PTZOPTICS™

Share Your Vision

Move 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 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 environemt, 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:

- **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.

HEVC Advance™
Covered by patents at patentlist.accessadvance.com

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

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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

MODEL

PT12X-4K-GY

PT12X-4K-WH

PT20X-4K-GY

PT20X-4K-WH

PT30X-4K-GY

PT30X-4K-WH

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. This feature will be available nearing the end of September 2024.

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)

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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.

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.

- ## Audio Based Auto-Tracking

  Audio Tracking. Audio Tracking can be performed by pairing the camera with the following microphones: Guide Linked here.

  Yamaha RM-CG, Nureva HDL410, Shure MXA920, Sennheiser, TeamConnect2 Ceiling, Televic Flex

- ## 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 flexibililty 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.

Technical Specifications

Camera & Lens	
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
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

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Video Signal Noise Reduction	≥55dB
Horizontal Field of View	(12X)..... 6.9˚ ~ 72.5˚ (20X)..... 3.5˚ ~ 60.7˚ (30X)..... 2.5˚ ~ 59.2˚
Veritical 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	▪ YUY2: Max resolution: 3840x2160pp@5 ▪ MJPEG: Max resolution: 3840x2160p@30 ▪ H.264 AVC: Max resolution: 3840x2160p@30 ▪ H.265: Max resolition: 3840x2160p@30
USB Audio	Supported
UVC Version	UVC 1.1 ~ 1.5
UVC Control	Supported

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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 Comppression	AAC
Audio Bit Rate	96kbps, 128kbps
Supported Protocols	TCP/IP, UDP, HTTP, RTSP, RTMP/RTMPS, ONVIF, SRT, Multicast, etc.
Input & Output Interface	
HD Output	▪ 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	▪ 1x 3.5mm Line level Input ▪ 1x 3.5mm Line level Output

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Communication Interface	▪ 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

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Auto-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’

Dimensions

12X & 20X Models

30X Model

Starting Your Camera

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 home 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)

Connections

- 3.5mm Input & Output
- Resolution Dial
- RS485 Interface
- RS232 Input & Output
- DC 12V
- LAN NDI | HX
- USB 2.0
- 3G SDI
- HDMI 2.0 Output
- Restore

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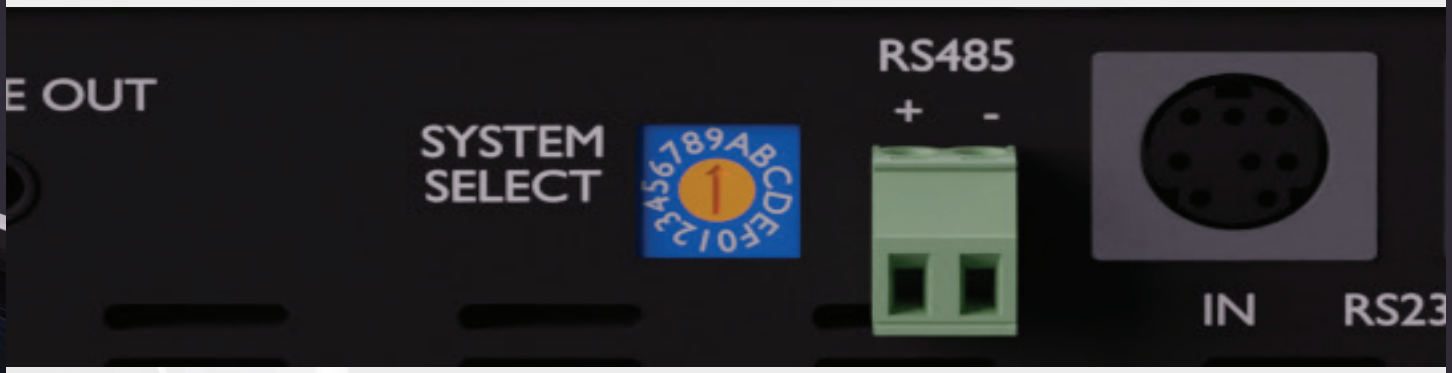
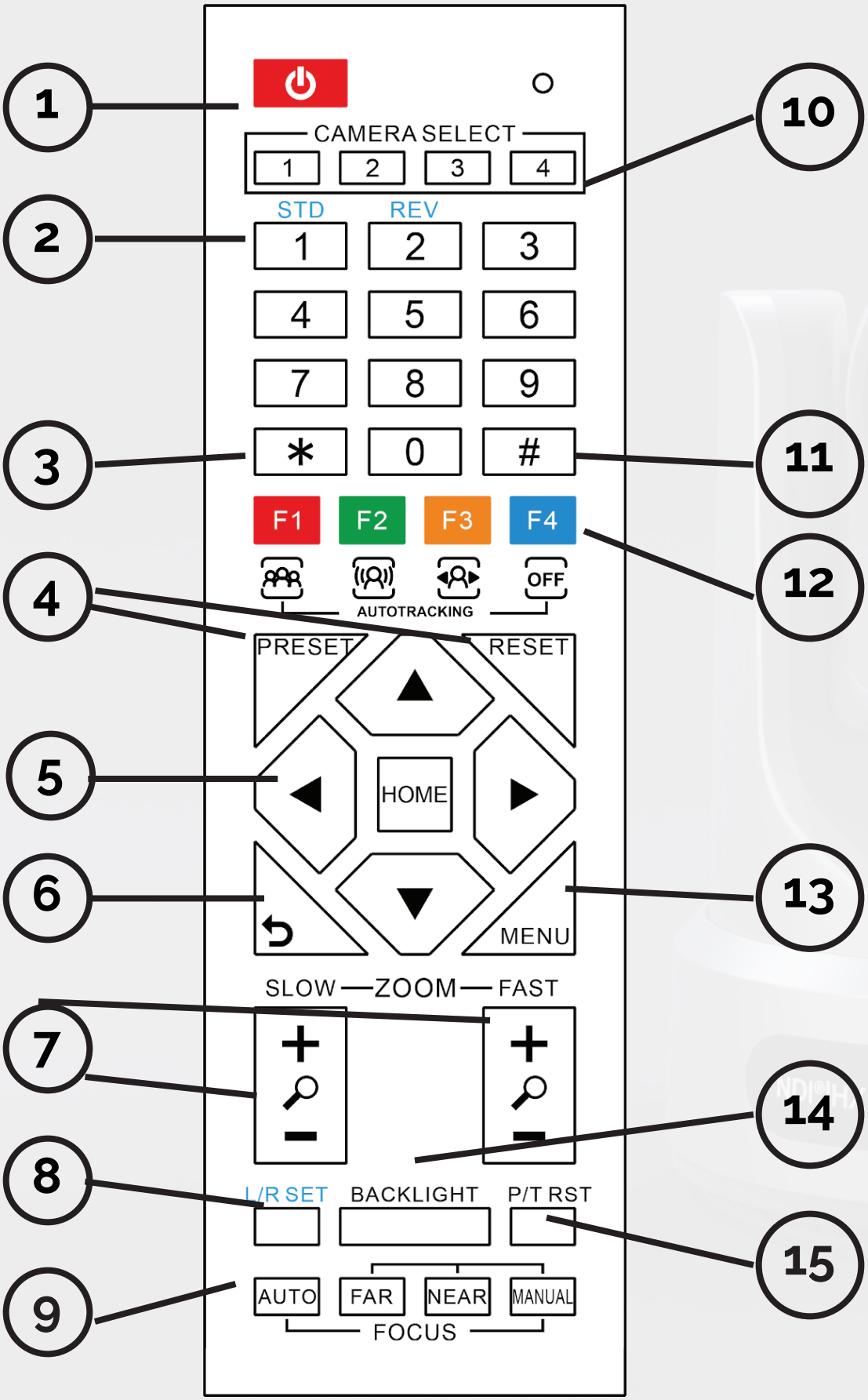
System Select Resolution Dial



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



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1. Standby Button
Press this button to enter standby mode. Press it again to enter normal mode.
Note: Power consumption in standby mode is approxinately 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)

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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

{*} > {*} > F3: Switch the camera between SDI and HDMI modes

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

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
Communication Setup
Restore Defaults
Privacy Mode
[Enter] Select
[Menu] Exit

Exposure

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).

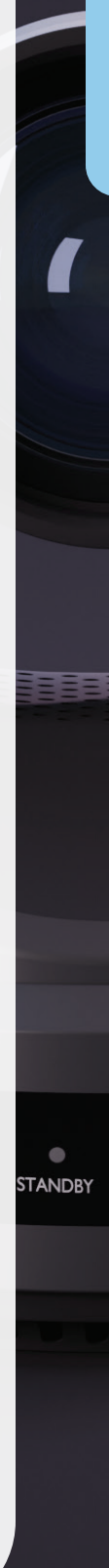
Iris: F1.8, F2.0, F2.4, F2.8, F3.4, F4.0, F4.8, F5.6, F6.8, F8.0, F9.6, F11.0, Close (Effective only in Manual, AAE mode).

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



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Color

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

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

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

Noise Reduction

NR3D	7
[Menu] Back	

Setup

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**

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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

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

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.

Privacy Mode

Privacy Mode
Select [Enter]
[Menu] Back

Select and press the Privacy Mode button to turn the camera head down and back, and disable the video feed.

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 Intial 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

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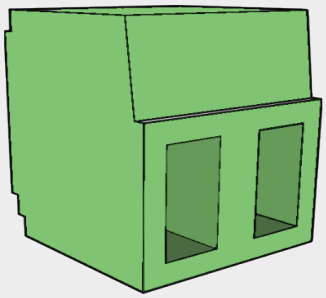
RS-485 Interface



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:

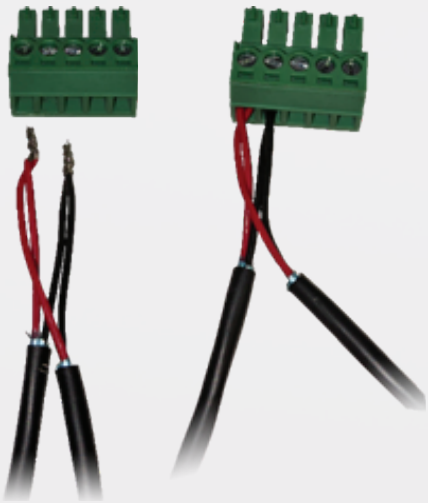
RS-485 Communication Control

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.
    - 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.

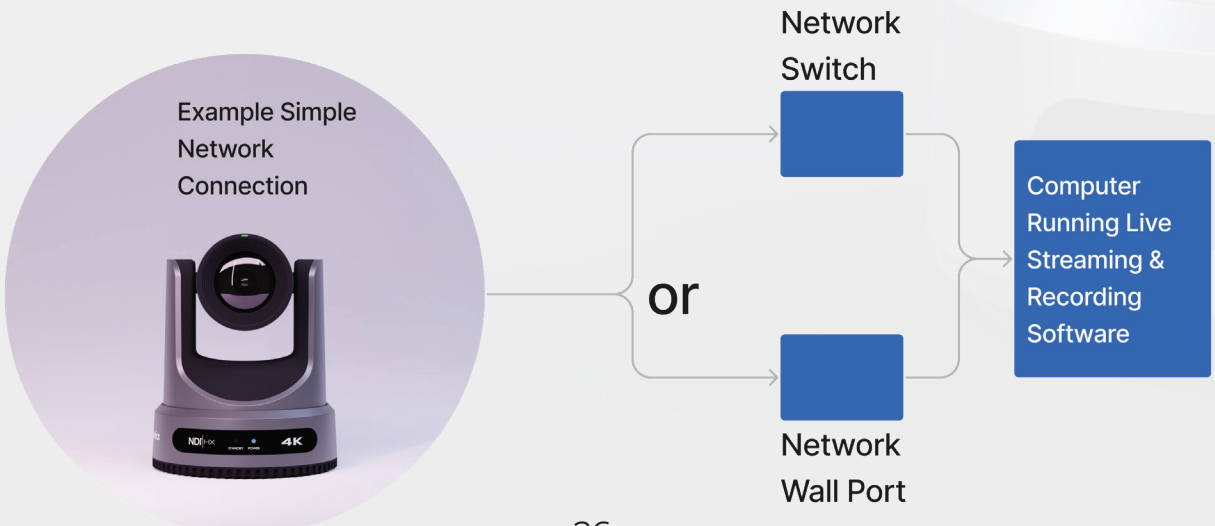
Finding the camera's IP Address

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/".



