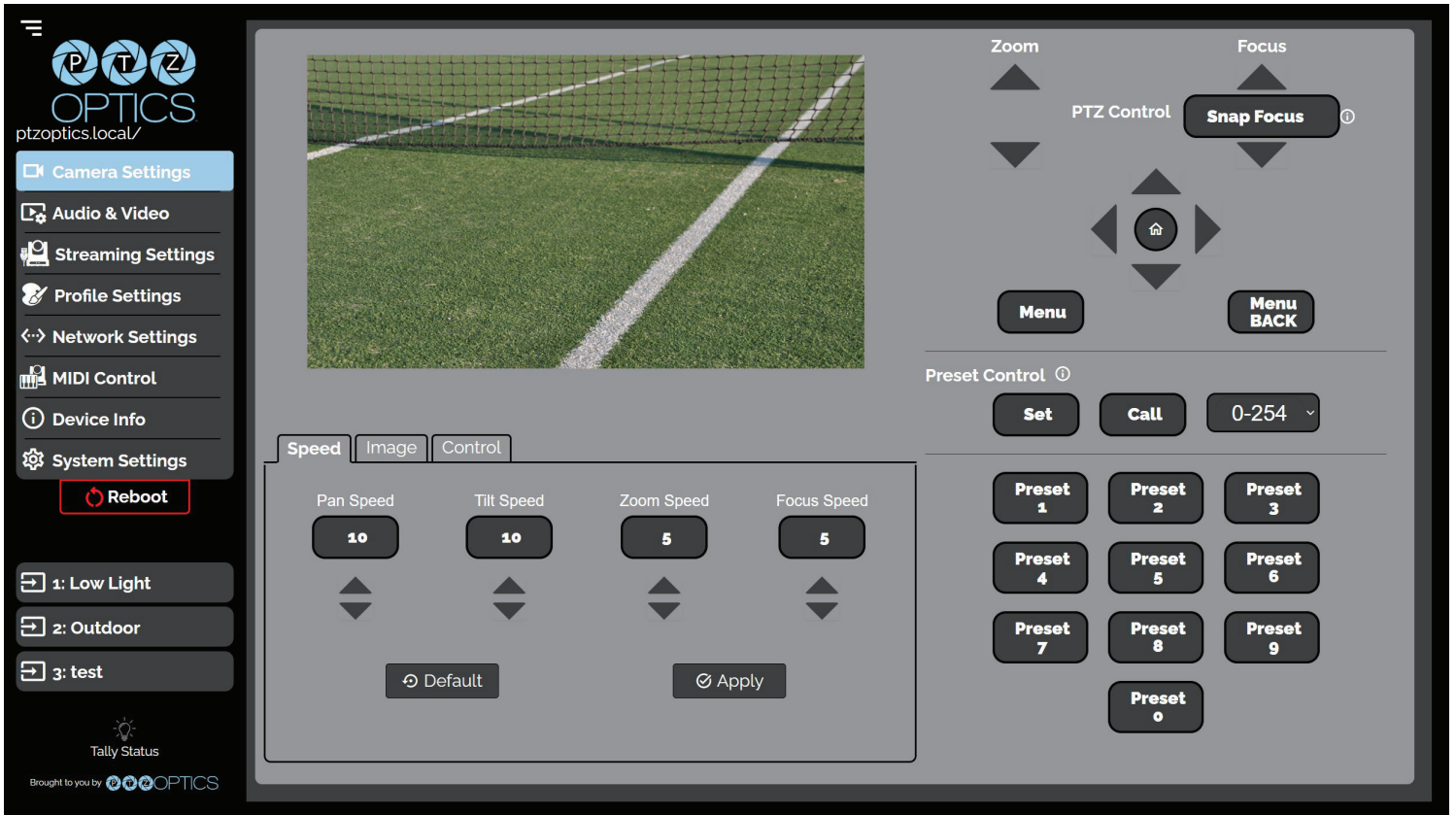
5. Standard Presets: These presets can be assigned to any number between 1 and 254.

1. Begin by calling preset zero.

(Tip: We recommend taking a screenshot of preset zero to help color match new presets or camera shots from different cameras. It can also be very helpful to pull the camera's video feed into live streaming software such as Vmix or OBS for viewing and comparison. To properly compare image quality, ensure you are using the same monitor or screen.)

2. Move the camera into the position you would like to have saved as a preset.
3. Compare the new preset position with preset zero to ensure they match. Most of the time they will not match, because you are taking the same image settings into a new area with different lighting that requires different settings. Here is where you will need to make adjustments to the image settings to color match with preset zero.
4. Use the drop down tab to select the preset number you wish to save. Then click set.

Web UI



Accessing the Camera

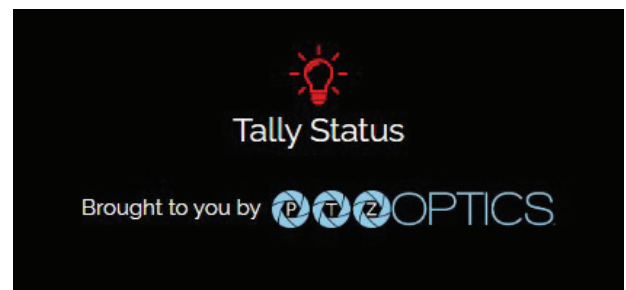
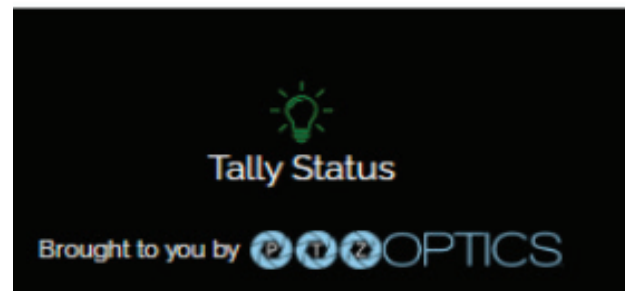
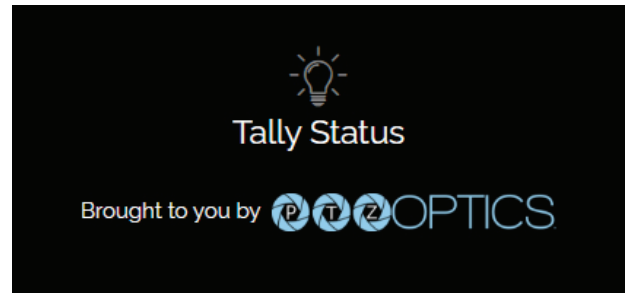
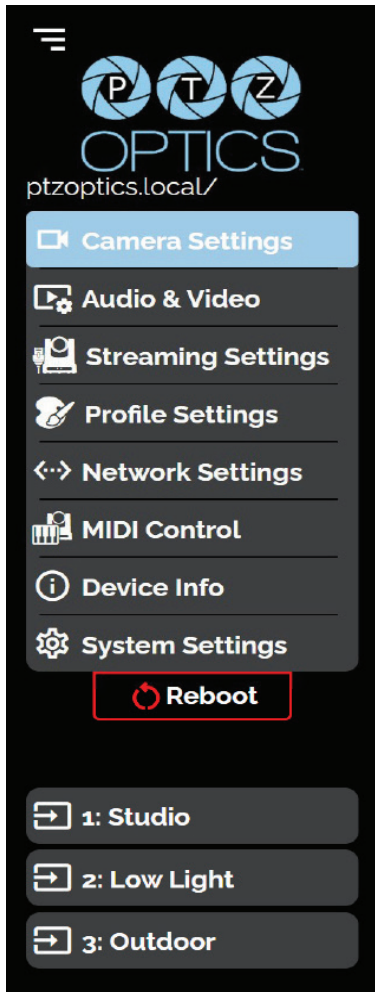
1. Enter “<http://ptzoptics.local/>” or the camera’s IP address into a web browser.
2. Enter the username and password into the login fields. Both the username and password are “admin” by default. You can change the login credentials on the System Settings page.

The login form consists of two input fields: 'Username' and 'Password', each with a corresponding icon (a person for username and a lock for password). Below the fields is a large blue 'Login' button.

Navigation Panel

The **Navigation Panel** allows you to select the various control options for the camera. It can be collapsed to make more room within the user interface.

You can load preconfigured profiles into the camera by selecting the desired profile from the Navigation Panel.



- **Logo:** You can change the photo in the Navigation Panel using Logo Upload from the Profile Settings page.
- **Camera Name:** You can change the camera's name from the Device Info page. The ".local/" appendage will always be on the end to give an easy reminder on how to return to this Web UI.
- **Reboot Button:** The Reboot button will reboot your camera. It can be easily accessed from any page while the Navigation Panel is maximized.
- **Quick Profile:** You can quickly change between pre-configured camera settings using the Profiles saved to the Navigation Panel.
- **Tally Status:** The Tally Status icon will mirror the tally light built into the camera as an easy reminder for when the camera is in Preview (green) or Program (red). This can be toggled on or off on the Camera Settings page.

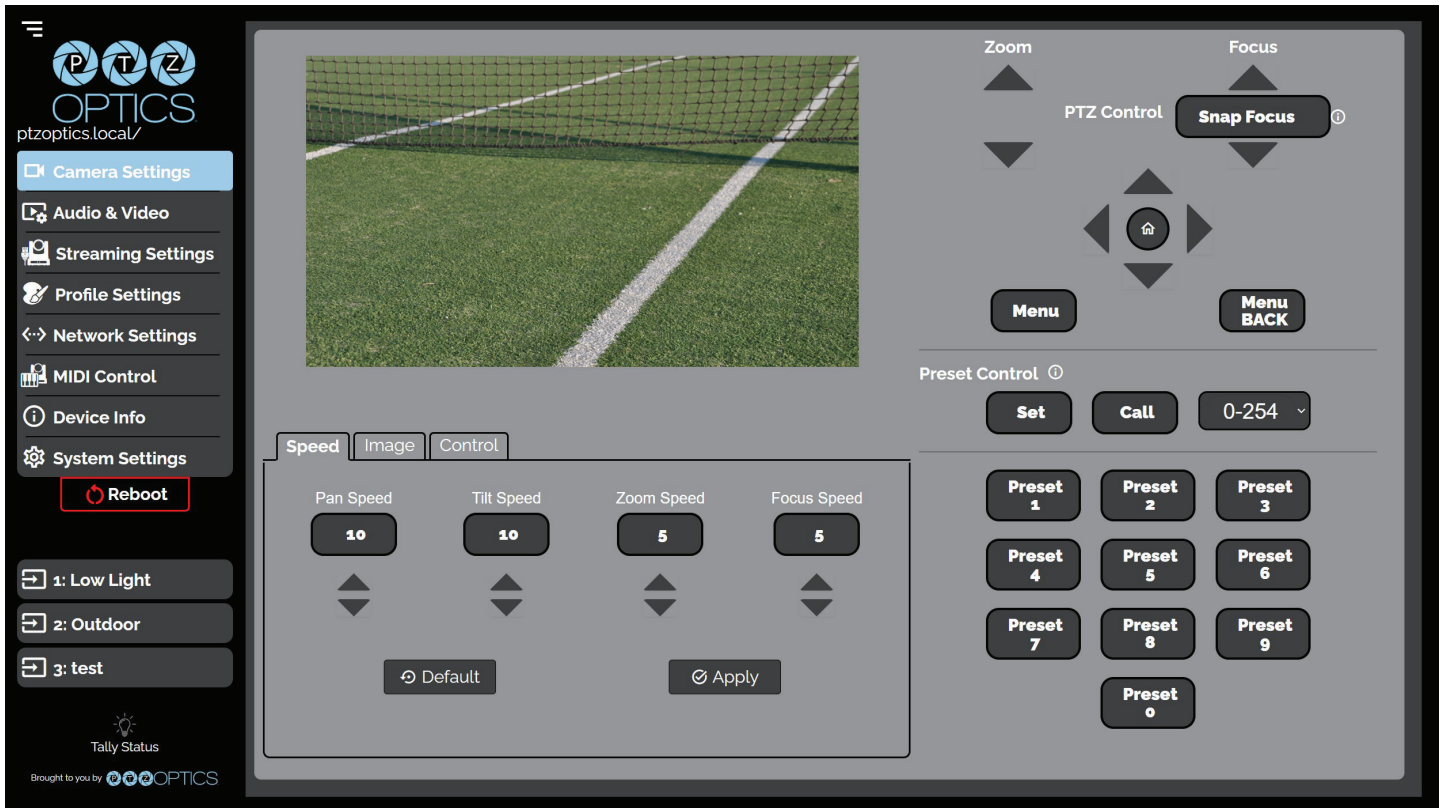
Camera Settings

The **Camera Settings** page gives you access to the **Camera's Video Feed, PTZ Control, OSD Menu, Preset Control, Speed Settings, Image Settings & Control Settings.**

All settings in the **Image** tab are also available in the camera's menu. The settings are offered in the Web UI so you don't have to open the Menu while the camera is in use.

