

PTZOptics Move 4K

Product Manual

Move 4K Manual



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The OSD Menu

Opening the On-Screen Display (OSD) Menu

Using the **IR Remote**, press the **[Menu]** button to display the OSD (On-Screen Display) menu. Use the arrow keys to navigate the OSD menu, the **[Home]** button to make selections, and the **[Return]** button to go back.

Opening the On-Screen Display provides the list of sub-menus shown below.

1. **Exposure**
2. **Color**
3. **Image**
4. **P / T / Z**
5. **Noise Reduction**
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Exposure Menu

The following settings can be adjusted from the Exposure menu:

Exposure Mode	Adjustable Settings	Description
Auto (Default)	**Exp-Comp-Mode**, **Backlight**, **Gain Limit**, **Anti-Flicker**, **Meter Region**, and **Dynamic Range Control (DRC)**	The camera automatically adjusts **Iris**, **Shutter**, and **Gain** to achieve optimal exposure. Exp-Comp-Mode and Backlight can be toggled On/Off.
Manual	**Iris**, **Shutter**, **Gain**, and **Dynamic Range Control**	The user manually sets **Iris**, **Shutter**, **Gain**, and **Dynamic Range Control (DRC)** for precise exposure

Exposure Mode	Adjustable Settings	Description
	(DRC)	control.
SAE (Shutter Automatic Exposure)	**Shutter**, **Gain Limit**, **Meter Region**, and **Dynamic Range Control (DRC)**	The user manually sets **Shutter**, **Gain Limit**, **Meter Region**, and **Dynamic Range Control (DRC)** while the camera automatically adjusts **Iris** for optimal exposure.
AAE (Aperture Automatic Exposure)	**Iris**, **Gain Limit**, **Anti-Flicker**, **Meter Region**, and **Dynamic Range Control (DRC)**	The user manually sets **Iris**, **Gain Limit**, **Anti-Flicker**, **Meter Region**, and **Dynamic Range Control (DRC)** while the camera automatically adjusts **Shutter** for optimal exposure.
Bright	**Bright (Brightness)**, **Gain Limit**, **Anti-Flicker**, **Meter Region**, and **Dynamic Range Control (DRC)**	The user manually sets **Bright (Brightness)**, **Gain Limit**, **Anti-Flicker**, **Meter Region**, and **Dynamic Range Control (DRC)** while the camera automatically adjusts **Iris** and **Shutter** for optimal exposure in low-light conditions.
OnePush	**Gain**	The camera automatically adjusts exposure settings based on a single button press. To perform a one-push exposure adjustment, select OnePush and click the icon next to the exposure mode dropdown.

Additional Exposure Settings

Exp Comp (Exposure Compensation)

Setting	Description	Options	Default	Availability
Exp-Comp	Enables exposure compensation adjustment. Adjusts the target brightness used by automatic exposure. **Positive values** produce a brighter image; **negative values** produce a darker image.	-7 ~ +7	-3	Available only while ExpCompMode is On.

Setting	Description	Options	Default	Availability
	Available only when Exposure Compensation is enabled.			

Backlight

Setting	Description	Options	Default	Availability
Backlight	Brightens a subject that appears too dark because of a strong light source or bright background behind them, such as a window or stage light.	On, Off	Off	Available only in Full Auto mode.

Bright

Setting	Description	Options	Default	Availability
Bright	Adjusts the target brightness used by automatic exposure. **Positive values** produce a brighter image; **negative values** produce a darker image.	0 ~ 17	7	Available only in AAE, Bright mode.

Gain Limit

Setting	Description	Options	Default	Availability
Gain Limit	Sets the maximum gain the camera will apply in low-light conditions. **Lower limits** can reduce image noise but may produce a darker image in low light; **higher limits** allow greater brightness at the cost of potentially increased noise.	0 ~ 15	4	Available only in Full Auto, AAE, Bright mode.

Anti-Flicker

Setting	Description	Options	Default	Availability
Anti-Flicker	Reduces flicker caused by artificial lighting. Select 50 Hz or 60 Hz to match the electrical frequency used by the lighting at your location.	Off, 50Hz, 60Hz	60Hz	Available only in Full Auto, AAE, Bright mode.

Iris

Setting	Description	Options	Default	Availability
Iris	Controls the lens aperture and therefore how much light reaches the image sensor. **Lower f-numbers** open the iris to allow more light; **higher f-numbers** close the iris to allow less light.	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	F1.8	Available only in Manual, AAE mode.

Meter

Setting	Description	Options	Default	Availability
Meter	Determines which area or method the camera uses when evaluating image brightness for automatic exposure. This is especially important when the subject and background have significantly different brightness levels.	Average, Center, Smart, Top	Average	Available only in Full Auto, SAE, AAE, & Bright.

Shutter

Setting	Description	Options	Default	Availability
Shutter	Controls how long each video frame is exposed to light. **Faster shutter** speeds reduce motion blur but require more light; **slower 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,	1/125	Available only in Manual, SAE mode.

Setting	Description	Options	Default	Availability
	speeds allow more light but may increase motion blur.	1/3000, 1/4000, 1/6000, 1/10000		

Gain

Setting	Description	Options	Default	Availability
Gain	Electronically amplifies the image signal to increase brightness. Increasing gain can improve visibility in low light but may also increase image noise.	0 ~ 7	2	Available only in Manual mode.

DRC (Dynamic Range Control)

Setting	Description	Options	Default	Availability
DRC	Dynamic Range Control helps preserve detail when bright and dark areas appear in the same scene by balancing the tonal range. **Higher settings** can reveal more shadow detail but may make the image appear flatter or increase visible noise.	0 ~ 8	4	Available in all modes with the exception of OnePush.

Color Menu

The following settings can be adjusted from the Color menu:

White Balance Mode	Adjustable Settings	Description
Auto (Default)	None	The camera automatically adjusts white balance based on the lighting conditions.
Indoor	None	Optimized for indoor lighting conditions, typically around 3200K.
Outdoor	None	Optimized for outdoor lighting conditions, typically around 5600K.
Manual	Red Gain and Blue Gain	The user manually sets Red Gain and Blue Gain for precise white balance control.
One Push	Red Gain and Blue Gain	The camera automatically adjusts white balance based on a single button press. To perform a one-push white balance adjustment, select One Push and click the icon next to the WB Mode dropdown.
VAR	Color Temperature, Red Gain, and Blue Gain	The user manually sets Color Temperature, Red Gain, and Blue Gain for precise white balance control.

Additional Color Settings

R Gain (Red Gain)

Setting	Description	Options	Default	Availability
R Gain	Adjusts the intensity of the red color channel when using Manual White Balance. Increase or decrease this value to correct an image that appears too cool or too warm. Adjusts relative to the current white balance mode.	0 ~ 255	1	Available only in Manual modes.

B Gain (Blue Gain)

Setting	Description	Options	Default	Availability
B Gain	Adjusts the intensity of the blue color channel when using Manual White Balance. Increase or decrease this value to correct an image that appears too cool or too warm. Adjusts relative to the current white balance mode.	0 ~ 255	-2	Available only in Manual modes.

Color Temp

Setting	Description	Options	Default	Availability
Color Temp	Sets the target white-balance color temperature in Kelvin when using VAR mode. **Lower values** correspond to warmer lighting; **higher values** correspond to cooler/daylight lighting.	2500K ~ 8000K	6500K	Available only in VAR mode.

RG Tuning (Red Gain Tuning)

Setting	Description	Options	Default	Availability
RG Tuning	Fine-tunes the red component of the camera's calculated white balance without switching to fully manual white balance.	-10 ~ +10	1	Available only in Auto, One Push, and VAR mode.

BG Tuning (Blue Gain Tuning)

Setting	Description	Options	Default	Availability
BG Tuning	Fine-tunes the blue component of the camera's calculated white balance without switching to fully manual white balance.	-10 ~ +10	-2	Available only in Auto, One Push, and VAR mode.

Saturation

Setting	Description	Options	Default
Saturation	Controls the intensity of colors in the image. **Lower values** produce more muted colors; **higher values** produce more vivid colors.	20% ~ 200%	90%

Hue

Setting	Description	Options	Default
Hue	Shifts the overall color tint of the image. Use this for fine color correction when colors appear shifted even after white balance has been set.	0 ~ 14	8

Image Menu

The following settings can be adjusted from the Image menu:

Luminance

Setting	Description	Options	Default
Luminance	Adjusts the overall brightness level of the processed image. Unlike exposure controls, this modifies image brightness rather than controlling how much light reaches the sensor.	0 ~ 14	8

Contrast

Setting	Description	Options	Default
Contrast	Adjusts the difference between the darkest and brightest portions of the image. **Higher values** create stronger separation; **lower values**	0 ~ 14	9

Setting	Description	Options	Default
	produce a flatter image.		

Sharpness

Setting	Description	Options	Default
Sharpness	Controls edge enhancement applied to the image. **Higher values** can make details appear more defined, but excessive sharpness may emphasize noise or create visible edge artifacts.	Auto, 0 ~ 11	9

Flip-H (Horizontal Flip)

Setting	Description	Options	Default
Flip-H	Mirrors the image horizontally.	On, Off	Off

Flip-V (Vertical Flip)

Setting	Description	Options	Default
Flip-V	Flips the image vertically. This can be used to correct image orientation when the camera is installed upside down.	On, Off	Off

B&W Mode (Black and White Mode)

Setting	Description	Options	Default
B&W Mode	Removes color information from the video and outputs the image in black and white.	On, Off	Off

Style

Setting	Description	Options	Default
Style	Selects a preconfigured profile of image settings to quickly adjust the camera’s overall image appearance.	Default, Norm, Bright, PC	Default

P / T / Z (Pan Tilt Zoom) Menu

The following settings can be adjusted from the P / T / Z menu:

SpeedByZoom

Setting	Description	Options	Default
SpeedByZoom		On, Off	On

AF (Auto-Focus) Zone

Setting	Description	Options	Default
AF (Auto-Focus) Zone	Sets the region of the frame used for autofocus detection.	Front, Top, Center, Bottom	Center

AF (Auto-Focus) Sense

Setting	Description	Options	Default
AF (Auto-Focus) Sense	Controls how quickly autofocus responds to changes in the scene.	High, Normal, Low	Normal

L/R Set

Setting	Description	Options	Default
L/R Set		STD, REV	STD

Preset Freeze

Setting	Description	Options	Default
Preset Freeze		On, Off	Off

Zoom Mode

Setting	Description	Options	Default	Availability
Zoom Mode		Digital, Optical, SuperZoom	Optical	**SuperZoom** effectively doubles the camera's optical zoom while halving the resolution. For example, a 20X 4K camera using SuperZoom becomes a 40X 1080p camera. Panning, Tilting, or Zooming the camera in while using SuperZoom does not cause resolution degradation beyond the initial halving cost. **Digital Zoom** differs in that it degrades resolution progressively as you digitally zoom in.

Magnification

Setting	Description	Options	Default
Magnification	Enables digital zoom magnification.	Off, 2x, 4x, 8x, 16x	Off

Call Preset Speed

Setting	Description	Options	Default
Call Preset Speed		1 ~ 24	12

Pre Zoom Speed

Setting	Description	Options	Default
Pre Zoom Speed	Controls the zoom speed used when the camera recalls a preset containing a different zoom position. Lower values produce slower zoom movement; higher values produce faster zoom movement.	0 ~ 7	5

Noise Reduction Menu

Adjusts the levels of digital noise reduction.

NR3D (3D Noise Reduction)

Setting	Description	Options	Default
NR3D (3D Noise Reduction)	Reduces image noise. Higher values apply stronger noise reduction. **Auto** lets the camera adjust dynamically. 3D Noise Reduction compares information between consecutive video frames to reduce visible image noise, particularly in low-light scenes. Increasing the value provides stronger noise reduction but can soften fine detail or introduce smearing around moving subjects.	0 ~ 15	7

Setup Menu

The following settings can be adjusted from the Setup menu:

Language

Setting	Description	Options	Default
Language		English, Chinese	English

Auto Focus L

Setting	Description	Options	Default
Auto Focus L	Locks focus at its current position so the autofocus system does not readjust it. Turn it off to allow normal autofocus operation.	Off, On	Off

OSD TimeOut

Setting	Description	Options	Default
OSD TimeOut	Determines whether the OSD menu remains open until manually closed or automatically closes after 2.5 minutes.	Off, 2.5min	Off

Motion Sync

Setting	Description	Options	Default	Availability
Motion Sync	Synchronizes pan, tilt, and zoom movement during a preset recall so all three movements reach their stored positions at approximately the same time.	Off, On	Off	While toggled on users can access the Max Speed setting for motion sync through this menu. This is the speed used for Sync while calling presets. Range: 185 ~ 230 (increments of 5)

Focus Limit

Setting	Description	Options	Default	Availability
Focus Limit	Enables a minimum focus distance limit to prevent the camera from focusing on very close objects. **On Settings: Furthest Pos:** Define the farthest focus position Options include: INF, 1m ~ 20m. **Nearest Pos:** Define the nearest focus position Options include: INF, 1m ~ 20m	Off, On	Off	Restricts the distance range in which autofocus is allowed to search for a subject, helping prevent the camera from focusing on objects that are significantly nearer or farther than the intended subject.

Video Mode

Setting	Description	Options	Default
Video Mode	**SDI-3G Mode:** Level-A, Level-B **Video Output:** HDMI, SDI **DVI Mode:** Define HDMI Data Transfer type: HDMI, DVI	SDI-3G Mode, Video Output, DVI Mode	HDMI

Other

Setting	Description	Options	Default
Auto Inversion	When enabled, the camera automatically corrects the image orientation when the head is inverted.	Off, On	On
Tally Mode	Enables the camera to respond to tally commands so its tally indicator can communicate when the camera is live or selected by a production system.	Off, On	Off
USB Audio		Off, On	Off

Setting	Description	Options	Default
USB 2.0 Function		UVC, Host	UVC
Display Info		Off, On	On

Communication Setup

This menu is used to adjust the camera's control methods and settings.

Protocol

Setting	Description	Options	Default
Protocol	Selects the serial control protocol the camera uses when receiving commands from an external controller: VISCA, Pelco-D, Pelco-P, or automatic protocol detection.	VISCA, PELCO-D, PELCO-P, Auto	VISCA

V_Address

Setting	Description	Options	Default
V_Address	Sets the camera's VISCA address, allowing multiple cameras on a serial control system to be individually addressed.	1 ~ 7	1

V_AddrFix

Setting	Description	Options	Default
V_AddrFix	When enabled, the camera's VISCA address is fixed and cannot be changed.	Off, On	Off

Net Mode

Setting	Description	Options	Default
Net Mode		Serial, Parallel	**Serial**

Baudrate

Setting	Description	Options	Default
Baudrate	Sets the serial communication speed used by the camera. The camera and the connected controller must use the same baud rate to communicate successfully.	**2400, 4800, 9600, 38400**	**9600**

P_D_Address

Setting	Description	Options	Default
P_D_Address	Sets the camera address used when controlling the camera with the Pelco-D protocol.	0 ~ 254	1

P_P_Address

Setting	Description	Options	Default
P_P_Address	Sets the camera address used when controlling the camera with the Pelco-P protocol.	0 ~ 31	1

Restore Default

This menu is used to restore the camera's factory default settings.

P/T Limit

Setting	Description	Options	Default
P/T Limit	**To Reset:** *Press the **[Enter]** button to Confirm. Restoring the default settings will return all camera parameters to factory defaults. Press the **[Back]** button to Cancel.*	Yes, No	No

Privacy Mode

This menu lets you enable or disable Privacy Mode.