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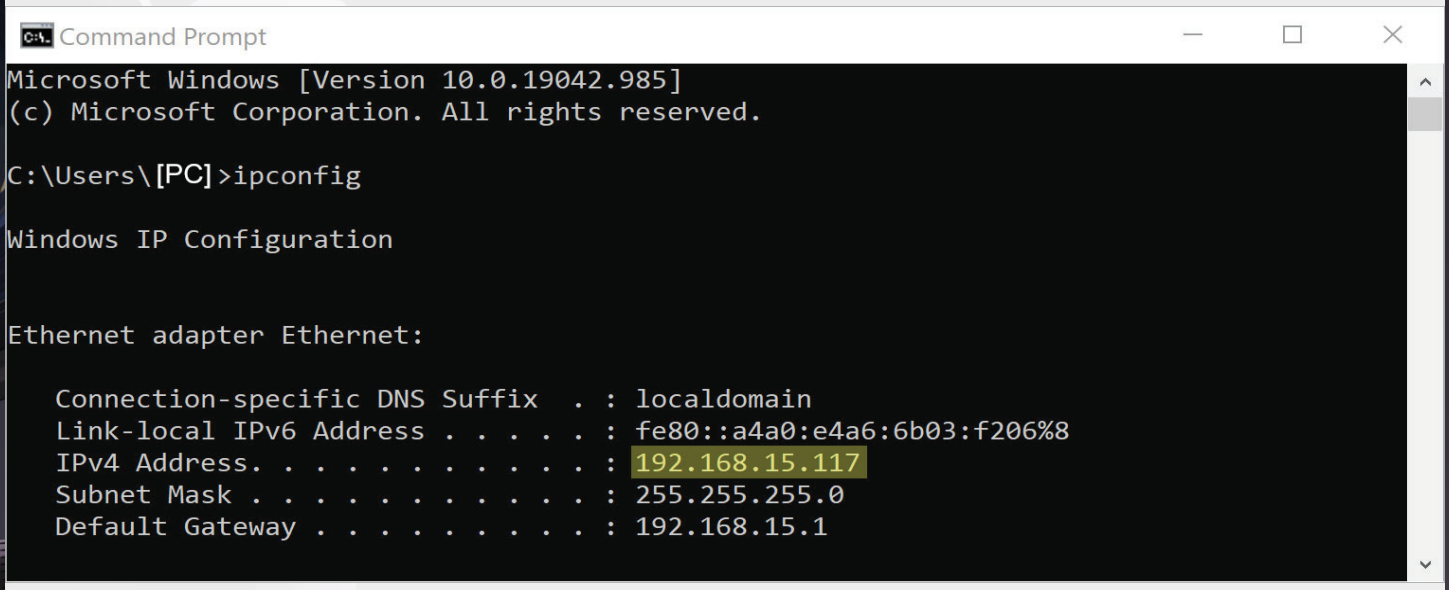
Discovering your Network Info

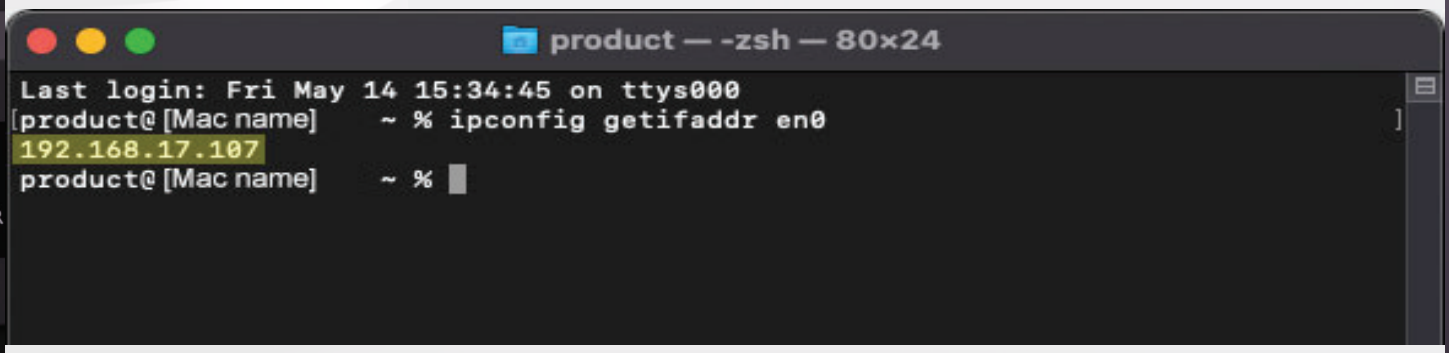
Windows

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”.



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.



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 dispered as possible thoughout 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 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.

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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.

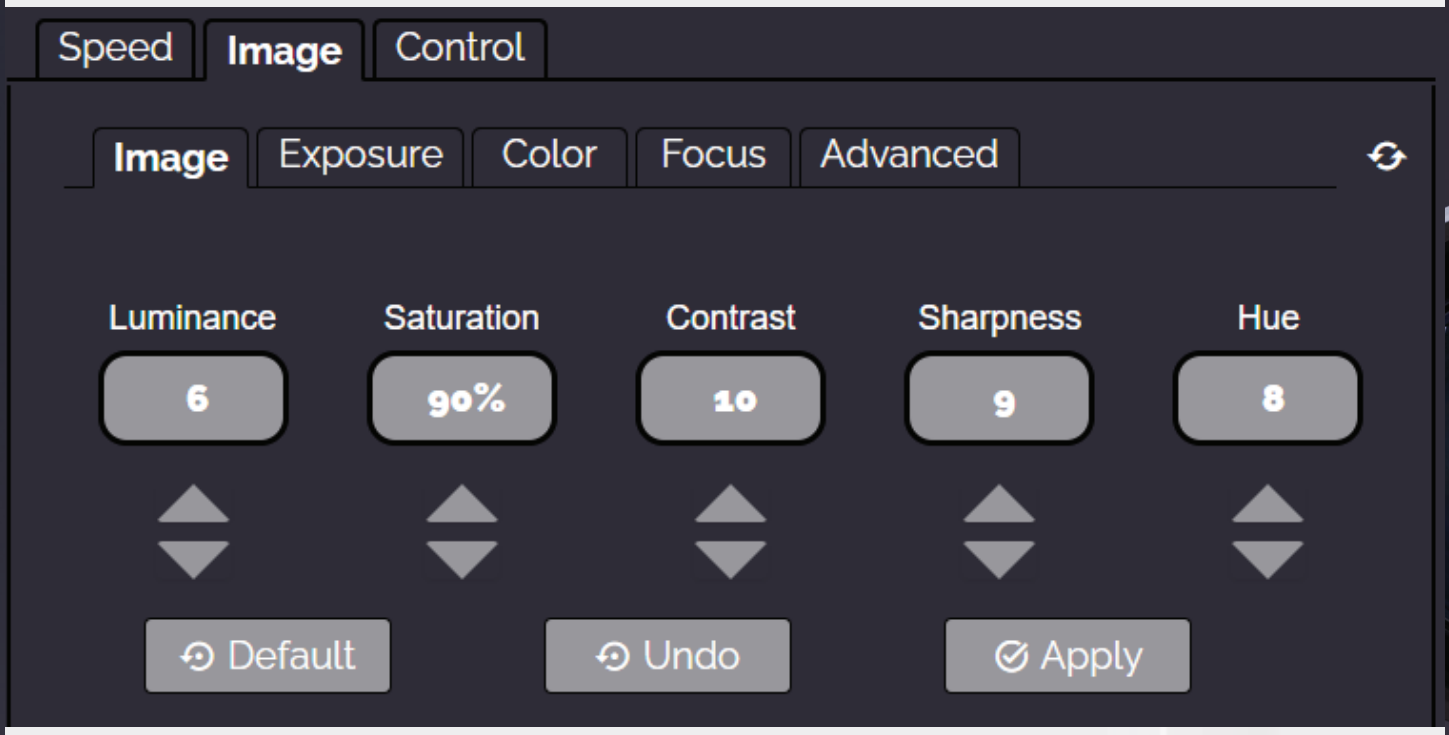
   (**Note:** Whenever you enable auto-tracking, the camera will call Preset Zero and utilize the image settings saved to preset Zero. For example, if you have saved preset zero and the exposure compensation was set to -3, when you enable auto-tracking the exposure compensation will automatically be set 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.

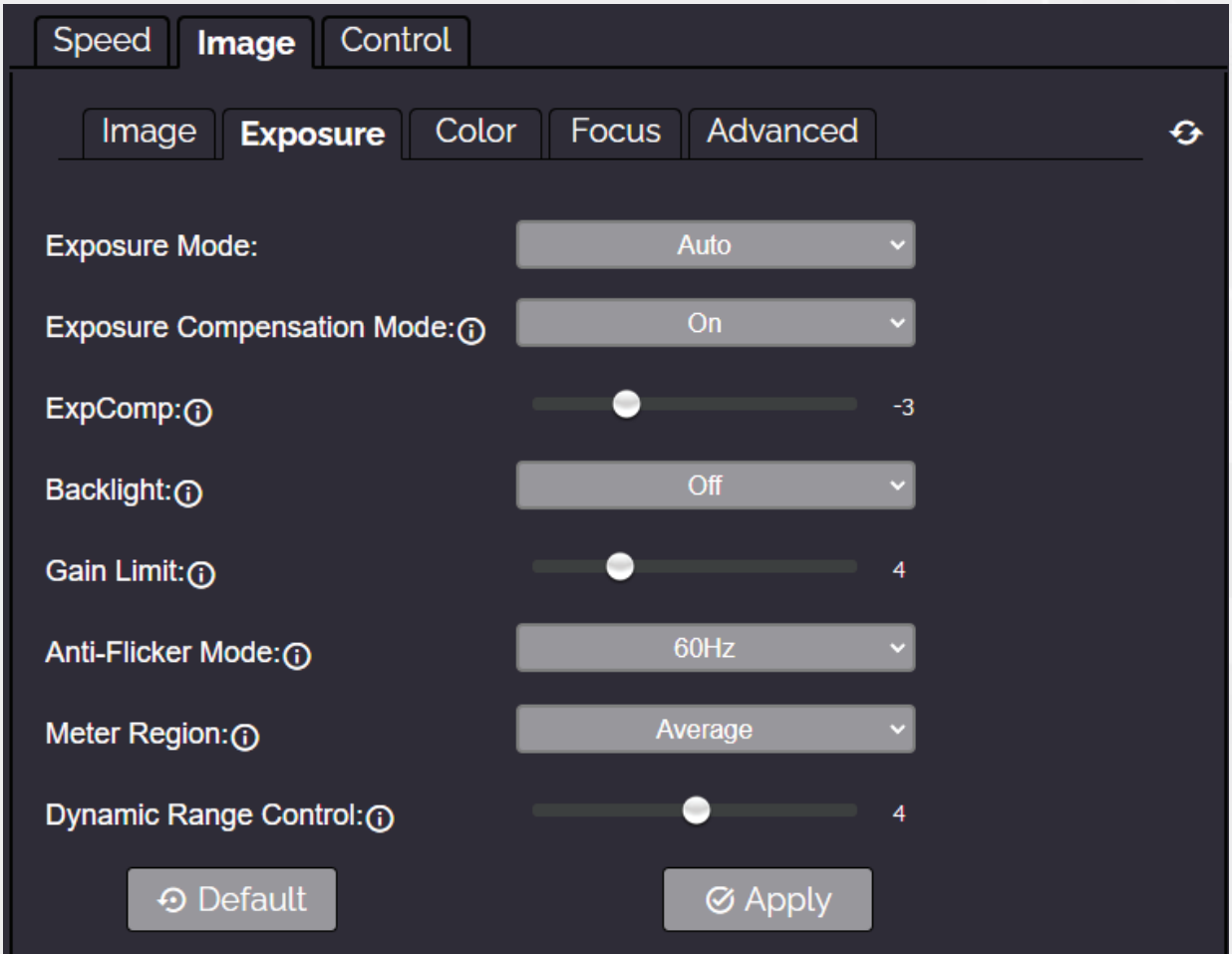
      (**Tip:** We recommend taking a screenshot of preset zero to help color match new presets or camera shots from different cameras. It can also be vary helpful to pull the camera's video feed into live streaming software such as Vmix or OBS for viewing and comparision. To properly compare image quality,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

