



Share Your Vision

Studio 4K User Manual





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Preface

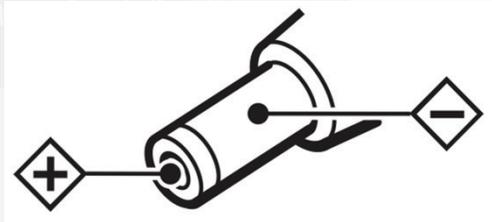
Before installation and usage, please read the manual thoroughly. If you have any questions or issues with this process, please contact our [Support Team](#).

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 expose the camera to any corrosive solid, liquid, or gas.
 - 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 rechargeable (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:

- **Studio 4K**
- **AC Power Supply**
- **Quick Start Guide**
- **IR Remote**
- **2 AAA Batteries**
- **USB C-A Cables**
- **Lens Cap**

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

PTZOptics 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. PTZOptics equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with instruction manuals, 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 PTZOptics equipment.

Operation is subject to the following two conditions:

- 1.) This device may not cause harmful interference.
- 2.) This device must accept any interference received, including interference that may cause undesired operation.

Copyright Notice

All PTZOptics works of authorship, including digital and printed materials such as manuals, guides, and software documentation, as well as trademarks, logos, and PTZOptics software code, are the exclusive property of PTZOptics. These materials are protected under applicable copyright laws in the United States and internationally. Unauthorized reproduction, translation, distribution, or replication in any form is strictly prohibited without explicit written permission from PTZOptics. PTZOptics reserves the right to enforce and protect its authored content rights, including those pertaining to its hardware, software, and other proprietary content, to the fullest extent permitted by law.

MODEL

PT12X-STUDIO-4K-GY-G3

PT20X-STUDIO-4K-GY-G3

PT12X-STUDIO-4K-WH-G3

PT20X-STUDIO-4K-WH-G3

Features



Hive Linked: PTZOptics cameras come Hive Linked out of the box. Once you've linked this camera to the PTZOptics Hive, you will be able to connect to this camera through a web browser from anywhere in the world.



Video Templates: With pre-configured NDI and IP streaming templates, you can easily choose the optimal IP video stream for your project, ensuring seamless setup and performance.



White Balance Modes: This feature helps adjust the color balance in your images, specifically focusing on 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, such as sunlight, shade, tungsten, fluorescent, etc. so that the white in your image remains true and other colors are displayed correctly.



Exposure Modes: Each exposure mode provides different combinations of aperture, shutter speed, and ISO. Various modes include manual (where you control everything), auto (the camera decides), and modes that allow control over one aspect (like shutter priority, where you control the shutter speed and the camera adjusts the other settings)



On-Camera Firmware Updates: Our developer team provides firmware updates accessible through the camera's web UI. These periodic updates will improve performance, add new features, fix bugs, or support new accessories.



Profiles: Profiles 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 conditions. Each profile would have different settings like white balance, exposure, frame rate, etc.



Simple Network Discovery: Quickly discover the camera and connect to a network. PTZ Optics cameras can now be found by simply entering <http://ptzoptics.local/> into any web browser. The IP address can 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. NTP ensures that the time stamps 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 other networked devices.



Multicast/Unicast: With multicast, data can be sent to multiple recipients simultaneously. With unicast, data can only be sent from one sender to one receiver. Choosing to use multicast or unicast will depend on the network setup and the requirements of the video stream.



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

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

- **4K Ultra HD**

The next-generation UHD CMOS sensor is 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.

- **Multiple Interfaces**

 - **Simultaneous Output combinations:**

 - HDMI 2.0 or 3G-SDI, plus IP Video [RTMP(S), SRT, RTSP, RTP] and either USB 3.0 or NDI HX 2 as outputs.

- **Multiple Control Options**

Controllable via IR remote, network connection, 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 used with NDI-compatible video mixing software.

- **Super Zoom**

SuperZoom takes advantage of the extra pixels available in our 4K PTZ cameras to deliver enhanced zoom capabilities when operating in 1080p mode. SuperZoom effectively doubles the optical zoom capabilities of our 4K cameras, allowing for more detailed image cropping.

Technical Specifications

Camera and Lens	
Model	PT12X-STUDIO-4K-GY-G3 PT20X-STUDIO-4K-GY-G3 PT12X-STUDIO-4K-WH-G3 PT20X-STUDIO-4K-WH-G3
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, 720-60/ 59.94/ 50/ 30/ 29.97
	SDI: 1920x1080p-60/59.94/50/30/29.97/25, 1280x720p-60/59.94/50/30/29.97
Sensor	(12X) 1/2.8" CMOS 8MP, Effective pixels: 8.4M
	(20X) 1/2.8" CMOS 8MP, Effective pixels: 8.4M
Scanning Mode	SDI: Progressive HDMI: Progressive and Interlaced
Lens	(12X) f = 4.1mm ~ 49.2mm, F1.8 ~ F2.68
	(20X) f = 4.7mm ~ 94mm, F1.6 ~ F3.6
Digital Zoom	Off (3840x2160) 2X (1920x1080) 4X (960x540) 8X (480x270) 16X (256x144)
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	2D & 3D Digital Noise Reduction

Video Signal Noise Reduction	≥55dB
Horizontal Field of View	(12X)..... 6.9° ~ 72.5° (20X)..... 3.5° ~ 60.7°
Vertical Field of View	(12X)..... 3.9° ~ 44.8° (20X)..... 1.9° ~ 34.1°
Display Field of View	(12X) 80.2° (20X) 67.8°
Image Flip	Supported (built-in gravity sensor)
Image Mirror	Supported
Image Freeze	Supported
POE	PoE+ (802.3at)
USB Specifications	
Operating System	Windows 7 / 8.1 / 10 / 11 / Mac OS, Linux, Android
Color System/Compression	H.264 / H.265 / MJPEG / YUY2
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 1.0
UVC Control	Supported

IP Video Specifications

Video Compression	H.264 / H.265 / MJPEG / YUY2 (H.265 HEVC via RTSP/NDI HX2 only)
Video Stream	First Stream, Second Stream
First Stream Resolutions	3840x2160, 2560x1440, 1920x1080, 1280x720, 1024x576, 960x540, 640x360
Second Stream Resolutions	1920x1080, 1280x720, 1024x576, 960x540, 640x360
Video Bitrate	First Stream: 32kbps ~ 81920kbps 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 3.0: Type C ▪ 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 USB 3.0: Type C ▪ 1x 3-pin Phoenix port RS485 Input / Output, Max distance: 3,937ft / 1200m, Protocol: VISCA / Pelco-D / Pelco-P

IR	4x IR Addresses, Max distance 30ft / 9.14m
Power Jack	JEITA Type (DC IN 12V)

Physical Parameter	
Input Voltage	JEITA type (DC IN 12V) / PoE+ (802.3at)
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. (L x W x H)	(12X) 5.7" L x 2.99" W x 3.09" H 145 mm L x 76 mm W x 78.5mm H
	(20X) 5.57" W x 5.94" (6.65 including SDI) D x 6.93" (7.91" with tilt up) H
Size mm. (L x W 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
Camera Weight	(12X) 1.5 lbs 0.68 kg
	(20X) 1.4 lbs 0.64kg

Dimensions

12X Model & 20X Model

3.09in



Zoom+/ Δ Zoom-/ ∇ 2.99in Focus-/ \rightarrow

AF/Enter Custom 0 Custom 1 Menu/Back



5.7in

Starting Your Camera

This camera can be powered using the included power supply or over Ethernet. Please make sure all connections are secure when using either method. Do not attempt to power the camera over Ethernet and use the power supply at the same time.

When the camera is turned on, it will perform a short startup sequence going through its full range of motion (This camera will zoom in and out). When the sequence is complete, the camera will stop and return to preset zero. If preset zero is not set, the camera will return to the factory default Home position.

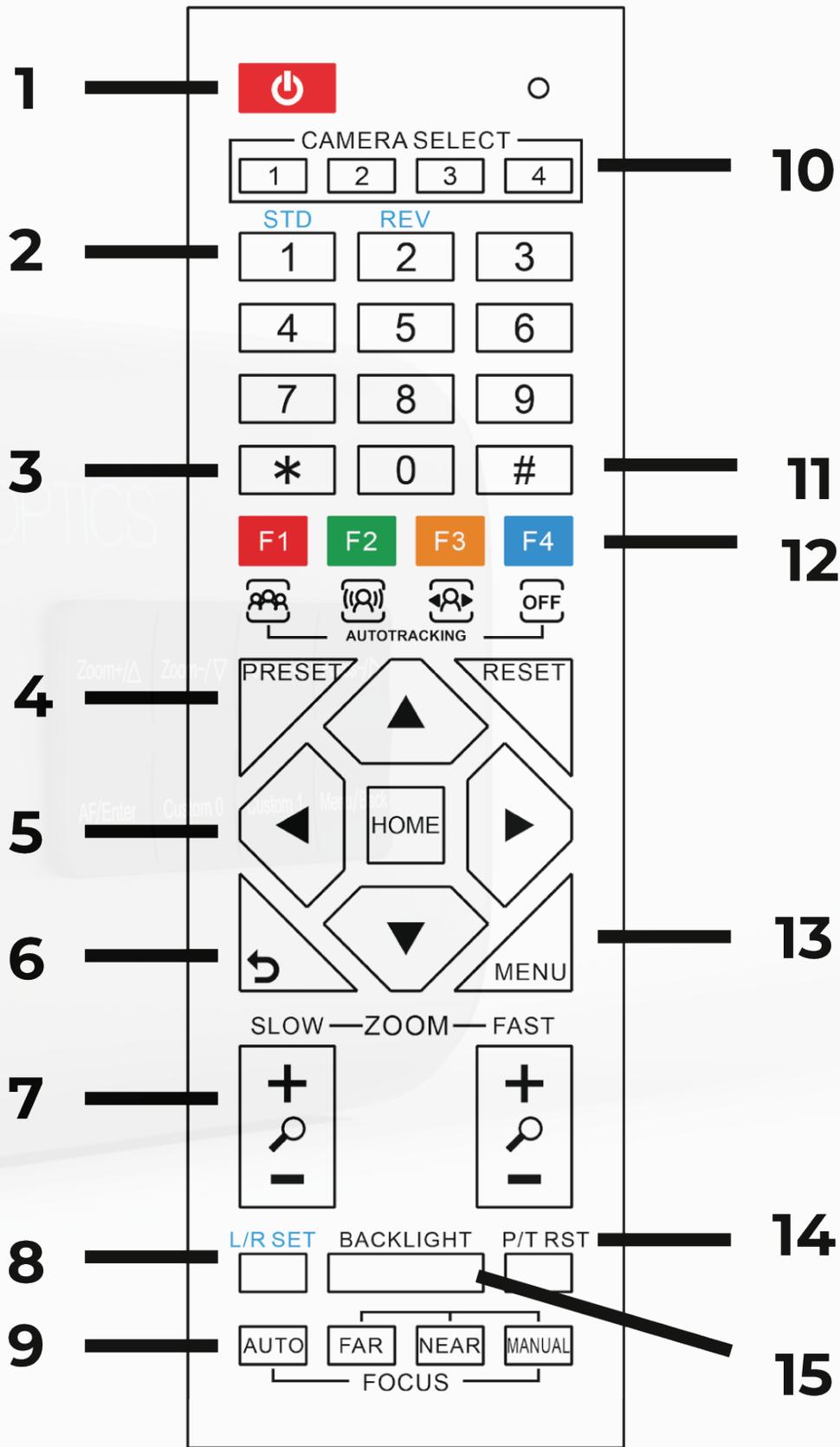
Power over Ethernet, or PoE, provides power and network connection. To power your camera over Ethernet, you will need a PoE+ 802.3at PoE switch. We recommend connecting your camera to the switch for peak performance using Cat 6 cabling or better.