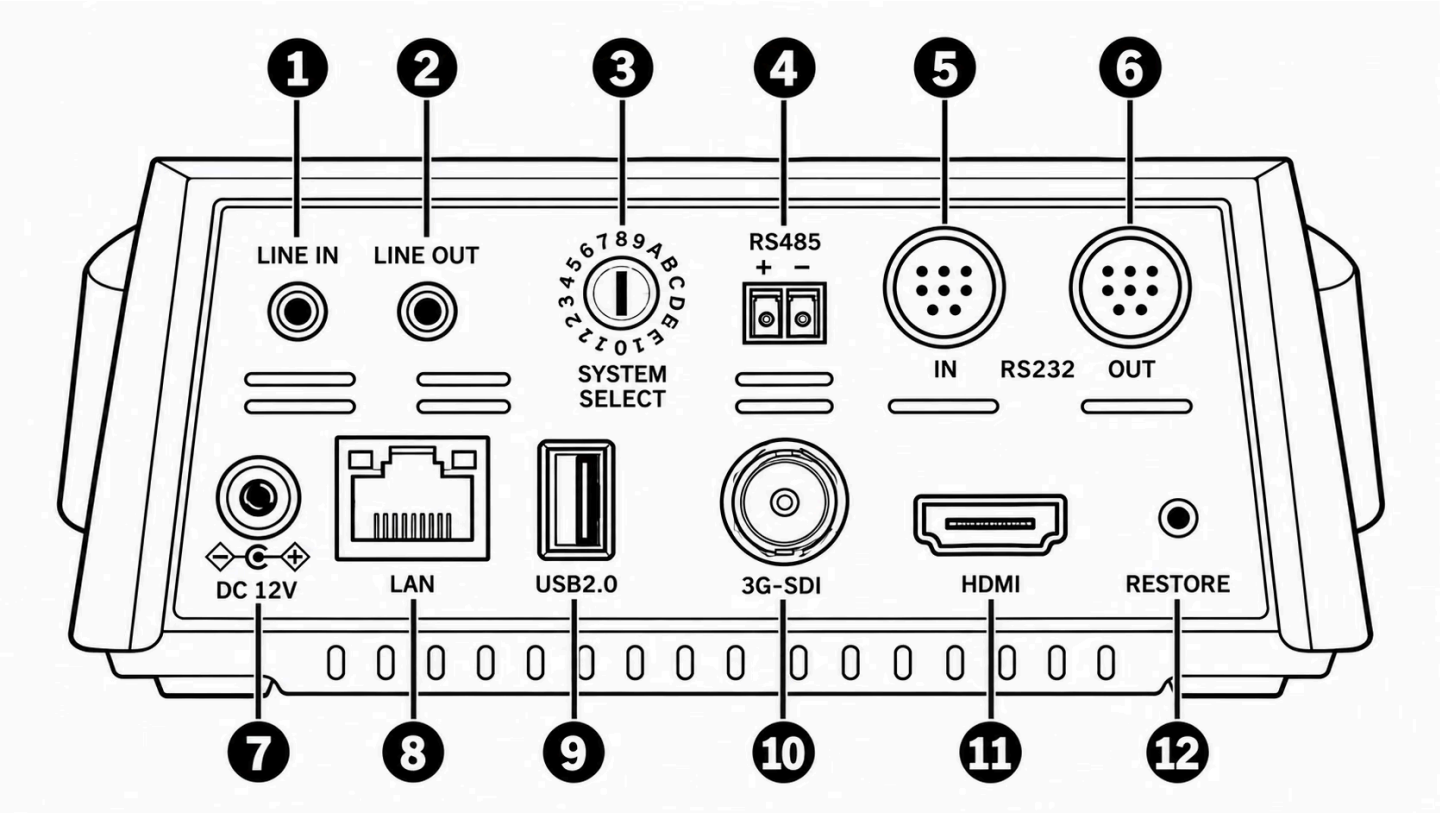
Privacy Mode Settings

Setting	Description	Options	Default
Privacy Mode Settings	*Enable Privacy Mode by pressing the **[Home]** or **[Enter]** button, turning the camera head down and disabling the video feed. Press either button again to disable Privacy Mode.*	Enable, Disable	Disable

Technical Specs

Model Information

Feature	Value
Official SKU	`PT12X-4K-GY-G3`, `PT12X-4K-WH-G3`, `PT20X-4K-GY-G3`, `PT20X-4K-WH-G3`, `PT20X-4K-RD-G3`, `PT30X-4K-GY-G3`, `PT30X-4K-WH-G3`
Model Name	`Move 4K`



Move 4K Connection List

1. 3.5mm Audio Input
2. 3.5mm Audio Output
3. Resolution Dial
4. RS-485 Interface
5. RS-232 Input

6. RS-232 Output
7. DC 12V Power
8. NDI HX LAN
9. USB 2.0
10. 3G-SDI
11. HDMI 2.0 Output
12. Restore Button

Camera & Lens

Feature	Specification
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 **1024x576** **720x480** **720x408** **640x480** **640x360** - 60/59.94/50/30/29.97/25
Resolution & Frame Rate 3G-SDI	**1920x1080p** - 60/59.94/50/30/29.97/25 **1920x1080i** - 60/59.94/50 **1280x720p** - 60/59.94 **1024x576** **720x480** **720x408** **640x480** **640x360** - 60/59.94/50/30/29.97/25
Resolution & Frame Rate USB	**3840x2160p** - 30/25/24/20/15/10/7.5/5 **1920x1080p** - 30/25/24/20/15/10/7.5/5 **1280x720p** - 30/25/24/20/15/10/7.5/5 **1024x576** - 30/25/24/20/15/10/7.5/5 **720x480** - 30/25/24/20/15/10/7.5/5 **720x408** - 30/25/24/20/15/10/7.5/5

Feature	Specification
	640x480 - 30/25/24/20/15/10/7.5/5 **640x360** - 30/25/24/20/15/10/7.5/5
Resolution & Frame Rate NDI Stream 1:	3840x2160, 1920x1080, 1280x720, 1024x576, 720x480, 720x408, 640x480, & 640x360. **ALL capable of 1 ~ 60 FPS**
Resolution & Frame Rate NDI Stream 2:	720x480, 720x408, 640x480, 640x360, 480x320, 320x240. **ALL capable of 1 ~ 60 FPS**
Lens	**(12X)** Sony 1/2.5 inch, CMOS
	(20X) Sony 1/1.8 inch, CMOS
	(30X) Sony 1/1.8 inch, CMOS
Image Sensor	**(12X)** 8.51MP, Effective Pixels: 8.29M
	(20X) 8.42MP, Effective Pixels: 8.29M
	(30X) 8.42MP, Effective Pixels: 8.29M
Optical Lens Focal Length (Zoom)	**(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
Maximum Tracking Distance	**(12X)** 202' (61.57m)
	(20X) 264' (80.47m)
	(30X) 334' (101.80m)
Optical Lens Field of View Horizontal & Vertical	**(12X)** H 6.9° ~ 72.5° V 3.9° ~ 44.8°
	(20X) H 3.5° ~ 60.7° V 1.9° ~ 34.1°
	(30X) H 2.5° ~ 59.2° V 1.4° ~ 34.6°

Feature	Specification
Display Field of View	**(12X)** 82.8°
	(20X) 66.6°
	(30X) 66.7°
Min Lux	0.5 Lux @ (F1.8, AGC ON)
Shutter	1/30s ~ 1/10000s
Pan Movement Range	±170°
Tilt Movement Range	-30° ~ +90°
Pan Speed	0.7°/s ~ 100°/s
Tilt Speed	0.7°/s ~ 69.9°/s
Presets	255 Presets
Preset Accuracy	0.1º
Image Flip, Mirror, and Freeze	Supported

Video Output Reference

Feature	HDMI	3G-SDI
Maximum Resolution	**4K @ 60fps** (3840 × 2160)	**1080p @ 60fps** (1920 × 1080)
Connector	HDMI 2.0	BNC (locking)
Signal Type	Uncompressed Digital	3G-SDI (Level-A or Level-B)
Embedded Audio	✅ Yes	✅ Yes
Typical Cable Length	~49 ft (15 m) without extenders	~200–328 ft (60–100 m)

Physical Specifications

Feature	Specification
Dimensions (L x W x H)	**(12X)** 6.65” L x 5.57” W x 7.91” H / 169mm L x 141.5mm W x 201mm H
	(20X) 6.65” L x 5.57” W x 7.91” H / 169mm L x 141.5mm W x 201mm H
	(30X) 7.12” L x 6.69” W x 8.98” H / 181mm L x 170mm W x 228mm H
Weight	**(12X)** 3.25 lbs (1.47 kg)
	(20X) 3.25 lbs (1.47 kg)
	(30X) 4.41lbs (2.0 kg)
Working Environment	Indoor
Humidity Range	10% - 80%
Operating Temperature	14°F ~ 104°F (-10°C ~ 40°C)
Storage Temperature	-40°F ~ 140°F (-40°C ~ 60°C)

Connections

Feature	Specification
RJ45	10/100/1000M Adaptive Ethernet Port, NDI HX enabled
HDMI	Version 2.0
3G-SDI	BNC Type, 800mVP-p, 75Ω, Along to SMPTE 424M,standard
USB 2.0	Type A

Feature	Specification
Compression Standards	YUY2 / MJPEG / H.264 / H.265
Audio Interface	3.5mm Line level Input & Output
RS232 Input	8-pin Mini DIN RS232 Input, Max distance: 98.5ft / 30m, **Protocol**: VISCA / Pelco-D / Pelco-P
RS232 Output	8-pin Mini DIN RS232 Output, Max distance: 98.5ft / 30m, **Protocol**: VISCA / Pelco-D / Pelco-P
RS485 Input / Output	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 Supply	JEITA type (DC IN 12V) / PoE+ (802.3at)
Current Consumption	Max 1.0A

Power Supply

> **INFO**
>
> The IEC 60601-1 certified power adapter is **purchased separately**. The external power adapter included with this device is not IEC 60601-1 certified.
>
> **IEC 60601-1 certified, PTZOptics SKU number:** `PT-PSB-M`
> IEC 60601-1 certified, Manufacturer Model: `EM1024QR(10)`, manufactured by Edac Power Electronics (Suzhou) Co., Ltd. (No. 59, Chang Sheng Road, Sheng Pu, Suzhou Industrial Park, Jiangsu, China).

- **Input:** `100–240 V~` (interchangeable wall-mount)
- **Output:** `12.0 V DC / 2.0 A / 24.0 W`, Efficiency Level VI
- **DC Cable & Plug:** `1200 mm` cable; `5.5 × 5 × 1.0 mm` inner-pin DC plug
- **Camera Max Input Current:** `1.0 A`
- **Replacement Power Supply:** Visit ptzoptics.com/where-to-buy

- **Power over Ethernet (PoE):** Supports PoE+ (IEEE 802.3at). Use a medical-grade PoE+ network switch complying with IEC 60601 or an isolated PoE+ injector.
- **Disconnecting Power / Supply Mains (IEC 60601-1, Clause 8.11.1):** To completely disconnect the camera from power, unplug the external power adapter from the AC wall outlet (or disconnect the PoE+ Ethernet cable). The power adapter plug serves as the disconnect device; do **NOT** position the equipment where it is difficult to reach and unplug.

Front Status LED Indicators

The camera front panel features a blue **Power LED** and a green **Standby Status LED**:

Camera State	Power LED (Blue)	Standby LED (Green)
Power-on (initial boot)	On	On
Normal operation (idle, no control)	Steady On	Off
Receiving IR remote signal	Steady On	Flashes once
Standby mode	On	On
Privacy Mode	On	Flashes continuously

Certifications

- BIS
- CE-EMC
- CE-LVD
- FCC
- REACH
- RoHS
- UKCA

Software Certifications

- NDI HX3

Packing List & Approved Accessories

Use only manufacturer-approved accessories. Compatibility of any third-party accessory must be confirmed with Haverford Systems Inc. before use:

Accessory	Specification / Part Number
AC Power Adapter	PTZOptics SKU `PT-PSB-U` `12.0 V DC / 2.0 A / 24.0 W`
Power Cable	AC power cord (supplied with the adapter; regional mains plug)
RS-232 Cable	8-pin Mini-DIN RS-232 cable (VISCA / Pelco-D / Pelco-P; max `30 m`)
IR Remote Control	IR remote control, 4 IR addresses, control range `9 m` (`30 ft`)
USB Cable	USB cable USB A-A Cable
Lens Cap	Lens cap (supplied with the camera)
Quick Start Guide	Quick Start Guide
AAA Batteries	2 AAA batteries

Compliance

The Move 4K is an NDAA Compliant camera.

- **Country of Origin:** China or Laos.

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


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

CAD Files & Technical Drawings

Move 4K Drawings

3MF	12x	20x	30x
PDF	12x	20x	30x
STEP	12x	20x	30x
STL	12x	20x	30x

Camera Mount Drawings

PDF	PT-CM-1	PT-CM-3	HCM-1	HCM-2

Firmware

Firmware Instructions

Firmware Changelog

Latest Firmware Files

Move 4K 12X Firmware

Move 4K 20X Firmware

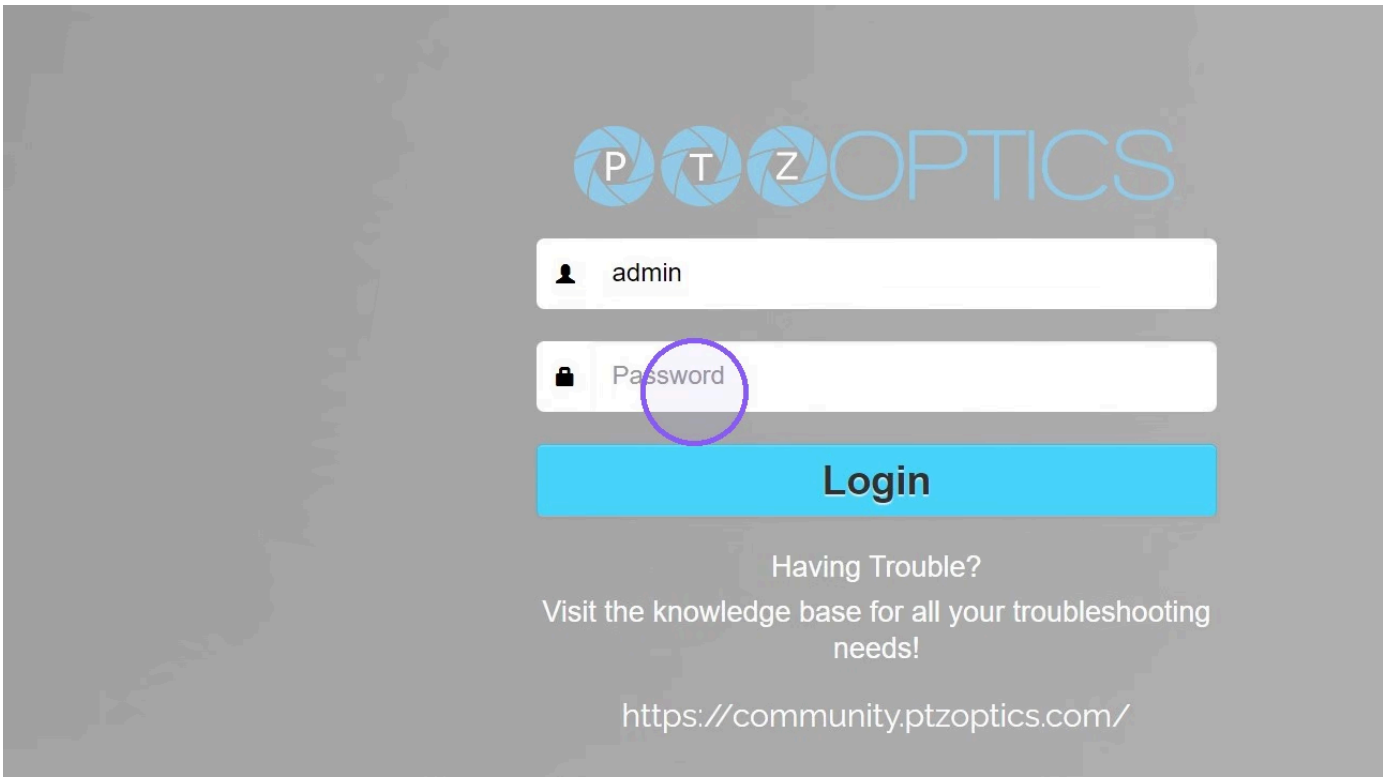
Move 4K 30X Firmware

Instructions

Upgrading Your G3 Camera's Firmware

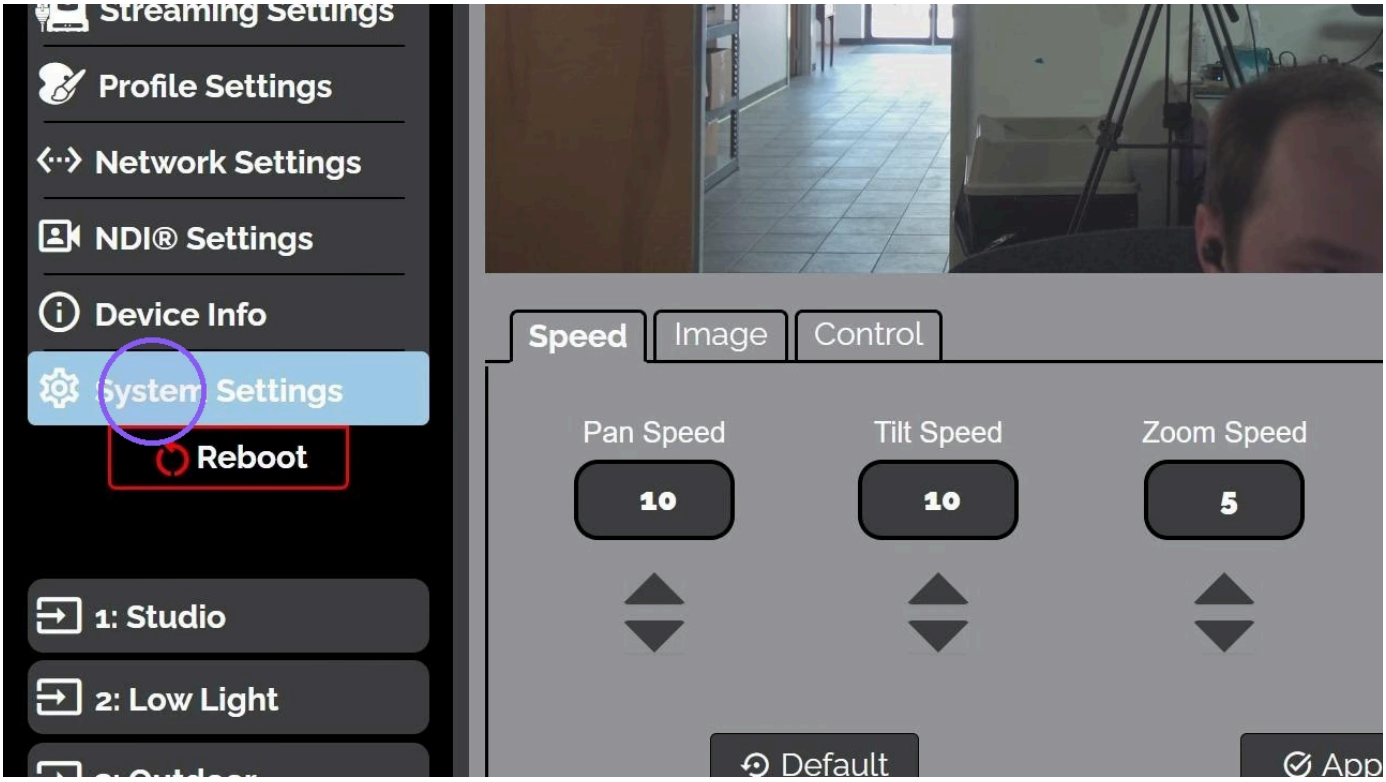
Steps

1. Login to your camera's web interface by typing in its IP address or .local address. For example `http://ptzoptics.local`