PTZOPTICS™

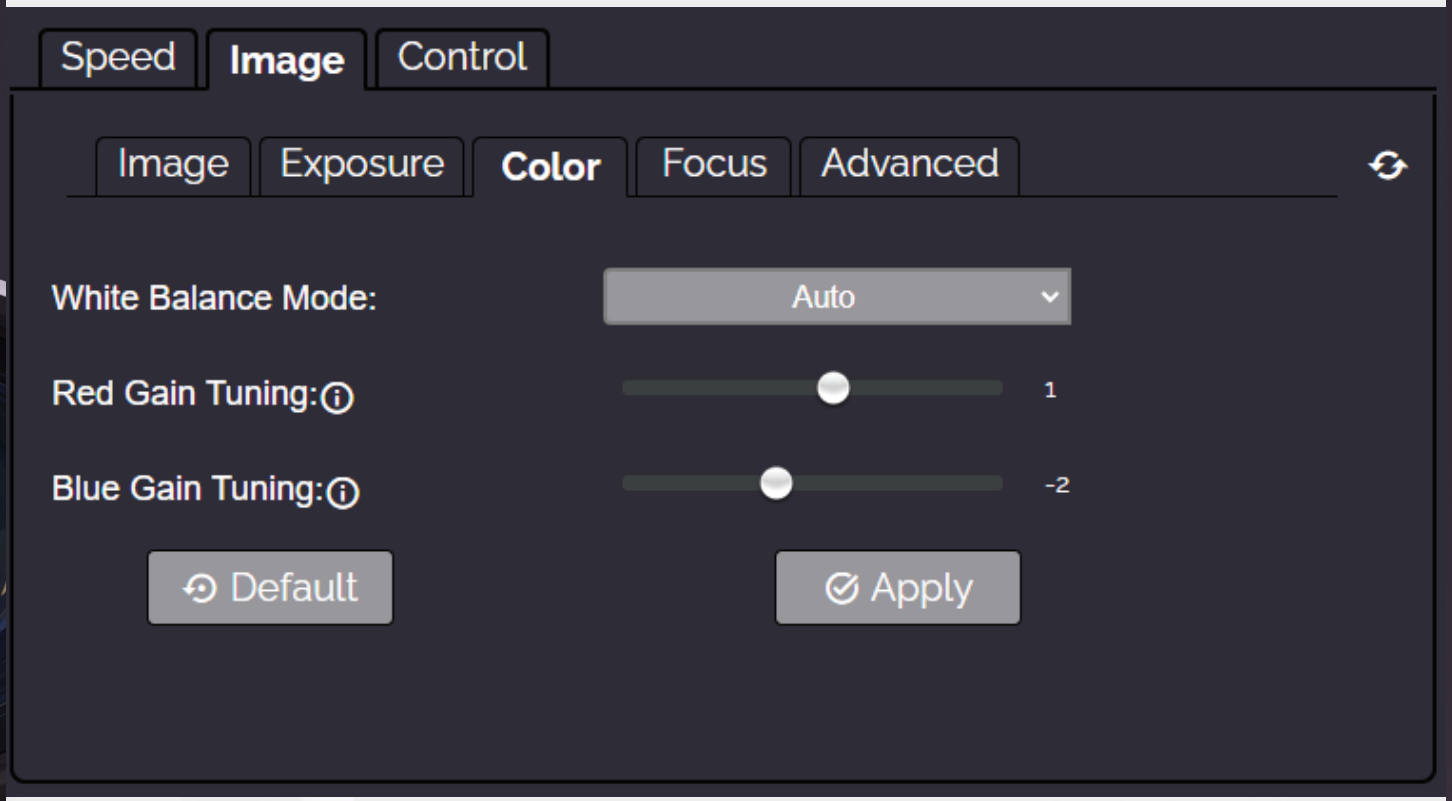
Image Tab Default Settings



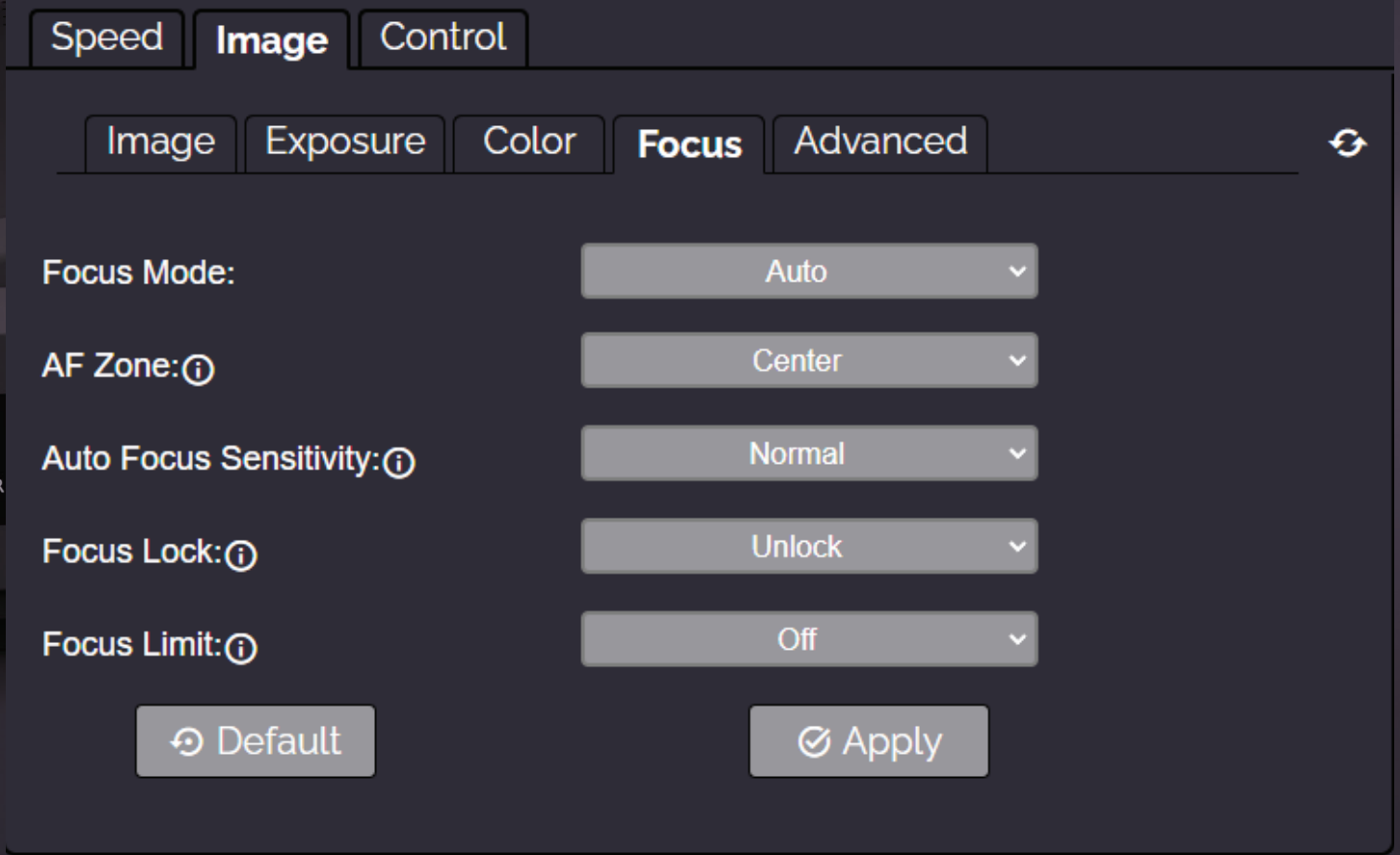
Exposure Tab Default Settings



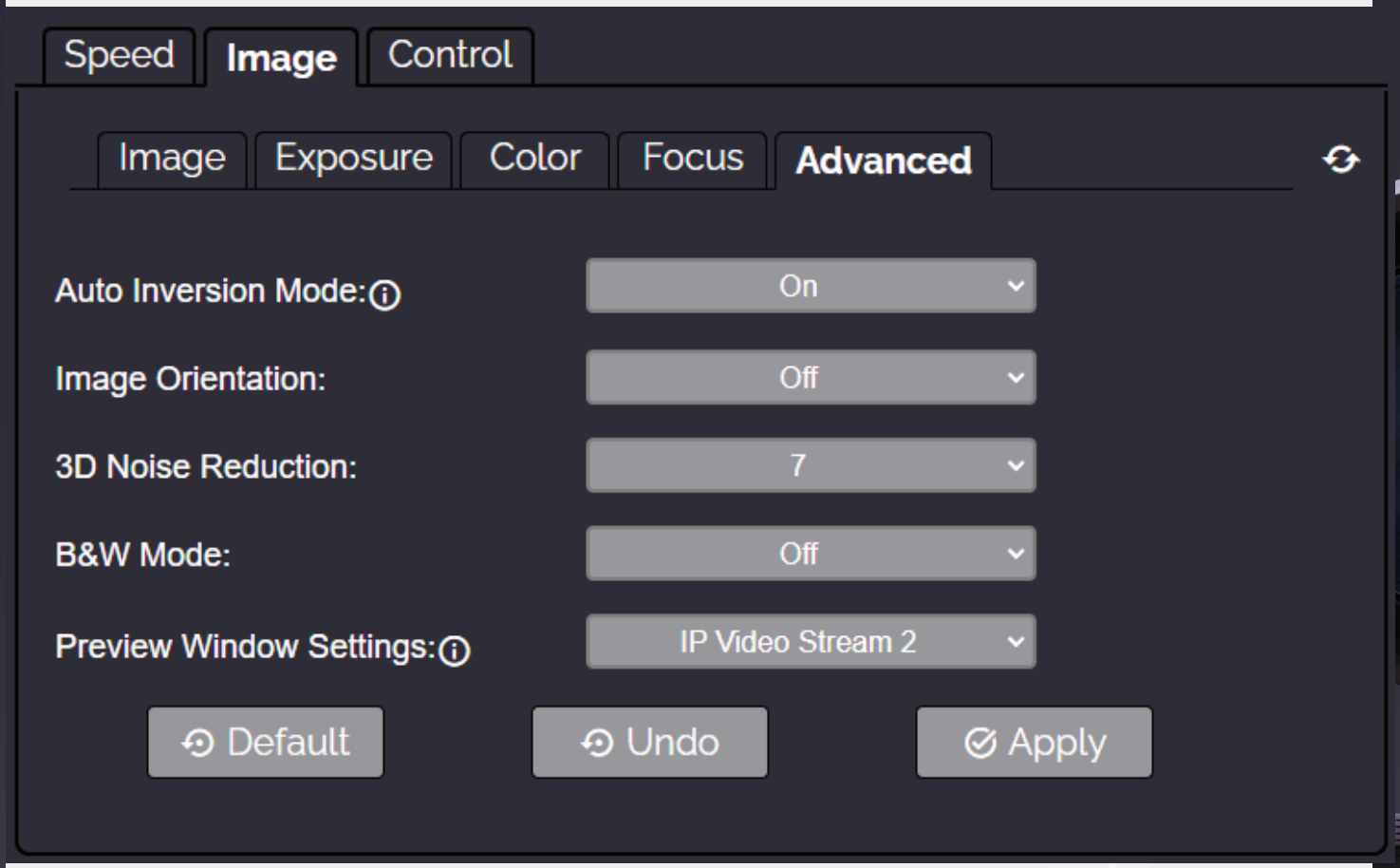
Color Tab Default Settings



Focus Tab Default Settings



Advanced Tab Default Settings



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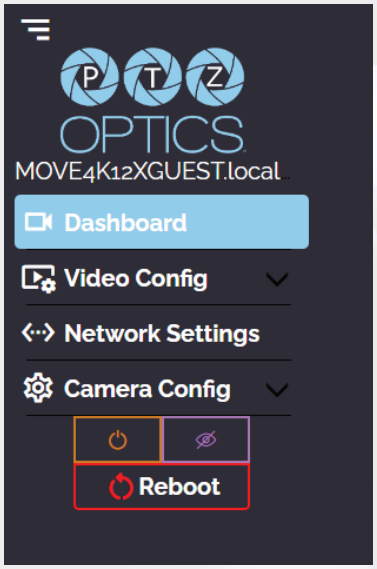
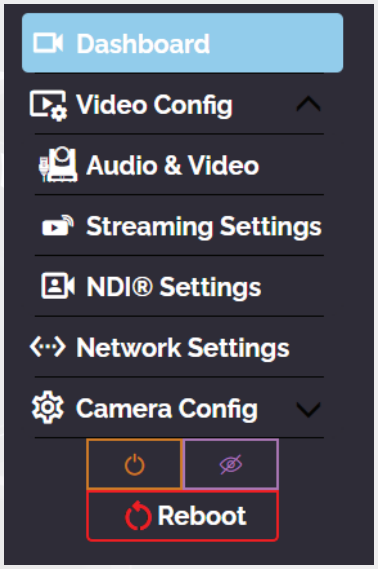
Accessing the Camera

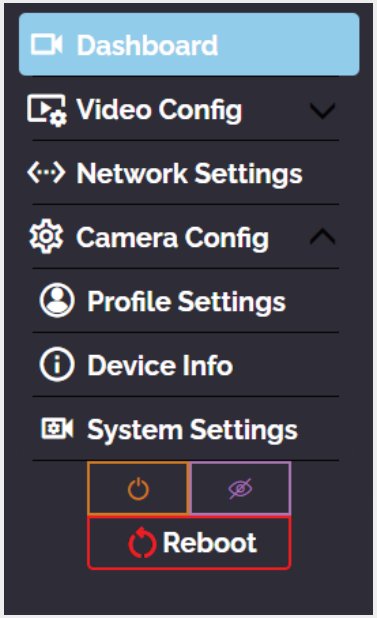
1. Enter “http://ptzoptics.local/” or the camera’s IP address into a web browser.
2. Enter the username and password into the login fields. Both the username and password are “admin” by default. You can change the login credentials on the System Settings page.