Connections

- 3.5mm Input & Output
- RS485 Interface
- DC 12V
- LAN NDI HX
- USB 3.0
- USB 2.0 Service Port
- 3G SDI
- HDMI 2.0 Output



IR Remote Controller



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. Star Sign 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

Pressing [AUTO] tells the camera to focus the image on the center object. Pressing [Manual] switches the camera to manual focus mode. Press [FAR] to focus on a far object. Press [NEAR] to focus on a near object.

10. Camera Select Buttons

Press 1, 2, 3, or 4 to select the corresponding camera.

11. # Button

For multiple functions. Typically used when calling shortcuts

12. Multiple Function Buttons.

Function 1:

- **[F1]:** Address 1
- **[F2]:** Address 1
- **[F3]:** Address 1
- **[F4]:** Address 1

Function 2: 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. P / T RST Button

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

15. 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.

Important:

Although this remote can be used to control both PTZ Optics Pan Tilt Zoom cameras and PTZ Optics stationary cameras, the P / T RST Button will not self-calibrate stationary cameras.

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)

Resetting the IP address of your camera from the remote:

[*] > [#] > [MANUAL]: Resets IP information to default as well as the Web UI passwording prompting you to redefine a password.

[#] > [*] > [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

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

Menu

- Exposure
- Color
- Image
- P / T / Z
- Noise Reduction
- Setup
- Information
- Restore Default
- Privacy Mode
- [Enter] Select
- [Menu] Exit

Exposure

Exposure

Mode	Auto
ExpCompMode	On
ExpComp	-1
Gain Limit	3
Meter	Average
Backlight	Off
DRC	2
Anti-Flicker	60Hz
[Menu] Back	

(Exposure) Mode: Auto, Manual, SAE (Shutter Automatic Exposure), AAE(Aperture Automatic Exposure), Bright

ExpCompMode: On, Off (Effective only in

Full Auto mode).

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

Gain Limit: 0 ~ 15 (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)

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

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

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

Meter Refion: Calculate where the camera will prioritize auto-exposure. Choose between Average, Center, Smart, or Top. (Effective only in SAE and AAE mode).

- **Average:** Calculates entire image
- **Center:** Calculates from the center of the image
- **Top:** Calculates the top of the image
- **Smart:** Calculates the entire image and finds the best location

Color

Color

WB Mode	Auto
AWB Sens	Low
RG Tuning	0
BG Tuning	0
Sturation	100%
Hue	7
[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

Image

Luminance	7
Contrast	7
Sharpness	4
B&W-Mode	Off
Flip-H	Off
Flip-V	Off
Gamma	.45
Image 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

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

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

Gamma: Adjust the gamma levels to better capture details in both bright and dark areas without overexposing highlights or underexposing shadows.

Default, .45, .5, .56, .63, EXT

Image Style: Default, Norm, Clarity

P / T / Z

P/T/Z

D-Zoom Limit	Off
Display Info	On
Image Freeze	Off
Pre Zoom Speed	5
[Menu] Back	

D-Zoom Limit: Off, 2x, 4x, 8x, 16x, Super

Display Info: On, Off

Image Freeze: On, Off

Pre Zoom Speed: The speed at which the camera moves to a preset: 0~7

Noise Reduction

Noise Reduction

2D NR	Auto
3D NR	Auto
[Menu] Back	

2D NR (2D Noise Reduction): Auto, or 1~5

3D NR (3D Noise Reduction):Auto, or 1~5

Setup

Setup

Language	English
Video Setting	
Audio Setting	
Focus Setting	
Communication Setting	
Other Setting	
[Menu] Back	

Language: Options include: English, Chinese

Video Setting: Enters Sub Menu:

- **VO Switch:** Switch the video output between HDMI or SD.
- **DVI Mode:** Turn DVI Mode On or Off.
- **Format Mode:** Choose OSD, 50HZ, or 60Hz
- **Video Format:** Options Below:
 - 4KP29.97 (HDMI)
 - 4KP30 (HDMI)
 - 4KP50 (HDMI)
 - 4KP59.94 (HDMI)
 - 4KP60 (HDMI)
 - 1080P25 (HDMI+SDI)
 - 1080P29.97 (HDMI+SDI)
 - 1080P30 (HDMI+SDI)
 - 1080I50 (HDMI)
 - 1080P50 (HDMI+SDI)
 - 1080I59.94 (HDMI)
 - 1080P59.94 (HDMI+SDI)
 - 1080I60 (HDMI)
 - 1080P60 (HDMI+SDI)
 - 720P29.97 (HDMI+SDI)
 - 720P30 (HDMI+SDI)
 - 720P50 (HDMI+SDI)
 - 720P59.94 (HDMI+SDI)
 - 720P60 (HDMI+SDI)

• **Audio Settings:** Enters Sub Menu:

- Audio Source: Mic, Line In (3.5mm), Disable
- Input Volume: 0dB to 24dB in increments of 3
- Line Out Volumet: 0dB, 1.5dB, 3dB, 4.5dB, 6dB, 7.5dB, 9dB, 10.5dB, 12dB

- **Focus Settings:** Enters Sub Menu:
 - **ToF (Time of Flight) Focus:** On or Off
 - **AF-Sense:** Low, Normal, High
 - **AF-Zone:** Center, Top, Bottom, Front
 - **AF Limit:** Choose distance in meters, Off, or Infinite
 - **Focus Lock:** Lock or Unlock

Other Settings

Other Setup

OSD Flip	Off
OSD TimeOut	Off
LDC	Off
Keypad	Active
Custom 1 func	Preset 0
Custom 2 func	Preset 1
[Menu] Back	

OSD Flip: Flips the OSD menu Horizontally

OSD TimeOut: Set time before OSD expires

LDC: Lens Distortion Correction. Slightly Adjust and compensate for lens any lens distortion

Keypad: Active or Lock the side keypad

Custom 1 func: Control the function of custom button 2

Custom 2 func: Control the function of custom button 2

Communication Setup

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

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

Information

Information

Version	8.1.88
Model	P11.HI
Date	2025-01-09
AF Version	14.4.55
Video Format	1080P60
Select [Enter]	
[Menu] Back	

Version: Displays firmware version

Model: Displays the camera model version

Date: Displays the date

AF Version: Displays the current Auto Focus implementation

Video Format: Displays the current video format

Restore Default

Restore Default

Yes

No

[HOME/ENTER] Enter

[Menu/BACK] Back

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

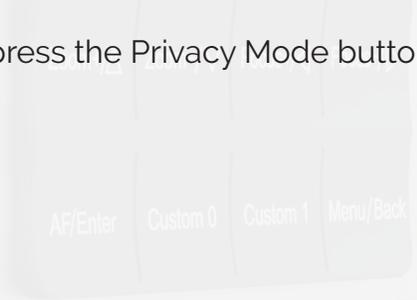
Privacy Mode

Privacy Mode

Select [Enter]

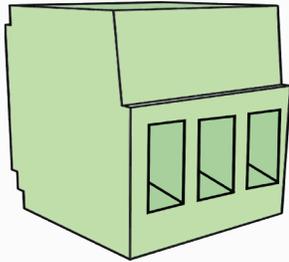
[Menu] Back

Select and press the Privacy Mode button to disable the video feed.



AF/Enter Custom 0 Custom 1 Menu/Back

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

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.

Finding the camera's IP Address

Method 1: Use a Internet browser and type in "<http://ptzoptics.local/>" to reach the camera's web interface. You will be prompted to set up a username and password. Once logged in, click on the Network Settings tab to make adjustments to the camera's network settings.

Method 2: Run an HDMI cable from the camera to a display. Use the IR remote shortcut **[*] > [#] > [4]** to display the camera's IP address.

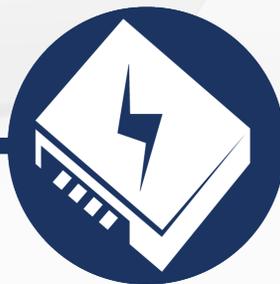
Note: If you are setting up multiple cameras, it's recommended to do so one at a time.