- The PTZ Control section lets you Pan, Tilt, Zoom, and Focus the camera.
- The Menu and Menu Back buttons allow you to navigate the Menu when needed.
- The Preset Control section allows you to save and call up to 255 presets.
 - The Preset 0 – 9 buttons allow you to quickly call the first 10 presets

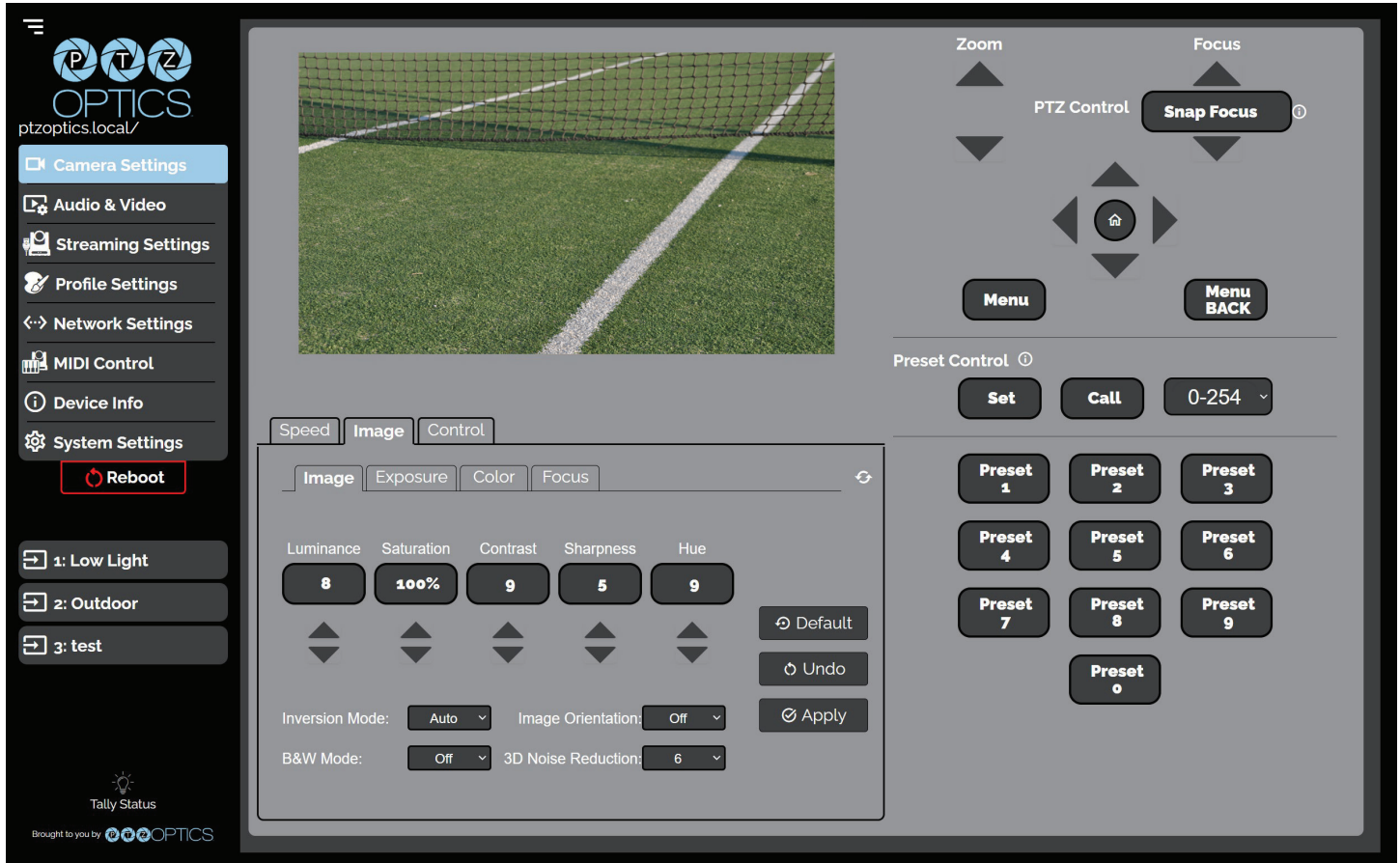
The **Speed** tab within Camera Settings page allows you to adjust the speed at which the camera will **Pan, Tilt, Zoom** and **Focus** while in the Web UI.



- You must click the “Apply” button to save the current Speed settings to the camera.
- The “Default” button will revert the Speed settings to factory default, as shown in the image above

Image

The **Image > Image** tab within the Camera Settings page allows you to adjust the camera's **Luminance, Saturation, Contrast, Sharpness, Hue, Inversion Mode, Image Orientation, 3D Noise Reduction, & Black and White Mode.**



- You must hit the “Apply” button for these changes to take effect.
- The “Default” button will revert the Image settings to factory default.
- The “Undo” button will revert the Image settings to the last saved settings.

Exposure

The **Advanced Image > Exposure** tab within the Camera Settings page allows you to fine-tune the camera's Exposure settings to ensure image clarity as well as ensure the images from multiple cameras match.



- You must click the “Apply” button to save the Exposure settings to the camera.
- The “Default” button will revert the Exposure settings to factory default, as shown in the image above.

Color

The **Advanced Image > Color** tab within the Camera Settings page allows you to fine tune the camera's white balance and color tint settings to adjust for lighting, as well as ensure images from multiple cameras match.



- You must click the “Apply” button to save the Color settings to the camera.
- The “Default” button will revert the Color settings to factory default, as shown in the image above

Focus

The **Advanced Image > Focus** tab within the Camera Settings page allows you to adjust the various focus settings, including **Auto Focus**, **Auto Focus Zone**, **Auto Focus Sensitivity**, **Focus Lock** and **Focus Limit**.

The screenshot displays the PTZ Optics camera settings interface. On the left is a navigation menu with options like Camera Settings, Audio & Video, Streaming Settings, Profile Settings, Network Settings, MIDI Control, Device Info, and System Settings. The main area shows a live camera feed of a church interior. Below the feed are tabs for Speed, Image, and Control, with the Focus sub-tab selected. The Focus settings are as follows:

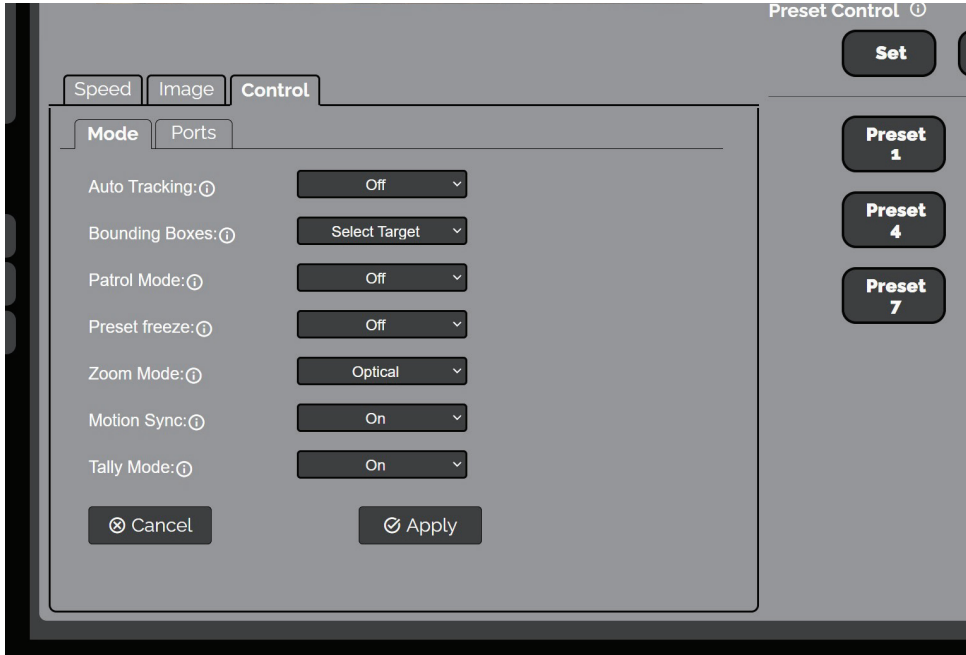
- Focus Mode: Auto
- AF Zone: Center
- Auto Focus Sensitivity: Normal
- Focus Lock: Unlock
- Focus Limit: Off

Buttons for Default and Apply are visible at the bottom of the settings panel. To the right of the main interface is a PTZ Control overlay with a Snap Focus button, a directional pad, and a Preset Control section with buttons for Set, Call, 0-254, and a grid of Preset 1 through 9, plus a Preset 0 button.

- You must click the “Apply” button to save the Focus settings to the camera.
- The “Default” button will revert the Focus settings to factory default, as shown in the image above.

Control Mode

The **Control > Mode** tab within the Camera Settings page allows you to toggle available camera modes, such as **Auto Tracking**, **Tracking Box**, **Patrol Mode**, **Preset Freeze**, **Zoom Mode**, **Motion Sync & Tally Mode**.



- **Auto-Tracking:** Select whether the camera automatically tracks the selected target
Options include: On, Off
- **Tracking Box:** Select if/how the Tracking Box is shown around the selected target on the video feed.
Options include: Off, Debug, & Select Target
- **Patrol Mode:** When enabled, the camera will call each of the Set presets sequentially.
Options include: On, Off
- **Preset Freeze:** When enabled, the video feed will temporarily pause while Calling a preset.
Options include: On, Off
- **Zoom Mode:** Select whether the camera utilizes Digital Zoom or not.
Options include: Optical, Digital, and Hybrid (Enabled on the Audio & Video page)
- **Magnification:** (Only available when "Digital" is selected from Zoom Mode) Define the Digital Zoom limit.
Options include: 2x, 4x, 8x, & 16x
- **Motion Sync:** When enabled, the camera will adjust Pan, Tilt, and Zoom speeds so that all 3 axis stop simultaneously.
Options include: On, Off
- **Tally Mode:** When enabled, the Web Interface's Tally Status icon at the bottom of the Navigation Panel will reflect the Tally Light on the front of the camera.
Options include: On, Off
- You must click the "Apply" button to save the Mode to the camera.
- The "Cancel" button will revert the Mode settings to the last saved settings.