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.





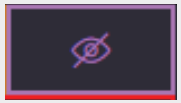


- **Dashboard:** This tab will take you to the Web UI's Main Screen.
- **Video Config Tab:** This drop-down tab houses the Audio & Video tab, the Streaming Settings tab, the NDI S
- **Audio & Video:** This tab access to Video Encoding, IP Video Stream 1 & Stream 2 Settings & Audio Settings.
- **Streaming 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 tab accesses the camera's NDI settings.
- **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 from preset zero or assigned preset.



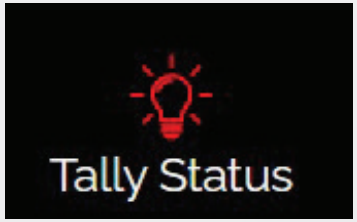
Privacy Button: Turns off the camera video feed and turns the camera down and to the left, leaving it in standby mode.

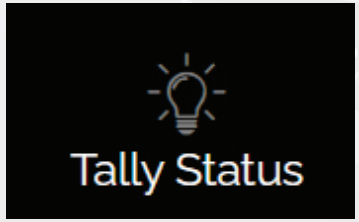
Quick Profiles

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

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

- 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 allows you to adjust the speed at which the camera will **Pan**, **Tilt**, **Zoom** and **Focus**.

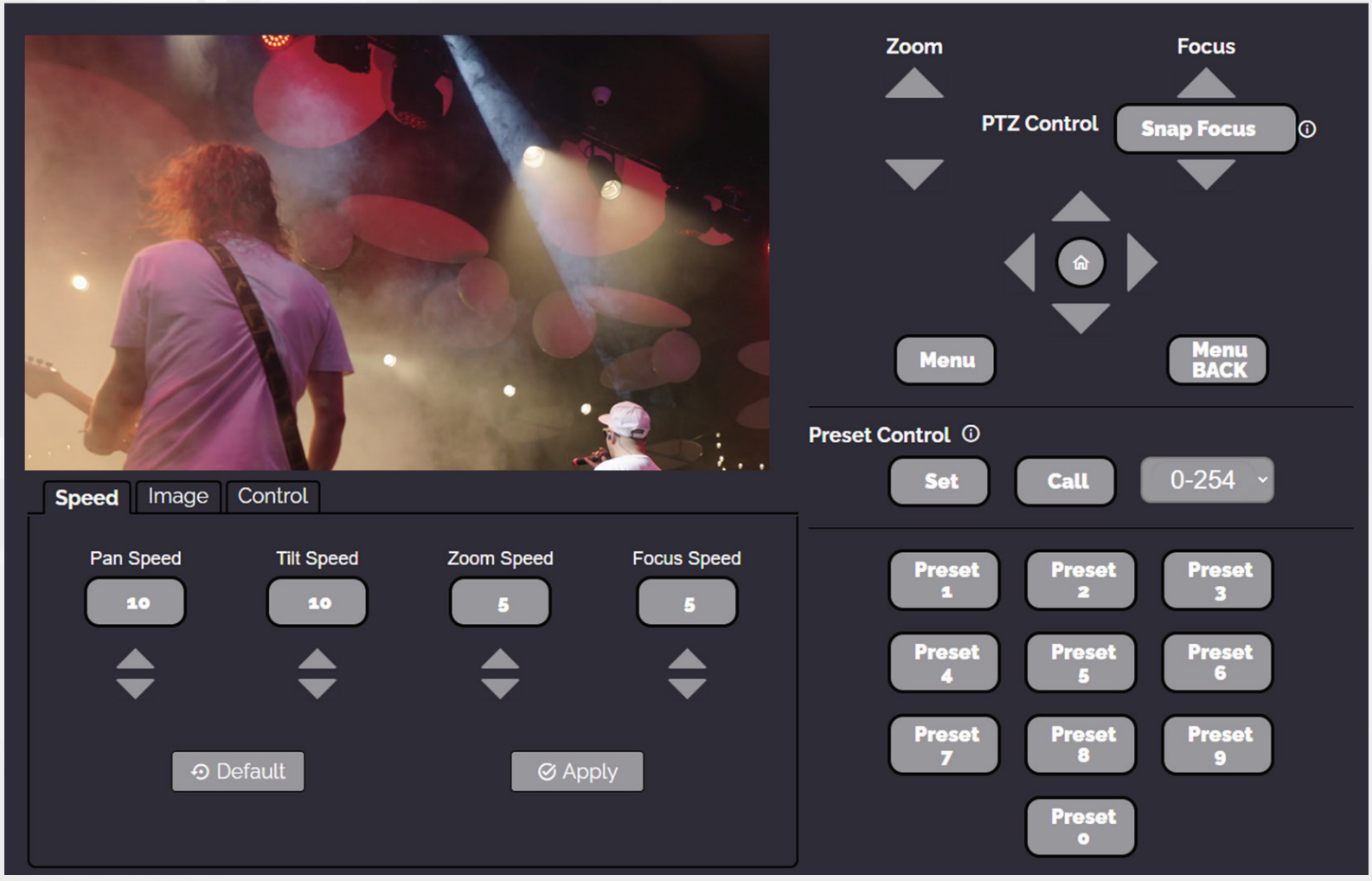
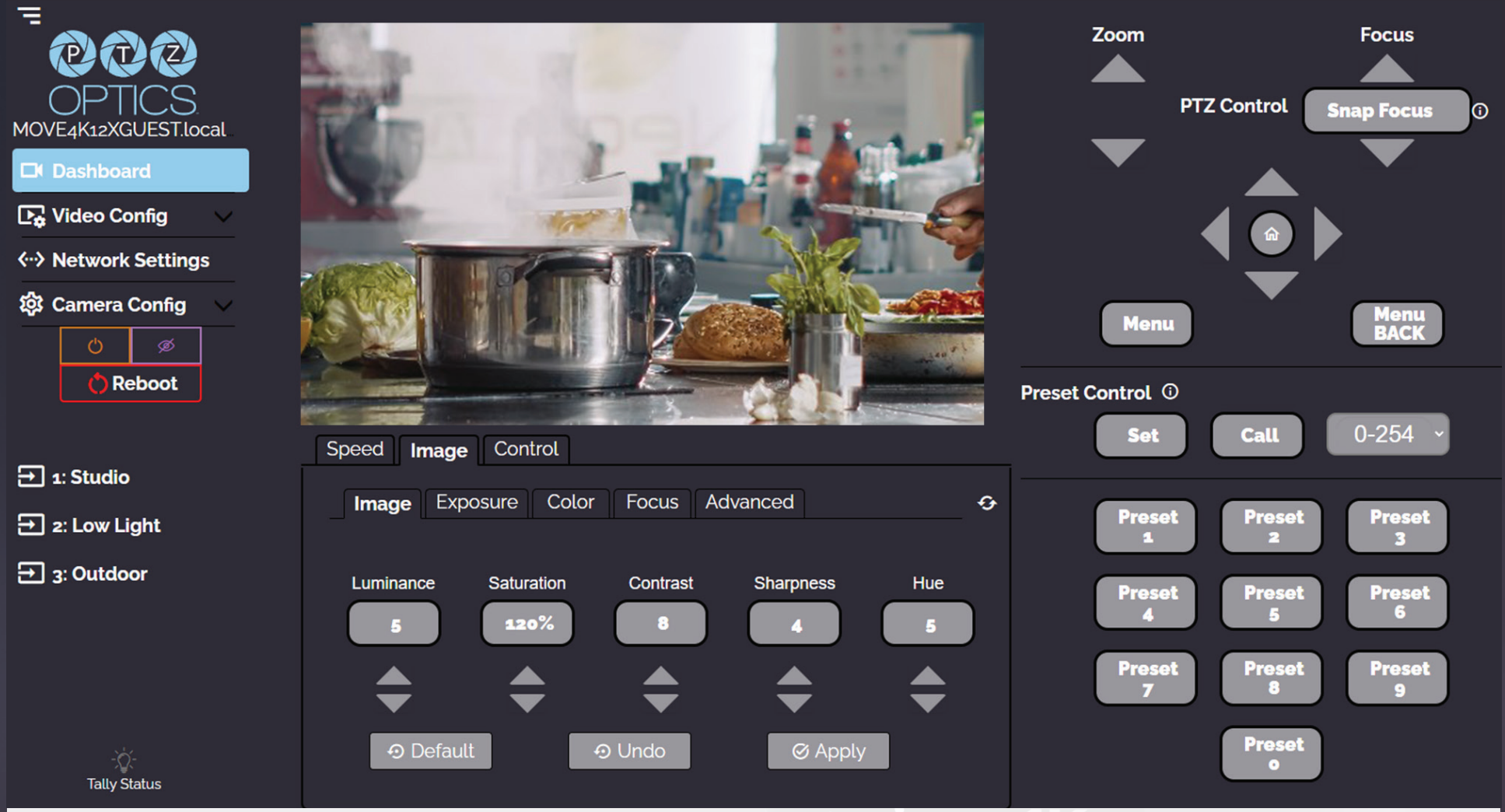