Tip: Assign a unique Device ID to each camera from the Web UI's Device Info tab. This will allow you to reach each camera's web interface without needing to memorize an IP address.

For example, "<http://cameraOne.local>" and "<http://cameraTwo.local>".



Studio 4K



Power over Ethernet Switch

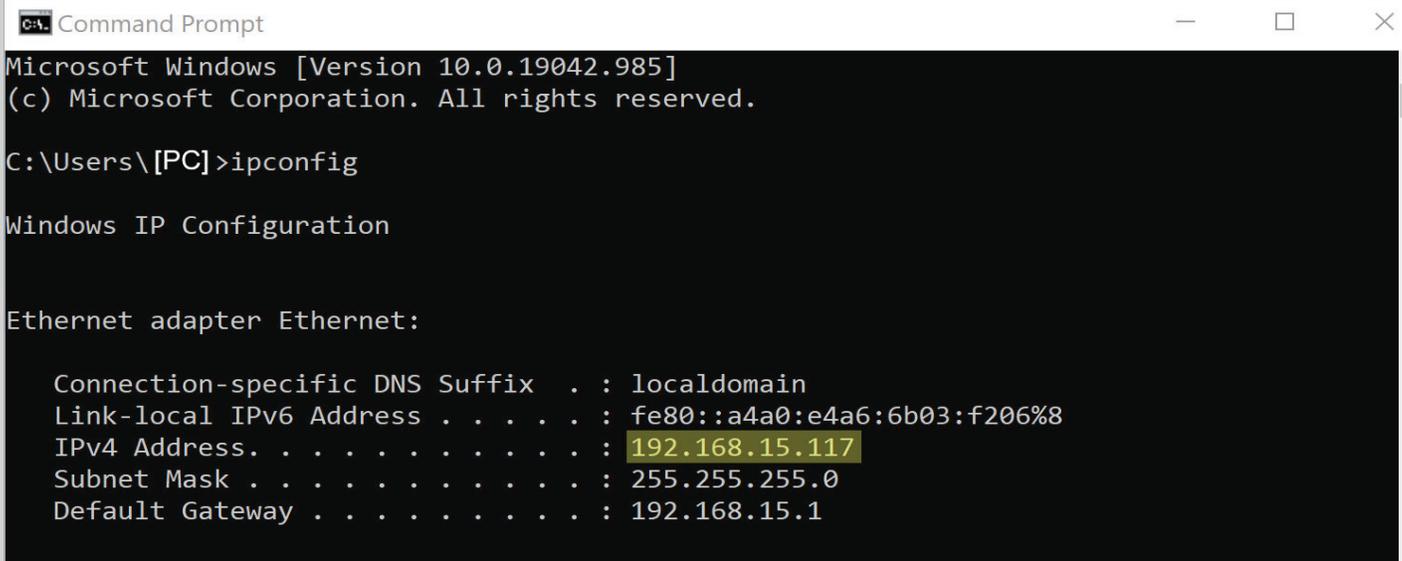


Computer

Discovering your Network Info

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".



```
C:\Users\[PC]>ipconfig

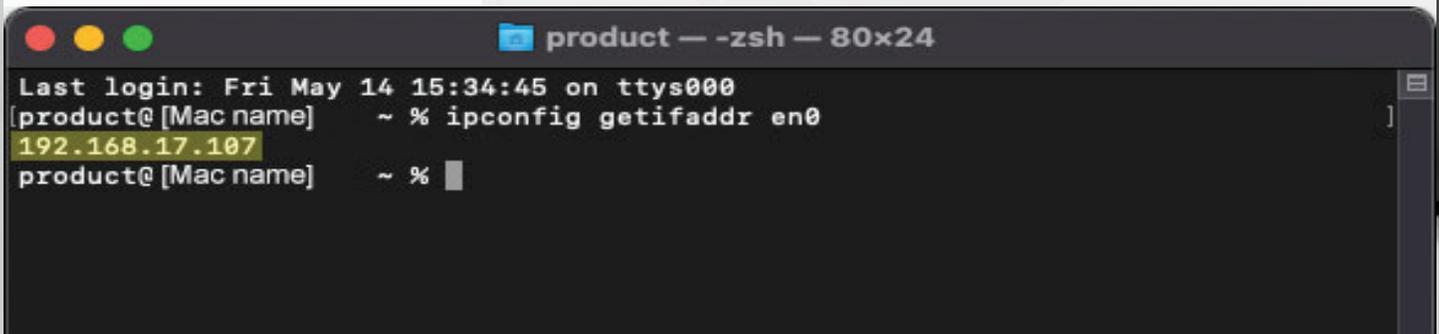
Windows IP Configuration

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] ~ %
```

Important Note: The camera's Mac Address is located on the sticker on the bottom of the camera.



NDI® HX 2 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®| X connection.

NDI® HX 2 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.
 - o The NDI feed will utilize the camera's device friendly name.
4. Select your camera.

NewTek® NDI®, NDI® 4 & NDI® HX are all registered trademarks by Vizrt®. Please note that your NDI License key is non-transferrable.

Setting & Calling Presets

The PTZOptics **Move 4K**, the **Move SE**, the **Link 4K**, and the **Studio 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 30 and page 32.

(**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 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.
 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.
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.

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

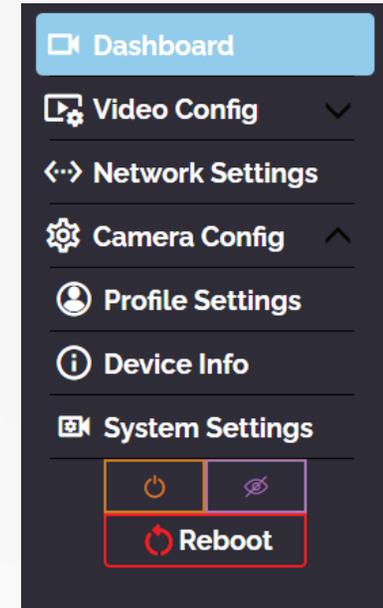
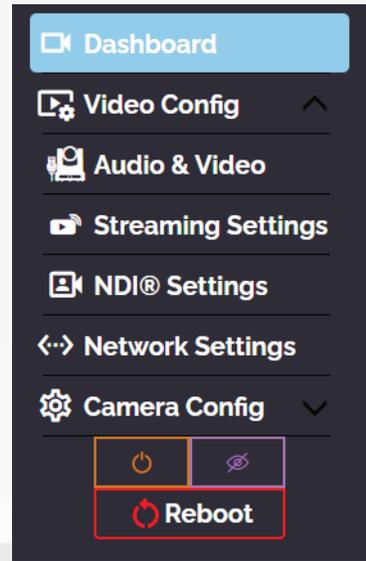
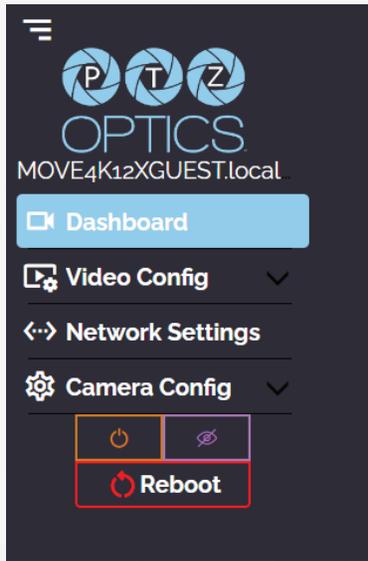
The screenshot displays the PTZ Optics web interface. On the left is a navigation sidebar with the PTZ Optics logo and the URL 'ptzoptics.local/'. The sidebar contains menu items: 'Dashboard', 'Video Config', 'Network Settings', and 'Camera Config'. Below these are power and eye icons, a 'Reboot' button, and three scene selection buttons: '1: Studio', '2: Low Light', and '3: Outdoor'. The main area features a live video feed of a man in a purple shirt speaking at a podium. To the right of the video are control panels for 'Zoom' and 'Focus', including 'Snap Focus', 'Menu', and 'Menu BACK' buttons. Below the video are tabs for 'Speed', 'Image', and 'Control'. The 'Speed' tab is active, showing 'Zoom Speed' and 'Focus Speed' both set to '5', with 'Default' and 'Apply' buttons. To the right of the speed controls is a 'Preset Control' section with 'Set', 'Call', and '0-254' dropdown buttons, and a grid of 'Preset 1' through 'Preset 9' buttons.

Accessing the Camera

1. Enter "<http://ptzoptics.local/>" or the camera's IP address into a web browser.
2. If this is your first time logging into the camera or a Factory Default Reset has been performed, you will be prompted to set a password. You can update your login credentials later on the [System Settings](#) page.

Navigation Panel

The **Navigation Panel** allows you to select the various control options for the camera. It can be collapsed by clicking the three lined icon in the top left hand corner to make more room within the user interface.



- **Dashboard:** This tab will take you to the Web UI's Main Screen.
- **Video Config Tab:** This drop-down tab houses the Audio & Video tab, the Streaming Settings and NDI Settings tab.
- **Audio & Video:** This tab access to Video Encoding, IP Video Stream 1 & Stream 2 Settings & Audio Settings.
- **Streaming Settings:** This tab accesses the RTMP(S), SRT, RTSP, Multicast & ONVIF Settings.
- **NDI Settings:** This tab accesses the camera's NDI settings.
- **Network Settings:** This tab accesses the LAN & NTP settings.
- **Camera Config Tab:** This drop-down tab houses the Profile Settings tab, the Device Info tab, and the System Settings tab.
- **Profile Settings:** This tab is for uploading a Logo, Profile Configuration, Quick Profiles, Custom CSS & Tutorial Mode sections.
- **Device Info:** This tab displays device information.
- **System Settings:** This tab accesses HTTPS and Access settings, Firmware Check, Restore Default (Basic), Firmware Upload, IR Remote Channel Selection, & Restore Default (Advanced) sections.