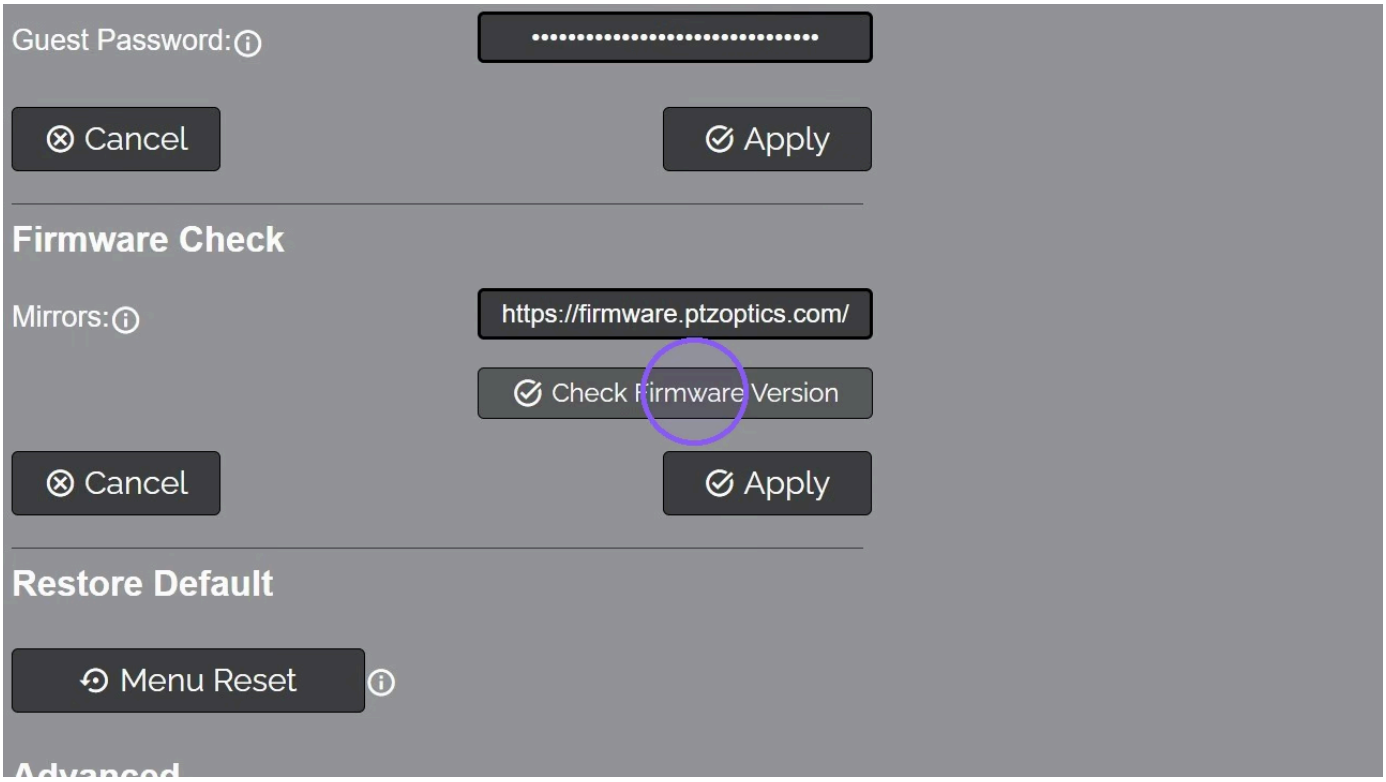


> **IMPORTANT**
>
> If this is your first time logging in, you will be prompted to create a username and password.

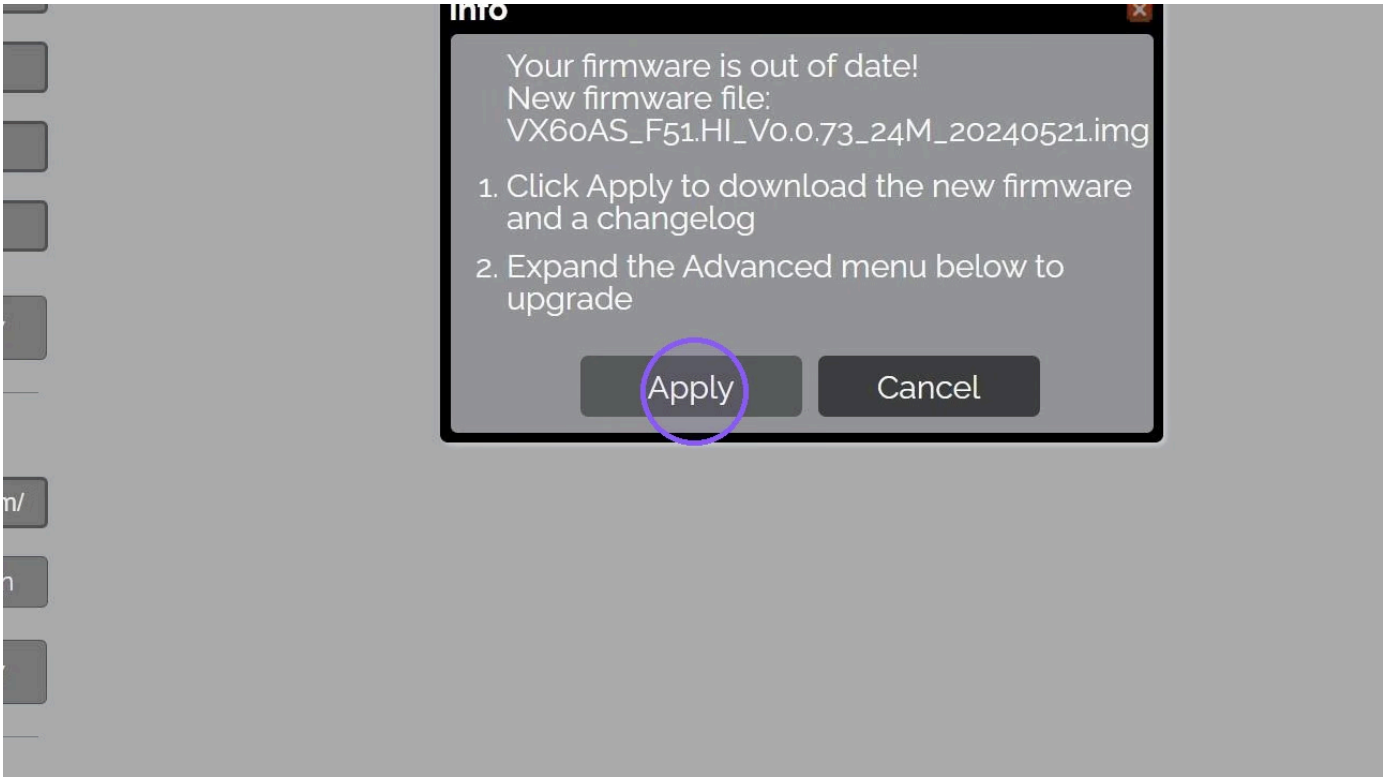
2. Once logged in, go to the System Settings page.



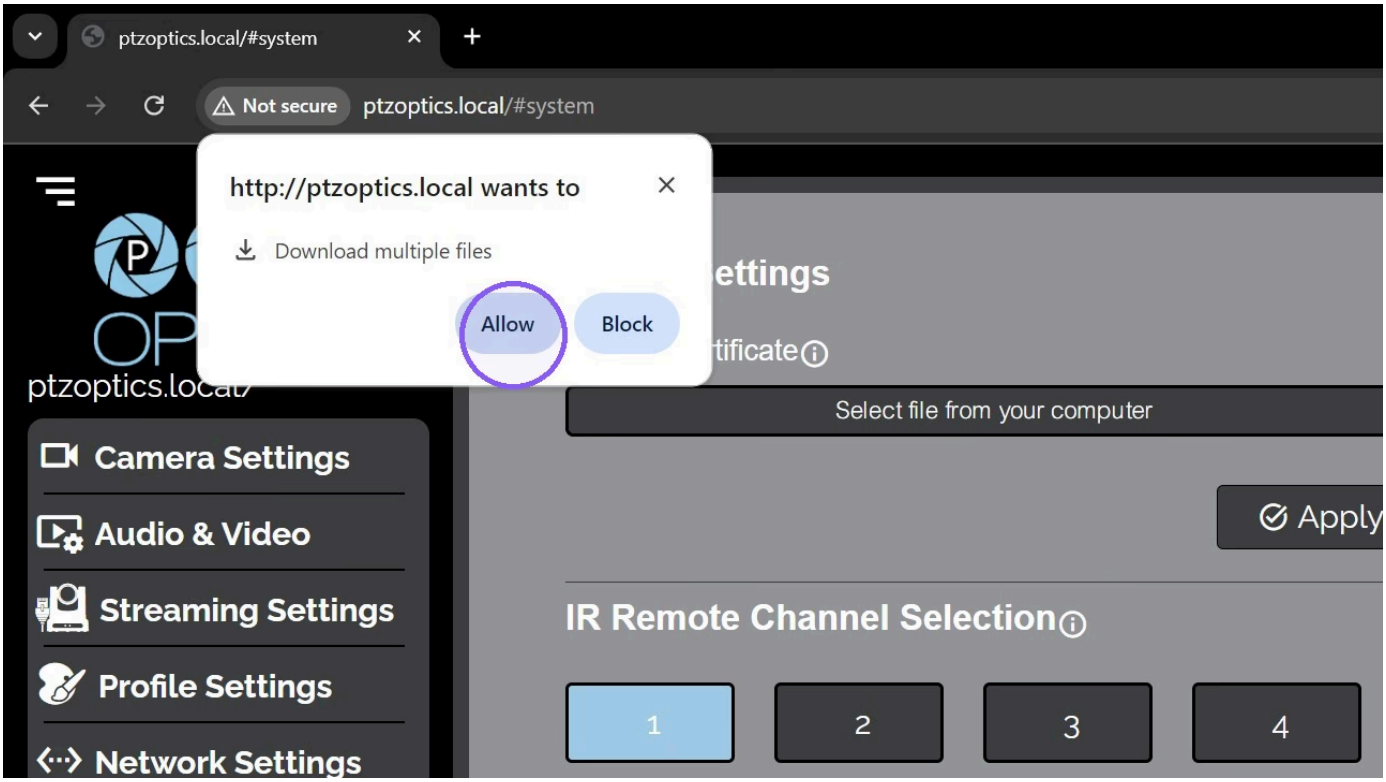
3. Click the Check Firmware Version button.



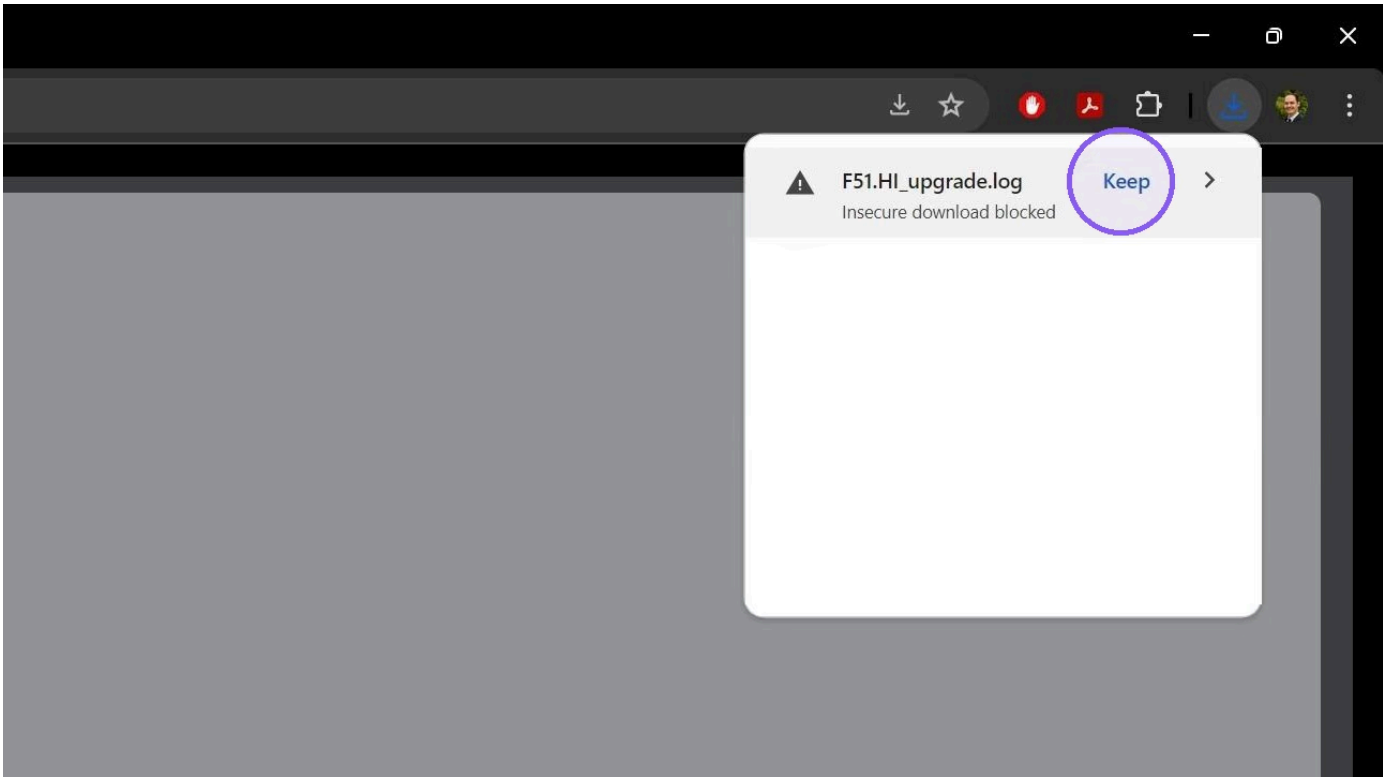
4. Click the Apply button to download the latest firmware file.



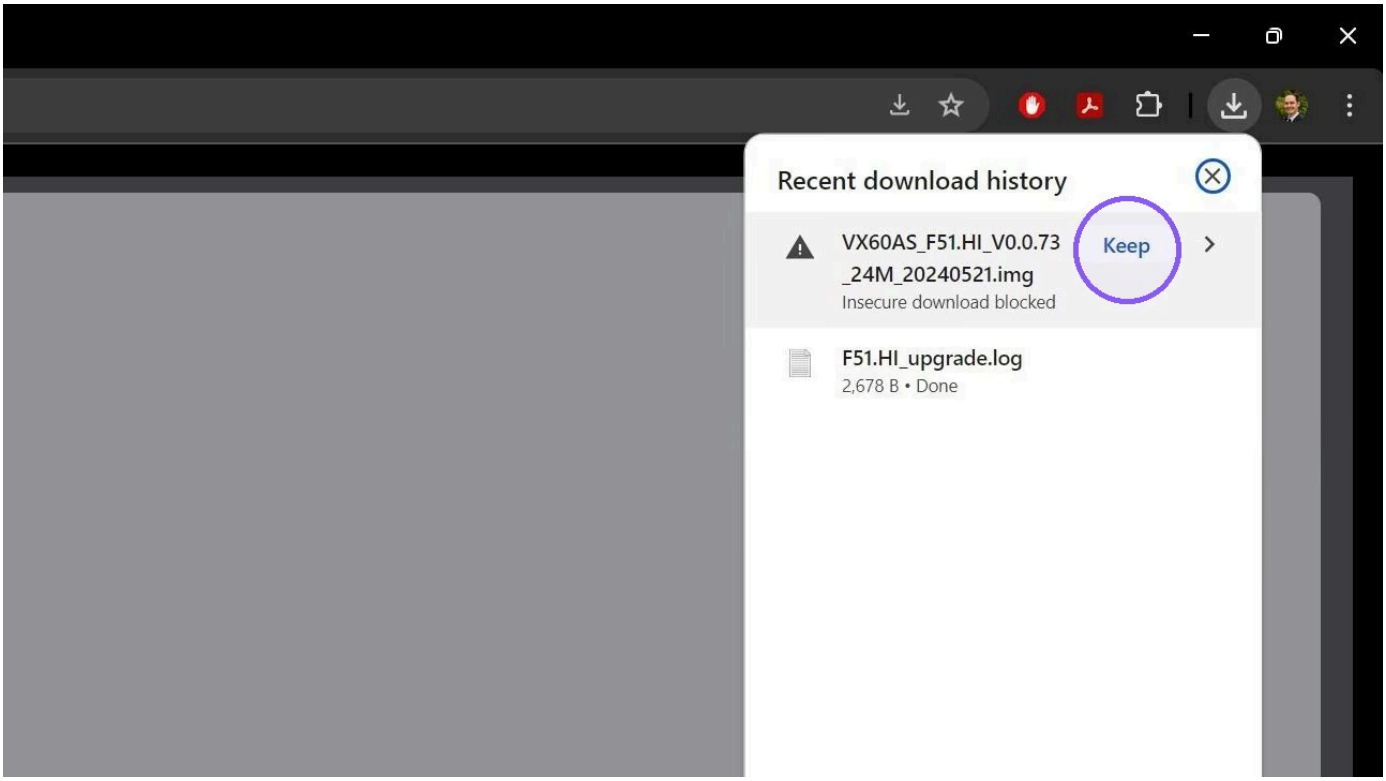
5. You may be prompted to download multiple files. Click "Allow" to download the firmware and changelog files.