Control Ports

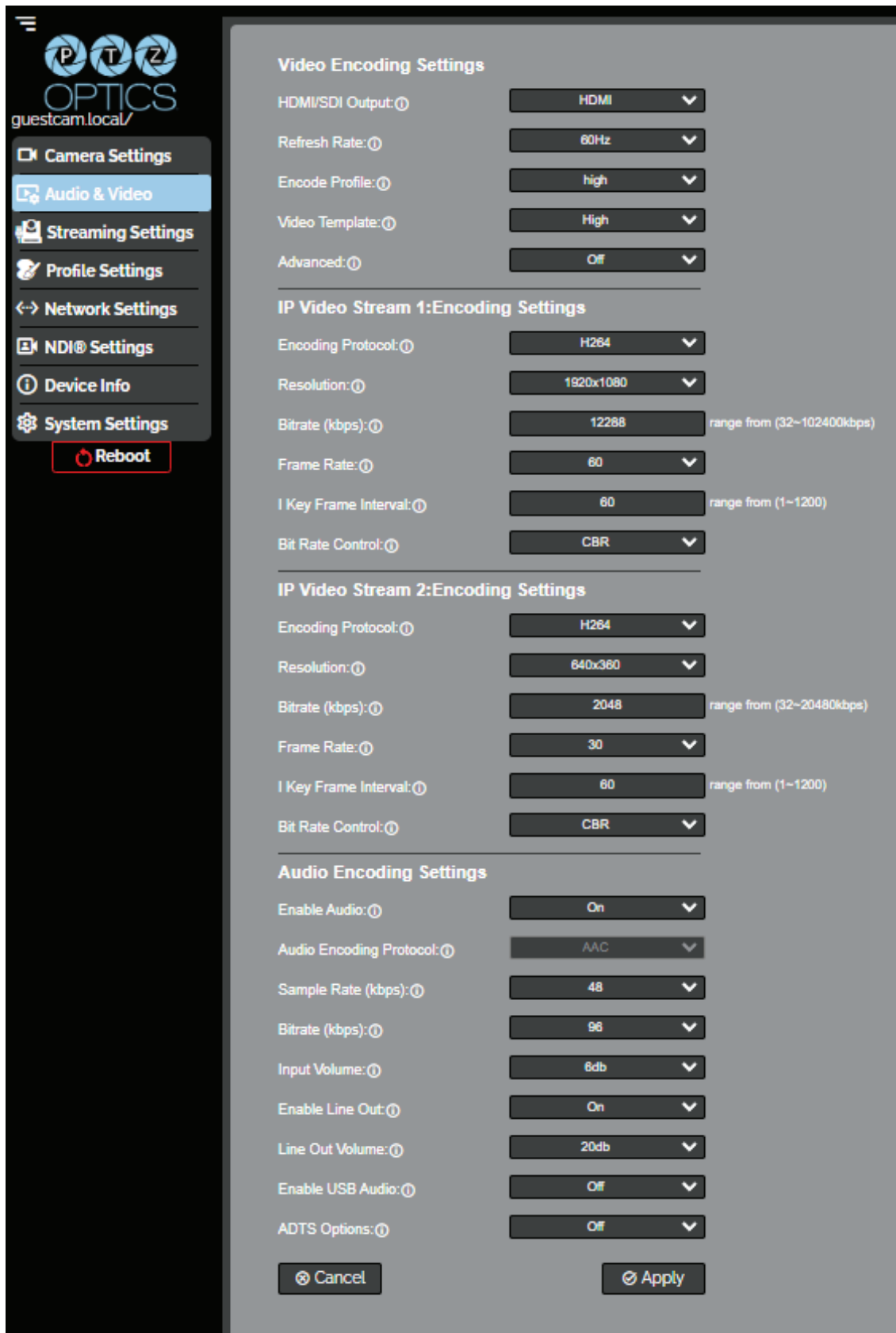
The **Control > Ports** tab on the Camera Settings page allows you to change the camera's **TCP**, **UDP** & **HTTP** control ports. The **Sony UDP** Port can not be changed.



- You must click the "Apply" button to save the Ports to the camera.
- The "Cancel" button will revert the Ports settings to the last saved settings.

Audio Video Settings

The Audio & Video Settings page accesses the **Video Encoding Settings, IP Video Stream 1 / Stream 2 Encoding Settings & Audio Encoding Settings** sections of the network video feeds.



The screenshot shows the 'Audio & Video' settings page in the PTZ Optics web interface. The left sidebar contains navigation options: Camera Settings, Audio & Video (selected), Streaming Settings, Profile Settings, Network Settings, NDI® Settings, Device Info, and System Settings. A 'Reboot' button is also present. The main content area is divided into three sections:

- Video Encoding Settings:**
 - HDMI/SDI Output: HDMI
 - Refresh Rate: 60Hz
 - Encode Profile: high
 - Video Template: High
 - Advanced: Off
- IP Video Stream 1:Encoding Settings:**
 - Encoding Protocol: H264
 - Resolution: 1920x1080
 - Bitrate (kbps): 12288 (range from 32~102400kbps)
 - Frame Rate: 60
 - I Key Frame Interval: 60 (range from 1~1200)
 - Bit Rate Control: CBR
- IP Video Stream 2:Encoding Settings:**
 - Encoding Protocol: H264
 - Resolution: 640x360
 - Bitrate (kbps): 2048 (range from 32~20480kbps)
 - Frame Rate: 30
 - I Key Frame Interval: 60 (range from 1~1200)
 - Bit Rate Control: CBR
- Audio Encoding Settings:**
 - Enable Audio: On
 - Audio Encoding Protocol: AAC
 - Sample Rate (kbps): 48
 - Bitrate (kbps): 96
 - Input Volume: 6db
 - Enable Line Out: On
 - Line Out Volume: 20db
 - Enable USB Audio: Off
 - ADTS Options: Off

At the bottom of the settings area are 'Cancel' and 'Apply' buttons.

Video Encoding Settings

- **HDMI/SDI Output:** Set either HDMI or SDI to output video (not simultaneous). Options include: HDMI, SDI
- **Refresh Rate:** Frequency adjustment for displays. Select the refresh rate for your region.
 - **Options include:** Dial Priority, 50Hz, 60Hz
- **Encode Protocol:** The Encoding Profile defines the compression method and color reproduction of the IP Stream.
 - **Options include: Main, High**
- **Video Template:** Select Off, Ultra, High, Medium, Low, NDI|HX3: H.264, 1080@50, NDI|HX3: H.264, 1080@60, NDI|HX3: H.265, 1080@50, NDI|HX3: H.265, 1080@60
- **Advanced:** Off or Hybrid Zoom (beta)

IP Video Stream 1 & 2: Encoding Settings

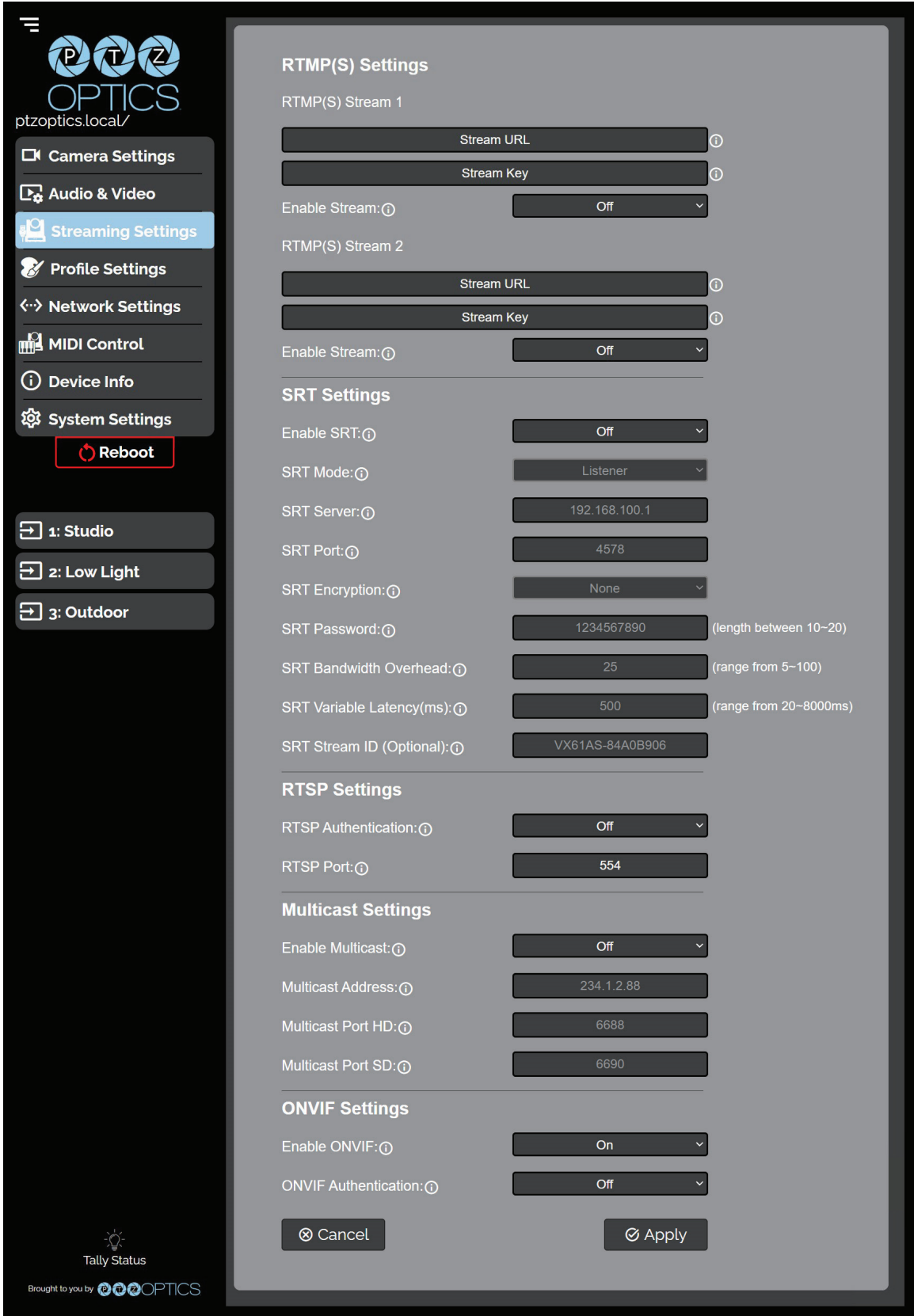
- **Encoding Protocol:** Define the compression method for the stream.
 - Options include: H264, H265, MJPEG
- **Resolution:** Define the resolution of the stream.
 - Stream 1 options include: 3840x2160, 1920x1080, 1280x720, 1024x576, 720x480, 720x408, 640x480, 640x360
 - Stream 2 option includes: 720x480, 720x408, 640x480, 640x360, 480x320, & 320x240
- **Bitrate (kbps):** Define the bit rate of the stream in kilobits. The higher the value, the higher the video quality at the cost of higher bandwidth.
 - Stream 1 Range: 1 ~ 102400
 - Stream 2 Range: 1 ~ 20480
- **QFactor:** Define the Quality Factor of the stream. The higher the value, the higher the video quality at the cost of higher bandwidth (Only available when MJPEG is selected as the Encoding Protocol).
 - Range: 1 ~ 99
- **Frame Rate:** Define the Frame Rate of the stream.
 - Range: 1 ~ 60
- **I Key Frame Interval:** Define the I-Key Frame Interval of the stream.
 - Options include: 1 ~ 1200
- **Bit Rate Control:** Select whether the Bit Rate fluctuates (VBR) or is static (CBR).
 - Options include: CBR, VBR

- **Audio Encoding Settings**

- **Enable Audio:** Select whether Audio is included in the applicable video outputs.
 - Options include: On, Off
- **Audio Encoding Protocol:** ACC
- **Sample Rate (kbps):** Define the number of samples per second the audio utilizes.
 - Options include: 44.1, 48
- **Bitrate (kbps):** Define the number of bits per second the audio utilizes in kilobits
 - Options include: 96, 128
- **Input Volume:** Define the Input Volume of the Audio Input.
 - Range: 0db ~ 59db
- **Enable Line Out:** Toggle the Line Output port on or off.
 - Options include: On, Off
- **Line Out Volume:** Define the Output Volume of the Audio Output
 - Range: 0db ~ 59db
- **Enable USB Audio:** Define whether the USB video out includes audio.
 - Options include: On, Off
- **ADTS Options:** Select whether Audio Data includes timestamps.
 - Options include: On, Off

Streaming Settings

The **Streaming Settings** page accesses the **RTMP(S) Settings**, **SRT Settings**, **RTSP Settings**, **Multicast Settings** & **ONVIF Settings** sections.