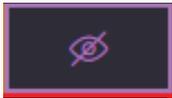
Power Controls



Power On/ Power Off Button: Remotely power the camera on or off.

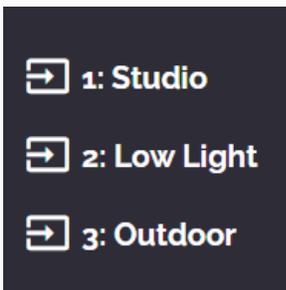


Reboot Button: Restarts the camera.



Privacy Button: Turns off the camera video feed leaving it in standby mode.

Quick Profiles



Below the Navigation Panel, there are three quick camera profiles. These profiles are included with the camera by default. They can be adjusted, removed, or replaced by custom profiles. Custom profiles are discussed in greater detail in the Profile section.

Tally Lights Colors

The built-in tally light has three colors to indicate status. Preview (green) or Program (red). This can be toggled on or off on the [Camera Settings](#) page.



Camera Dashboard

The **Camera Dashboard** page accessese the **Camera's Video Feed**, **PTZ Control**, **OSD Menu**, **Preset Control**, **Speed Settings**, **Image Settings** & **Control Settings**.

- The PTZ Control section lets you 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 allows you to adjust the speed at which the camera will **Zoom** and **Focus**.

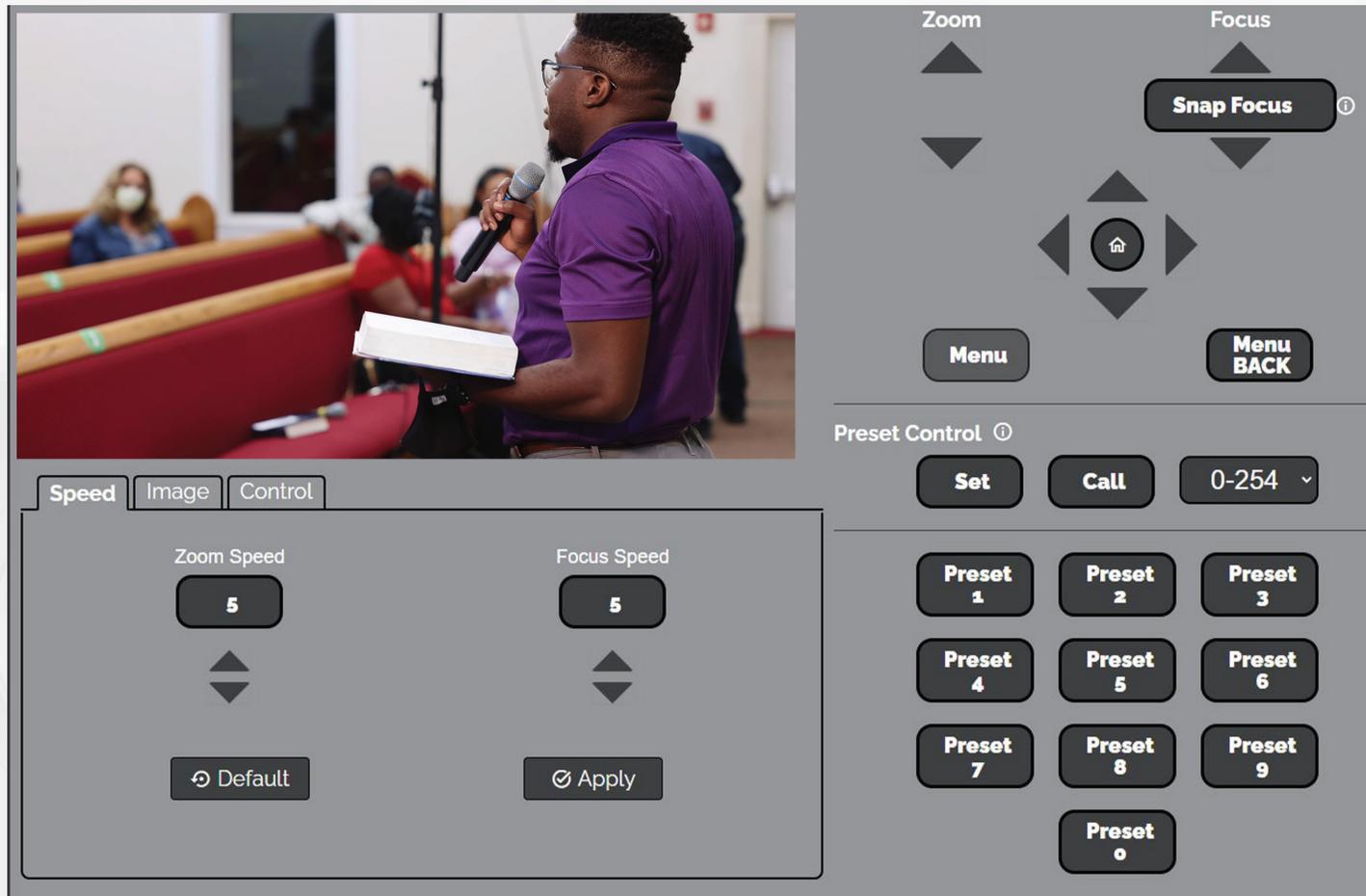
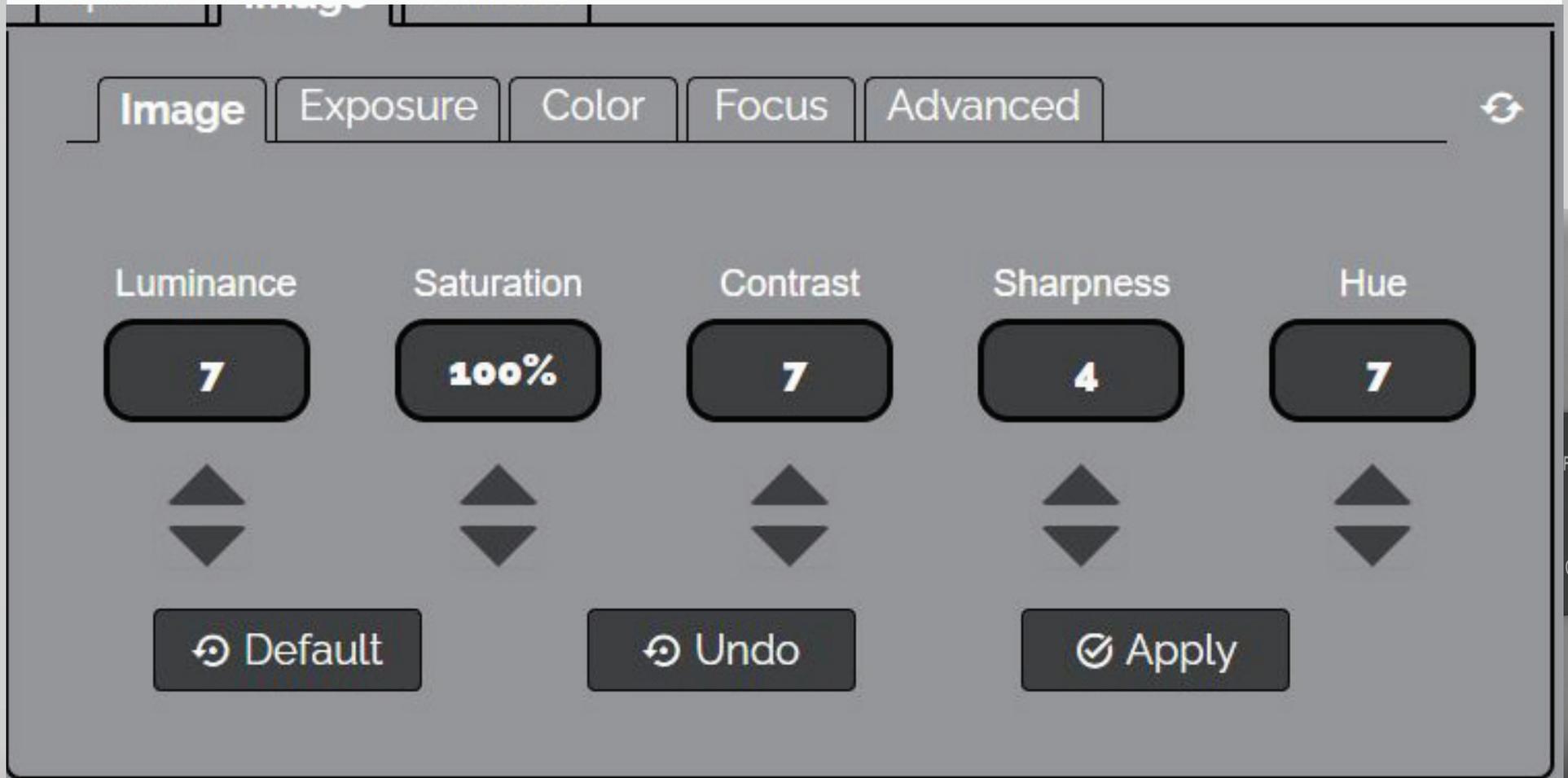