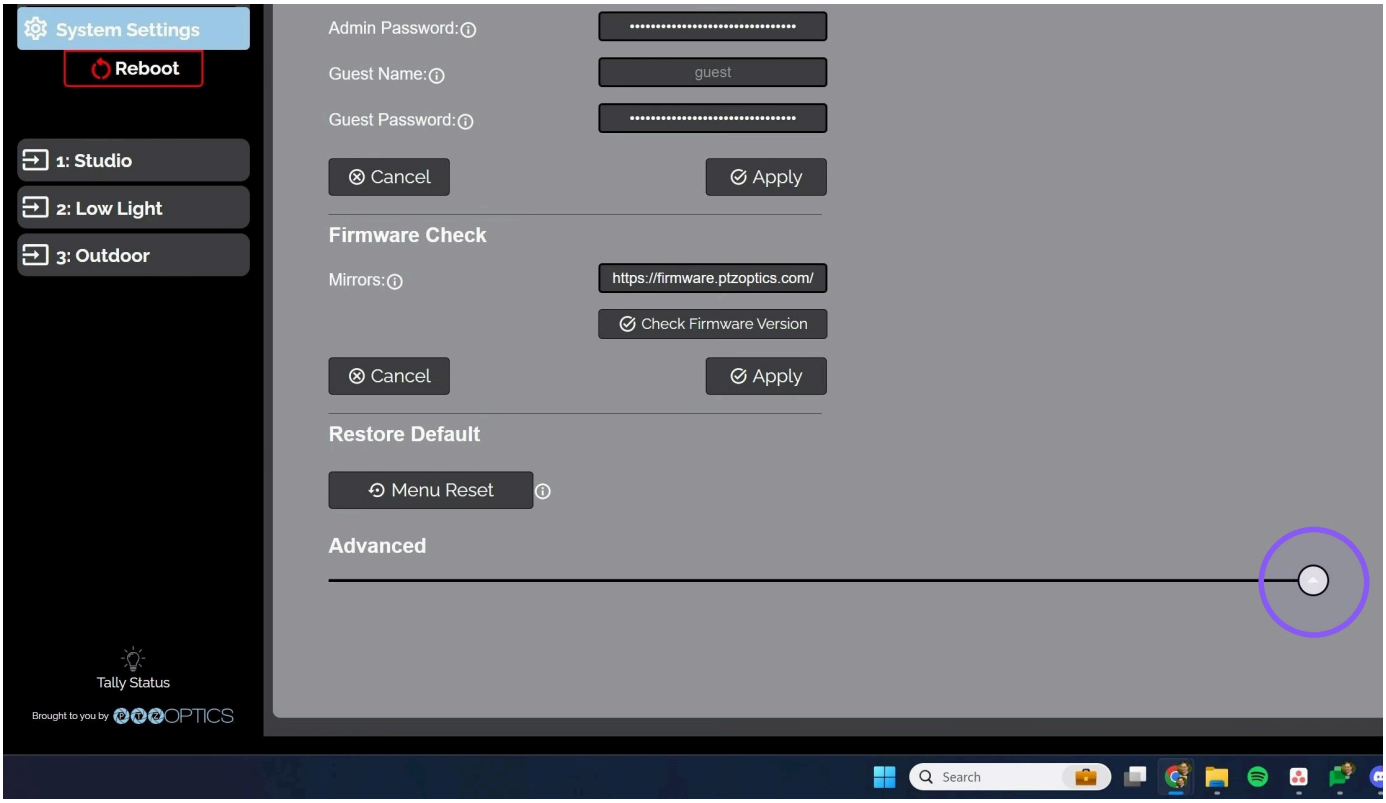
6. You may be prompted to approve the download. Click the Keep button on the changelog to approve the download.



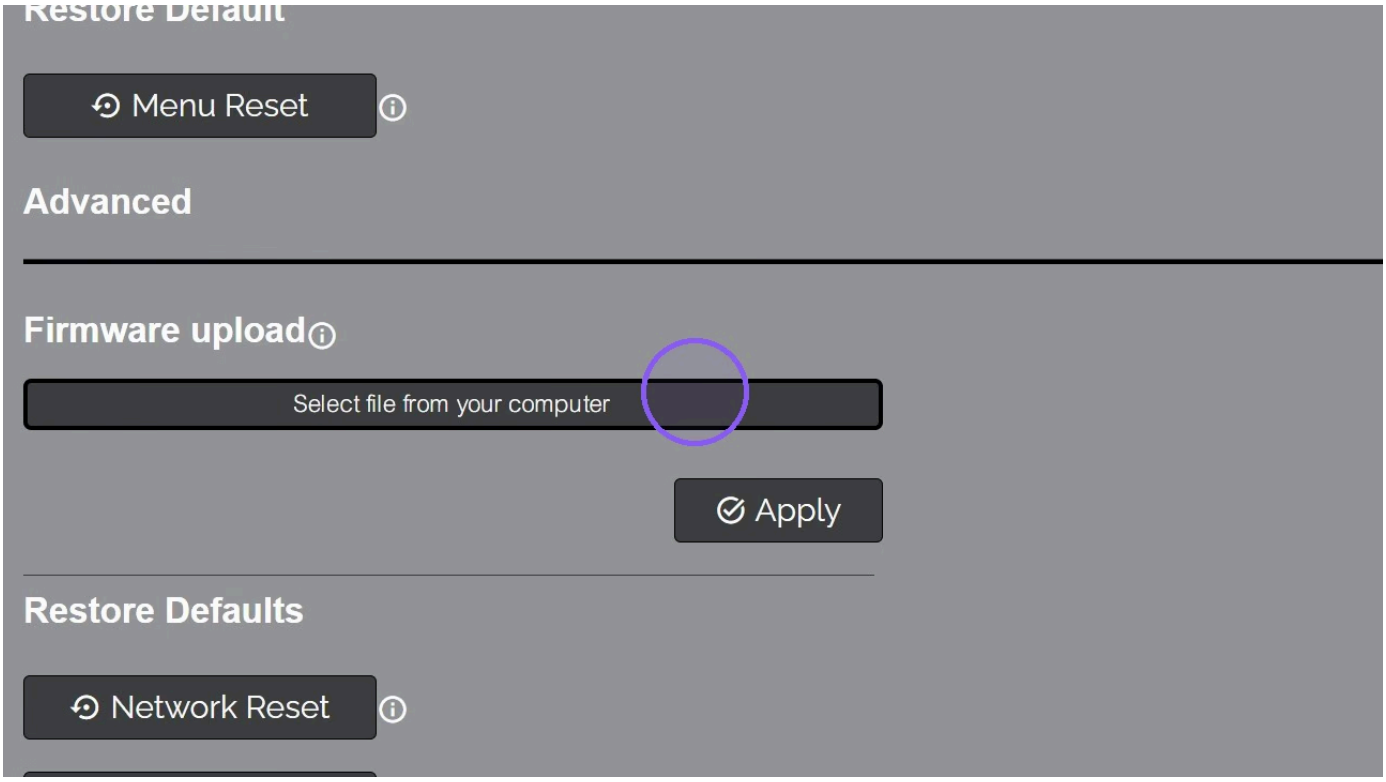
7. Now click the Keep button on the firmware file to approve the download.



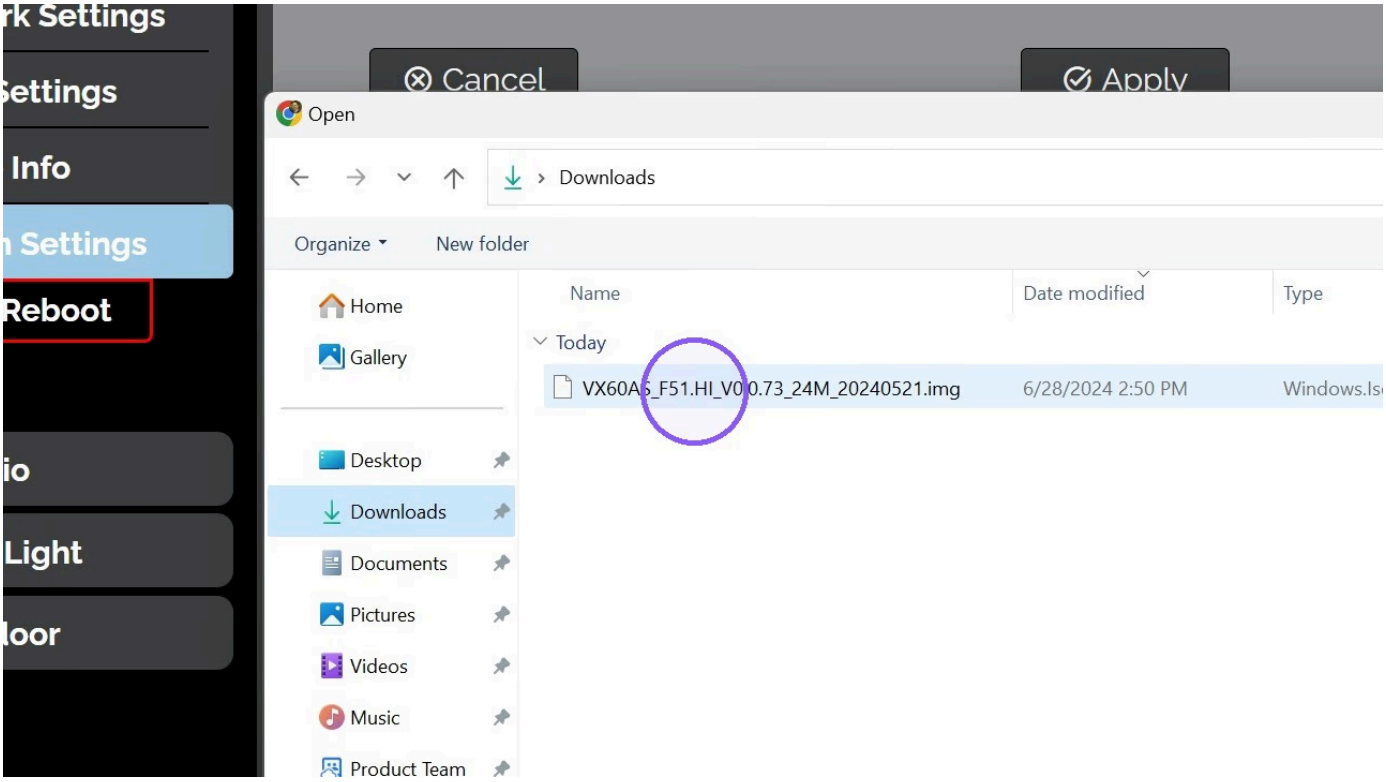
8. Click the arrow to reveal the Advanced section of System Settings.



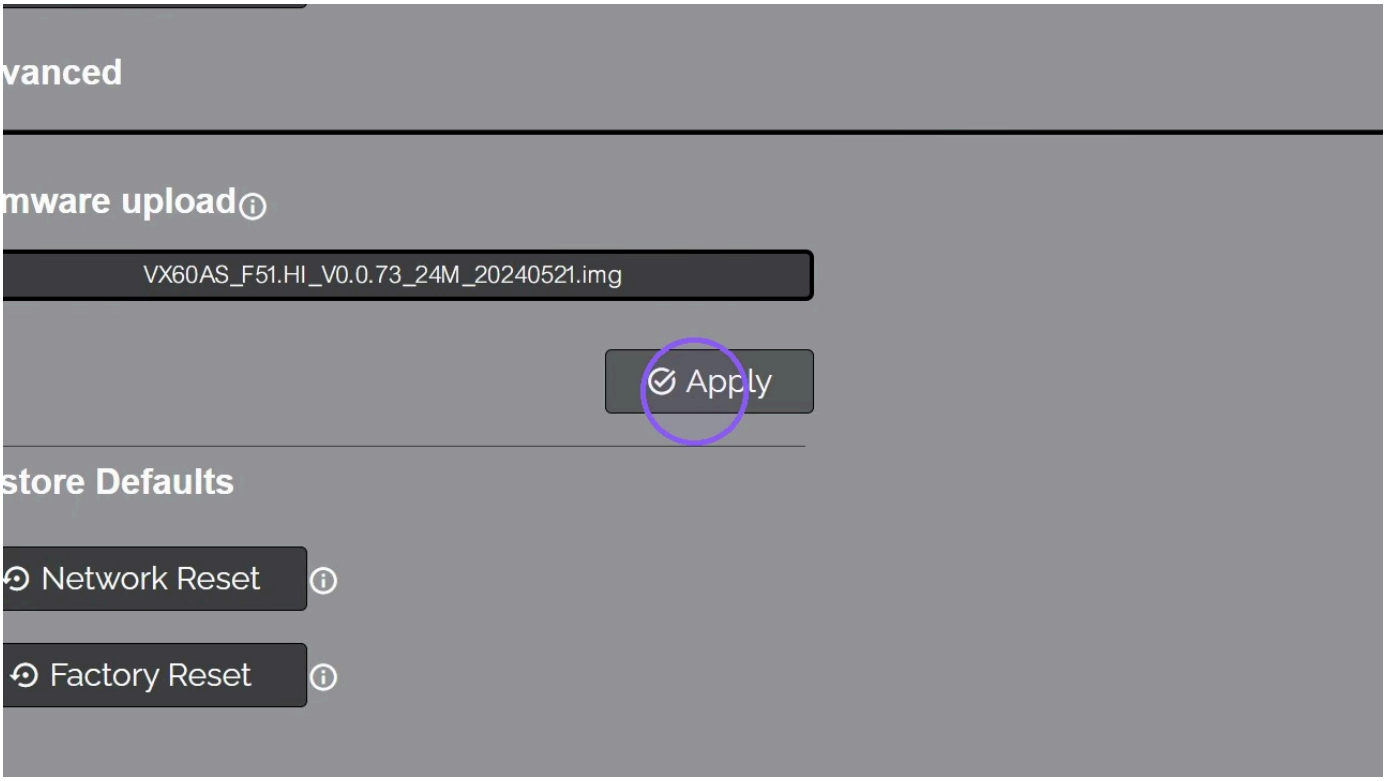
9. Click the Select File button.



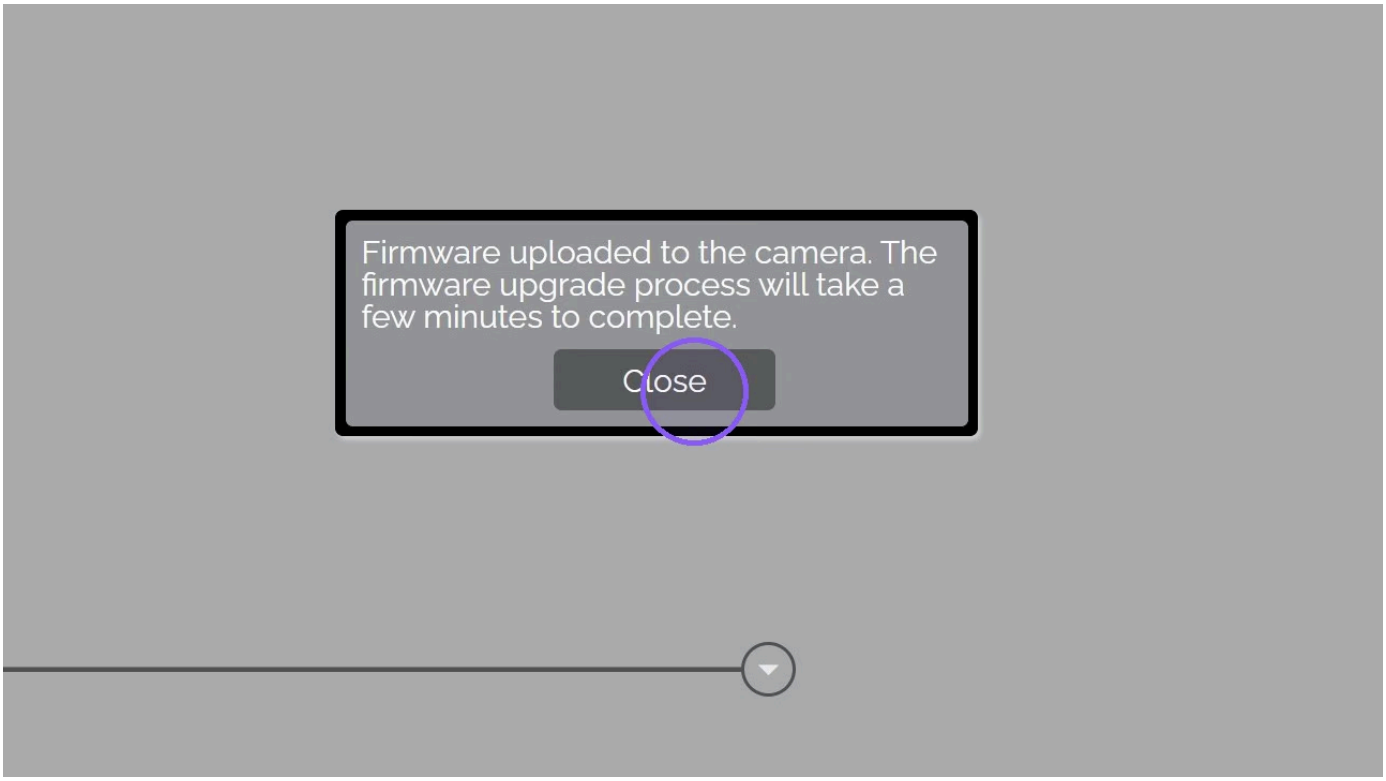
10. Navigate to the Download folder and select the *.img firmware file.



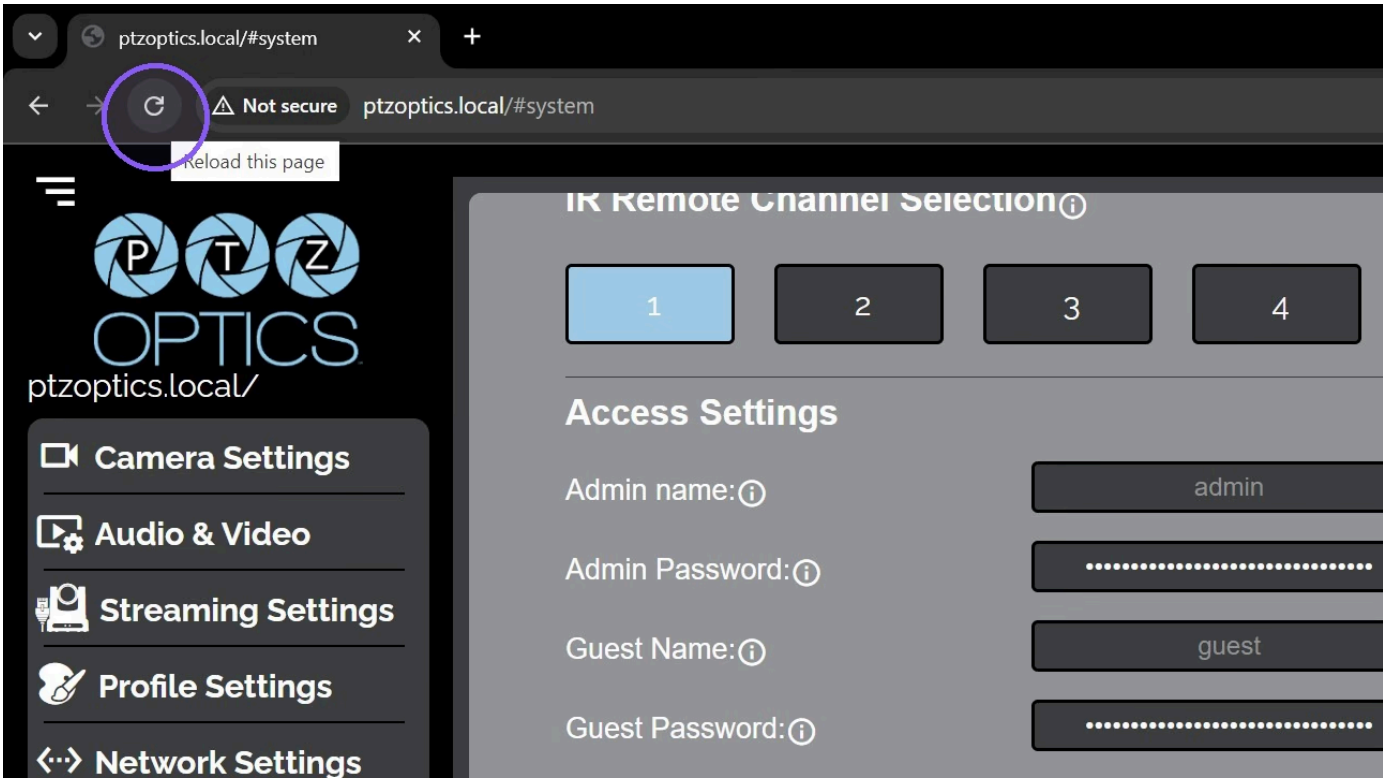
11. Click the Apply button to upload the firmware to the camera.