The screenshot shows the 'Streaming Settings' page in the PTZ OPTICS interface. The left sidebar contains navigation options: Camera Settings, Audio & Video, Streaming Settings (highlighted), Profile Settings, Network Settings, MIDI Control, Device Info, System Settings, and a Reboot button. Below the sidebar are three scene buttons: 1: Studio, 2: Low Light, and 3: Outdoor. The main content area is divided into several sections:

- RTMP(S) Settings:**
 - RTMP(S) Stream 1:** Stream URL, Stream Key, Enable Stream: Off.
 - RTMP(S) Stream 2:** Stream URL, Stream Key, Enable Stream: Off.
- SRT Settings:**
 - Enable SRT: Off
 - SRT Mode: Listener
 - SRT Server: 192.168.100.1
 - SRT Port: 4578
 - SRT Encryption: None
 - SRT Password: 1234567890 (length between 10-20)
 - SRT Bandwidth Overhead: 25 (range from 5-100)
 - SRT Variable Latency(ms): 500 (range from 20-8000ms)
 - SRT Stream ID (Optional): VX61AS-84A0B906
- RTSP Settings:**
 - RTSP Authentication: Off
 - RTSP Port: 554
- Multicast Settings:**
 - Enable Multicast: Off
 - Multicast Address: 234.1.2.88
 - Multicast Port HD: 6688
 - Multicast Port SD: 6690
- ONVIF Settings:**
 - Enable ONVIF: On
 - ONVIF Authentication: Off

At the bottom of the settings area are 'Cancel' and 'Apply' buttons. The footer includes 'Tally Status' and 'Brought to you by PTZ OPTICS'.

- **RTMP(S) Stream 1 & 2 Settings**
 - **RTMP(S) Stream URL:** Define the RTMP Address of the CDN you wish to stream to.
 - **RTMP(S) Stream Key:** Define the stream key of the CDN you wish to stream to.
 - **Enable Stream:** Toggle the RTMP stream on or off.
- **SRT Settings**
 - **SRT:** Toggle the SRT stream on or off.
 - **SRT Mode:** Define whether the SRT stream is pulled (Listener) from the camera, or whether the stream must be pushed (Caller) to a server.
 - **SRT Server:** Define the Server IP address. This is only used in Caller mode.
 - **SRT Port:** The SRT Port is how you reach the SRT video feed of your camera.
 - **SRT Encryption:** Toggle SRT Encryption on or off.
 - **SRT Password:** Define the SRT password when utilizing SRT Encryption
 - **SRT Bandwidth Overhead:** SRT Bandwidth is a percentage that you assign that helps determine the total bandwidth that the SRT stream will use up. This percentage should not exceed 50%, and is set to 25% by default.
 - **SRT Variable Latency(ms):** Define the maximum buffer size for maintaining SRT packets from the camera to the destination.
- **RTSP Settings**
 - **RTSP Authentication:** Toggle RTSP Authorization on or off.
 - **RTSP Port:** The RTSP Port is how you reach the RTSP video feed(s) of your camera.
- **Multicast Settings**
 - **Multicast Mode:** Toggle Multicast on or off.
WARNING! Only use this setting with a network configured for Multicast.
 - **Multicast Address:** Define the Multicast Address. Recommended format: 234.1.2.[camera IP address last octet]
 - **Multicast Port HD:** The Multicast Port HD is how you reach the HD stream through RTP Multicast.
 - **Multicast Port SD:** The Multicast Port SD is how you reach the SD stream through RTP Multicast.
- **ONVIF Settings**
 - **Enable ONVIF:** Toggle ONVIF control on or off.
 - **ONVIF Authentication:** Toggle ONVIF Authentication on or off.

Profile Settings

The **Profile Settings** page gives you access to the **Logo Upload**, **Profile Configuration**, **Quick Profiles**, **Custom CSS & Tutorial Mode** sections.

The screenshot displays the 'Profile Settings' page for PTZ Optics. On the left is a dark sidebar with a menu of settings categories: Camera Settings, Audio & Video, Streaming Settings, Profile Settings (highlighted), Network Settings, MIDI Control, Device Info, and System Settings. Below the menu are three profile selection buttons: '1: Studio', '2: Low Light', and '3: Outdoor'. A 'Reboot' button is also present. The main content area is divided into several sections: 'Logo Upload' with a file selection button and an 'Apply' button; 'Profile Menu' with fields for 'Profile Name' and 'Call Preset', and checkboxes for 'Select All', 'Image Settings', 'Audio Encoding Settings', 'Video Output Settings', and 'Include on Quick Profile Select'; 'Profile Upload' with another file selection button and 'Apply' button; 'Quick Profile Select' showing three profiles (Studio, Low Light, Outdoor) each with 'Download' and 'Remove' buttons; 'Custom CSS' with a 'Color Mode' dropdown set to 'Dark' and several color selector buttons (Highlight, Font, Background, Middleground, Foreground, Button), plus 'Download' and 'Apply' buttons; 'CSS Upload' with a file selection button and 'Apply' button; and 'Tutorial Mode' with a 'Show Tutorial Mode' checkbox.

- **Logo Upload**
 - **Upload File:** Browse your PC for an image file you'd like to upload to the camera's web interface. The resolution of this logo should be 2500x1000 and PNG or JPG type file.
- **Profile Menu**
 - **Profile Name:** Give your Profile a unique name so you can easily remember it.
 - **Call Preset:** Select a preset to be called when the Profile is loaded. This field is optional.
 - **Select All:** Select all of the below options in the Profile Menu section.
 - **Image Settings:** Select whether the Image Settings on the Camera Settings page are stored in the Profile.
 - **Audio Encoding Settings:** Select whether the Audio Settings on the Audio & Video Settings page are stored in the Profile. This will require a camera reboot when loaded.
 - **Video Output Settings:** Select whether the Video Settings on the Audio & Video Settings page are stored in the Profile. This will require a camera reboot when loaded.
 - **Device Settings:** Select whether the Device Name is stored in the Profile. This will require a camera reboot when loaded.
 - **Include on Quick Profile Select:** Select whether the Profile is displayed in the Quick Profile Select section on the Navigation Panel.
 - **Download:** Download the profile from the Profile Menu section.
 - **Save:** Save the configured Profile. The Include on Quick Profile Select checkbox needs to be checked in order to save the Profile to the camera.
- **Profile Upload**
 - **Upload File:** Upload a saved Profile from your computer to the camera.
- **Quick Profile Select**
 - **Download Button:** Download the selected Profile to your computer.
 - **Remove Button:** Remove the selected Profile from the camera.
- **Custom CSS**
 - **Color Mode:** Select the color mode of the Web UI. Custom allows you to define your own colors.
 - **Highlight Color Selector:** Define the color that buttons glow while hovering over or pressing the buttons.
 - **Font Color Selector:** Define the font color.
 - **Background Color Selector:** Customize the background color of the Web UI.
 - **Middle ground Color Selector:** Customize the middle ground color of the Web UI.
 - **Foreground Color Selector:** Customize the foreground color of the Web UI.
 - **Button Color Selector:** Customize the button background and text field color of the Web UI. The colors can be defined by using the eyedropper tool, decimal code, HSL code, or hex code.
- **CSS Upload**
 - **Upload File:** Upload a saved Custom CSS file from your computer to the camera.
 - **Download Button:** Download the currently selected CSS Color Mode
- **Tutorial Mode**
 - **Show Tutorial Mode:** While checked, the Information Symbols and associated text will be available, giving a description of each available setting.

Network Settings

The **Network Settings** page accesses the **LAN Settings** & **NTP Settings** sections.

PTZ OPTICS
ptzoptics.local/

- Camera Settings
- Audio & Video
- Streaming Settings
- Profile Settings
- Network Settings**
- MIDI Control
- Device Info
- System Settings
- Reboot

1: Studio
2: Low Light
3: Outdoor

Tally Status
Brought to you by **PTZ OPTICS**

LAN Settings

| | |
|--------------------------|-------------------|
| IP Configuration type: ⓘ | DHCP |
| IP address: ⓘ | 192.168.15.237 |
| Subnet mask: ⓘ | 255.255.255.0 |
| Gateway: ⓘ | 192.168.15.1 |
| DNS address: ⓘ | 192.168.15.1 |
| MAC address: ⓘ | DC:ED:84:A0:B1:AB |
| DHCP timeout: | 30 |
| Static fallback address: | 192.168.100.88 |
| Static fallback mask: | 255.255.255.0 |

Cancel Apply

NTP Settings

| | |
|-------------------|------------------------------|
| NTP Time Sync: ⓘ | On |
| NTP time zone: ⓘ | (GMT-05:00) Eastern Time (L) |
| Server address: ⓘ | time.windows.com |
| Time Interval: ⓘ | 64 (range from 1-86400) |

Cancel Apply

- **LAN Settings**

- **IP Configuration Type:** Select whether the camera automatically configured the network settings (DHCP) or whether you manually configure the network settings (Static).
- **IP Address:** The IP address is a unique address the network uses to connect and configure the camera.
- **Subnet Mask:** The Subnet Mask is a set of numbers that defines how large your network is.
- **Gateway:** The Gateway is the address associated with your router to connect to the internet.
- **DNS Address:** The DNS address is a unique IP address the camera will query when trying to reach a specific website.
- **MAC Address:** The MAC Address is a unique address the Ethernet port utilizes to communicate with the network. You cannot change this address.
- **DHCP Timeout:** DHCP Timeout is the amount of time the camera will try to acquire an IP address through DHCP. After 30 seconds, the camera will revert to the Static Fallback Address & Static Fallback Mask. You cannot change this timeout.
- **Static Fallback Address:** Static Fallback Address is the IP address the camera will revert to if one cannot be acquired automatically. You cannot change this address.
- **Static Fallback Mask:** Static Fallback Mask is the Subnet Mask the camera will revert to if one cannot be acquired automatically. You cannot change this subnet mask.

- **NTP Settings**

- **NTP Time Sync:** Toggle Network Time Protocol (NTP) on or off.
- **NTP Time Zone:** Select your time zone.
- **Server Address:** Define the NTP Server Address you wish to utilize.
- **Time Interval:** Define how frequently NTP queries the server (in seconds).

MIDI Control

The **MIDI Control** page accesses the **PTZOptics MIDI Control, Control Mapping, Mass Command Edit & Information** sections. The MIDI Control page can be reached by accessing the HTTPS version of the camera's web interface. ([https://\[Camera IP\]/](https://[Camera IP]/)). The page must remain open for MIDI Control to function.

PTZOptics MIDI Control - Beta

MIDI Control:

MIDI Controller:

Control Mapping

Command:

Event:

MIDI Value:

Mass Command Edit

View Mapped Commands:

Download Configuration:

Upload Mapped Commands:

Information

Display MIDI Commands below:

Last Command Event:

Last MIDI Command:

Last Command Value:

- **PTZ Optics MIDI Control**
 - **MIDI Control:** Toggle MIDI Control on or off.
 - **MIDI Controller:** Select a MIDI Controller currently connected to your PC.