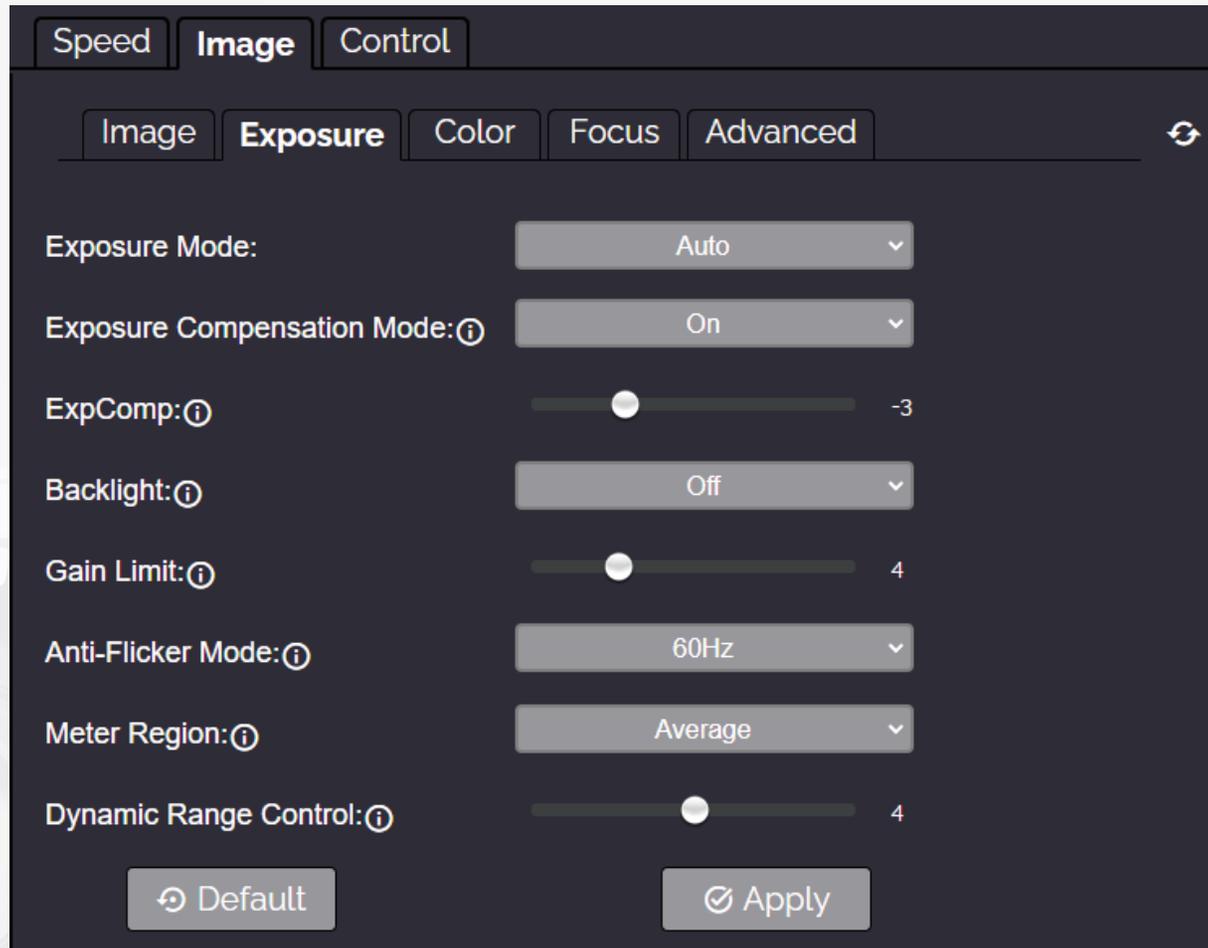
Image Tab

The **Image** tab lets you to adjust the camera's **Luminance**, **Saturation**, **Contrast**, **Sharpness**, and **Hue**



Exposure

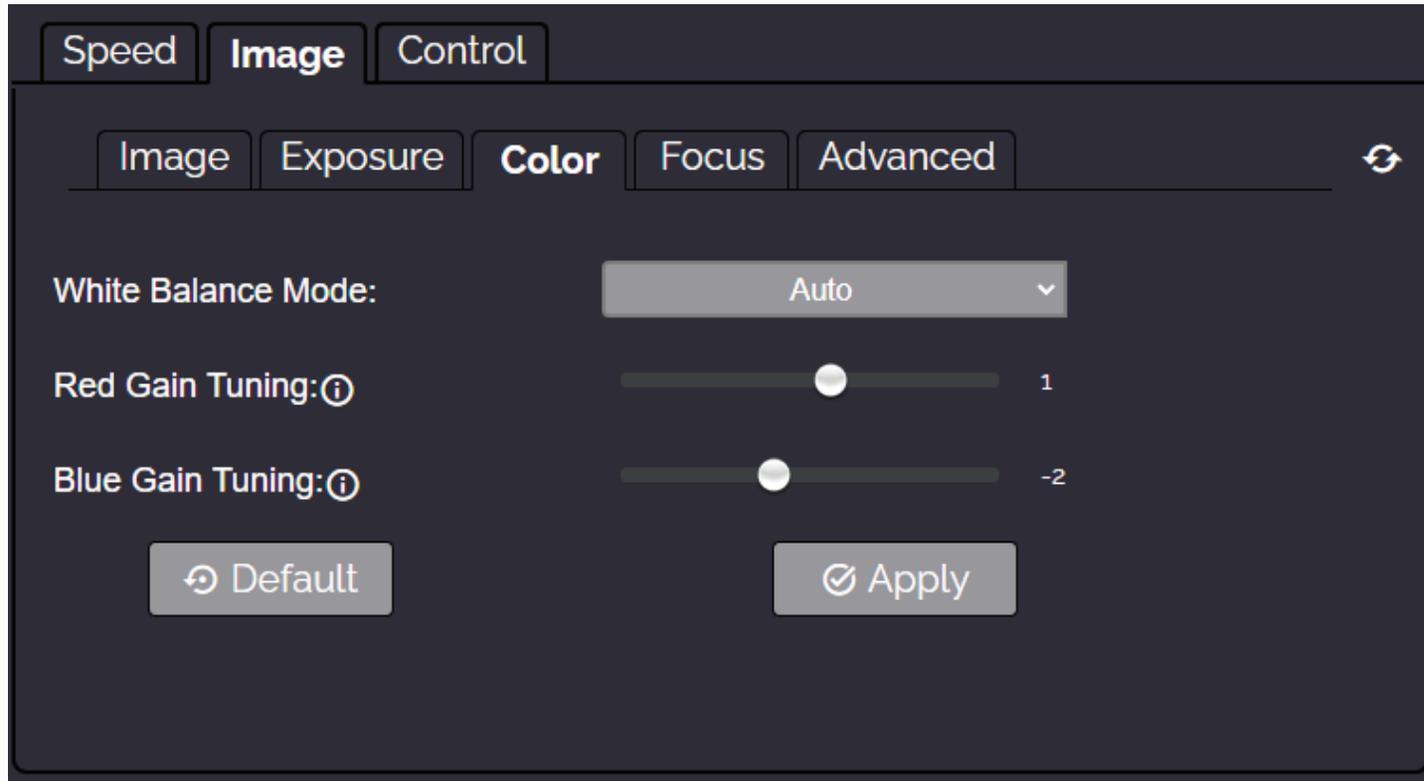
The **Exposure** tab lets you to fine-tune the camera's Exposure settings to ensure image clarity as well as ensure the images from multiple cameras match.



- 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 Tab

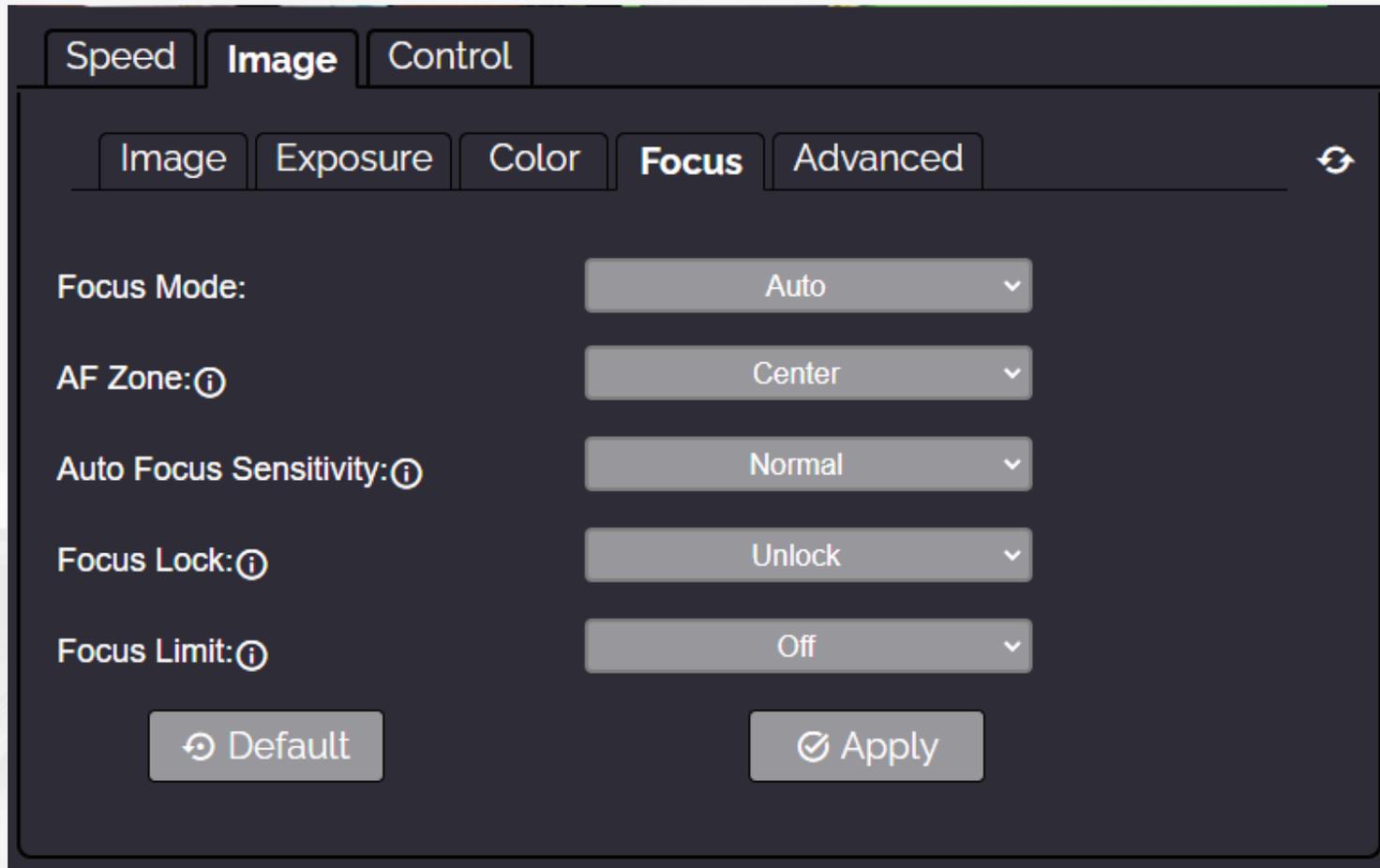
The **Color** tab lets you to fine tune the camera's white balance and color tint settings to adjust for lighting, as well as ensure images from multiple cameras match.