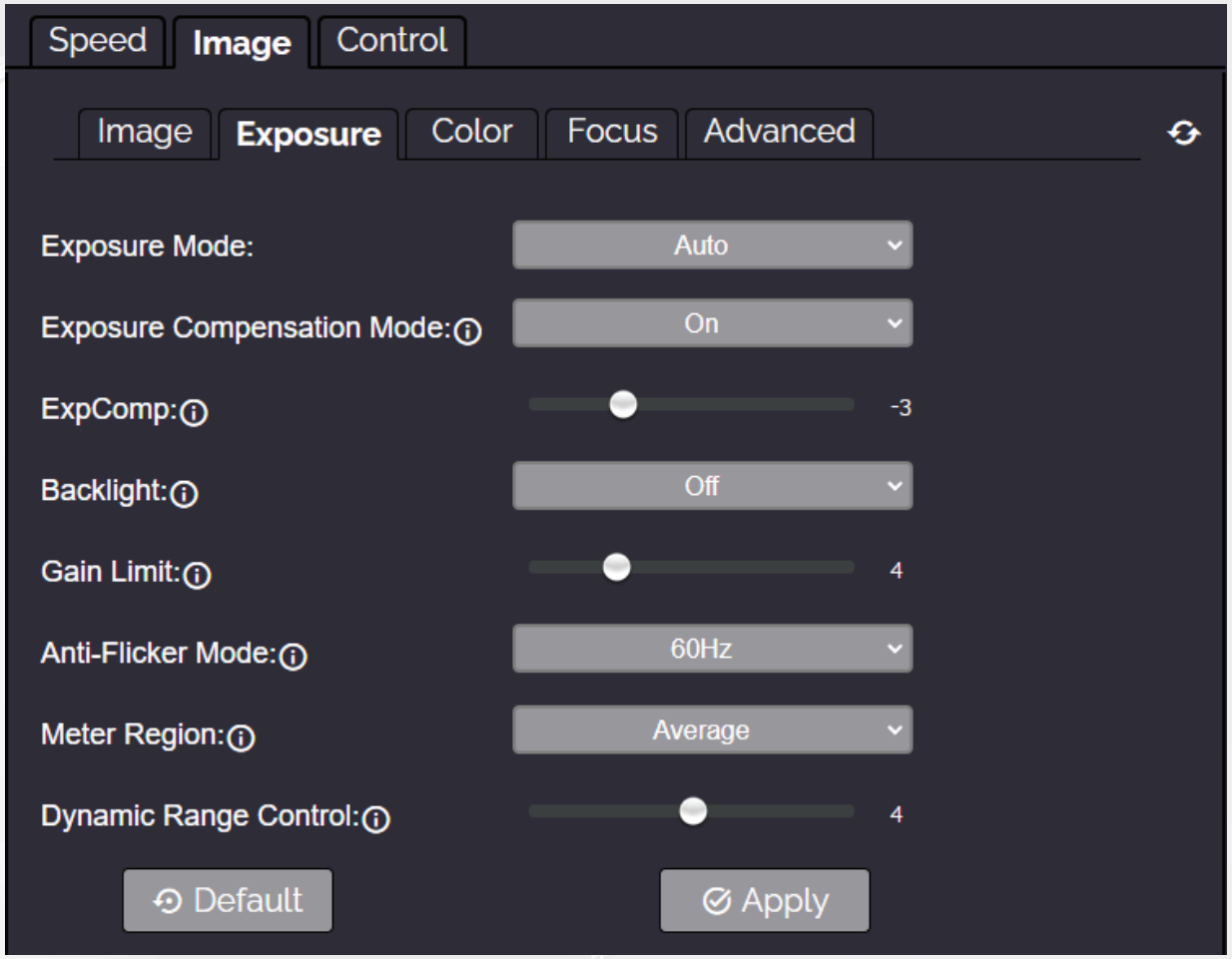
Image Tab

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



Exposure

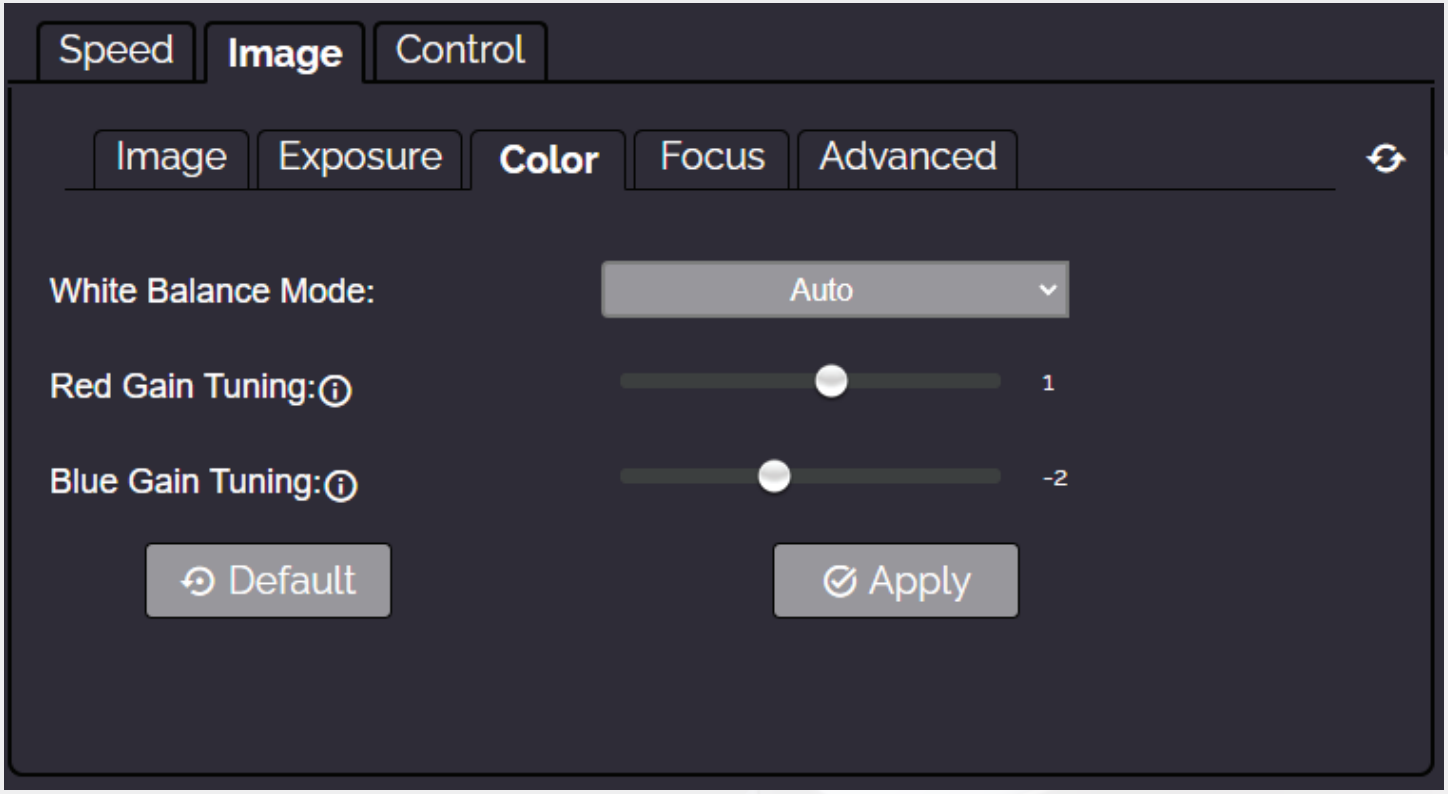
The **Advanced Image > Exposure** tab within the Camera Settings page allows you to fine-tune the camera's Exposure settings to ensure image clarity as well as ensure the images from multiple cameras match.



- 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 Tab

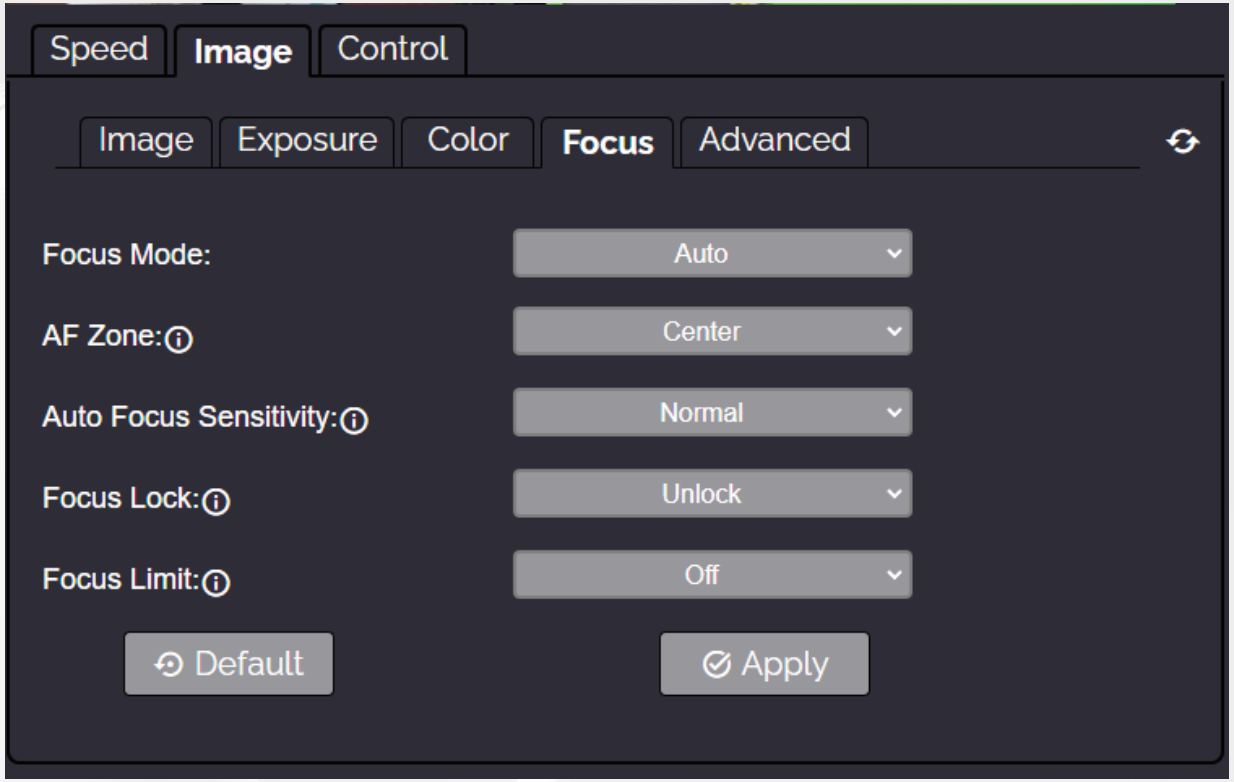
The **Advanced Image > Color** tab within the Camera Settings page allows you to fine tune the camera's white balance and color tint settings to adjust for lighting, as well as ensure images from multiple cameras match.



- 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 Tab

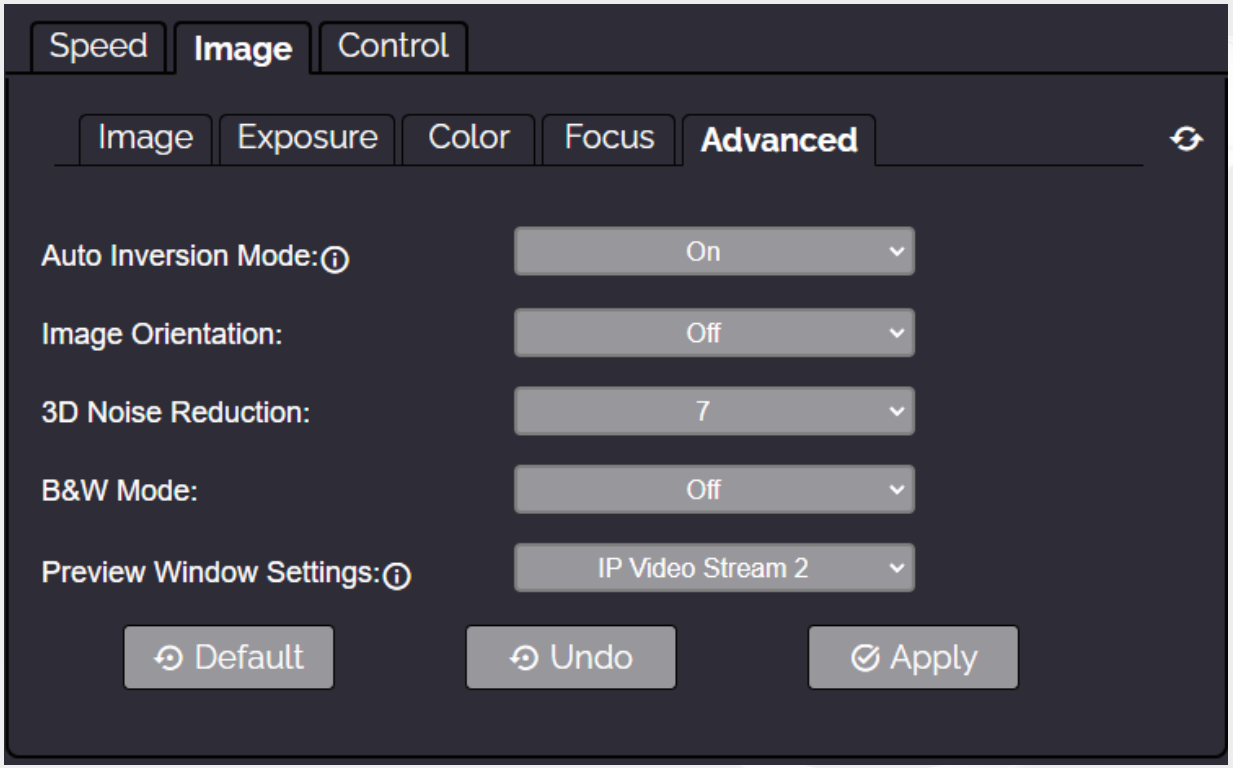
The **Advanced Image > Focus** tab within the Camera Settings page allows you to adjust the various focus settings, including **Auto Focus**, **Auto Focus Zone**, **Auto Focus Sensitivity**, **Focus Lock** and **Focus Limit**.