- **Control Mapping**
 - **Command:** What function you'd like the camera to perform.
 - **Event:** How you would like the trigger the command to be sent.
 - **MIDI Value:** The value associated with the button / dial / knob / etc. on the MIDI Controller.

- **Mass Command Edit**
 - **View Mapped Commands Button:** View the commands currently mapped to the camera.
 - **Download Configuration:** Download the commands currently mapped to the camera.
 - **Upload Mapped Commands:** Upload a list of mapped MIDI commands to the camera.

- **Information**
 - **Display MIDI Commands below:** Select whether the camera displays the commands being sent from the MIDI Controller. This is typically used when Control Mapping.
 - **Last Command Event:** The most recent MIDI Event the Controller sent.
 - **Last MIDI Command:** The most recent MIDI Command the Controller sent.
 - **Last Command Value:** The most recent MIDI Value the Controller sent.

Device Info

The **Device Info** page accesses the **Device Information Section**.

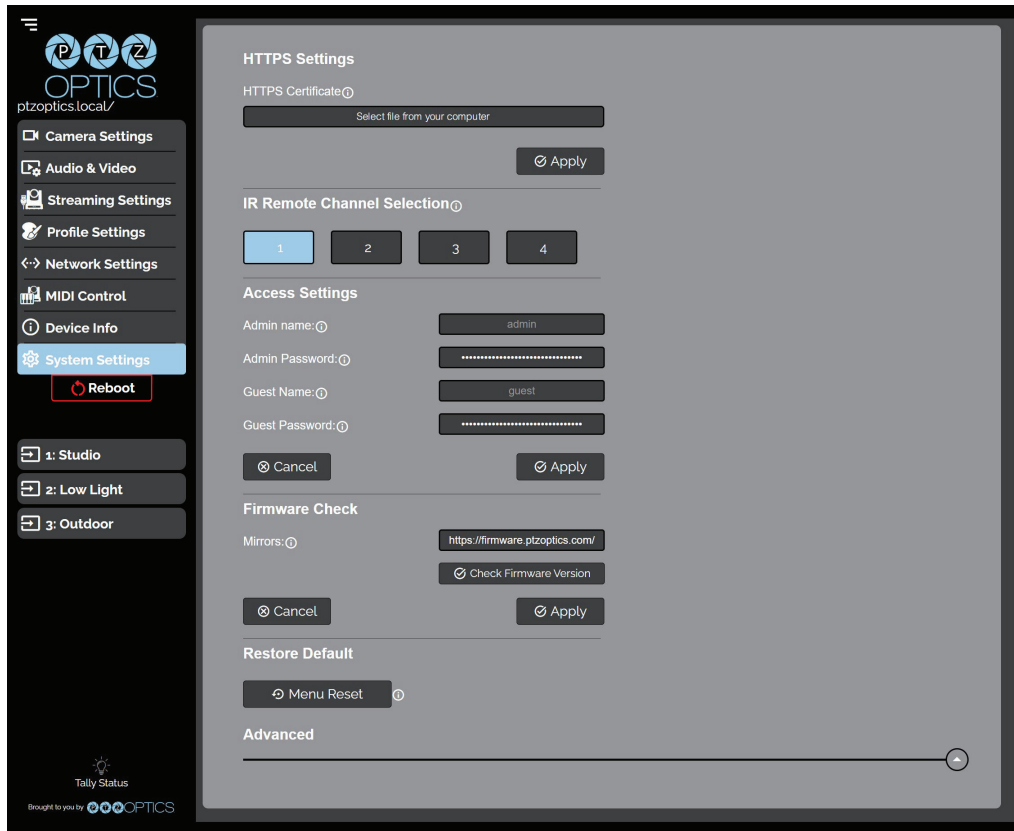


- **Device Information**

- **Device ID:** Define the camera's Device ID to clearly designate which camera you are interacting with. The Device ID is displayed at the top left of the Navigation Panel and anything that queries the camera's name.
- **Firmware Version:** The Firmware Version displays the firmware file currently running on the camera.
- **Device Model:** The Device Model is a field that PTZOptics uses to designate the camera.
- **Webware Version:** The Webware Version is the version of the web interface.
- **Serial Number:** The camera's serial number.
- **Need Help?** An easy to access URL to the PTZOptics Knowledge Base.

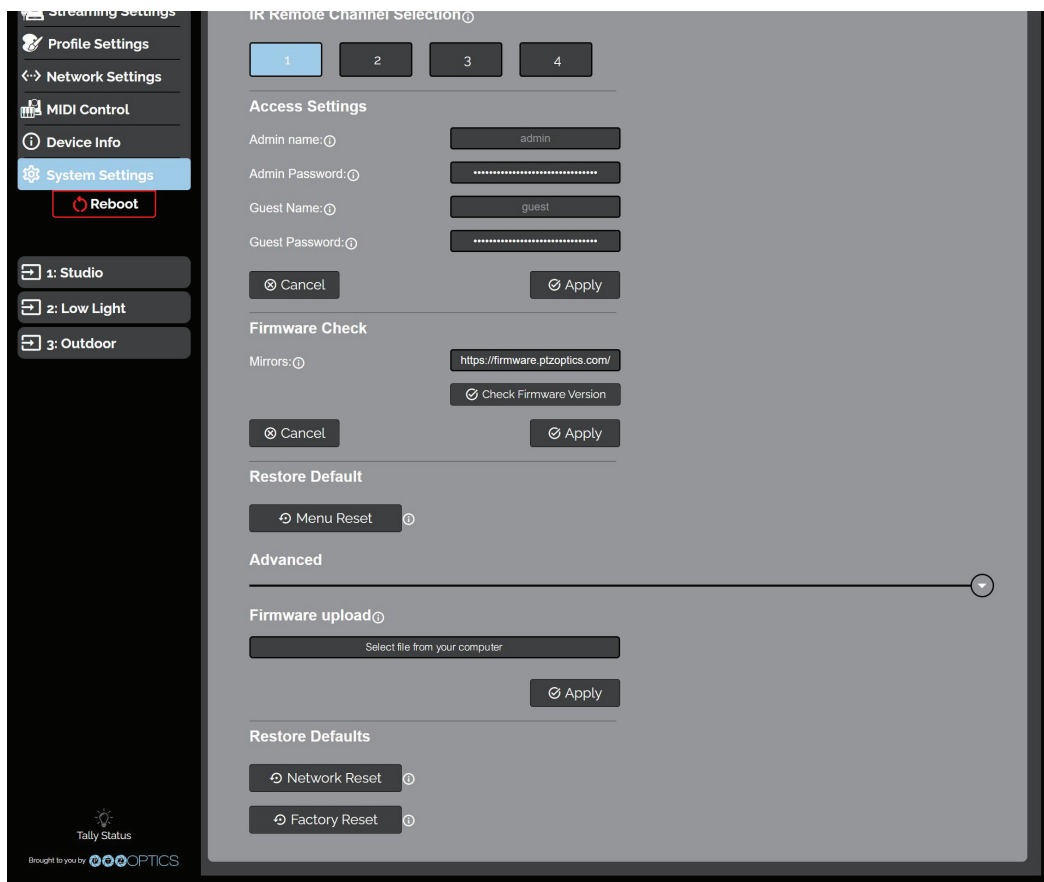
System Settings

The **System Settings** page gives access to the **HTTPS Settings**, **IR Remote Channel Selection**, **Access Settings**, **Firmware Check**, **Restore Default** (Basic), **Firmware Upload & Restore Default** (Advanced) sections.



- **HTTPS Settings**
 - **HTTPS Certificate:** Upload a HTTPS Certificate from your computer.
 - **HTTP Port:** The HTTP Port is how you reach the web interface of your camera ([http://\[Camera IP\]:\[port\]/](http://[Camera IP]:[port]/))
- **IR Remote Channel Selection**
 - **1 – 4 Button:** Define the communication channel the camera utilizes with the remote control. This allows you to easily use multiple cameras with a single IR remote.
- **Access Settings**
 - **Admin Name:** Administrator username login. This username can not be changed.
 - **Admin Password:** Administrator password. If you desire to change the password, all letters, numbers, and specifically "!@#\$\$^()" can be used, up to 15 characters. Please note the circles in the field are encrypted and do not reflect the password saved on the camera.
 - **Guest Name:** Guest username login. This username can not be changed.
 - **Guest Password:** Guest password. If you desire to change the password, all letters, numbers, and specifically "!@#\$\$^()" can be used, up to 15 characters. Please note the circles in the field are encrypted and do not reflect the password saved on the camera.

- **Firmware Check**
 - **Mirrors:** Define a server address for acquiring the latest PTZOptics firmware files. By default, the camera will query PTZOptics at <https://firmware.ptzoptics.com/>
 - **Check Firmware Version:** Check to see if your camera is running the latest firmware from the Firmware Update Server.
- **Firmware Upload**
 - **File Upload (Advanced):** Select a firmware file from your PC to upload to the camera.
- **Restore Default**
 - **Menu Reset (Basic):** Reset the camera's non-network settings to factory default.
 - **Network Reset (Advanced):** Reset the camera's network settings to factory default.
 - **Factory Reset (Advanced):** Reset all of the camera's settings to factory default.



For more information you can scan the QR code below or visit ptzoptics.com/get-started.

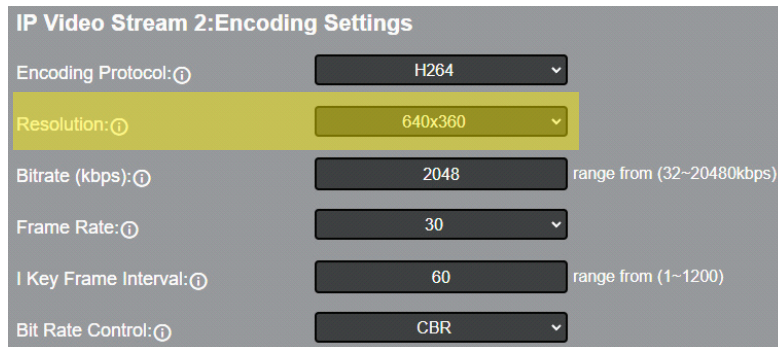


Photobooth Functionality

The PTZOptics Move 4K / Link 4K can quickly take a series of four still image or video files. These image and video files are stored locally on the camera and can be retrieved with an HTTP-CGI command and a web browser.

Configuration

You can set the resolution of the image and video files by logging into the camera's web interface and adjusting the Stream 2 resolution, as shown below. The camera will need to reboot for the new resolution to take effect.



Photos

Use the command below to take a single photo of the camera's current view. You can type this HTTP-CGI Command into a web browser to take & download the photo.

`http://[Camera IP]/snapshot.jpg`

You can also take a series of four photos with a defined delay. Use the command below to take these photos.

`http://[Camera IP]/cgi-bin/booth.cgi?0&4&[delay]&:photo&0`

In this command, **[delay]** is how long the camera will wait before taking the next photo, in seconds.

The **[delay]** range is: 1 ~ 9.

You can download the photos by sending a separate HTTP-CGI command through a web browser.

`http://[Camera IP]/photo[num].jpg`

In this command, **[num]** is the photo you would like to download.

The **[num]** options are: 1 ~ 4.

Videos

Use the command below to take a series of four videos. You can define the video length and delay (in seconds) between each video.

```
http://[Camera IP]/cgi-bin/booth.cgi?0&4&[delay]&video&[length]
```

In this command, **[delay]** is how long the camera will wait before taking the next video, in seconds.

The **[delay]** range is: 1 ~ 9.

In this command, **[length]** is how long each video recording will be, in seconds.

The **[length]** range is: 1 ~ 10.