- 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 Tab

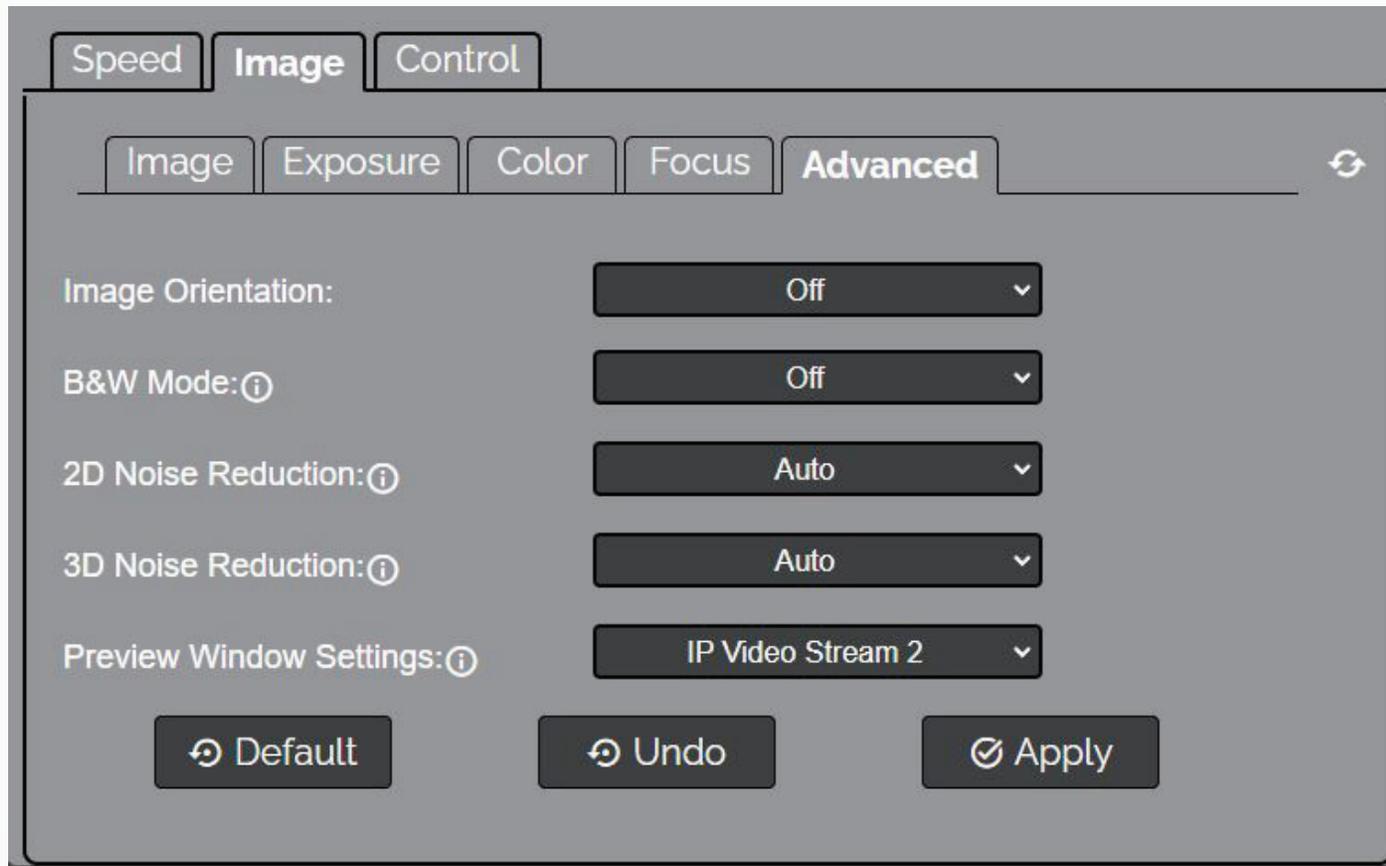
The **Focus** tab lets you to adjust the various focus settings, including **Auto Focus**, **Auto Focus Zone**, **Auto Focus Sensitivity**, **Focus Lock** and **Focus Limit**.



- 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.

Advanced Tab

The **Advanced** tab allows you to adjust more advanced settings such as **Image Orientation** manual adjustment, **2D Noise Reduction**, **3D Noise Reduction**, **B&W Mode**, and **Preview Window Settings**.

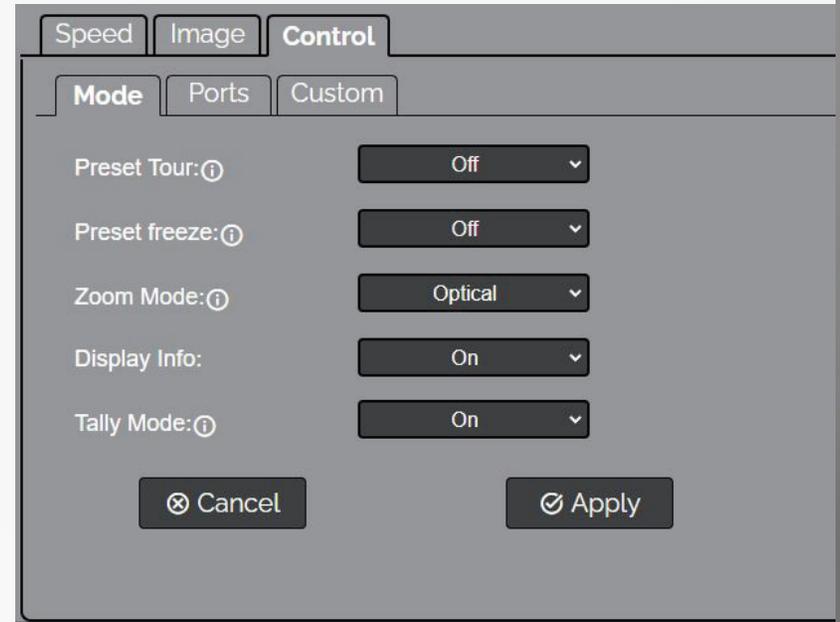


- You must hit the “Apply” button for these changes to take effect.
- The “Default” button will revert the Image settings to factory default.
- The “Undo” button will revert the Image settings to the last saved settings.

Control Tab

The **Mode** tab lets you adjust the performance settings.

- Preset Tour:** When enabled, the camera will call each of the Set presets sequentially.
 Options include: On, Off
When Enabled:
Time Interval: How long the camera will remain at a preset before recalling the next preset.
Preset Range: Which presets are called when Preset Tour is enabled.
Preset Tour Speed: How fast the camera will recall presets.
- Preset Freeze:**
 Temporarily pauses the video feed as the camera calls a preset. Once the camera is in position, the camera will resume sending the video feed.
 Options include: On, Off
- Zoom Mode:** Determine whether the camera is in Optical or Digital Zoom mode.
Optical: The camera will be able to zoom in and out within the maximum ranges provided by its optical lens.
Digital: The camera will be able to digitally zoom in beyond the optical lens range. This feature reduces the video quality.
 Options include: 2X, 4X, 8X, & 16X.
- Display Info:** Toggle camera info on or off.
- Tally Mode:** Decide whether or not the camera's tally light reacts to signal changes.
 Options include: On, Off



Control Ports

The **Control > Ports** tab allows you to change the camera's **TCP**, **UDP** & **HTTP** ports, and view the Sony port. The Sony Port cannot be changed.

The screenshot shows the camera's menu interface. At the top, there are three tabs: 'Speed', 'Image', and 'Control'. The 'Control' tab is selected. Below it, there are three sub-tabs: 'Mode', 'Ports', and 'Custom'. The 'Ports' sub-tab is selected. The main area displays four port settings, each with a label and a value in a dark grey box:

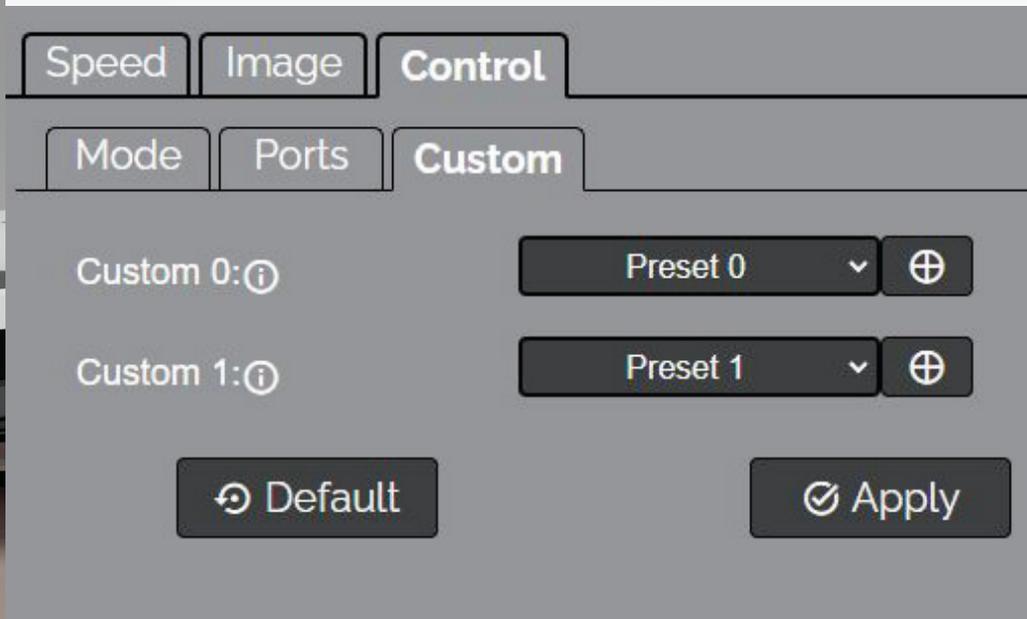
TCP Port: ⓘ	5678
UDP Port: ⓘ	1259
HTTP Port: ⓘ	80
Sony UDP Port: ⓘ	52381

At the bottom of the menu, there are two buttons: 'Cancel' (with a close icon) and 'Apply' (with a checkmark icon).