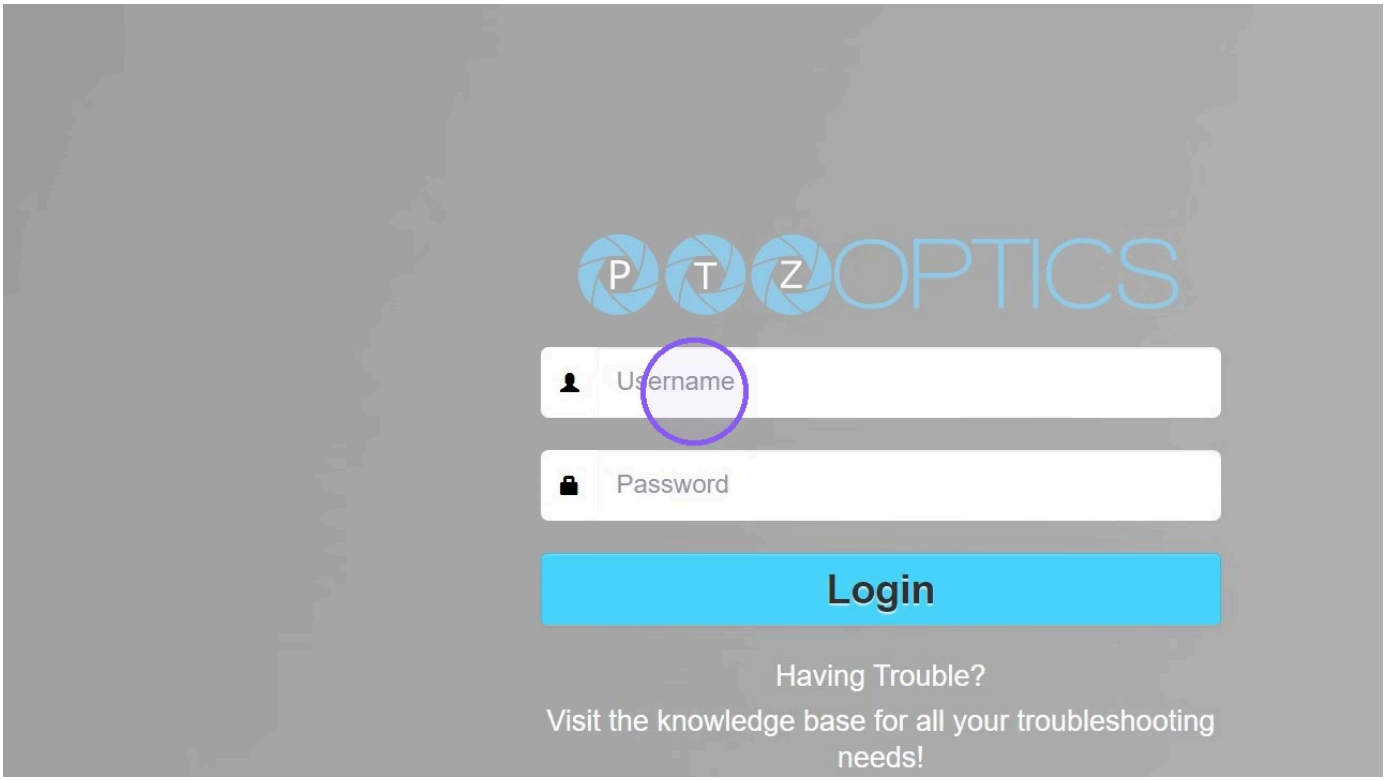
12. In 1 ~ 3 minutes a notification will pop up informing you the firmware has been uploaded and will take a few minutes to complete.



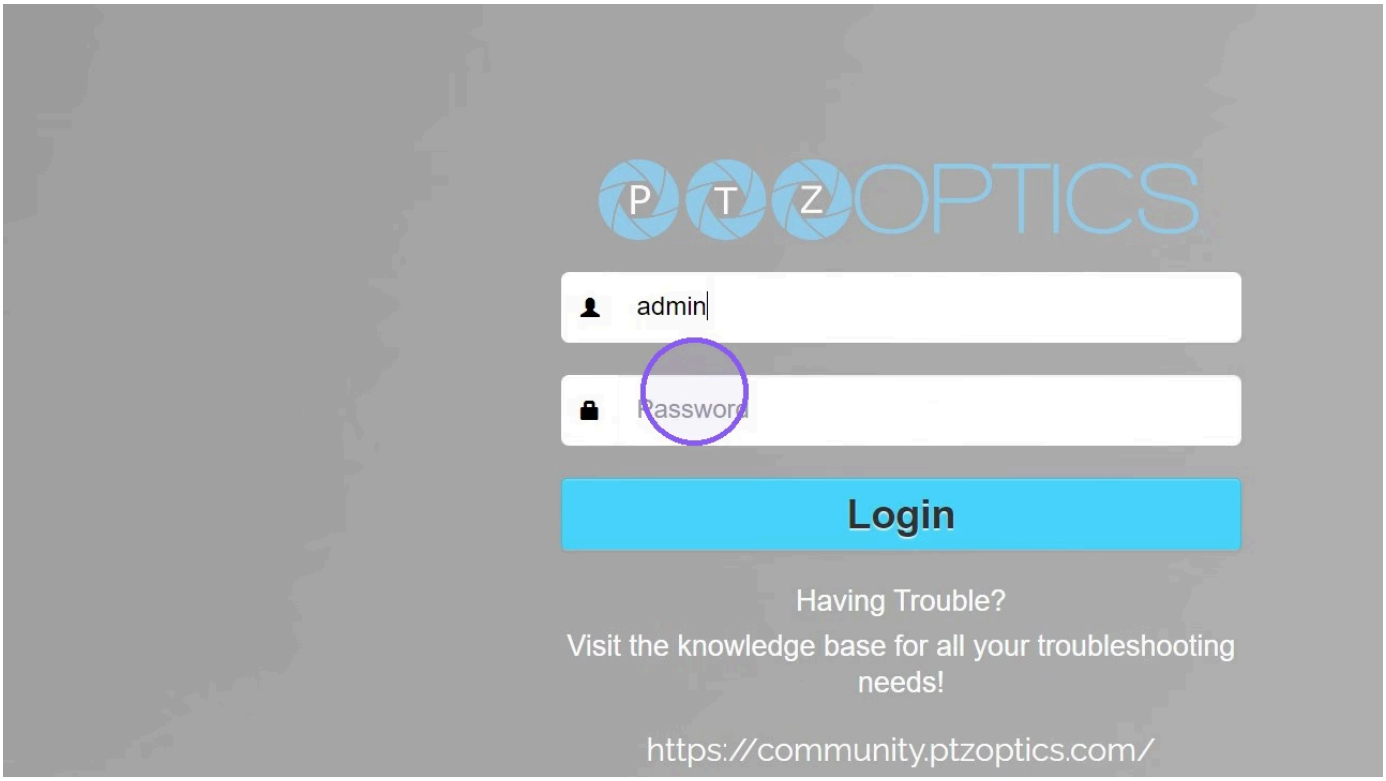
13. After 3 ~ 6 minutes, the firmware upgrade process will be complete. Reload the web interface to reveal the new features.



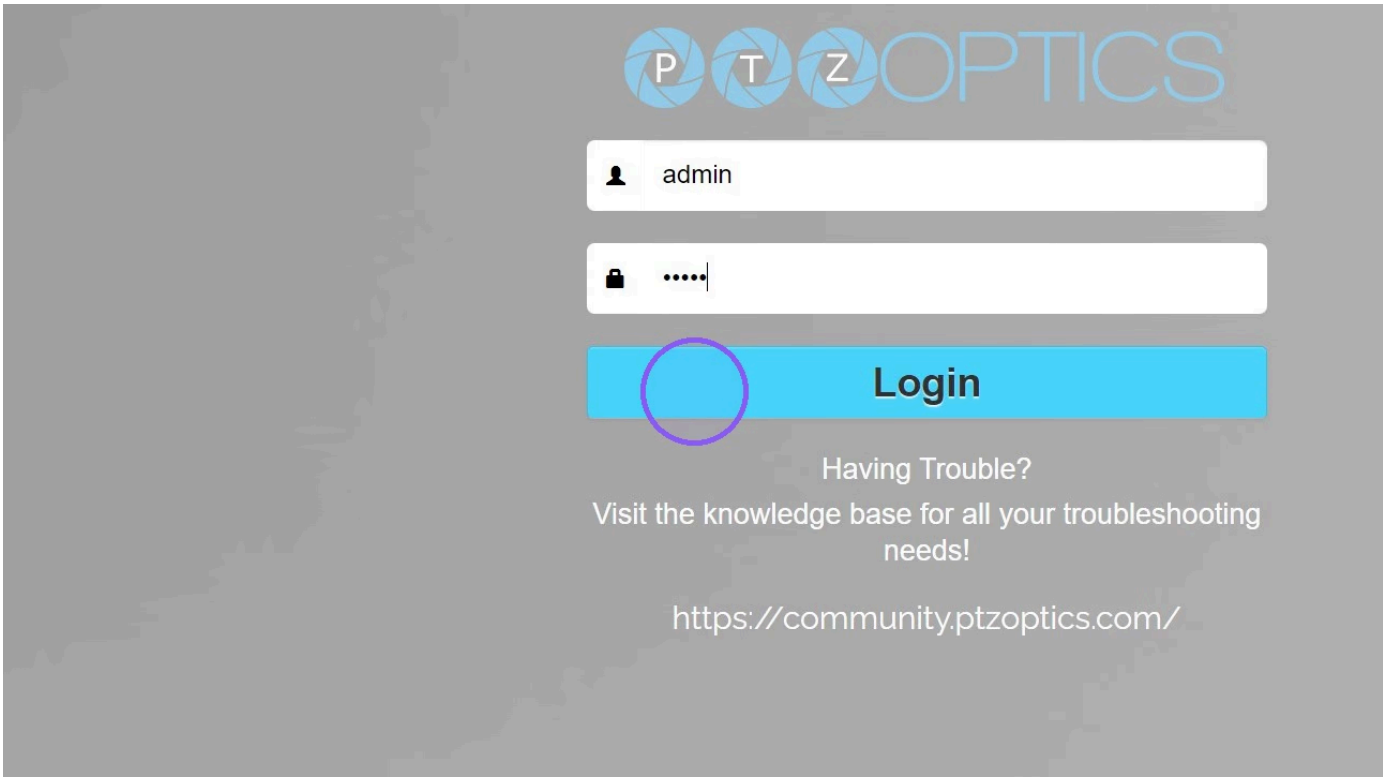
14. Enter your username.



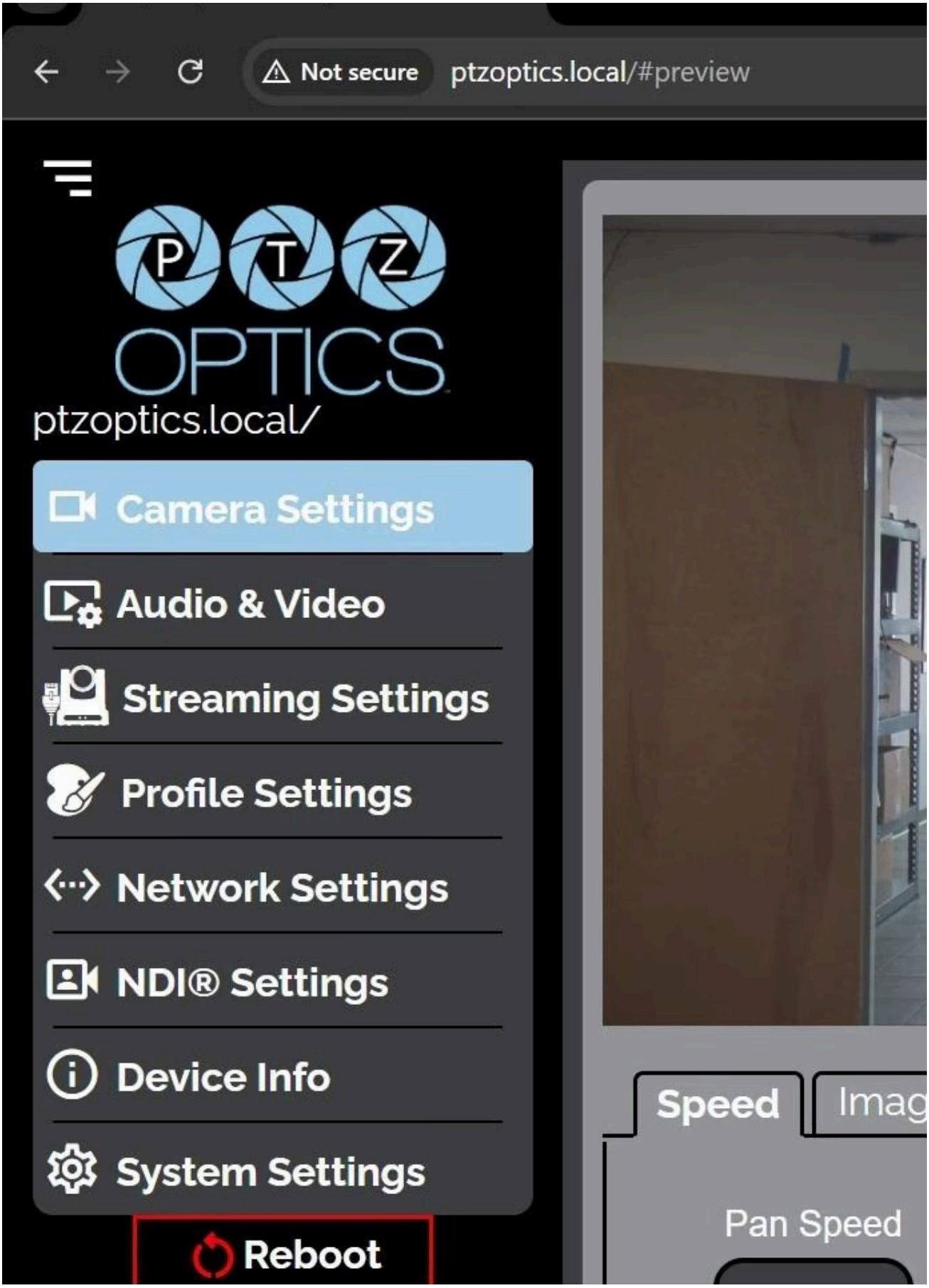
15. Enter your password.



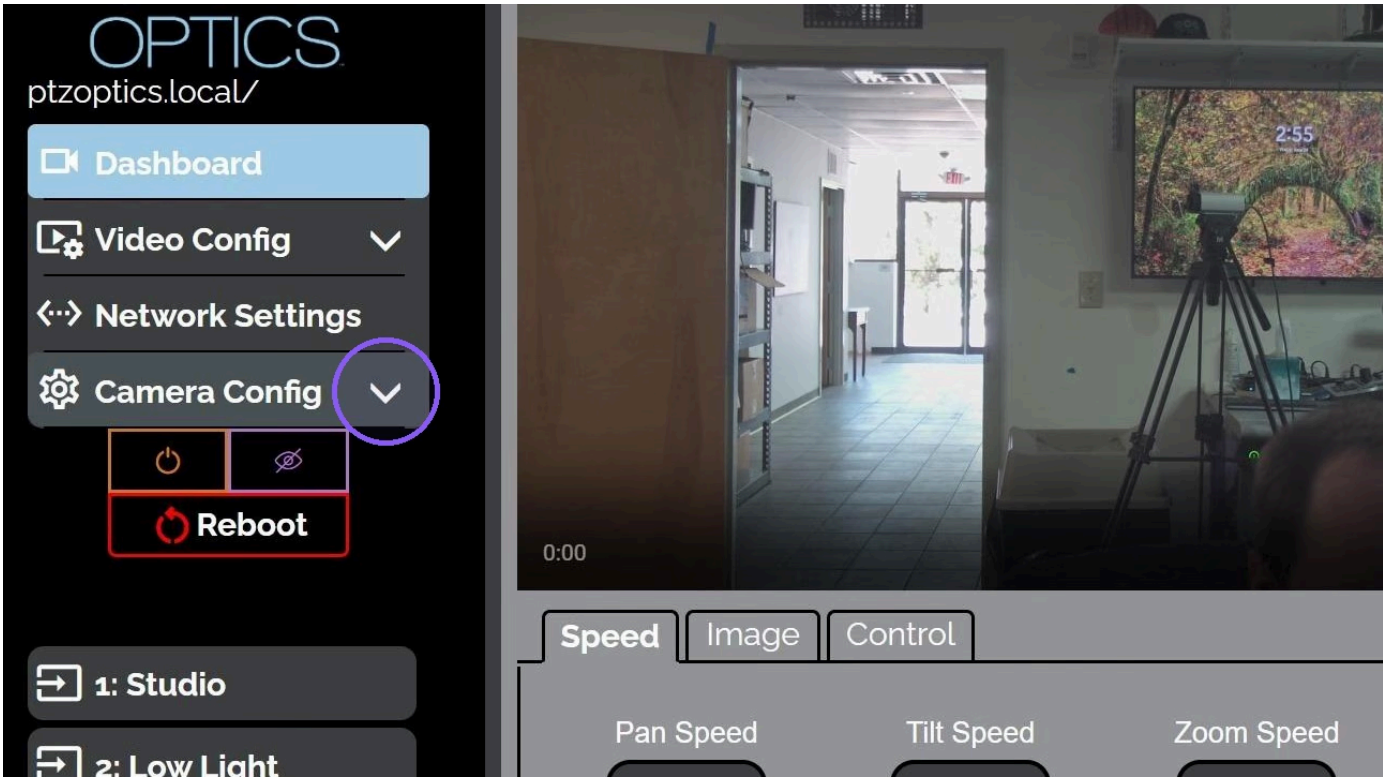
16. Click the Login button.