You can download the videos by sending a separate HTTP-CGI command through a web browser.

```
http://[Camera IP]/video[num].mp4
```

In this command, **[num]** is the video you would like to download.

The **[num]** options are: 1 ~ 4.

PTZ Optics Serial VISCA & VISCA over IP Command List

Part 1: Camera Issued Commands

| ACK / Completion Messages | | | |
|---------------------------|------------------------|---|--|
| Command | Function | Command Packet | Comments |
| ACK / Completion Messages | ACK | z0 4y FF (y: Socket No.) | Returned when the command is accepted. |
| | Completion | z0 5y FF (y: Socket No.) | Returned when the command has been executed. |
| Error Messages | | | |
| Command | Function | Command Packet | Comments |
| Error Messages | Syntax Error | z0 60 02 FF | Returned when the command format is different or when a command with illegal command parameters is accepted. |
| | Command Buffer Full | z0 60 03 FF | Indicates that two sockets are already being used (executing two commands) and the command could not be accepted when received |
| | Command Canceled | z0 6y 04 FF (y: Socket No.) | Returned when a command which is being executed in a socket specified by the cancel command is canceled. The completion message for the command is not returned. |
| | No Socket | z0 6y 05 FF (y: Socket No.) | Returned when no command is executed in a socket specified by the cancel command, or when an invalid Socket No. is specified |
| | Command Not Executable | z0 6y 41 FF (y: Execution command Socket No. Inquiry command: 0) | Returned when a command cannot be executed due to current conditions. For example: when commands controlling the focus manually are received during auto focus mode. |

VISCA over IP control: z = 9

Serial VISCA control: z = Camera Address + 8

Part 2: PTZOptics Command List

| Command | Function | Command Packet | Comments |
|-------------------|-----------------|----------------------------|---|
| IF Clear | Broadcast | 8x 01 00 01 FF | I/F Clear |
| CAM_Power | On | 8x 01 04 00 02 FF | Power On/Off |
| | Off | 8x 01 04 00 03 FF | |
| CAM_Zoom | Stop | 8x 01 04 07 00 FF | |
| | Tele (Standard) | 8x 01 04 07 02 FF | |
| | Wide (Standard) | 8x 01 04 07 03 FF | |
| | Tele (Variable) | 8x 01 04 07 2p FF | p = 0 (low) – 7 (high) |
| | Wide (Variable) | 8x 01 04 07 3p FF | |
| | Direct | 8x 01 04 47 p q r s FF | |
| CAM_ZoomFocus | Direct | 8x 01 04 47 0p 0q | pqrs: Zoom Position |
| | | 0r 0s 0t 0u 0v 0w FF | tuvw: Focus Position |
| CAM_Focus | Stop | 8x 01 04 08 00 FF | |
| | Far (Standard) | 8x 01 04 08 02 FF | |
| | Near (Standard) | 8x 01 04 08 03 FF | |
| | Far (Variable) | 8x 01 04 08 2p FF | |
| | Near (Variable) | 8x 01 04 08 3p FF | p = 0 (low) – 7 (high) |
| | Direct | 8x 01 04 48 0p 0q 0r 0s FF | pqrs: Zoom Position (0x04 0x00 0x00 0x00 = Full Zoom in. 0x00 0x00 0x00 0x00 = Full Zoom out.) |
| | Auto Focus | 8x 01 04 38 02 FF | Auto Focus On / Off |
| | Manual Focus | 8x 01 04 38 03 FF | |
| | Auto / Manual | 8x 01 04 38 10 FF | |
| | Snap Focus | 8x 01 04 38 04 FF | Focus image while maintaining manual focus mode. |
| | Focus Lock | 8x 0a 04 68 02 FF | Prevents any other operation or command from adjusting the current focus state |
| | Focus Unlock | 8x 0a 04 68 03 FF | |
| CAM_AFSensitivity | Hlgh | 8x 01 04 58 01 FF | AF Sensitivity High / Normal / Low |
| | Normal | 8x 01 04 58 02 FF | |
| | Low | 8x 01 04 58 03 FF | |

| | | | |
|---------------|------------------------|----------------------------|--|
| CAM_WB | Auto | 8x 01 04 35 00 FF | Normal Auto mode |
| | Indoor | 8x 01 04 35 01 FF | Indoor mode |
| | Outdoor | 8x 01 04 35 02 FF | Outdoor mode |
| | OnePush | 8x 01 04 35 03 FF | One Push White Balance mode |
| | Manual | 8x 01 04 35 05 FF | Manual control mode |
| | ColorTemperature (VAR) | 8x 01 04 35 20 FF | Color Temperature mode |
| | OnePush Trigger | 8x 01 04 10 05 FF | One Push White Balance Trigger |
| CAM_RGain | Reset | 8x 01 04 03 00 FF | Default Bright position |
| | Up | 8x 01 04 03 02 FF | |
| | Down | 8x 01 04 03 03 FF | |
| | Direct | 8x 01 04 43 00 00 0p 0q FF | pq: Red Gain |
| CAM_BGain | Reset | 8x 01 04 04 00 FF | Manual control of blue gain |
| | Up | 8x 01 04 04 02 FF | |
| | Down | 8x 01 04 04 03 FF | |
| | Direct | 8x 01 04 44 00 00 0p 0q FF | pq: Blue Gain |
| CAM_ColorTemp | Reset | 8x 01 04 20 00 FF | Default ColorTemperature settings |
| | Up | 8x 01 04 20 02 FF | |
| | Down | 8x 01 04 20 03 FF | |
| | Direct | 8x 01 04 20 0p 0q FF | pq: ColorTemperature position: 0x00: 2500K ~ 0x37: 8000K |
| CAM_RTuning | Direct | 8x 0A 01 12 pq FF | pq: Red / Blue Tuning position 0x00 (-10) ~ 0x14 (+10) |
| CAM_BTuning | Direct | 8x 0A 01 13 pq FF | |

| | | | |
|-------------|------------------|----------------------------|-------------------------------------|
| CAM_AE | Full Auto | 8x 01 04 39 00 FF | Automatic Exposure mode |
| | Manual | 8x 01 04 39 03 FF | Manual exposure mode |
| | Shutter Priority | 8x 01 04 39 0A FF | Shutter priority auto exposure mode |
| | Iris Priority | 8x 01 04 39 0B FF | Iris priority auto exposure mode |
| | Bright | 8x 01 04 39 0D FF | Bright manual exposure mode |
| CAM_Iris | Reset | 8x 01 04 0B 00 FF | Default Iris position |
| | Up | 8x 01 04 0B 02 FF | Iris setting |
| | Down | 8x 01 04 0B 03 FF | |
| | Direct | 8x 01 04 4B 00 00 0p 0q FF | pq: Iris position |
| CAM_DRC | Direct | 8x 01 06 01 0E 0E 03 02 FF | p: 0(low) - 8(high) |
| CAM_Shutter | Reset | 8x 01 04 0A 00 FF | Default shutter position |
| | Up | 8x 01 04 0A 02 FF | Shutter setting |
| | Down | 8x 01 04 0A 03 FF | |
| | Direct | 8x 01 04 4A 00 00 0p 0q FF | pq: Shutter position |
| CAM_Gain | Reset | 8x 01 04 0C 00 FF | Gain Setting |
| | Up | 8x 01 04 0C 02 FF | |
| | Down | 8x 01 04 0C 03 FF | |
| | Direct | 8x 01 04 0C 00 00 0p 0q FF | pq: Gain Position |
| | Gain Limit | 8x 01 04 2C 0p FF | p: Gain Position |
| CAM_Bright | Reset | 8x 01 04 0D 00 FF | Default Bright position |
| | Up | 8x 01 04 0D 02 FF | Bright setting |
| | Down | 8x 01 04 0D 03 FF | |
| | Direct | 8x 01 04 0D 00 00 0p 0q FF | pq: Bright position |

| | | | |
|------------------------------|--------------|----------------------------|--|
| CAM_ExpComp | On | 8x 01 04 3E 02 FF | Exposure Compensation On / Off |
| | Off | 8x 01 04 3E 03 FF | |
| | Reset | 8x 01 04 0E 00 FF | Default ExpComp position |
| | Up | 8x 01 04 0E 02 FF | ExpComp setting |
| | Down | 8x 01 04 0E 03 FF | |
| | Direct | 8x 01 04 4E 00 00 0p 0q FF | pq: ExpComp position |
| CAM_NR(2D)Mode | Auto | 8x 01 04 50 02 FF | ND2D Auto/Manual |
| | Manual | 8x 01 04 50 03 FF | |
| CAM_NR(2D)Level | Direct | 8x 01 04 53 0p FF | p: NR Setting (0: Off, level 1 to 5) |
| CAM_NR(3D)Level | Direct | 8x 01 04 54 0p FF | p: NR Setting (0: Off, level 1 to 8) |
| CAM_WDRStrength | Reset | 8x 01 04 21 00 FF | |
| | Up | 8x 01 04 21 02 FF | |
| | Down | 8x 01 04 21 03 FF | |
| | Direct | 8x 01 04 51 00 00 0p 0q FF | pq: WDR Level Positon |
| CAM_Backlight | On | 8x 01 04 33 02 FF | Backlight Compensation On / Off |
| | Off | 8x 01 04 33 03 FF | |
| CAM_Flicker | - | 8x 01 04 23 0p FF | p: Flicker settings - (0: Off, 1: 50Hz, 2: 60Hz) |
| CAM_ApertureMode (Sharpness) | Auto | 8x 01 04 05 02 FF | |
| | Manual | 8x 01 04 05 03 FF | |
| CAM_Aperture (sharpness) | Reset | 8x 01 04 02 00 FF | Aperture Control |
| | Up | 8x 01 04 02 02 FF | |
| | Down | 8x 01 04 02 03 FF | |
| | Direct | 8x 01 04 42 00 00 0p 0q FF | pq: Aperture Gain |
| CAM_Picture Effect | Off | 8x 01 04 63 00 FF | Picture Effect setting |
| | B&W | 8x 01 04 63 04 FF | |
| CAM_Memory | Reset | 8x 01 04 3F 00 pp FF | pp: Memory number (=0 to 127) |
| | Set | 8x 01 04 3F 01 pp FF | |
| | Recall | 8x 01 04 3F 02 pp FF | |
| Preset_Recall_Speed | Preset Speed | 8x 01 06 01 p FF | P: Speed grade (0x01 ~ 0x18) |

| | | | |
|-----------------|------------------|--|---|
| CAM_ImageFreeze | Freeze Image | 8x 01 04 62 0p FF | p: 2 ON; p: 3 OFF |
| CAM_LR_Reverse | On | 8x 01 04 61 02 FF | Image Flip Horizontal On / Off |
| | Off | 8x 01 04 61 03 FF | |
| CAM_PictureFlip | On | 8x 01 04 66 02 FF | Image Flip Vertical On / Off |
| | Off | 8x 01 04 66 03 FF | |
| CAM_ColorGain | Direct | 8x 01 04 49 00 00 00 0p FF | P: Color Gain setting 0h (60%) to Eh(200%) |
| Pan_TiltDrive | Up | 8x 01 06 01 VV WW 03 01 FF | VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high) |
| | Down | 8x 01 06 01 VV WW 03 02 FF | |
| | Left | 8x 01 06 01 VV WW 01 03 FF | |
| | Right | 8x 01 06 01 VV WW 02 03 FF | |
| | UpLeft | 8x 01 06 01 VV WW 01 01 FF | |
| | UpRight | 8x 01 06 01 VV WW 02 01 FF | |
| | DownLeft | 8x 01 06 01 VV WW 01 02 FF | |
| | DownRight | 8x 01 06 01 VV WW 02 02 FF | |
| | Stop | 8x 01 06 01 VV WW 03 03 FF | |
| | AbsolutePosition | 8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF | YYYY: Pan position, ZZZZ: Tilt position |
| | RelativePosition | 8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF | |
| | Home | 8x 01 06 04 FF | |
| | Reset | 8x 01 06 05 FF | |