Custom Tab & Custom Buttons

The **Custom** tab lets you configure the custom buttons to perform one of several available options.

- **Custom 0:** Configure the Custom Zero button on the camera.
Options include: Preset 0, Home, Quick Profile 1, Quick Profile 2, Quick Profile 3, Snap Focus, OnePush White Balance, or Privacy Mode.
- **Custom 1:** Configure the Custom One button on the camera.
Options include: Preset 0, Home, Quick Profile 1, Quick Profile 2, Quick Profile 3, Snap Focus, OnePush White Balance, or Privacy Mode.



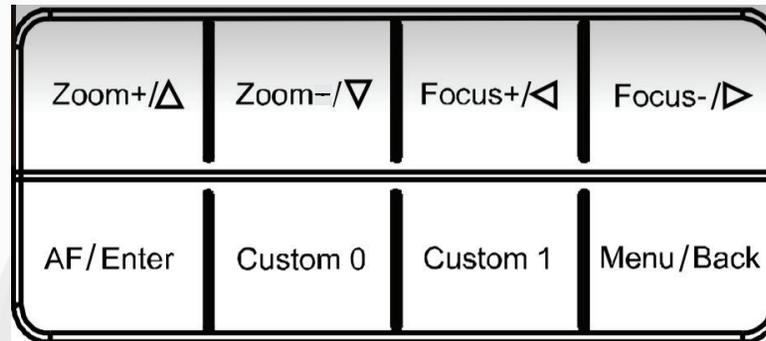
- **Crosshairs:** Clicking on the crosshair buttons to the right of the drop-down options will test any recent changes to the custom button settings.

1

2

3

4



5

6

7

8

- 1.)** Zoom the camera IN. (When in the menu, directional key UP.)
- 2.)** Zoom the camera OUT. (When in the menu, directional key DOWN.)
- 3.)** Focus IN. (When in the menu, directional key LEFT.)
- 4.)** Focus OUT. (When in the menu, directional key RIGHT.)
- 5.)** The Auto-Focus button. (When in the menu, acts as the ENTER key.)
- 6.)** Press to send the command associated with Custom 0. By default, short pressing will Recall Preset 0, and long pressing will Set Preset 0.
- 7.)** Press to send the command associated with Custom 1. By default, short pressing will Recall Preset 1, and long pressing will Set Preset 1.
- 8.)** Press to bring up the on-screen menu. (When in the menu press to go BACK.)

Audio & Video Settings

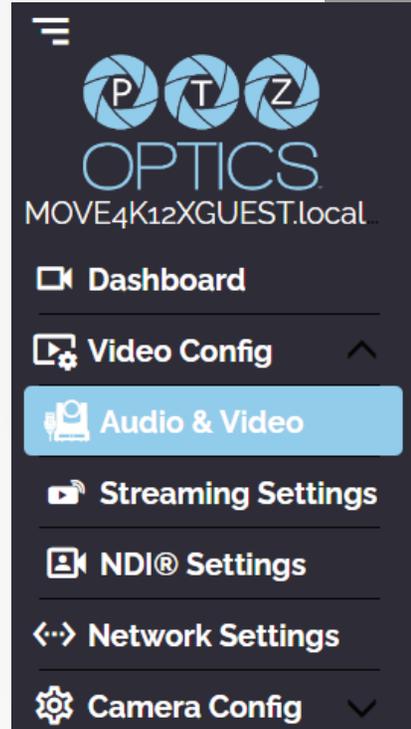
The Audio & Video Settings page accesses the **Video Encoding Settings, IP Video Stream 1 / Stream 2 Encoding Settings & Audio Encoding Settings** sections of the network video feeds.

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:** OSD Priority, 50Hz, 60Hz
- **Encode Protocol:** The Encoding Profile defines the compression method and color reproduction of the IP Stream.
 - **Options include:** High, Main, Baseline.
- **Video Template:** Select Off, Ultra, High, Medium, Low,
- **Advanced:** Off or Super Zoom. Super Zoom sets the maximum resolution to 1080 to double the camera's zoom distance. For example, a 20X 4K camera will operate as a 40X 1080 camera.

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, 2560x1440, 1920x1080, 1280x720, 1024x576, 960x540, 640x360
 - Stream 2 option includes: 1920x1080, 1280x720, 1024x576, 960x540, 640x360
- **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. **Note:** The available range for the bitrate will depend on the selected Encoding Protocol.
 - Stream 1 Range: 32~81920kbps
 - 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
- **Factory Reset:** Press and Hold Enter + Menu for 15 seconds to perform a factory reset.



- **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

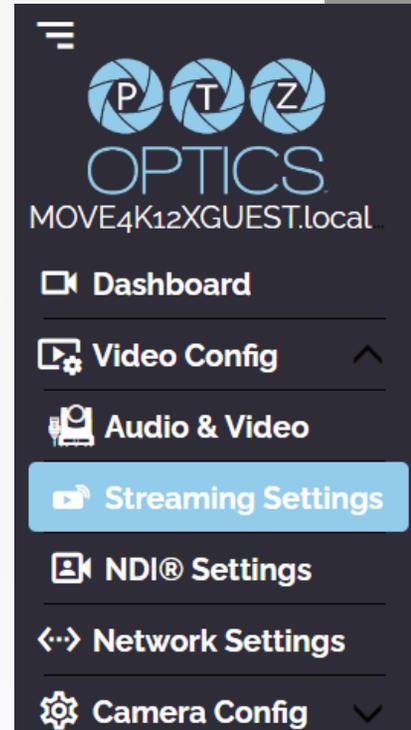
Audio Encoding Settings

- **Enable Audio Encoding:** Select whether Audio is included in the applicable video outputs.
 - Options include: On, Off
- **Input Type:** Choose between Micorphone or Line Input
- **Audio Encoding Profile:** ACC
- **Sample Rate (kbps):** Define the number of samples per second the audio utilizes.
 - Options include: 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
- **Audio Out:** Select whether the Line Out is included with the applicable video outputs:
 - Options include: Off, Video Outputs, Line Out, or All.
- **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, 1.5dB, 3dB, 4.5dB, 6dB, 7.5dB, 9dB, 10.5dB, 12dB
- **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.

- **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**
 - **Enable 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:** None, AES-128, AES-192, AES-256
 - **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. Range 5 ~100.
 - **SRT Variable Latency(ms):** Define the maximum buffer size for maintaining SRT packets from the camera to the destination. Range 20 ~ 8000ms
 - **SRT Stream ID (Optional):** Define a unique name for the SRT stream.
- **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.



NDI Settings

This tab access the camera's configurable NDI settings.

- **NDI Local Device Name:** The name you assign your camera.
- **NDI Local Device Channel:** The video feed you assign to the camera.
- **NDI Receive Group:** Decide which NDI devices your network can view the NDI sources. The camera and computer must be part of the same group.
- **NDI Discovery Server:** Toggles On or Off. This handles discovering and distributing NDI sources more reliably across your network.
- **NDI Discovery Server Address:** Define the IP Address for the Discovery Server.
- **NDI Multicast Server:** Toggles On or Off. This allows the camera's NDI feed to be viewed by multiple NDI devices. Do not use this unless your network is configured for multicast.
- **NDI Firmware Version:** The NDI firmware version currently running on the camera.
- **NDI Port:** Defaulted at 5961. This port is how you reach the NDI feed of your camera.
- **Video Template:** This alters the corresponding settings on the Audio & Video Settings Page.



The screenshot shows the 'NDI® Config' settings menu with the following values:

Setting	Value
NDI® Local Device Name: ⓘ	ptzoptics
NDI® Local Device Channel: ⓘ	Chan 1
NDI® Receive Group: ⓘ	Public
NDI® Discovery Server: ⓘ	Off
NDI® Discovery Server Address: ⓘ	192.168.1.2
NDI® Multicast Server: ⓘ	Off
NDI® Firmware Version: ⓘ	PT5.6.0
NDI® Port: ⓘ	5961
Video Template: ⓘ	High

Buttons: Cancel, Apply

Network Settings

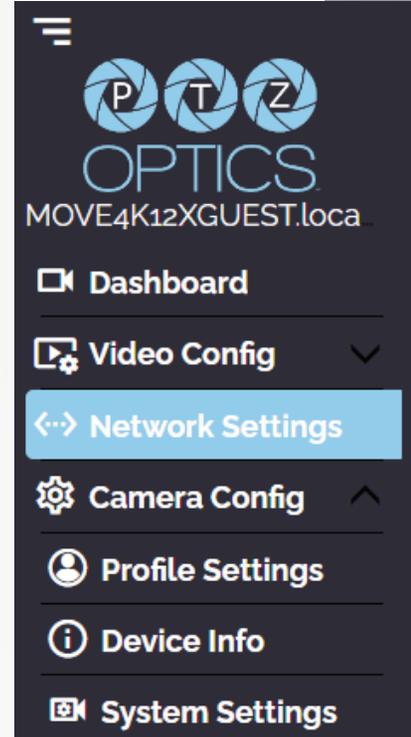
The **Network Settings** page accesses the **LAN Settings** & **NTP Settings** sections.