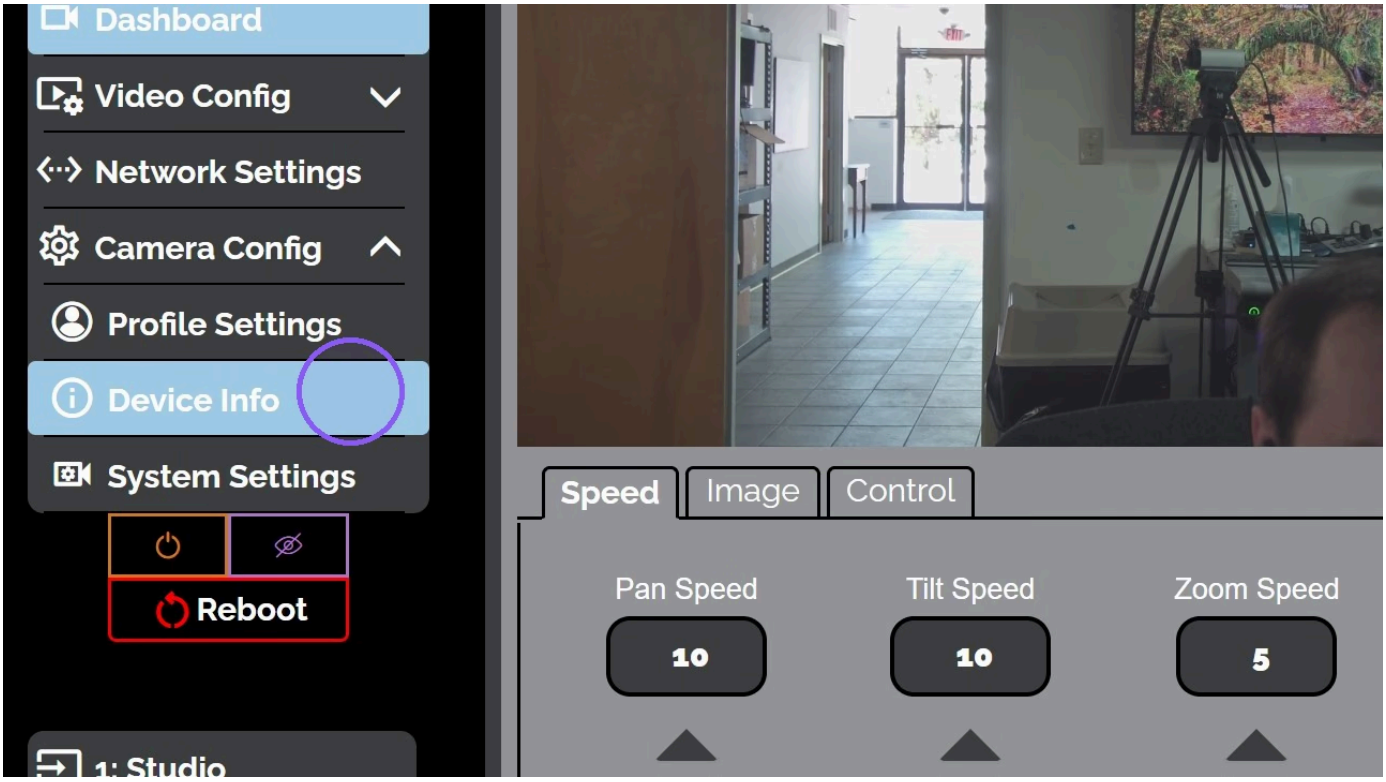
17. Once logged in, press [[Shift]] + [[Ctrl]] + [[R]] to refresh the Web UI without cookies / cache.



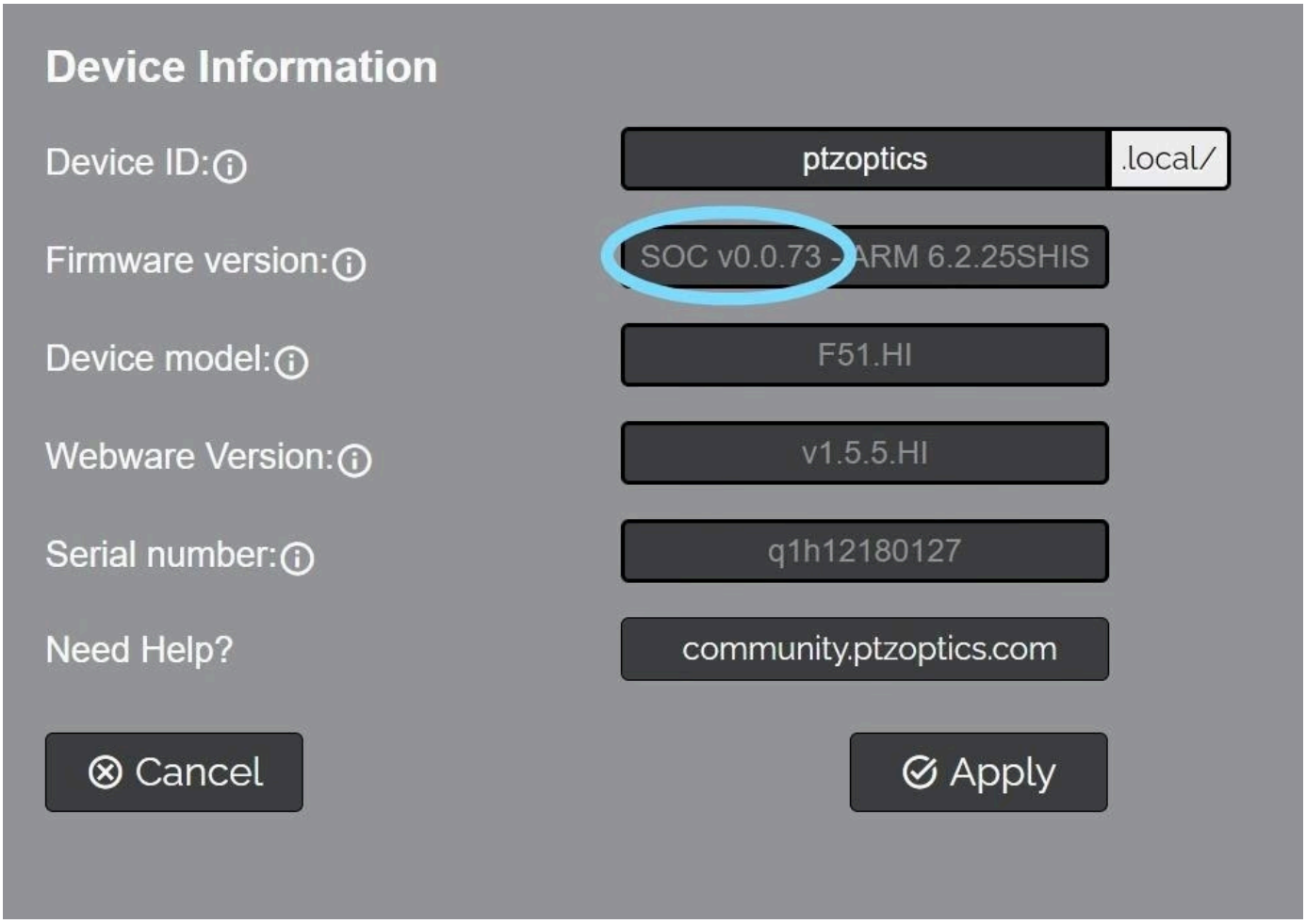
18. Click Camera Config.



19. Check the Device Info page to confirm that your camera has received the new firmware.



20. View the Firmware Version field for the new SOC version.


Device Information
Device ID:
ptzoptics
.local/
Firmware version:
SOC v0.0.73 - ARM 6.2.25SHIS
Device model:
F51.HI
Webware Version:
v1.5.5.HI
Serial number:
q1h12180127
Need Help?
community.ptzoptics.com
Cancel
Apply

Move 4K Firmware Changelog

Select a release date from the **On this page** menu on the right to jump directly to that version's release notes, or press `Ctrl+F` (`Cmd+F` on Mac) to search across all firmware updates.

09/30/2026

Move 4K 12X - v0.0.98 | Move 4K 20X - v0.1.33 | Move 4K 30X - v2.1.17

New Features

Camera and Image Controls

- Image Presets: Added the option to determine whether recalling a preset restores both the saved camera position and image settings, or restores the position while preserving the camera's current image settings. Image Presets are enabled by default and can be configured from the OSD menu or Web UI.
- IR Cut Filter Control (Move/Link 4K 20X Only): Added IR cut filter controls to the OSD menu and Web UI. In the Web UI, this setting is labeled IR Night Mode and is available under Image > Advanced on the Dashboard. In the OSD menu, it is labeled IRCUT and is available under Image.
    - On: Removes the IR cut filter and allows the camera to use external infrared lighting for improved visibility in dark environments. Video is displayed in black and white.
    - Off: Keeps the IR cut filter active and maintains normal color video.
- Anti-Flicker can now be adjusted in all supported exposure modes: Auto, AAE/Iris Priority, Bright, and One Push.

NDI and Streaming

- NDI 6 Update: Upgraded NDI support to NDI 6.3 for improved compatibility, performance, and access to the latest NDI protocol features.
- NDI HX3 Profiles: Added High and Ultra NDI HX3 streaming profiles for H.264 and H.265. The High profile supports 1080p50/60, while the Ultra profile supports 4K50/60. These options are available in

the Audio & Video section of the Web UI.

- NDI Enable/Disable Control: Added an option to enable or disable NDI from the NDI Settings page in the Web UI.
- NDI Transmission Protocol Selection: Added the ability to select the NDI transmission protocol from the Web UI. Available options include Reliable UDP (RUDP), TCP, UDP, and Multicast UDP. RUDP is recommended for most applications.
- NDI Multicast Configuration: Added multicast configuration options to the NDI Settings page in the Web UI.
- NDI Iris & Shutter Control: Added support for NDI exposure control through the NDI Advanced SDK.

API Command Additions and Updates

- HTTP Reboot, Privacy, and Standby Commands: Added native HTTP commands for rebooting the camera and enabling Privacy or Standby mode.

```
POST /api/v2/advanced/reset/{option}
Supported option values:
reboot
standby
privacy

Example: POST http://192.168.100.88/api/v2/advanced/reset/standby
A successful request returns an HTTP 200 response.
```

- Linux V4L2 Privacy Control Support: Added Linux V4L2 support for the UVC Privacy control. The privacy control can now be discovered and managed through standard V4L2 camera controls.

Bug Fixes

- Corrected an issue that caused the camera to use TCP instead of Reliable UDP for its default NDI transmission protocol.
- Addressed an issue that prevented the completion notification from appearing after a Focus Calibration was performed through the Web UI.
- Corrected an issue that could cause the camera to overshoot the target position and drift before settling when manual pan or tilt commands were issued immediately after recalling a preset with Motion Sync

enabled.

- Corrected an issue that required two reboots for USB Audio changes made through the Web UI to take effect.
- MIDI Logout Fix: Corrected an issue that caused the Web UI to log out after a mapped MIDI command was sent. MIDI commands can now be sent without interrupting the active session, and MIDI mappings now persist after a reboot.

> **NOTE**
>
> MIDI mappings are stored in the browser cache. Previously configured mappings will not be available if the browser cache is cleared or a different browser is used.

- UVC Absolute Position Behavior: Corrected an issue where the camera did not accurately report its absolute position when responding to UVC absolute position inquiries in Windows and macOS.
- NDI Preset Offset Fix: Fixed an issue where NDI Presets did not align with the camera's built-in preset numbering scheme. Ex: Preset 1 set in the Web UI now correctly corresponds to preset 1 in NDI Studio Monitor.
- Corrected the "Target Timeout" description in the Web UI. The displayed range now correctly indicates that supported values are 6–60 seconds.
- Fixed an issue that could cause the OSD menu to freeze when cycling through White Balance modes after a firmware update.
- Corrected an issue that caused the camera to revert to the default NTP server, time.windows.com, after a reboot.
- Fixed a forced logout issue that would occur approximately 1 minute and 20 seconds after accessing the Web UI post reboot.
- Changed the default resolution of Stream 2 to 640x360 to improve compatibility with certain web browsers, including Safari.
- Corrected an issue that caused the Anti-Flicker setting to return to its default value after the One Push Exposure trigger was activated.

Security

- Firmware updates now require authentication using the camera's login credentials. This helps prevent unauthorized users from uploading firmware to the camera.

Known Issues

1. FreeD Stream Activation: While FreeD data output and checksum formatting have been corrected and verified with Unreal Engine's LiveLink plugin, the FreeD stream does not automatically start from the web interface. Users must select the desired stream option in the web interface and manually enable the stream using the Hex command (e.g., via Packet Sender): Enable Stream Command: D0 01 01 D2

2. NDI Send Groups – Web UI Limitation: While comma-separated NDI Group entries are supported via HTTP commands, this functionality is not yet available in the Web UI. Users must configure multiple groups through API or HTTP commands until Web UI support is added in a future update.

3. Multi-Target Select – Identification Persistence: When using Auto-Tracking with Multi-Target Select, identification numbers may not consistently stay assigned to the same individual when multiple people are present or cross paths. The Home button does not currently refresh or reassign bounding boxes as described, and a reboot may be required to restore numbering.

4. Audio Input Volume adjustments (via the Web UI or HTTP commands) may not take effect as expected. As a workaround, adjust the volume from the connected input source.

05/14/2026

Move 4K 12X - v0.0.90 | Move 4K 20X - v0.1.25 | Move 4K 30X - v2.1.08

Horizon Features

- New Video Player utilizing WebRTC
- New refactored backend API that will allow for more stability for future Horizon updates
- Horizon authentication using bearer tokens. Legacy interface still uses digest authentication
- Updated mobile controls to be more responsive
- Click and hold on mobile replaces the point-and-click to prevent accidental finger taps
- Joystick should be more responsive
- Framing removed only on mobile until it can be better reworked
- You can now pinch-to-zoom

Horizon Bug Fixes

- Fixed where excess stop commands would be sent, affecting preset recall
- Fixed standby/privacy modes not persisting if refreshing/closing the browser
- Fixed where non-80 HTTP port could cause issues with loading
- Fixed firmware updater that some users reported being unable to update

Known Issues

1. MTU / Jumbo Frames: Some network switches and routers may not support MTU values above 1,500, which can result in packet loss or unstable connections.

2. Move 4K/Link 4K 30X Focus Limit Functionality: When testing the Focus Limit feature, setting the Furthest Position (e.g., 1 m) does not currently restrict autofocus beyond that point.

3. Multi-Target Select – Identification Persistence: When using Auto-Tracking with Multi-Target Select, identification numbers may not consistently stay assigned to the same individual when multiple people are present or cross paths. The Home button does not currently refresh or reassign bounding boxes as described, and a reboot may be required to restore numbering.

4. FreeD Stream Activation: While FreeD data output and checksum formatting have been corrected and verified with Unreal Engine's LiveLink plugin, the FreeD stream does not automatically start from the web interface. Users must select the desired stream option in the web interface and manually enable the stream using the Hex command (e.g., via Packet Sender): Enable Stream Command: D0 01 01 D2

5. NDI Send Groups – Web UI Limitation: While comma-separated NDI Group entries are supported via HTTP commands, this functionality is not yet available in the Web UI. Users must configure multiple groups through API or HTTP commands until Web UI support is added in a future update.

6. USB Audio Setting Requires Multiple Reboots: When enabling or disabling USB Audio via the Web UI, the selected setting may not apply after the first reboot. Users may need to select the desired USB Audio state and reboot the camera a second time for the change to take effect.

7. Pan/Tilt Drift After Preset Recall with Motion Sync Enabled: When Motion Sync is enabled, issuing manual Pan or Tilt commands immediately after recalling a preset may cause the camera to briefly overshoot the target position and drift before settling at the correct location.

01/12/2026

Move 4K 12X - v0.0.83 | Move 4K 20X - v0.1.03 | Move 4K 30X - v2.1.02

New Features

HIVE Linked Integration

HIVE Linked Enabled: The camera now includes HIVE Linked, allowing users to connect directly to the PTZOptics HIVE platform. This integration unlocks powerful remote management, monitoring, and collaboration capabilities, providing users with centralized access to camera control, status monitoring, and multi-location coordination through the cloud. For more information, visit Hive Studio.

PTZOptics Updater Application

PTZOptics Updater Integration: Added the PTZOptics Updater application, giving users access to the onboard Voice Tracking and early access to beta features such as Horizon. This tool simplifies firmware and feature updates, ensuring users can easily enable the latest innovations directly from their camera interface.

For setup details and instructions on enabling beta features, please reference How to activate Horizon & Voice Tracking.

Video and Audio Enhancements

- NDI 6 Upgrade: Upgraded NDI support from NDI 5 to NDI 6 for improved compatibility, performance, and access to the latest NDI protocol features.
- G711 Audio Encoding: Added support for G711 audio as an available encoding protocol. This improves interoperability with third-party software systems and addresses key compatibility requirements from software developers.
- Super Zoom Feature Replacement: The previously named Hybrid Zoom feature in Video Settings has been replaced with the updated Super Zoom functionality. This improves zoom flexibility and preserves 1080p resolution across the extended zoom range.
- Exposure Mode - Bright Mode: Added a Bright Mode option under Dashboard > Image > Exposure > Exposure Mode.
- One Push Exposure: Added One Push Exposure functionality, allowing the camera to automatically set optimal exposure based on current lighting conditions. Once calibrated, the settings are held, similar to One Push White Balance.
- USB Video Configuration: Added the ability to define the USB video output resolution listed under USB Video Stream.