| | | | |
|------------------|------------|--|---|
| Pan_TiltLimitSet | LimitSet | 8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF | W: 1 (UpRight), 0: Down-Left |
| | LimitClear | 8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF | YYYY: Pan position, ZZZZ: Tilt position |
| CAM_Brightness | Direct | 8x 01 04 A1 00 00 0p 0q FF | pq: Brightness position |
| CAM_Contrast | Direct | 8x 01 04 A2 00 00 0p 0q FF | pq: Contrast position |

| | | | |
|---------------------|---------------------|----------------------------|--|
| CAM_Flip | Off | 8x 01 04 A4 00 FF | Single Command for video flip |
| | Flip-H | 8x 01 04 A4 01 FF | |
| | Flip-V | 8x 01 04 A4 02 FF | |
| | Flip-HV | 8x 01 04 A4 03 FF | |
| CAM_SettingSave | Save | 8x 01 04 A5 10 FF | Save Current Setting |
| CAM_AWB Sensitivity | High | 8x 01 04 A9 00 FF | |
| | Normal | 8x 01 04 A9 01 FF | |
| | Low | 8x 01 04 A9 02 FF | |
| CAM_AFZone | Top | 8x 01 04 AA 00 FF | AF Zone weight select |
| | Center | 8x 01 04 AA 01 FF | |
| | Bottom | 8x 01 04 AA 02 FF | |
| CAM_ColorHue | Direct | 8x 01 04 4F 00 00 00 0p FF | P: Color Hue setting oh (-14°) to Eh (+14°) |
| OSD_Control | Open / Close | 8x 01 04 3F 02 5F FF | |
| | Close | 8x 01 06 06 03 FF | |
| | Navigate Up | 8x 01 06 01 0E 0E 03 01 FF | |
| | Navigate Down | 8x 01 06 01 0E 0E 03 02 FF | |
| | Navigate Left | 8x 01 06 01 0E 0E 01 03 FF | |
| | Navigate Right | 8x 01 06 01 0E 0E 02 03 FF | |
| | Enter | 8x 01 06 06 05 FF | |
| | Return | 8x 01 06 06 04 FF | |
| CAM_LensType | Type1 | 8x 0A 01 04 1B 00 FF | Corrects camera focus capabilities |
| | Type 2 | 8x 0A 01 04 1B 01 FF | p=1: Flashing, p=2: Light always on, p=3: normal |
| CAM_AFCalibration | Re-Calibrates Focus | 8x 0A 01 03 12 FF | |
| CAM_TallyLight | Tally Light Control | 8x 0A 02 02 0p FF | |
| CAM_NDIMode | High | 8x 0B 01 01 FF | |
| | Medium | 8x 0B 01 02 FF | |
| | Low | 8x 0B 01 03 FF | |
| | Off | 8x 0B 01 04 FF | |
| CAM_Multicast Mode | Multicast Mode | 8x 0B 01 23 0p FF | p=1: On, p=2: Off |

| | | | |
|--------------------|--------------------------|-------------------------|---|
| CAM_PTZMotion Sync | PTZ Motion Sync On | 8x 0A 11 13 02 FF | |
| | PTZ Motion Sync Off | 8x 0A 11 13 03 FF | |
| | PTZ MS Upper Speed Limit | 8x 0A 11 14 pq FF | pq: Speed stage |
| | PTZ MS Lower Speed Limit | 8x 2A 11 14 pq FF | |
| CAM_UACStatus | Toggle USB Audio | 8x 2a 02 a0 04 0p FF | p=2: On, p=3: Off |
| CAM_RTMPSet | Toggle RTMP | 8x 0A 11 A8 pq FF | p: 1 Stream 1; p: 2 stream 2; q: 2 ON, q: 3 OFF |
| CAM_FocusRange | Focus Range | 8x 0A 11 42 0p rs tv FF | p=0: Off p=1: On, rs: furthest position(0x00 ~ 0x0B), tv: nearest position(0x00 ~ 0x0B) |
| CAM_SettingSave | Save | 8x 01 04 A5 10 FF | Save Current Setting |
| CAM_SettingReset | Reset | 8x 01 04 A0 10 FF | Reset to Factory Settings |
| CAM_NetworkReset | Reset Network Parameters | 8x 0A 01 AA FF | |

Part 3: PTZOptics Query Command List

| | | | |
|---------------------|----------------|----------------------|------------------------------|
| CAM_PowerInq | 8x 09 04 00 FF | y0 50 02 FF | On |
| | | y0 50 03 FF | Off (Standby) |
| | | y0 50 04 FF | Internal Power Circuit Error |
| CAM_ZoomPosInq | 8x 09 04 47 FF | y0 50 0p 0q 0r 0s FF | pqrs: Zoom position |
| CAM_FocusAFModelInq | 8x 09 04 48 FF | y0 50 02 FF | AutoFocus |
| | | y0 50 03 FF | Manual Focus |
| CAM_FocusPosInq | 8x 09 04 35 FF | y0 50 0p 0q 0r 0s FF | pqrs: Focus Position |
| CAM_WBModelInq | 8x 09 04 35 FF | y0 50 00 FF | Auto |
| | | y0 50 01 FF | Indoor |
| | | y0 50 02 FF | Outdoor |
| | | y0 50 03 FF | OnePush |
| | | y0 50 05 FF | Manual |
| | | | ColorTemperature |
| CAM_RGainInq | 8x 09 04 43 FF | y0 50 00 00 0p 0q FF | pq: Red Gain |

| | | | |
|------------------------------------|-------------------|-------------------------|-----------------------------------|
| CAM_BGainInq | 8x 09 04 44 FF | y0 50 00 00 0p 0q FF | pq: Blue Gain |
| CAM_ColorTempInq | | y0 50 pq FF | pq: ColorTemperature position |
| CAM_RTuningInq | 8x 09 04 12 FF | 90 50 00 00 0p 0q FF | pq: 0x00 ~ 0x14 |
| CAM_BTuningInq | 8x 09 04 13 FF | 90 50 00 00 0p 0q FF | pq: 0x00 ~ 0x14 |
| CAM_AEModeInq | 8x 09 04 39 FF | y0 50 00 FF | Full Auto |
| | | y0 50 03 FF | Manual |
| | | y0 50 0A FF | Shutter Priority (SAE) |
| | | y0 50 0B FF | Iris Priority (AAE) |
| | | y0 50 0D FF | Bright |
| CAM_ShutterPosInq | 8x 09 04 4A FF | y0 50 00 00 0p 0q FF | pq: Shutter position |
| CAM_IrisPosInq | 8x 09 04 4B FF | y0 50 00 00 0p 0q FF | pq: Iris position |
| CAM_BrightPosInq | 8x 09 04 4D FF | y0 50 00 00 0p 0q FF | pq: Bright position |
| CAM_ExpCompModeInq | 8x 09 04 3E FF | y0 50 02 FF | On |
| | | y0 50 03 FF | Off |
| CAM_ExpCompPosInq | 8x 09 04 4E FF | y0 50 00 00 0p 0q FF | pq: ExpComp position |
| CAM_BacklightModeInq | 8x 09 04 33 FF | y0 50 02 FF | On |
| | | y0 50 03 FF | Off |
| CAM_Noise2DModeInq | 8x 09 04 50 FF | y0 50 02 FF | Auto Noise 2D |
| | | y0 50 03 FF | Manual Noise 2D |
| CAM_Noise2DLevel | 8x 09 04 53 FF | y0 50 0p FF | Noise Reduction (2D) p: 0 to 5 |
| CAM_Noise3DLevel | 8x 09 04 54 FF | y0 50 0p FF | Noise Reduction (3D) p: 0 to 5 |
| CAM_FlickerModeInq | 8x 09 04 55 FF | y0 50 0p FF | p=0: Off, 1: 50Hz, 2: 60Hz |
| CAM_ApertureModeInq (Sharpness) | 8x 09 04 05 FF | y0 50 02 FF | Auto Sharpness |
| | | y0 50 03 FF | Manual Sharpness |
| SYS_MenuModeInq | 8x 09 06 06 FF | y0 50 02 FF | On |
| | | y0 50 03 FF | Off |

| | | | |
|---------------------------|-------------------|----------------------------------|--|
| CAM_PictureEffectModelInq | 8x 09 04 63 FF | y0 50 02 FF | Off |
| | | y0 50 04 FF | B&W |
| CAM_MemoryInq | 8x 09 04 3F FF | y0 50 0p FF | p: Memory number last operated |
| CAM_LR_ReverseInq | 8x 09 04 61 FF | y0 50 02 FF | On |
| | | y0 50 03 FF | Off |
| CAM_PictureFlipInq | 8x 09 04 66 FF | y0 50 02 FF | On |
| | | y0 50 03 FF | Off |
| CAM_ColorGainInq | 8x 09 04 49 FF | y0 50 00 00 00 0p FF | P: Color gain oh (60%) to Eh (200%) |
| CAM_PanTiltPosInq | 8x 09 06 12 FF | y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF | WWW: Pan position, ZZZZ: Tilt position |
| CAM_GainLimitInq | 8x 09 04 2C FF | y0 50 0q FF | p: Gain limit |
| CAM_AFSensitivityInq | 8x 09 04 58 FF | y0 50 01 FF | High |
| | | y0 50 02 FF | Normal |
| | | y0 50 03 FF | Low |
| CAM_BrightnessInq | 8x 09 04 A1 FF | y0 50 00 00 0p 0q FF | pq: Brightness position |
| CAM_ContrastInq | 8x 09 04 A2 FF | y0 50 00 00 0p 0q FF | pq: Contrast position |
| CAM_FlipInq | 8x 09 04 A4 FF | y0 50 00 FF | Off |
| | | y0 50 01 FF | Flip-H |
| | | y0 50 02 FF | Flip-V |
| | | y0 50 03 FF | Flip-HV |
| CAM_AFZone | 8x 09 04 AA FF | y0 50 00 FF | Top |
| | | y0 50 01 FF | Center |
| | | y0 50 02 FF | Bottom |
| CAM_ColorHueInq | 8x 09 04 4F FF | y0 50 00 00 00 0p FF | P: Color Hue oh (-14°) to Eh (+14°) |
| CAM_AWBSensitivityInq | 8x 09 04 A9 FF | y0 50 00 FF | High |
| | | y0 50 01 FF | Normal |
| | | y0 50 02 FF | Low |
| CAM_UACInq | 8x 2A 02 A0 04 FF | y0 50 02 FF | On |
| | | y0 50 03 FF | Off |

| | | | |
|--|----------------|-------------|--|
| CAM_PTZMotionSyncInq | 8x 09 11 13 FF | 90 50 0p FF | p: MotionSync setting 0: Off, 1: On |
| | 8x 09 11 14 FF | 90 50 pq FF | pq: Max MotionSync speed 00 (185) ~ 09 (230) |
| CAM_RTMPInq | 8x 09 11 53 FF | 90 50 00 FF | Stream 1 OFF; Stream 2 OFF |
| | | 90 50 01 FF | Stream 1 ON; Stream 2 OFF |
| | | 90 50 02 FF | Stream 1 OFF; Stream 2 ON |
| | | 90 50 03 FF | Stream 1 ON; Stream 2 ON |
| VISCA over IP control: x = 1 Serial VISCA control: x = Camera Address + 8 | | | |

| Block Inquiry Command List | | | |
|----------------------------|-------------------|---|--|
| Command | Command Packet | Inquiry Packet | Comments |
| CAM_LensBlockInq | 8x 09 7E 7E 00 FF | y0 50 0u 0u 0u 0u 00 00 0v 0v 0v 0v 00 0w 00 FF | UUUU: Zoom position VVVV: Focus position W.bit0: Focus mode 1: Auto, 0: manual |
| CAM_CameraBlockInq | 8x 09 7E 7E 01 FF | y0 50 0p 0p 0q 0q 0r 0s 0t 0u 0v 0w 00 0x 0z FF | PP: Red Gain, QQ: Blue Gain R: WB Mode, S: Aperture TT: AE Mode, U.bit2: Backlight U.bit1: Exposure Comp, VV: Shutter position. WW: Iris position, XX Bright position, Z: Exposure Comp position |

| | | | |
|-------------------------|-------------------|---|--|
| CAM_OtherBlockIng | 8x 09 7E 7E 02 FF | y0 50 0p 0q 00 0r 00 00 00 00 00 00 00 00 00 FF | P.bit0: Power 1: On, 0: Off, Q.bit2: LR Reverse: 1: On, 0: Off R.bit3~0: Picture Effect Mode |
| CAM_EnlargementBlockIng | 8x 09 7E 7E 03 FF | y0 50 00 00 00 00 00 00 00 0p 0q rr 0s 0t 0u FF | P: AF Sensitivity Q.bit0: Picture flip: 1: On, 0: Off RR.bit6~3: Color Gain (0h (60%) to Eh (200%) S; Flip 0: Off, 1: Flip-H, 2: FlipV, 3: Flip-HV T.Bit2~0: NR2D level U: Gain Limit |