- 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

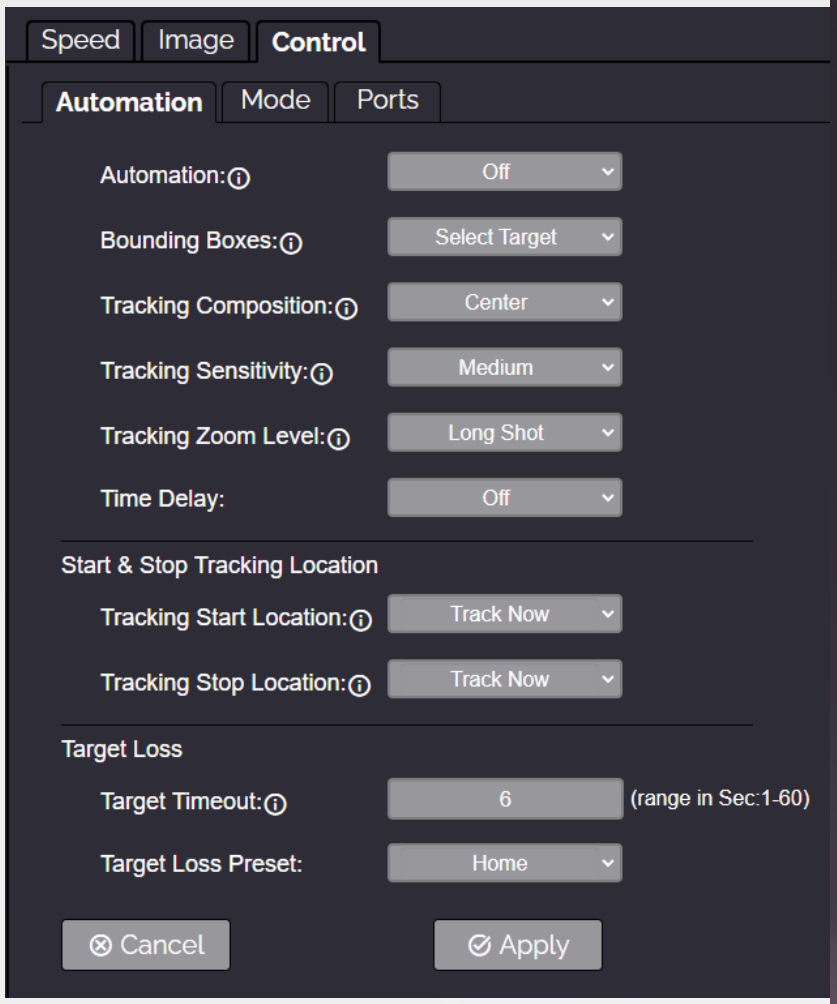
The **Advanced** tab allows you to adjust more advanced settings such as **Auto Inversion Mode**, which automatically adjusts the camera's image orientation, **Image Orientation** manual adjustment, **3D Noise Reduction**, **B&W Mode**, and **Preview Window Settings**.



- 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 **Automation** tab lets you choose between auto-tracking mode or auto-framing mode, and adjust the performance settings.



- **Automation:** Auto-track or Auto-frame a subject.

  Options include: Off, AutoTracking, or AutoFraming.
- **Bounding Box:** Determine the behavior of bounding boxes while in auto-tracking mode.

  Options include: Off, Debug, Select Target, & Multi-Target Select.
- **Tracking Composition:** Adjust how the subject will be positioned in the frame as they are being tracked.

  Options include: Left, Center, & Right.
- **Tracking Sensitivity:** Adjust how responsive the camera is to subject movement.

  Options include: Low, Medium, & High.
- **Tracking Zoom Level:** Adjusts the limit to which the camera can zoom in or out as it tracks a subject.

  Options include: Dynamic Zoom, Medium Close Up, Medium Shot, & Long Shot.
- **Time Delay:** Set a time delay between when tracking is turned on and when the camera selects a subject for tracking.
  Options: On 0 to 60 seconds | Off.
- **Tracking Start Location:** Determine where the camera begins tracking.

  Options include: **Track Now** = the camera will track a subject from wherever the subject was identified. **Home**, or any preset you assigned between **0 & 255.**
- **Tracking Stop Location:** Determine where the camera will reorient to when auto-tracking is turned off.

  Options include: **Track Now** = the camera will stop tracking and remain in it's current position. **Home**, or any preset you assigned between **0 & 255.**
- **Target Timeout:** When enabled, the camera will call each of the Set presets sequentially.

  Options include: On, Off
- **Target Lost Preset:** When enabled, the video feed will temporarily pause while Calling a preset.

  Options include: On, Off

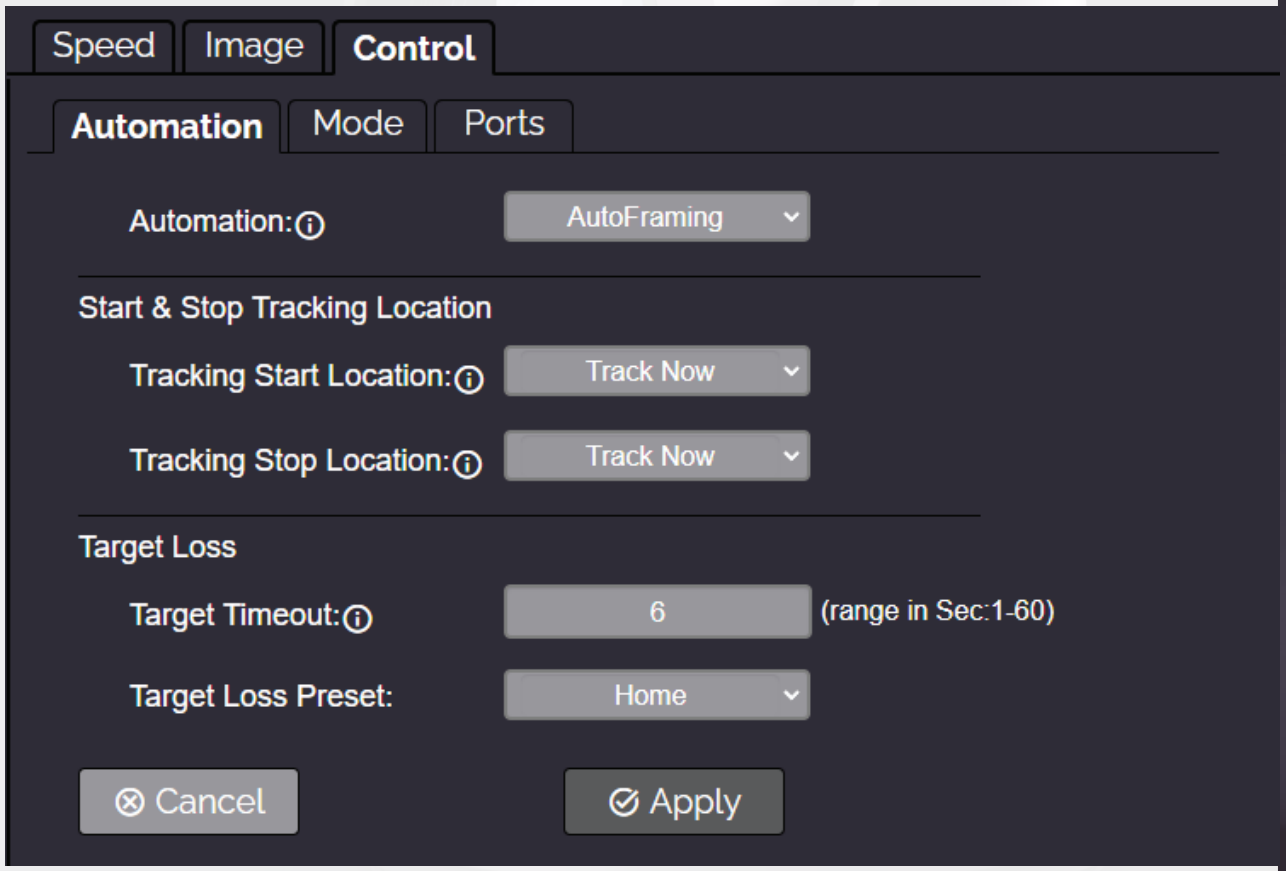
Control Tab Continued

Auto-Framing Mode:

When Auto-Framing Mode is turned on, the camera will locate a subject and frame them in a fixed camera shot.

While in Auto-Framing Mode, the automation settings available are:

- **Tracking Start Location**
- **Tracking Stop Location**
- **Target Timeout**
- **Target Lost Preset**



Control Mode

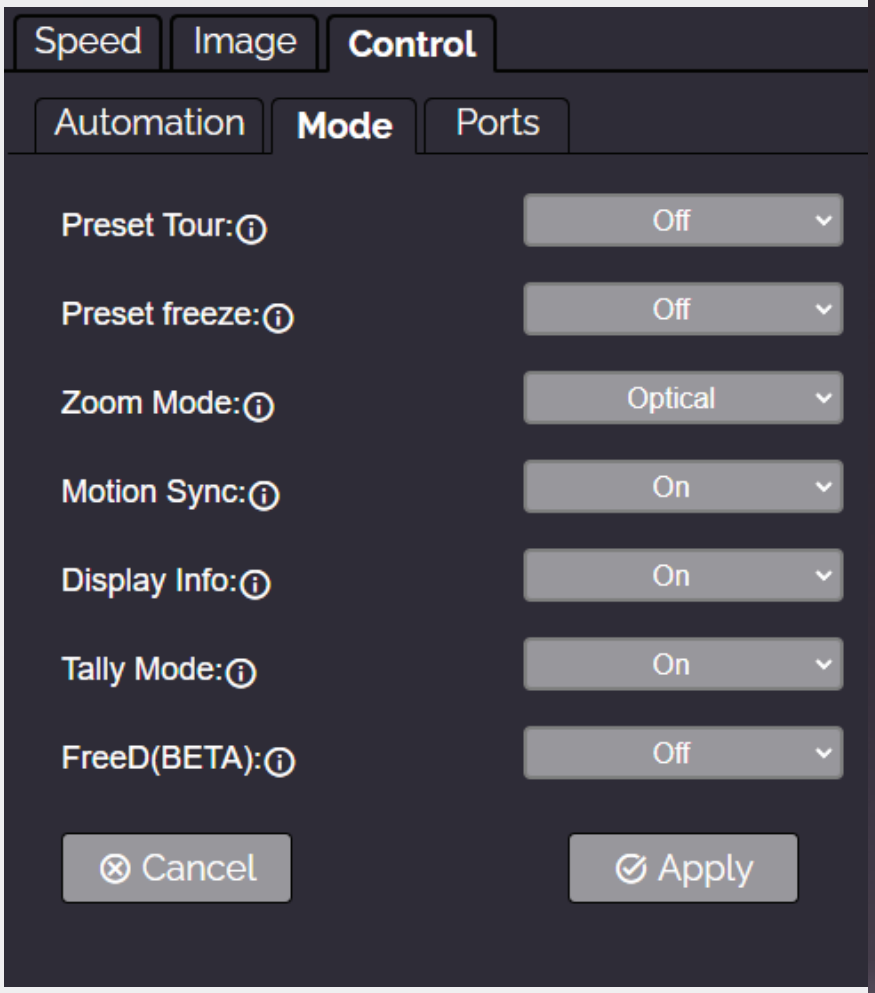
The **Control > Mode** tab allows you to toggle available camera modes.

- **Preset Tour:** Enable Preset Tour to cycle through camera presets you've created in sequential order. This mode will ignore preset zero.
- **Preset Freeze:** Freezes the image when calling a preset, hiding the movement from the current camera position to the called preset position. The video will resume once the camera has moved to the called preset position.
- **Zoom Mode:** Switch between Optical or Digital zoom.
- **Motion sync:** Syncronize Pan, Tilt, & Zoom movement when calling presets.
- **Display Info:** Toggle camera info on or off.
- **Tally Mode:** Select whether the TallyLight reacts to signal changes.
- **Preset Speed Sync:** ?
- **FreeD (BETA):** Off, D0, or A4 (non-functional_
  - The FreeD protocol transmits a real-time data stream, containing a camera's position, lens rotation, zoom distance, and focus distance.

    D0: Sends real time positional data.