- Updated Volume Setting Behavior: Input and Output Volume settings now apply immediately without requiring a reboot or clicking Apply.
- Increased Kelvin Scale Precision: Enhanced White Balance control in VAR mode by changing the adjustment increments from 100 to 20 for finer adjustments.
- ONVIF Profile S Certification: The camera fully complies with all ONVIF Profile S requirements and is officially certified.

Automation and Control

- Presenter Lock Mode: The Automation section has been updated to rename Bounding Boxes to Presenter Lock Mode. Information symbols have also been enhanced for clarity.
- Auto-Tracking Delay Behavior: Auto-Tracking now starts instantly after the user-defined Delay Time, eliminating the previous default 4-second delay that was added on top of the configured value.
- Tilt-Lock Option for Auto-Tracking: Added a new Tilt-Lock feature within Auto-Tracking. When enabled, the camera restricts vertical movement and only follows horizontal motion. A dedicated Tilt-Lock option is now present in the Automation section for easier access.
- Tracking Preset Recall: Introduced dedicated preset numbers for toggling tracking. This enables users with serial controllers to manage tracking more easily.

```
Preset 150 = Tracking On
Preset 151 = Tracking Off
```

- Redefined Tracking Compositions: The camera's tracking composition options have been expanded to provide greater user customization.

```
Horizontal Compositions: Left, Center, Right
Vertical Compositions: Top, Center, Bottom
```

- Auto-Framing Behavior: Adjusted the Auto-Framing feature to zoom in or out based on the number of subjects in the frame instead of defaulting to a maximum zoom-out position.
- Multi-Target Select Visual Enhancements: Improved the visibility and persistence of bounding boxes during Auto-Tracking with Multi-Target Select enabled. Bounding boxes now remain visible during tracking, and identification numbers are larger for better visibility.
- Multi-Target Select - Improved Identification and Reassignment Prevention: Improved bounding-box assignments for each identified subject, providing unique numbering with fewer false identification issues.

UI and System Changes

- USB Port Function: Added a selectable option in Dashboard > Control > USB Mode, allowing users to choose between UVC or Host mode.
- RTSP Stream Info Display: RTSP stream settings are now visible in the web interface and can be copied directly for easier integration with external software.
- NTP Timestamp Overlay: Users can now enable an NTP Timestamp overlay in the Network Settings section. Placement options include Top or Bottom, and Left, Center, or Right. This matches the feature in the Move SE.
- Updated Encoding Protocol Info Symbol: Added a new info icon next to the Encoding Protocol selection in the web UI providing descriptions of each protocol.
- Device Info Button Change: The community.ptzoptics.com button has been replaced with a Need Help? button linking to the same community site.
- ONVIF Authentication Default Enabled: ONVIF authentication is now enabled by default to align with updated security protocols and ensure the ONVIF route is protected out of the box.
- MTU Frames: Added MTU configuration to allow users to adjust the maximum packet size up to 8,000 bytes, with the default set at 1,500.

> **NOTE**
>
> Changing MTU settings can improve performance in properly configured environments but may cause connectivity issues if not supported by all network devices. Only adjust these settings if you understand your network's capabilities and requirements.

Control and Integrations

- NDI Absolute Positioning: Added compatibility with third-party software (for example, Resolume) using NDI Absolute Position commands.

API Additions

HTTP Movement Status Query

Added a route to allow users to query whether the camera is actively moving. The endpoint returns a boolean response indicating pan, tilt, zoom, or focus motion.

> **NOTE**

> This status does not report focus movement when Auto Focus is enabled.

```
GET /api/v1/info/is-moving
```

Example:

```
GET http://192.168.100.88/api/v1/info/is-moving
```

Returns:

```
{
  "isMoving": false
}
```

Bounding Box Data Query

Added the ability to query subject-recognition bounding box data via the API. When subject recognition is enabled, the endpoint returns an array of detected objects with bounding box coordinates and dimensions. When subject recognition is disabled or no subjects are detected, the response returns an empty object list.

```
GET /cgi-bin/param.cgi?get_tally_status
```

Example:

```
GET http://192.168.100.88/cgi-bin/param.cgi?get_tally_status
```

Returns:

```
{
  "status": 200,
  "data": {
    "tally": "Off",
    "standby": "0",
    "privacy": "0",
    "objs": [
      {
        "ID": "1",
        "X": 13,
```

```
        "Y": 242,
        "Width": 77,
        "Height": 117
      },
      {
        "ID": "2",
        "X": 79,
        "Y": 221,
        "Width": 64,
        "Height": 138
      }
    ],
    "shoulddraw": "0",
    "target": "2"
  }
}
```


Snapshot Stream 1 and 2

Added support for retrieving snapshots from either stream, providing the option to capture higher-resolution still images.

```
GET http://[ipaddress]/snapshot0.jpg -> Stream 1
GET http://[ipaddress]/snapshot1.jpg -> Stream 2
```

PT Limits Inquiry

Added support for querying the camera's current Pan-Tilt limit settings via HTTP commands. Users can now retrieve the defined coordinates for `panMin`, `panMax`, `tiltMin`, and `tiltMax`, enabling easier configuration verification and integration with external control systems.

```
GET /api/v1/info/pt-limit
```

Example:

```
GET http://192.168.100.88/api/v1/info/pt-limit
```

Returns:


```
{
  "panMax": 170.0,
```

```
  "panMin": -170.0,
  "tiltMax": 90.0,
  "tiltMin": -30.0
}
```

Preset Inquiry

Added a new Preset Inquiry, allowing users to retrieve or confirm the absolute pan, tilt, and zoom coordinates stored for a specific preset without recalling it. This enables precise monitoring and integration with external automation systems.

```
GET /api/v1/info/preset/1
```

Example:

```
GET http://192.168.100.88/api/v1/info/preset/1
```

Returns:

```
{
  "exist": true,
  "focusPos": 1026,
  "panPos": 42.432,
  "tiltPos": -29.239,
  "zoomPos": 3294
}
```

Preset Recall Completion Confirmation

Added the ability to receive a completion response when recalling a preset. When a preset recall command is issued, the camera will execute the movement and hold the request until the preset position is fully reached. Once the camera arrives at the target position, the API will return a confirmation response indicating success.

```
POST /api/v1/action/preset
Body:
{
  "action": "recall",
  "position": <preset number>
```

```
}
```

Example:

```
POST http://192.168.100.88/api/v1/action/preset
Body:
{
  "action": "recall",
  "position": 1
}
```

Returns:

```
{
  "msg": "operate success"
}
```

FreeD Interface Overhaul

Dedicated FreeD (BETA) Tab

The FreeD UI has been moved from the Mode section into its own tab under the Control menu, making it easier to access and manage.

Expanded FreeD Command Support

The dropdown menu now includes command types: `D-Stream`, `D-Poll`, `A-Stream`, and `A-Poll`, increasing compatibility with external systems.

Camera ID Configuration

Added a new Camera ID text entry field to define the ID used as the second byte in FreeD hex commands (for example, `D0 01 01 D2`). This ID is essential for proper device targeting and stream control.

Configurable Ports with Updated Defaults

- Data Port: `40000`
- UDP Control Port: `1259` (updated from `19147`)

Expanded FreeD Streaming Parameters

FreeD output now includes `X`, `Y`, `Z` coordinates and Roll, providing a more complete data set for motion tracking and virtual production.

Protocol-Compliant FreeD Hex Message Format

FreeD messages now follow the correct protocol structure to improve standardization and third-party compatibility. Each FreeD command is composed of the following hexadecimal fields, sent in order:

```
D0 - Message Type
CA - Camera ID (user-defined)
CD - Command (00 = Stop Stream, 01 = Start Stream)
CK - Checksum (calculated using 8-bit modulo 256)
```

The following hex command enables the FreeD stream for Camera ID `01` and should be sent via UDP on port `1259`:

```
Example: D0 01 01 D2
Response: Data Streaming on port 40000
D1 01 0C 41 C7 00 3E 38 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0F D0 00 00
3B
```

Unreal Engine Compatibility

The FreeD checksum and output format have been corrected, enabling operation with Unreal Engine using the LiveLink plugin. For setup, configure the connection to the camera's IP (for example, `0.0.0.0`) to begin receiving positional data.

Bug Fixes

- Pan/Tilt Stop Command Bug: Fixed an issue where the camera intermittently ignored Pan/Tilt Stop commands (`81 01 06 01 vv ww 03 03 FF`) from serial controllers. Control is now consistent and reliable.
- Time Server & SSL Certificate Issue: The camera now properly manages time-zone data, ensuring SSL certificate auto-renewal works as intended.
- VISCA Standby Inquiry Command Fix: Corrected an issue where the VISCA Standby Inquiry command (`81 09 04 00 FF`) was returning an error response (`90 62 41 FF`) and not functioning as expected. The command now operates correctly, returning (`90 50 03 FF`) when the camera is in Standby mode.

Known Issues

- MTU / Jumbo Frames: Some network switches and routers may not support MTU values above `1,500`, which can result in packet loss or unstable connections.
- Move 4K/Link 4K 30X Focus Limit Functionality: When testing the Focus Limit feature, setting the Furthest Position (for example, `1 m`) does not currently restrict autofocus beyond that point.
- Multi-Target Select - Identification Persistence: When using Auto-Tracking with Multi-Target Select, identification numbers may not consistently stay assigned to the same individual when multiple people are present or cross paths. The Home button does not currently refresh or reassign bounding boxes as described, and a reboot may be required to restore numbering.
- FreeD Stream Activation: While FreeD data output and checksum formatting have been corrected and verified with Unreal Engine's LiveLink plugin, the FreeD stream does not automatically start from the web interface. Users must select the desired stream option in the web interface and manually enable the stream using the hex command (for example, via Packet Sender): `D0 01 01 D2`.
- NDI Send Groups - Web UI Limitation: While comma-separated NDI Group entries are supported via HTTP commands, this functionality is not yet available in the Web UI. Users must configure multiple groups through API or HTTP commands until Web UI support is added in a future update.
- USB Audio Setting Requires Multiple Reboots: When enabling or disabling USB Audio via the Web UI, the selected setting may not apply after the first reboot. Users may need to select the desired USB Audio state and reboot the camera a second time for the change to take effect.
- Pan/Tilt Drift After Preset Recall with Motion Sync Enabled: When Motion Sync is enabled, issuing manual Pan or Tilt commands immediately after recalling a preset may cause the camera to briefly overshoot the target position and drift before settling at the correct location.

02/27/2025

Move 4K 12X - v0.0.58 | Move 4K 20X - v0.0.85 | Move 4K 30X - v2.0.64

New Features and Bug Fixes

- Enhanced Tracking Algorithm: Improved the overall tracking algorithm for better accuracy and performance.
- Reorganized Audio Section: Organized the audio section for improved usability.
- Improved network security. Guest Login is disabled by default and can be enabled on the System Settings page.
- Implemented HTTP Authentication: Added Digest Authentication to protect API routes, enabled by default.

- Removed the ability to change the Focus parameters when logged in as a Guest user.
- Removed OSD access in the web interface when logged in as a Guest user.
- Resolved an issue where the Iris would not fully close in Manual Exposure mode when set to Close.
- Resolved an issue on Move 4K models where the stop command was not properly triggered when using serial control (RS-232 or RS-485). This caused the camera to continue moving to its limit after releasing the joystick.

Known Issues

- NDI video may freeze when simultaneously connected via USB for video. This issue occurs when the camera streams NDI while the USB is connected to another device.
- Guest Access Focus Controls: Focus controls are currently missing from the Guest Access login.
- When RTMP streaming to YouTube using camera video templates, bitrate errors may occur. Resolution: Adjust the camera's video settings to align with YouTube's video requirements.
- The NTP service address cannot be set within the `100` subnet (for example, `192.168.100.10`) through the web interface. This can be modified by using the HTTP API route:

```
/cgi-bin/param.cgi?post_network_other_conf&net_addr=[VALUE]
```

07/11/2024

Move 4K 12X - v0.0.46 | Move 4K 20X - v0.0.73 | Move 4K 30X - v2.0.48

New Features and Bug Fixes

- Added new information symbols for all new features available in the web interface. Please see these information symbols for more detailed information.
- You can now select which video feed is displayed in the web interface. The option is available on the Dashboard page > Image > Advanced > Preview Window Settings.
- Added the ability to change tracking targets using the left and right arrow buttons in the web interface.
- Improved the overall tracking algorithm.
- Added more control options for starting and stopping tracking. These options are available on the new tab on Dashboard page > Control > Automation.
- Added the ability to select between Auto Tracking and Auto Framing through the Automation dropdown.

- Added Multi-Target Select to the Bounding Box dropdown. This mode allows you to use the Number Keys to select the desired subject.
- Added Tracking Composition with Left, Right, and Center as selectable options.
- Added Tracking Sensitivity with Low, Medium, and High as selectable options.
- Added Tracking Zoom Level with Medium Close Up, Medium Shot, Long Shot, and Dynamic Zoom.
- Added Time Delay dropdown.
- Added Tracking Start Location dropdown.
- Added Tracking Stop Location dropdown.
- Added Target Timeout dropdown.
- Added Target Loss Preset dropdown.
- Renamed Patrol Mode to Preset Tour. Added Time Interval, Preset Range, and Preset Tour Speed.
- Added FreeD (BETA) to the web interface.
- Added FreeD (BETA) Data & Control Ports. The option is available on the Dashboard page > Control > Ports.
- Reorganized the Navigation Panel.
- Added a Privacy Mode button to the navigation panel of the web interface. When enabled, the camera will turn away and disable the video feeds. Simply call a preset or disable Privacy Mode to enable video.
- Added a Power On / Off button to the navigation panel of the web interface.
- Added a Cancel and Apply button to the RTMP(S) Settings section of the Streaming Settings page.
- Enabled the ability to edit the Static Fallback Address, Gateway, and Subnet Mask in the Network Settings page.
- Added Focus Calibration buttons to the System Settings > Advanced section.
- Added more commands to the VISCA & HTTP-CGI APIs.
- Corrected the position values associated with zoom when Digital Zoom is enabled.
- Fixed some vulnerabilities.

08/04/2023

Move 4K 12X - v0.0.32 | Move 4K 20X - v0.0.50 | Move 4K 30X - v2.0.39

New Features and Bug Fixes

- Set Stream 2 to H.264 by default.

- Updated the Information Symbols in the web interface.
- Moved some settings from the Image tab to the Advanced tab.
- Added Auto Inversion to the web interface.
- Added SRT Stream ID to the web interface.
- Added the ability to select between Stream 1 and Stream 2 in the web interface.
- Increased the max file size for firmware uploads.

02/20/2023

Move 4K 12X - v0.0.22 | Move 4K 20X - v0.0.37 | Move 4K 30X - v2.0.15

New Features and Bug Fixes

- Change the location of the login interface logo and the image of the login background.
- Change NDI Configuration Settings to NDI® Settings.
- The preset position of the call in the user-defined saved profile is changed to the last call.
- Add a prompt box for reboot operation.
- Add the Image Orientation secondary drop-down box, including Off, Flip, Mirror, and Flip and Mirror options. The default is Off.
- The prompt message of Motion Sync is changed to Synchronize Pan, Tilt, & Zoom when calling presets.
- Image > Color > OnePush pop-up syntax corrected to: Calculating, Please wait.
- Modify the Tracking Box under Control > Mode > Tracking Box to Bounding Boxes.
- Modify the information symbol of Auto Tracking to explain tracking start position, target timeout behavior, and Preset 0 default behavior.
- Add BETA in Video Encoding Settings > Advanced > Hybrid Zoom.
- Audio encoding protocol redisplay: Audio Encoding Protocol: AAC is only for display and cannot be modified.
- Modify the profile name of the shortcut area and remove profile from the name.
- Change Indoor to Low Light.
- Remove the save device name from the profile save menu.
- After selecting quick profile, add a reboot prompt.
- Modify the information symbol of Device ID.
- Modify the ID info page and click Apply to pop up the reboot prompt box.

- Modify the text content of the pop-up box after ID application.
- On the guest page, remove Image under Image settings, and keep Port content under Exposure and Color; control visible but not modifiable.
- Add Sony VISCA over IP (`52381`) search function.
- Open stream ID settings on the web.
- Delete the multicast server IP address of NDI.

Medical Certification (IEC 60601-1 & IEC 60601-1-2)

This guide contains the IEC 60601-1 and IEC 60601-1-2 medical certification information for the **Move 4K**.

Certified Camera Model SKUs

PTZOptics Certified Model SKUs:

Move 4K	Link 4K	Move SE

`PT12X-4K-GY-G3`
`PT12X-4K-WH-G3`
`PT20X-4K-GY-G3`
`PT20X-4K-WH-G3`
	`PT12X-LINK-4K-GY`
	`PT12X-LINK-4K-WH`
	`PT20X-LINK-4K-GY`
	`PT20X-LINK-4K-WH`
		`PT12X-SE-GY-G3`
		`PT12X-SE-WH-G3`
		`PT20X-SE-GY-G3`
		`PT20X-SE-WH-G3`
		`PT30X-SE-GY-G3`
		`PT30X-SE-WH-G3`

Certified Power Supply SKU

- **PTZOptics SKU:** `PT-PSB-M`
- **Manufacturer Model:** `EM1024QR(10)`

Camera Technical Specifications

For full hardware specifications, power supply ratings, rear panel connections, and packing lists, see the Technical Specs for your camera model:

- Move 4K Technical Specs
- Link 4K Technical Specs
- Move SE Technical Specs

Manufacturer

- Haverford Systems Inc.
- 534 Trestle Place, Downingtown, PA 19355, USA

Installation, Operation & Safe Termination

Installation

The **Responsible Organization** *(The hospital or healthcare facility that deploys this equipment)* must ensure that the equipment is installed, used, and maintained in accordance with this document and with applicable requirements of IEC 60601-1 for medical electrical (ME) systems.