VISCA over IP control: x = 1

Serial VISCA control: x = Camera Address + 8

Part 4: Pelco-D Protocol Command List

| Function | Byte1 | Byte2 | Byte3 | Byte4 | Byte5 | Byte6 | Byte7 |
|-----------------------------|-------|---------|-------|-------|-----------------|----------------|-------|
| Up | 0xFF | Address | 0x00 | 0x08 | Pan Speed | Tilt Speed | SUM |
| Down | 0xFF | Address | 0x00 | 0x10 | Pan Speed | Tilt Speed | SUM |
| Left | 0xFF | Address | 0x00 | 0x04 | Pan Speed | Tilt Speed | SUM |
| Right | 0xFF | Address | 0x00 | 0x02 | Pan Speed | Tilt Speed | SUM |
| Zoom In | 0xFF | Address | 0x00 | 0x20 | 0x00 | 0x00 | SUM |
| Zoom Out | 0xFF | Address | 0x00 | 0x40 | 0x00 | 0x00 | SUM |
| Focus Far | 0xFF | Address | 0x00 | 0x80 | 0x00 | 0x00 | SUM |
| Focus Near | 0xFF | Address | 0x00 | 0x00 | 0x00 | 0x00 | SUM |
| Set Preset | 0xFF | Address | 0x00 | 0x03 | 0x00 | Preset ID | SUM |
| Clear Preset | 0xFF | Address | 0x00 | 0x05 | 0x00 | Preset ID | SUM |
| Call Preset | 0xFF | Address | 0x00 | 0x07 | 0x00 | Preset ID | SUM |
| Auto Focus | 0xFF | Address | 0x00 | 0x2B | 0x00 | 0x01 | SUM |
| Manual Focus | 0xFF | Address | 0x00 | 0x2B | 0x00 | 0x02 | SUM |
| Query Pan Position | 0xFF | Address | 0x00 | 0x51 | 0x00 | 0x00 | SUM |
| Query Pan Position Response | 0xFF | Address | 0x00 | 0x59 | Value High Byte | Value Low Byte | SUM |

| | | | | | | | |
|------------------------------|------|---------|------|------|-----------------|----------------|-----|
| Query Tilt Position | 0xFF | Address | 0x00 | 0x53 | 0x00 | 0x00 | SUM |
| Query Tilt Position Response | 0xFF | Address | 0x00 | 0x5B | Value High Byte | Value Low Byte | SUM |
| Query Zoom Position | 0xFF | Address | 0x00 | 0x55 | 0x00 | 0x00 | SUM |
| Query Zoom Position Response | 0xFF | Address | 0x00 | 0x5D | Value High Byte | Value Low Byte | SUM |
| Query Zoom Position Response | 0xFF | Address | 0x00 | 0x5D | Value High Byte | Value Low Byte | SUM |

Part 5: Pelco-P Protocol Command List

| Function | Byte1 | Byte2 | Byte3 | Byte4 | Byte5 | Byte6 | Byte7 |
|------------------------------|-------|---------|-------|-------|-----------------|----------------|-------|
| Up | 0xFF | Address | 0x00 | 0x08 | Pan Speed | Tilt Speed | SUM |
| Down | 0xFF | Address | 0x00 | 0x10 | Pan Speed | Tilt Speed | SUM |
| Left | 0xFF | Address | 0x00 | 0x04 | Pan Speed | Tilt Speed | SUM |
| Right | 0xFF | Address | 0x00 | 0x02 | Pan Speed | Tilt Speed | SUM |
| Zoom In | 0xFF | Address | 0x00 | 0x20 | 0x00 | 0x00 | SUM |
| Zoom Out | 0xFF | Address | 0x00 | 0x40 | 0x00 | 0x00 | SUM |
| Focus Far | 0xFF | Address | 0x00 | 0x80 | 0x00 | 0x00 | SUM |
| Focus Near | 0xFF | Address | 0x00 | 0x00 | 0x00 | 0x00 | SUM |
| Set Preset | 0xFF | Address | 0x00 | 0x03 | 0x00 | Preset ID | SUM |
| Clear Preset | 0xFF | Address | 0x00 | 0x05 | 0x00 | Preset ID | SUM |
| Call Preset | 0xFF | Address | 0x00 | 0x07 | 0x00 | Preset ID | SUM |
| Auto Focus | 0xFF | Address | 0x00 | 0x2B | 0x00 | 0x01 | SUM |
| Manual Focus | 0xFF | Address | 0x00 | 0x2B | 0x00 | 0x02 | SUM |
| Query Pan Position | 0xFF | Address | 0x00 | 0x51 | 0x00 | 0x00 | SUM |
| Query Pan Position Response | 0xFF | Address | 0x00 | 0x59 | Value High Byte | Value Low Byte | SUM |
| Query Tilt Position | 0xFF | Address | 0x00 | 0x53 | 0x00 | 0x00 | SUM |
| Query Tilt Position Response | 0xFF | Address | 0x00 | 0x5B | Value High Byte | Value Low Byte | SUM |
| Query Zoom Position | 0xFF | Address | 0x00 | 0x55 | 0x00 | 0x00 | SUM |
| Query Zoom Position Response | 0xFF | Address | 0x00 | 0x5D | Value High Byte | Value Low Byte | SUM |

Starter HTTP Commands

HTTP Commands are URL strings issuable through PTZOptics Joystick web user interfaces or by copying and pasting them directly into a web browser. Below is a list of HTTP commands to get you started that are best suited for pairing with one of our joysticks.

| Function | Command | Variable | Values |
|------------------------------|---|----------|--------|
| Turn Camera Auto-Tracking On | http://<camera ip address>/cgi-bin/ptzctrl.cgi?post_image_value&autotrack&2 | none | none |

This command can be used in the PT-JOY-G4's or the PT-SUPERJOY's web ui and assigned to a custom button, allowing you to quickly turn on auto-tracking mode for the Move 4K, Move SE, and Link 4K cameras.

| Function | Command | Variable | Values |
|-------------------------------|---|----------|--------|
| Turn Camera Auto-Tracking Off | http://<camera ip address>/cgi-bin/ptzctrl.cgi?post_image_value&autotrack&3 | none | none |

This command can be used in the PT-JOY-G4's or the PT-SUPERJOY's web ui and assigned to a custom button, allowing you to quickly turn off auto-tracking mode for the Move 4K, Move SE, and Link 4K cameras.

| Function | Command | Variable | Values |
|---------------|--|----------|-----------------------------|
| Home Position | http://[camera ip]/cgi-bin/ptzctrl.cgi?ptzcmd&home | none | camera's current IP address |

This command can also be assigned to a custom button, allowing you to quickly send the currently selected camera to the home position. This command works with the Move 4K, Move SE, and Link 4K cameras.

| Function | Command | Variable | Values |
|---------------|---------------------------------|----------|-----------------------------|
| Take Snapshot | http://[camera ip]/snapshot.jpg | none | camera's current IP address |

This command can also be assigned to a custom button, allowing you to take a quick JPEG snapshot. This command works with the Move 4K, Move SE, and Link 4K cameras.

Check out our full list of PTZOptics camera commands by following this link.
<https://ptzoptics.imagerelay.com/share/PTZOptics-Command-List-HTTP-CGI>

Maintenance and Troubleshooting

Camera Maintenance

1. If the camera will not be used for a long time, power off the camera.
2. Use a soft cloth or lotion-free tissue to clean the camera body.
3. Use a soft, dry, lint-free cloth to clean the lens. If the camera is very dirty, clean it with a diluted neutral detergent. Do not use any type of solvent or harsh detergent, which may damage the surface.

Unqualified Applications

- Do not shoot extremely bright objects for a long period of time.
- Do not operate close to powerful electromagnetic radiation, such as a TV or radio transmitter.

Troubleshooting

• **No image**

1. Check whether the power cord is connected, voltage is OK & power LED is lit.
2. Check whether the camera can “self-test” after startup.
You can also press [*] > [#] > [Auto Focus] on the IR remote to trigger the camera to perform the startup dance on repeat.
3. If using SDI or HDMI, check that the desired connection is selected to output video. You can select the desired connection from the OSD Menu or through the Web Interface.
4. Check that the video cable is connected to the destination device correctly.

• **Image is shaky or vibrating**

1. Check whether the camera is mounted solidly to a steady horizontal and level surface.
2. Check the building and any supporting furniture for vibration. Ceiling mounts are often affected by building vibration more than wall mounts. Any external vibration that is affecting the camera will be more apparent when zoomed in (tele).

• **Abnormal display of image**

1. Check the resolution dial on the back of the camera. Verify that the resolution and refresh rate is supported by your destination device.
2. If using SDI, check that the SDI level is set to the desired level.

• **Image settings are changing on their own**

1. The cameras have a feature called “Preset 2.0” where many of the Exposure, White Balance, and Image settings are saved with each preset. When a preset is called, the saved Exposure, White Balance, and Image settings are then loaded.

Control

- **IR Remote controller does not control the camera**

1. Does one of the four “Camera Select” buttons at the top of the remote light up when you press any of the buttons?
 - If not, change the batteries in the remote.
2. Check that the remote and camera are on the same IR channel. The “Camera Select” buttons will light up with the selected IR channel when a button is pressed. You can change the camera’s IR channel by accessing the System Settings of the web interface.
3. Try removing other sources of IR interface (sunlight, fluorescent lighting, etc.)

- **Serial communication does not control the camera**

1. Make sure the camera is on and functioning with the IR remote controller.
2. Verify that the RS-232/RS-485 cable is connected correctly and using the proper pinout.
3. Verify the communication settings of the control software or device (e.g. joystick).
4. Verify that the communication port on the controlling device is activated (e.g. Com port on PC).
5. Verify that all communication settings in the OSD Setup Menu correlate to the commands being used (e.g. VISCA address).

- **IP communication does not control the camera**

1. Verify that the camera and controlling device are on the same LAN with unique IP addresses.
2. Verify that the controlling device is using the appropriate control port for the protocol.
 - o The default control ports are as follows: TCP: 5678, UDP: 1259, Sony UDP: 52381

If you need further assistance, please contact our support team at <https://community.ptzoptics.com/s/login/>