    HEX Commands: To enable send **D0 F5 01 7A FF** to the camera via UDP to port 19147

    To disable send **D0 F5 00 7A FF** to the camera via UDP port 19147

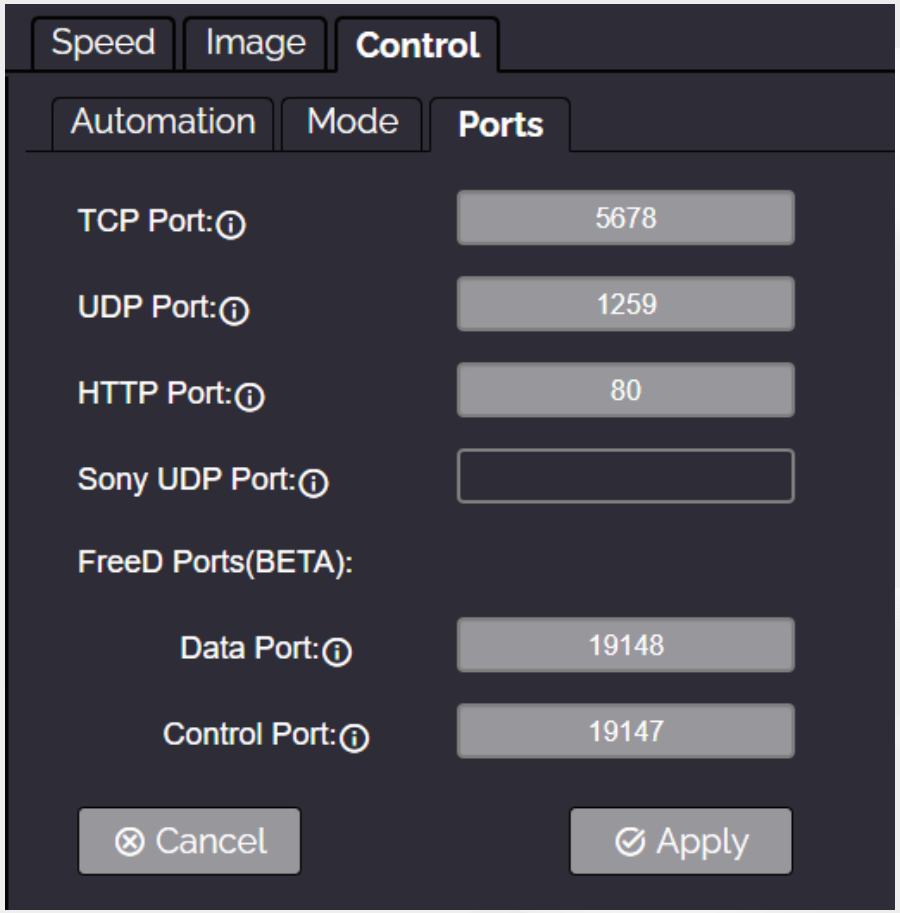


Note:
This feature is an in development beta feature.

To disable FreeD, select "Off" in the FreeD dropdown menu.

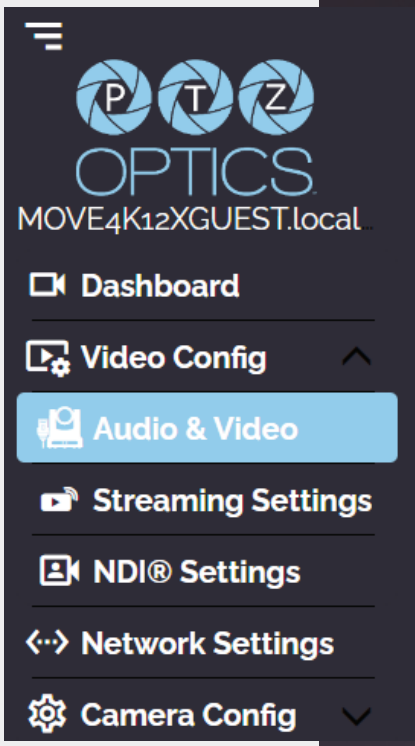
Control Ports

The **Control > Ports** tab allows you to change the camera's **TCP**, **UDP** & **HTTP** ports, the Sony port and the data and control ports for FreeD.



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:** 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)

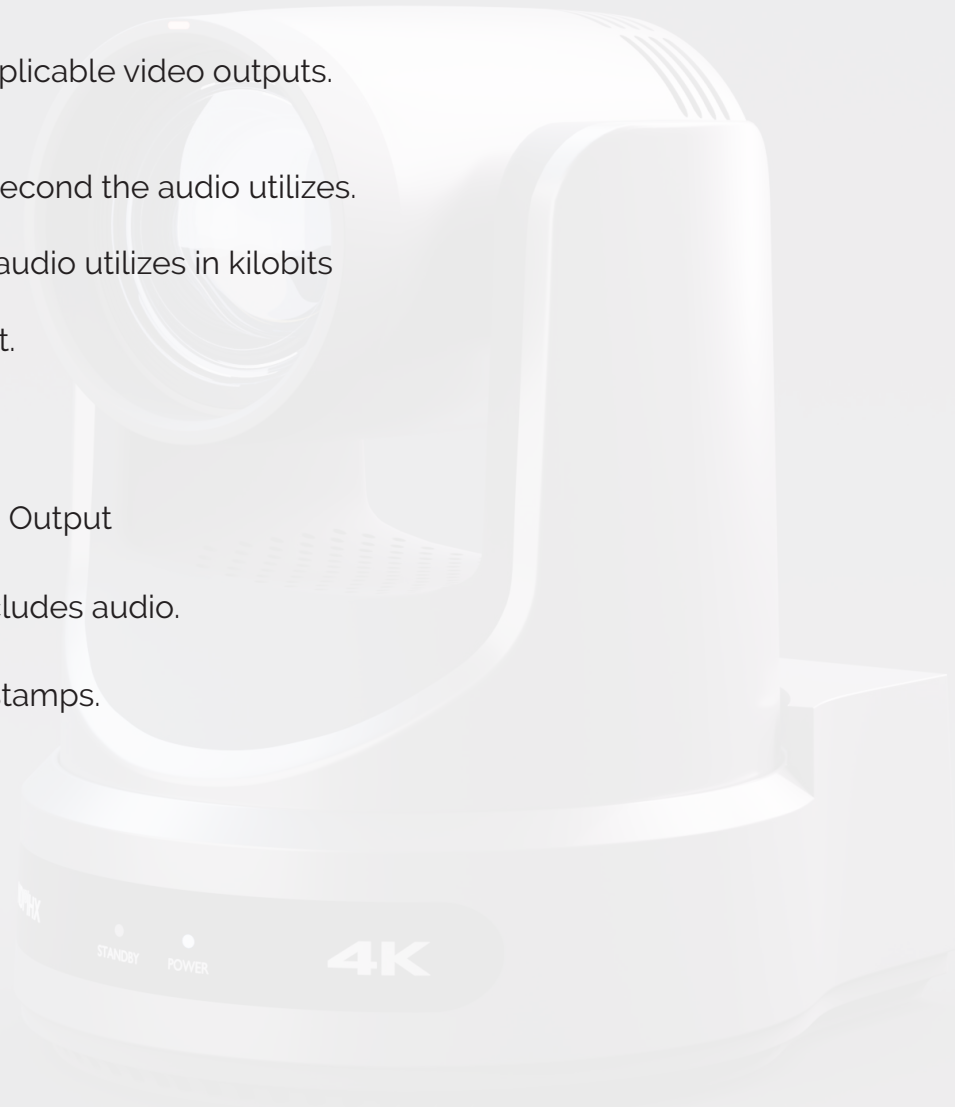
IP Video Stream 1 & 2: Encoding Settings

- **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

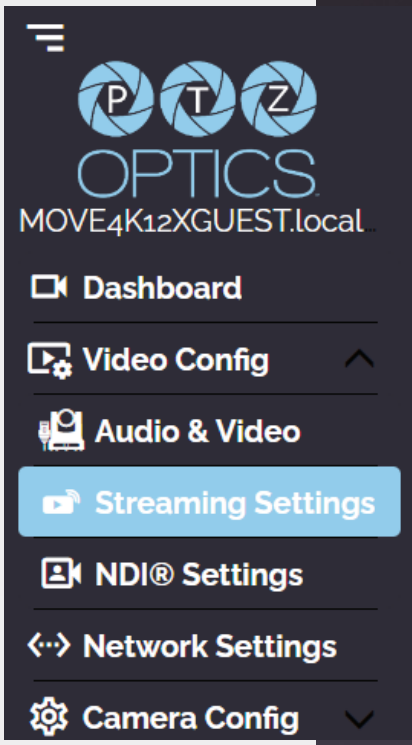
Audio Encoding Settings

- **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

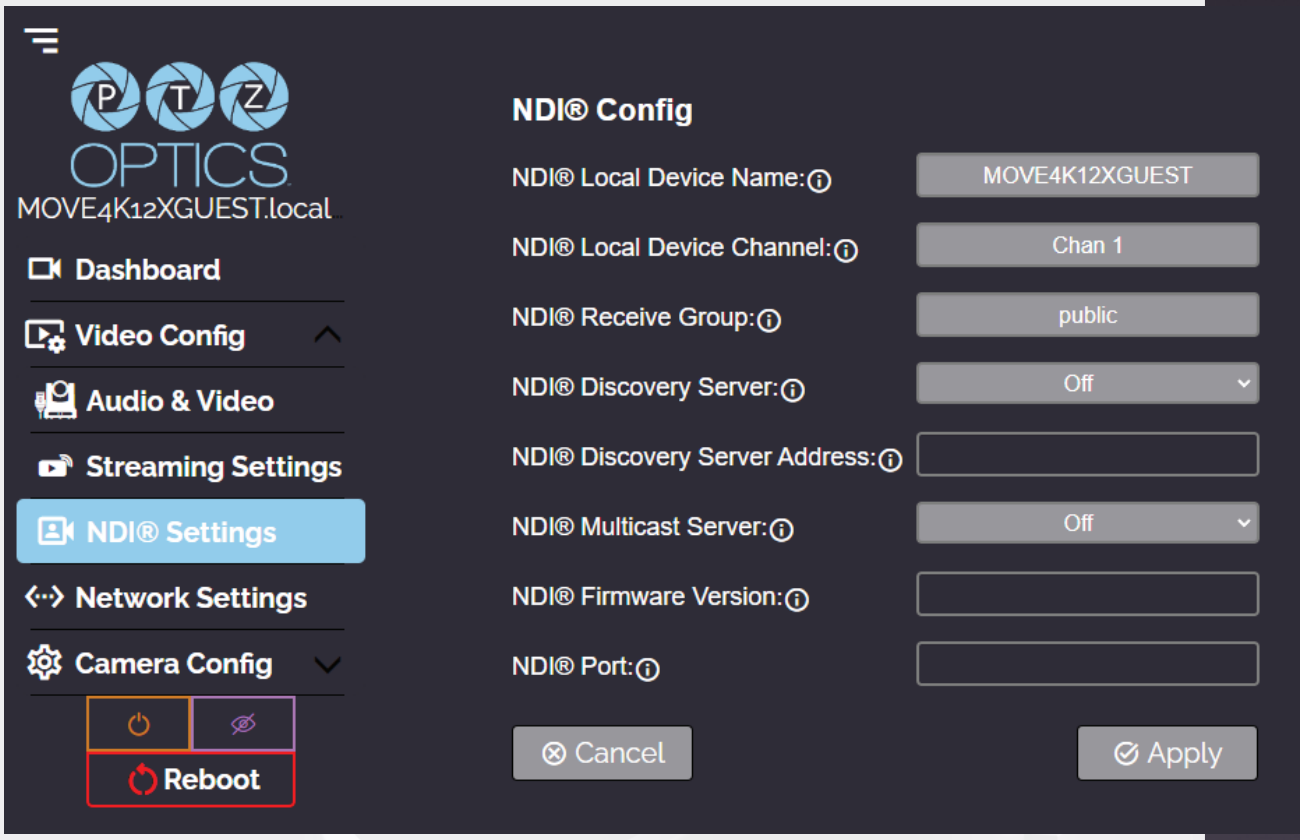
The **Streaming Settings** page accesses the **RTMP(S) Settings, SRT Settings, RTSP Settings Multicast Settings** & **ONVIF Settings** sections.



- **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.

NDI Settings

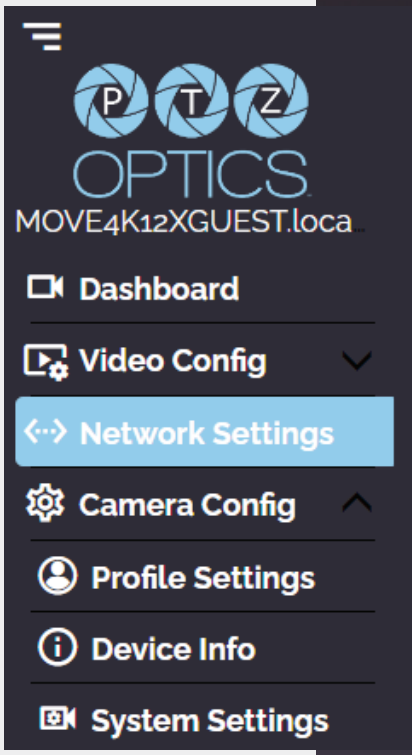
This tab access the camera's configurable NDI settings.