- **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.

- **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).
- **DHCP Timeout:** controls how long the camera waits to obtain an IP address after being powered on. This setting can not be changed.
- **Static Feedback Address, Static Fallback Address, Static Feedback Mask:** Handle the network settings the camera will utilize if it does not obtain the network connection via DHCP.



Profile Settings

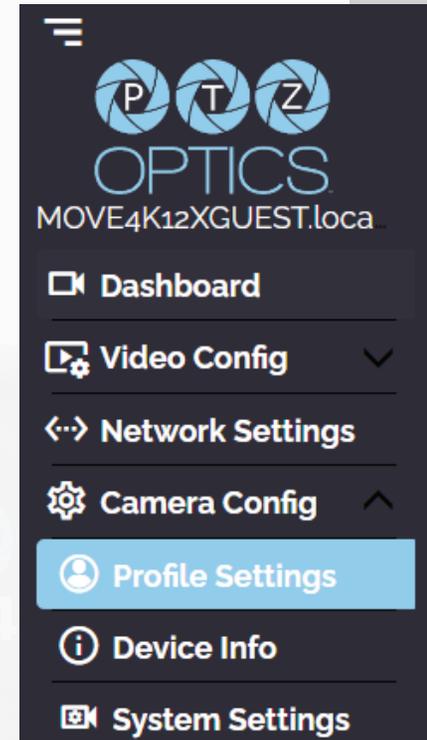
Under the Camera Config tab, the **Profile Settings** page gives you access to the **Logo Upload**, **Profile Configuration**, **Quick Profiles**, **Custom CSS & Tutorial Mode** sections.

- **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.
- **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 Settings Continued

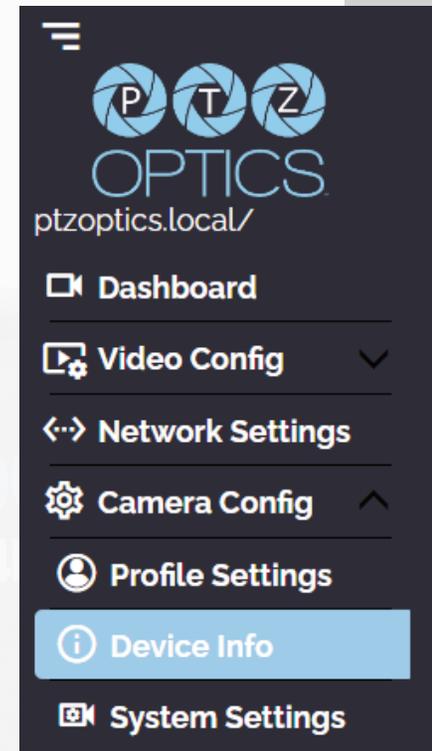
- **Profile Upload**
 - **Upload File:** Upload a saved Profile from your computer to the camera.
- **Quick Profile Select**
 - **Download Button:** Download the selected Profile to your computer.
 - **Remove Button:** Remove the selected Profile from the camera.
- **Custom CSS**
 - **Color Mode:** Select 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.

Device Information

The **Device Info** tab 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

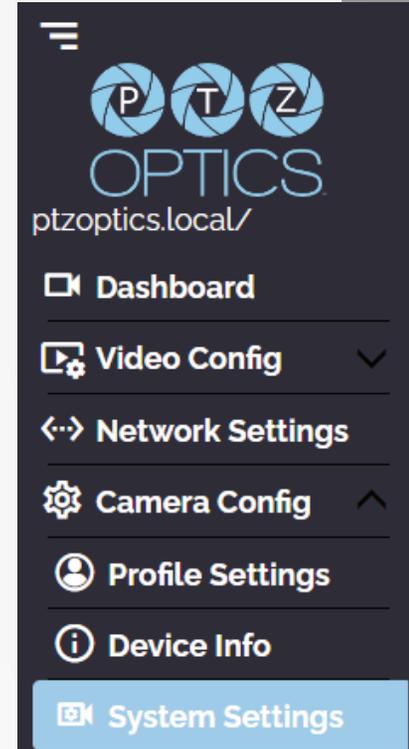
- **HTTPS Certificate:** Upload a HTTPS Certificate from your computer.
- **HTTP Port:** The HTTP Port is how you reach the web interface of your camera
(http://[Camera IP]:[port]/)

▪ 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 Login:** Enable or Disable. Sending the IP address to a guest will provide the guest with a limited version of the camera Web UI. Standard camera operations will be available, but administrative privileges will not be.
- **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

- o **Mirrors:** Define a server address for acquiring the latest PTZOptics firmware files. By default, the camera will query PTZOptics at <https://firmware.ptzoptics.com/>
- o **Check Firmware Version:** Check to see if your camera is running the latest firmware from the Firmware Update Server.

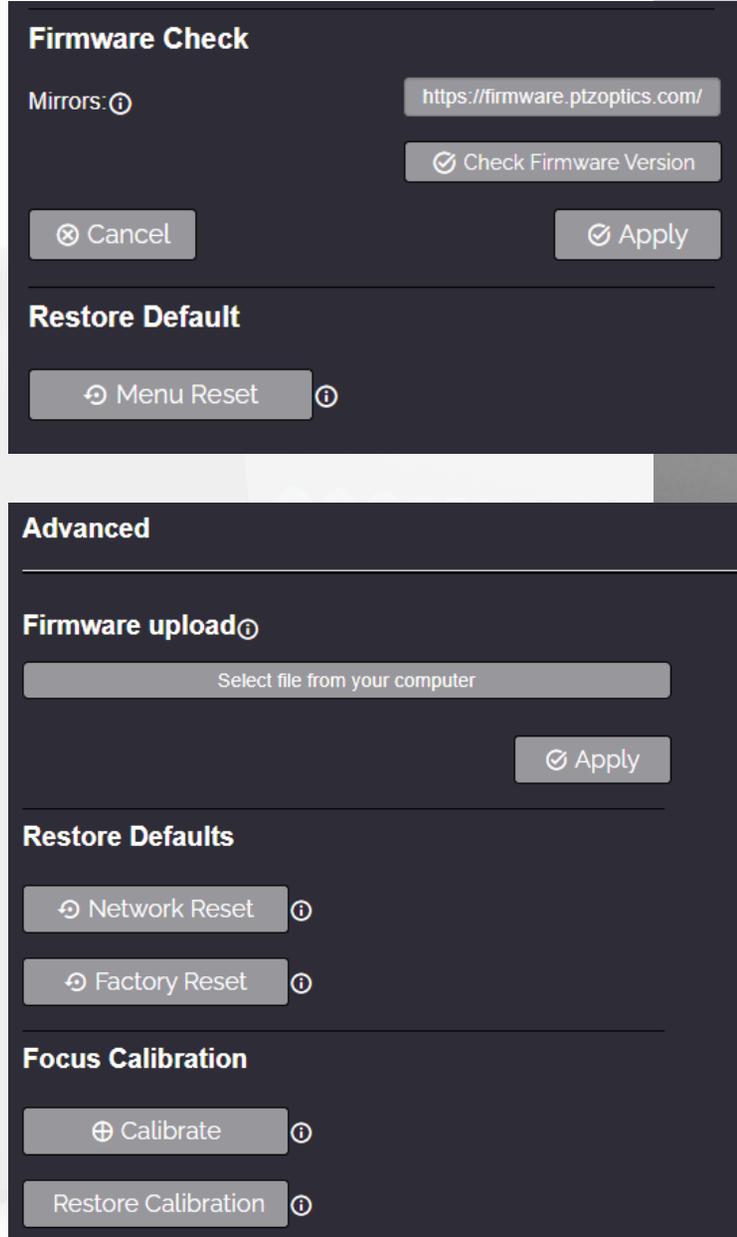
Firmware Upload

- o **File Upload (Advanced):** Select a firmware file from your PC to upload to the camera.

Restore Default

- o **Menu Reset (Basic):** Reset the camera's non-network settings to factory default.
- o **Network Reset (Advanced):** Reset the camera's network settings to factory default.
- o **Factory Reset (Advanced):** Reset all of the camera's settings to factory default.

Note: Performing a Network or Factory Reset will prompt you to set a new password.

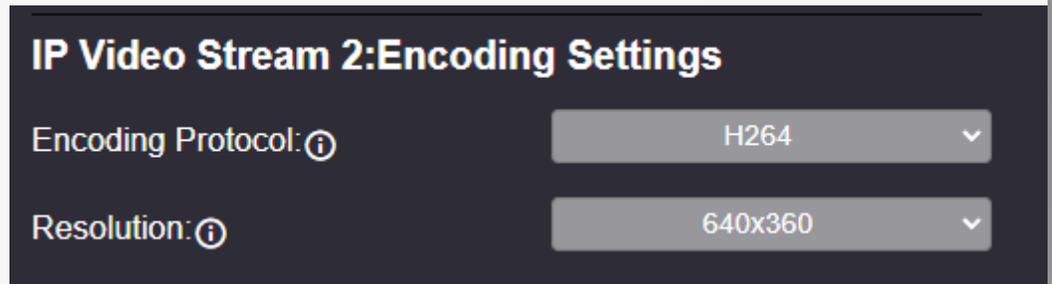


Photobooth Functionality

The PTZOptics Studio 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.



PTZOptics 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
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_LensBlocking	8x 09 7E 7E 00 FF	y0 50 ou ou ou ou 00 00 ov ov ov ov 00 ow 00 FF	UUUU: Zoom position VVVV: Focus position W.bit0: Focus mode 1: Auto, 0: manual
CAM_CameraBlocking	8x 09 7E 7E 01 FF	y0 50 op op op oq oq or os tt ou vv ww 00 xx oz 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
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/ml/PTZOptics-Command-List-HTTP-CGI-G3>

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.
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. 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/>