- **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.

Network Settings

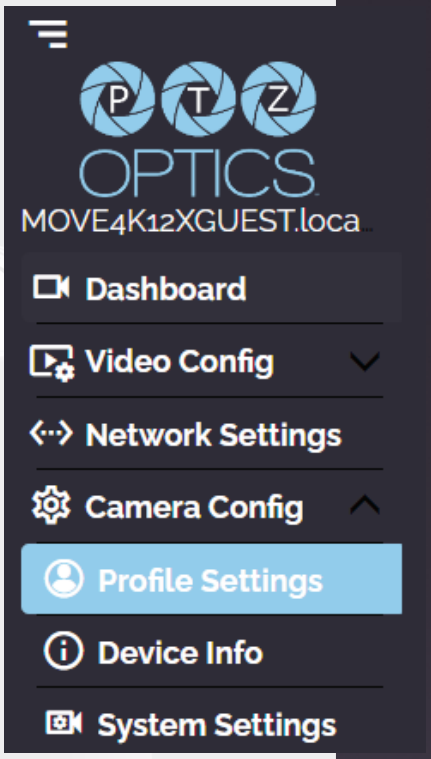
The **Network Settings** page accesses the **LAN Settings** & **NTP Settings** sections.



- **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).

Profile Settings

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.
  - **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 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.

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]/). The page must remain open for MIDI Control to function.

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

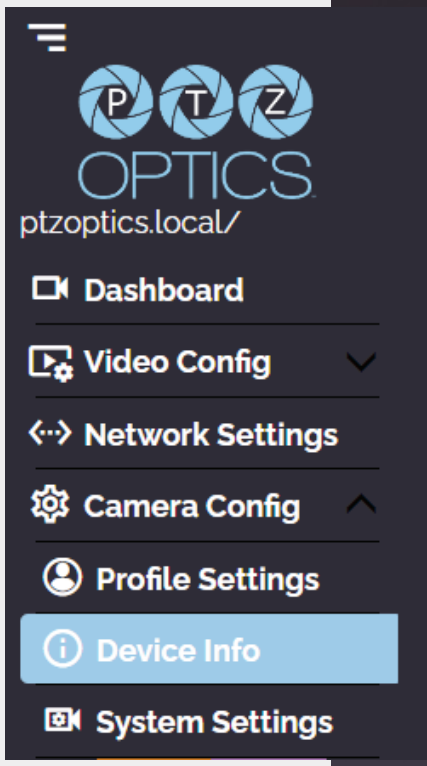
- **Control Mapping**
  - **Command:** What function you'd like the camera to perform.
  - **Event:** How you would like the trigger the command to be sent.
  - **MIDI Value:** The value associated with the button / dial / knob / etc. on the MIDI Controller.

- **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 Information

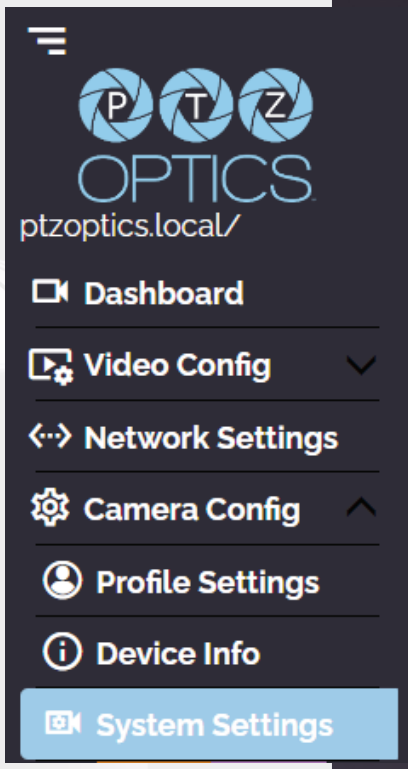
The **Device Info** tab accesses the **Device Information Section.**



- **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.

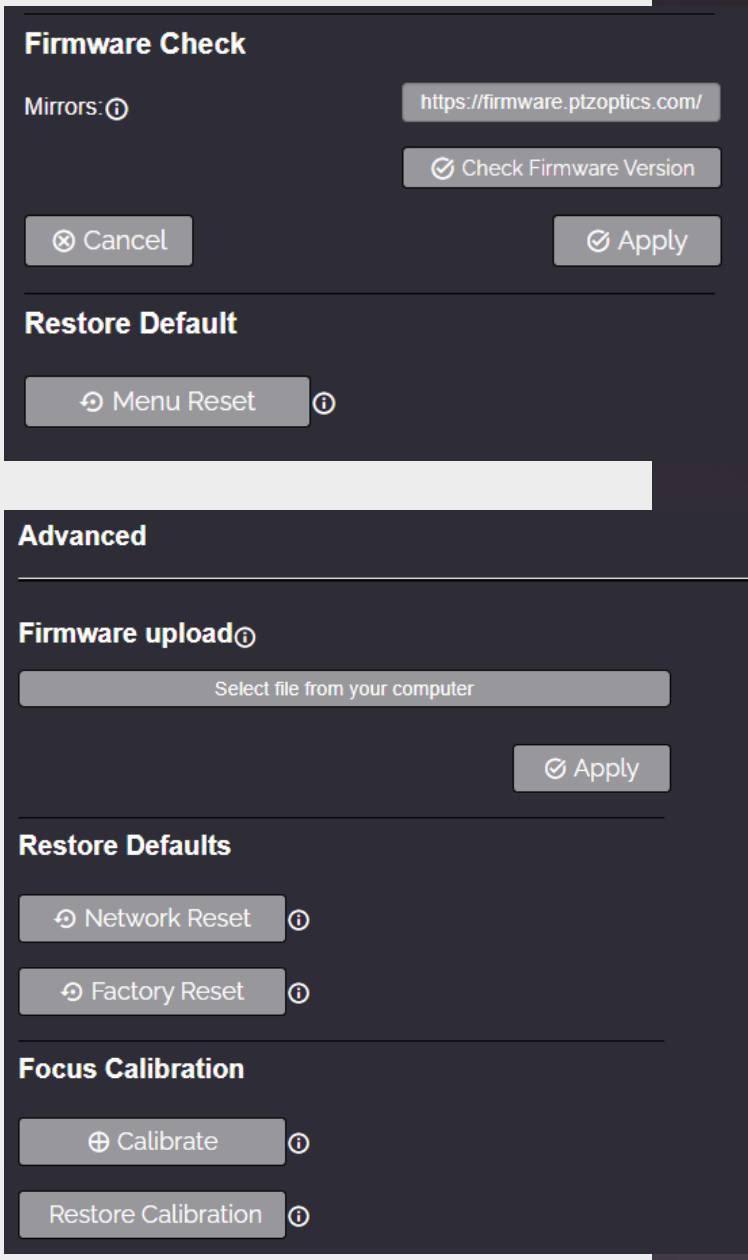
System Settings

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 "!@#$^()" can be used, up to 15 characters. Please note the circles in the field are encrypted and do not reflect the password saved on the camera.
  - **Guest Name:** Guest username login. This username can not be changed.
  - **Guest Password:** Guest password. If you desire to change the password, all letters, numbers, and specifically "!@#$^()" 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.

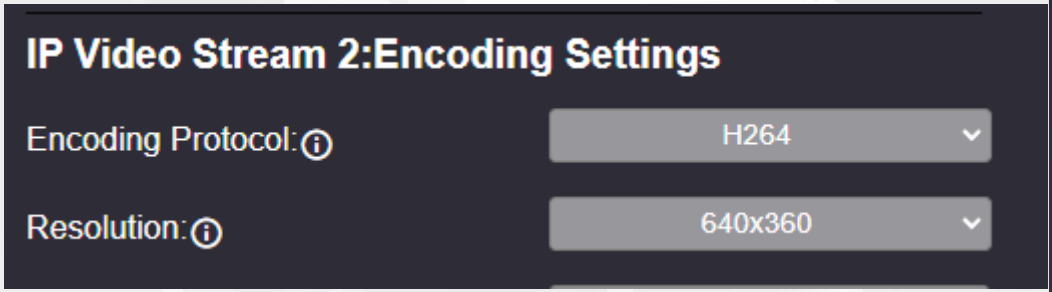


Photobooth Functionality

The PTZOptics Move 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]**

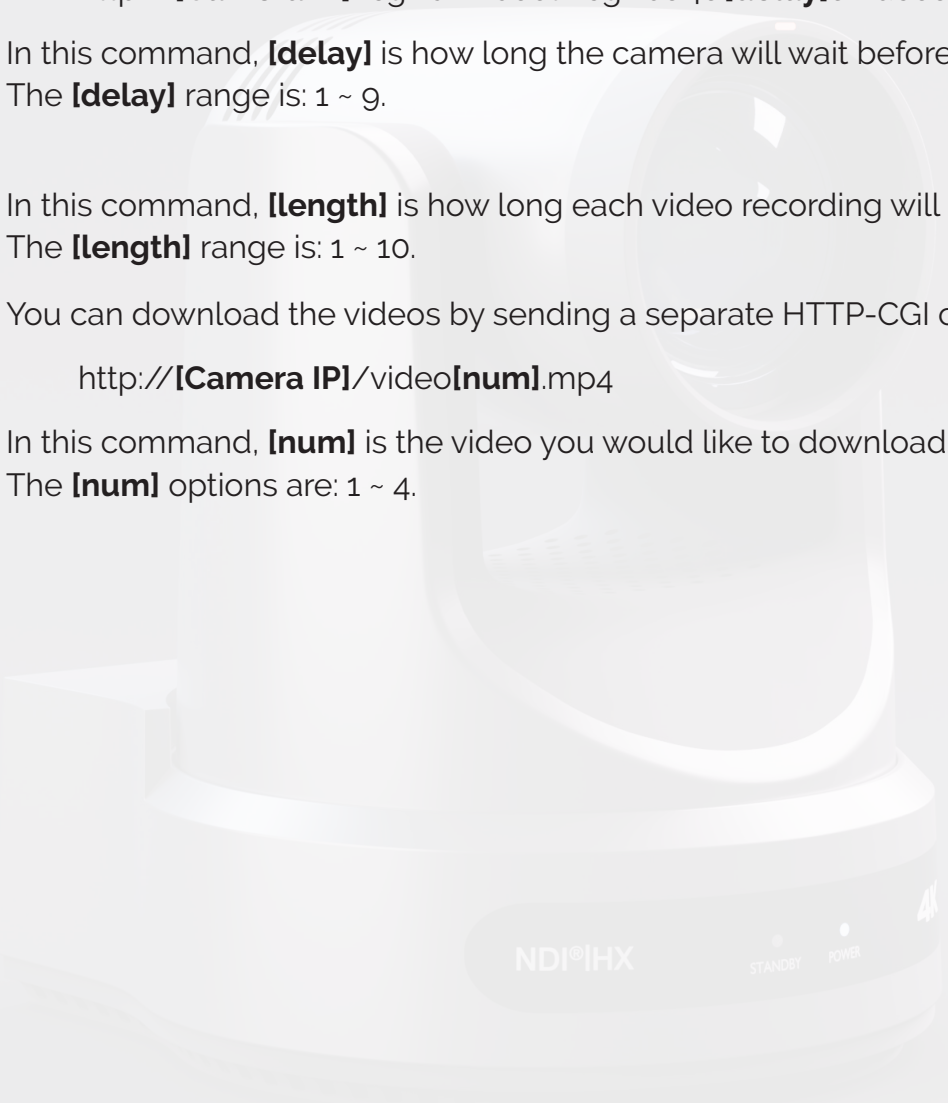
In this command, **[delay]** is how long the camera will wait before taking the next video, in seconds.
The **[delay]** range is: 1 ~ 9.

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 nu 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 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position
			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	HIgh	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	

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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

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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 YYYY: Pan position, ZZZZ: Tilt position
	LimitClear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	
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

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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 0h (-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_FocusAFModeInq	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_WBModeInq	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

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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_ PictureEffectModeInq	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 0h (60%) to Eh (200%)
CAM_PanTiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	WWWW: 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 0h (-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

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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 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_CameraBlockIng	8x 09 7E 7E 01 FF	y0 50 0p 0p 0q 0q 0r 0s tt 0u vv ww 00 xx 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

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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 brower. 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

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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. Please check the camera’s presets. When a preset is saved, many of the exposure, color, and image settings are saved. Image settings change with preset recall. If you’ve confirmed that the presets and image settings are tuned and saved correctly and you are still experiencing image changes, please contact support.

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.
     - 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/

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