- **Supported Mounting Methods:** Desktop, wall mount (with wall bracket), or ceiling mount (requires enabling vertical image flip in the OSD menu).
- **Qualification:** Installation must be performed by qualified personnel (see **Intended Use & Operators** below). Confirm no obstacles are within the pan/tilt range and that all mounting hardware is mechanically secured before powering on.

Operation & Safe Termination

1. **Bringing into Operation:** Connect the IEC 60601-1 certified power adapter (or PoE/PoE+ Ethernet cable) and video/network cables, power on the camera, and complete initial setup (IP address, stream parameters, and presets) via the web GUI or IR remote.
2. **Operating the Equipment:** Control pan/tilt, zoom, presets, image parameters, and AI tracking via the IR remote or web GUI.
3. **Safe Termination of Operation:**
    - Stop any active recording or streaming session.
    - Return the camera to standby via the IR remote or web GUI.
    - To fully power off, unplug the external power adapter from the AC outlet or disconnect the PoE/PoE+ Ethernet cable. **Do NOT** disconnect power by pulling on the cable itself.

Cleaning, Disinfection, Service & Disposal

Cleaning & Low-Level Disinfection

> ⚠ **WARNING**
>
> Disconnect ALL power supplies before performing any cleaning, disinfection, or maintenance work.

- **Enclosure Cleaning:** Wipe with a lint-free soft cloth moistened with diluted neutral detergent, then dry with a separate dry soft cloth.
- **Lens Cleaning:** Use professional lint-free lens-cleaning paper only. **Do NOT** spray liquid directly onto the lens surface.
- **Prohibited Substances: Do NOT** use solvents, alcohol, isopropyl alcohol, acetone, thinners, or aerosol spray cleaners.
- **Low-Level Disinfection:** If required by the healthcare facility, wipe external surfaces with a soft cloth lightly moistened with a compatible low-level disinfectant (such as a diluted quaternary ammonium compound), following the disinfectant manufacturer's instructions for concentration and contact time. Wipe dry afterward. **Do NOT** spray, immerse, autoclave, or sterilize.
- **Sterilization: NOT** required and **NOT** supported.

Technical Description, Servicing & Version Control

- **Servicing & Replaceable Parts:** There are no user-serviceable parts inside the housing and no field-replaceable components. All repairs or replacements must be performed by Haverford Systems Inc.
- **Service Documentation:** Upon request, the manufacturer will provide circuit diagrams, component part lists, descriptions, and calibration instructions to assist qualified Service Personnel.
- **Revision Control:** This information corresponds to **Revision 2.0**. Changes affecting safety or performance are revision-controlled; superseded versions must be removed from use.

End-of-Life Disposal

- **Camera (WEEE):** Contains printed circuit assemblies and electronic components. **Do NOT** dispose of with household waste. Follow local electronic-waste regulations and transfer the unit to an authorized e-waste recycling facility.
- **Remote Control Batteries:** Collect and recycle AAA batteries separately in accordance with local battery-recycling requirements; **do NOT** discard in general waste bins.

Intended Use & Operators

Intended Medical Applications

PTZOptics **Move 4K**, **Link 4K**, and **Move SE** IEC 60601-1 and IEC 60601-1-2 certified cameras may be deployed in medical environments for the following applications:

Application	Description
Tele-medicine Consultation	Mounting on mobile medical carts for face-to-face video communication between medical staff and remote patients, or installing in hospital conference rooms for multi-provider case consultations.
Surgical Live Streaming & Teaching	Installing inside operating rooms to stream live surgical procedures and record footage for teaching and archiving.
Remote Patient Monitoring & Virtual Ward Rounds	Integrating with common monitoring software and mainstream patient monitoring systems to enable real-time visual observation inside patient rooms.
Sleep Monitoring Research	Enabling continuous patient observation during sleep studies in low-light or zero-light conditions using the switchable infrared-cut filter paired with IR illuminators. *Move SE: Not supported*
Medical Education & Training	Supporting remote medical training across different training venues with multiple optical zoom options.
AI-assisted Medical Device Identification	Using the camera feed with third-party AI and computer-vision platforms to identify medical instruments within the scene view, support hospital inventory management, and help prevent instrument misuse.

WARNING

This camera functions solely as an audio/video image-acquisition device. **Do NOT** use it for life-sustaining applications. Video output is for visual reference only and must **NOT** be used as the sole basis for clinical diagnosis; clinical staff must always corroborate with other medical examinations and equipment.

Intended Patient Population & Applied Part

- **Intended Patient Population:** Patients involved in telemedicine consultation, surgical teaching, virtual ward rounds, and sleep-study research. The device does not classify or screen patients; the patient population is determined by the healthcare facility based on clinical need.
- **Applied Part: None.** The equipment is an image-acquisition peripheral and does **NOT** make direct contact with the patient. It performs no physiological measurement, treatment output, or energy transfer to the patient.

Intended Operators & Required Training

The **patient is NOT an intended operator**. Operators must read and understand this guide, including **Medical Environment Warnings**, Warnings & Precautions, **Installation, Operation & Safe Termination**, and **Cleaning, Disinfection, Service & Disposal**—before use.

Operator Group	Description	Required Skills & Training
User 1: Clinical Staff (doctor, nurse, instructor)	Operates the camera via IR remote or web GUI	Basic electronic-device operation; trained on basic camera operation, intended use, and limits
User 2: Hospital IT / Biomedical Engineer	Installation, network configuration, periodic maintenance, and fault diagnosis	Networking and hardware fundamentals; trained on installation and maintenance
User 3: System Integration Engineer	Integration with third-party control systems, RS-232/RS-485 configuration, and preset setup	Communication protocols and control-system experience; trained on interface integration
User 4: Occasional User	Temporary basic operation after reading the applicable safety instructions	Basic power on/off operation only; must be briefed on intended use, limits, and emergency shutdown

Prohibited Uses

The following uses are strictly prohibited:

- Using the video output as the sole basis for clinical diagnosis.
- Using the camera as part of a life-sustaining system.

- Direct contact with the patient body or invasive use.
- Outdoor use, rain exposure, or operation in high-humidity/splash environments (the equipment is not waterproof).
- Powering the unit with a non-original or non-IEC 60601-1 certified power adapter (see **Certified Power Supply SKU** above).
- User disassembly of the housing (no user-serviceable parts inside).
- Operation outside the rated `0 °C to +40 °C` operating temperature range.

Medical Environment Warnings

When deploying IEC 60601-1 and IEC 60601-1-2 certified **Move 4K**, **Link 4K**, or **Move SE** cameras in healthcare environments, operators and the Responsible Organization must also observe the following medical safety warnings (see Warnings & Precautions for general equipment warnings and the certification details above for full compliance details):

1. **Visual Reference Only:** The camera is an audio/video image-acquisition device only. It does not contact the patient and is not a diagnostic or life-sustaining device. Its output must **NOT** be used as the sole basis for clinical diagnosis; clinical staff must always corroborate with other medical examinations and equipment.
2. **Certified Medical Power Adapter Required (`PT-PSB-M`):** You must purchase the IEC 60601-1 certified DC 12 V power supply separately (PTZOptics SKU `PT-PSB-M`, manufacturer model `EM1024QR(10)`). **The standard power adapter included with the camera is NOT IEC 60601-1 certified.** Using a non-compliant adapter may cause electric shock or fire.
3. **Keep Dry:** The equipment is **NOT** waterproof. Do **NOT** spray or splash disinfectant or liquid directly onto the device.
4. **Secure Medical-Compliant Mounting:** For ceiling or wall mounting in clinical areas, secure the camera firmly using medical-compliant mounting hardware, confirm no cables or obstacles are within the pan/tilt range, and complete installation before powering on.
5. **AI Auto-Tracking in Clinical Scenes:** AI human-tracking may lose the target or drift. For surgical teaching and critical telemedicine scenes, disable AI auto-tracking and use manual presets instead.
6. **Wired Backup for Network Video Streams:** Network video streams (RTSP, RTMP, SRT, NDI) may be interrupted by hospital network fluctuations. For critical medical operations, enable local hard-wired HDMI or 3G-SDI output as a backup; do **NOT** rely on network video alone.
7. **Reciprocal Electromagnetic Interference:** Medical electrical (ME) equipment generates radio-frequency energy and may cause or be affected by electromagnetic interference during specific investigations or

treatments. Keep portable RF communication devices and sources of strong electromagnetic interference at an adequate separation distance.

Classification, Symbols & Technical Parameters

Medical Device Classification (IEC 60601-1, Clause 6)

- **Protection Against Electric Shock:** Class I (Protective Earth).
- **Applied Part:** None (no patient contact).
- **Ingress Protection:** Ordinary equipment (not waterproof and not protected against liquid splashing).
- **Anesthetic Safety:** Not suitable for use with flammable anesthetic mixtures or in the presence of flammable or explosive gas atmospheres.
- **Mode of Operation:** Continuous operation.

Connected Equipment & Network Requirements

Only connect the camera's video, audio, serial, USB, and network ports to equipment that complies with applicable safety standards—such as IEC 62368-1 (or IEC 60950-1) for IT/AV equipment, or IEC 60601-1 for medical equipment. Combining the camera with other devices (such as displays, computers, controllers, or network switches) forms a **Medical Electrical (ME) System**; the healthcare facility (Responsible Organization) is responsible for ensuring that the complete combined system complies with IEC 60601-1.

Symbol Glossary

Safety symbols marked on the equipment and/or packaging:

Symbol	Standard / Name	Meaning
⚠	**General Warning** (ISO 7010 W001)	Indicates a potential safety hazard; read the accompanying text.
⚠	**Caution** (ISO 15223-1 5.4.4 / ISO 7000-0434A)	Indicates the need for the user to consult the instructions for use for important cautionary information.

Symbol	Standard / Name	Meaning
	**Fragile, Handle with Care** (ISO 15223-1 5.3.1 / ISO 7000-0621)	Indicates a medical device that can be broken or damaged if not handled carefully.
	**Keep Away from Rain** (ISO 15223-1 5.3.4 / ISO 7000-0626)	Keep dry; protect the equipment and packaging from rain and moisture.
	**This Way Up** (ISO 7000-0623)	Indicates the correct upright position of the transport package.
	**Stacking Limit by Number** (ISO 7000-2403)	Indicates the maximum number of identical packages that may be stacked (5 maximum).
	**European Conformity (CE)**	Indicates conformity with applicable European Union health, safety, and environmental protection legislation.
	**Federal Communications Commission (FCC)**	Indicates compliance with FCC electromagnetic compatibility (EMC) regulations.
	**WEEE Disposal**	Do not discard with domestic household waste; dispose of via separate e-waste collection.

EMC Declaration of Conformity

Guidance and Manufacturer's Declaration – Electromagnetic Emission

Emission test	Compliance
Conducted and Radiated RF emissions (CISPR 11)	Group 1
Conducted RF emissions (CISPR 11)	Class B
Radiated RF emissions (CISPR 11)	Class B

Emission test	Compliance
Harmonic emissions (IEC 61000-3-2)	Class A
Voltage fluctuations and flicker emissions (IEC 61000-3-3)	Complies

Guidance and Manufacturer's Declaration – Electromagnetic Immunity

Immunity test	IEC 60601-1-2 test level	Compliance level
Electrostatic discharge (IEC 61000-4-2)	±8 kV contact; ±2 kV, ±4 kV, ±8 kV, ±15 kV air	±8 kV contact; ±2 kV, ±4 kV, ±8 kV, ±15 kV air
Electrical fast transients/bursts (IEC 61000-4-4)	±2 kV for AC power supply lines; ±1 kV for input/output lines; 100 kHz repetition frequency	±2 kV for AC power supply lines; ±1 kV for input/output lines; 100 kHz repetition frequency
Surges (IEC 61000-4-5)	±0.5 kV, ±1 kV line(s) to line(s); ±0.5 kV, ±1 kV, ±2 kV line(s) to earth	±0.5 kV, ±1 kV line(s) to line(s); ±0.5 kV, ±1 kV, ±2 kV line(s) to earth
Rated power frequency magnetic fields (IEC 61000-4-8)	30 A/m 50 Hz or 60 Hz	30 A/m 50 Hz or 60 Hz
Voltage dips (IEC 61000-4-11)	0 % U_T; 0.5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0 % U_T; 1 cycle and 70 % U_T; 25/30 cycles Single phase: at 0°	0 % U_T; 0.5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0 % U_T; 1 cycle and 70 % U_T; 25/30 cycles Single phase: at 0°
Voltage interruptions (IEC 61000-4-11)	0 % U_T; 250/300 cycle	0 % U_T; 250/300 cycle

NOTE

> U_T is the a.c. mains voltage prior to application of the test level.

Guidance and Manufacturer's Declaration – Electromagnetic Immunity (RF & Proximity Magnetic Fields)

Immunity test	IEC 60601-1-2 test level	Compliance level
Conducted disturbances induced by RF fields (IEC 61000-4-6)	3 Vrms in 0.15 MHz – 80 MHz; 6 Vrms in ISM and amateur radio bands between 0.15 MHz and 80 MHz [a), f)] 80 % AM at 1 kHz	3 Vrms in 0.15 MHz – 80 MHz; 6 Vrms in ISM and amateur radio bands between 0.15 MHz and 80 MHz [a), f)] 80 % AM at 1 kHz
Radiated RF EM fields (IEC 61000-4-3)	10 V/m 80 MHz – 2.7 GHz [b)] 80 % AM at 1 kHz	10 V/m 80 MHz – 2.7 GHz [b)] 80 % AM at 1 kHz
Proximity magnetic fields (IEC 61000-4-39) [d)]	30 kHz, CW modulation, 8 A/m 134.2 kHz, Pulse modulation 2.1 kHz [e)], 65 A/m [f)] 13.56 MHz, Pulse modulation 50 kHz [e)], 7.5 A/m [f)]	30 kHz: 8 A/m 134.2 kHz: 65 A/m 13.56 MHz: 7.5 A/m

Electromagnetic environment – guidance & notes:

- **Electromagnetic environment – guidance (Conducted & Radiated RF):** Portable and mobile RF communications equipment should be used no closer to any part of these devices, including cables, than the recommended separation distance (30 cm / 12 inches). Interference may occur in the vicinity of equipment marked with the following symbol: (((·))) *(non-ionizing electromagnetic radiation symbol)*.
- **Note 1:** At 80 MHz and 800 MHz, the higher frequency range applies.
- **Note 2:** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.
- **a.** The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6,765 MHz to 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz. The amateur radio bands between 0,15 MHz and 80 MHz are 1,8 MHz to 2,0 MHz, 3,5 MHz to 4,0 MHz, 5,3 MHz to 5,4 MHz, 7 MHz to 7,3 MHz, 10,1 MHz to 10,15 MHz, 14 MHz to 14,2 MHz, 18,07 MHz to 18,17

MHz, 21,0 MHz to 21,4 MHz, 24,89 MHz to 24,99 MHz, 28,0 MHz to 29,7 MHz and 50,0 MHz to 54,0 MHz.

- **b.** Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which these devices are used exceeds the applicable RF compliance level above, these devices should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating these devices.
- **c.** Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.
- **d.** This test is applicable only to ME EQUIPMENT and ME SYSTEMS intended for use in the HOME HEALTHCARE ENVIRONMENT.
- **e.** The carrier shall be modulated using a 50 % duty cycle square wave signal.
- **f.** r.m.s., before modulation is applied.

Proximity Fields from RF Wireless Communications Equipment (IEC 61000-4-3)

Immunity test	IEC 60601-1-2 test level	Compliance level
Proximity fields from RF wireless communications equipment (IEC 61000-4-3)	See the following table	Complies

Test frequency (MHz)	Band [a] (MHz)	Service [a]	Modulation	Immunity Test Level (V/m)
385	380 – 390	TETRA 400	Pulse modulation [b] 18 Hz	27
450	430 – 470	GMRS 460, FRS 460	FM [c] ± 5 kHz deviation 1 kHz sine	28

Test frequency (MHz)	Band [a] (MHz)	Service [a]	Modulation	Immunity Test Level (V/m)
710 745 780	704 – 787	LTE Band 13, 17	Pulse modulation [b] 217 Hz	9
810 870 930	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation [b] 18 Hz	28
1 720 1 845 1 970	1 700 – 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation [b] 217 Hz	28
2 450	2 400 – 2 570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation [b] 217 Hz	28
5 240 5 500 5 785	5 100 – 5 800	WLAN 802.11 a/n	Pulse modulation [b] 217 Hz	9

Notes:

- **NOTE:** If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.
- **a)** For some services, only the uplink frequencies are included.
- **b)** The carrier shall be modulated using a 50 % duty cycle square wave signal.
- **c)** As an alternative to FM modulation, the carrier may be pulse modulated using a 50 % duty cycle square wave signal at 18 Hz. While it does not represent actual modulation, it would be worst case.

Essential Performance, Troubleshooting & Preventive Checks

Essential Performance (IEC 60601-1)

- **Definition:** Capturing and outputting real-time high-definition video for medical visual workflows, including teleconsultation, surgical teaching, patient monitoring, and recording.
- **Loss of Essential Performance:** Occurs if there is no video output, a persistent black screen, or a pan/tilt/zoom (PTZ) failure. If essential performance is lost, discontinue use in clinical workflows immediately and arrange equipment repair.

Fault Conditions & Troubleshooting

If a fault persists, contact Haverford Systems Inc. support. **Do NOT** attempt internal repair.

Condition / Message	Possible Cause	Required Action
Smoke, unusual noise, or burning smell	Internal fault	Cut off ALL power immediately, discontinue use, and contact manufacturer support.
No video output / black screen	Cable, power supply, or input source selection	Verify cables and power; confirm the connected display/peripheral is functional; if the camera still fails, arrange service.
Image interruption on restart	Watchdog auto-restart (residual risk)	Wait for the reboot to complete and verify that video output restores.
Network stream interrupted	Hospital network fluctuation	Check network connectivity; use local HDMI or 3G-SDI backup output for critical clinical scenes.
Pan/tilt not responding	Physical obstacle, serial conflict, or loss of essential performance	Clear obstacles; disable unused external serial control; if persistent, arrange service.
Inverted image (ceiling mount)	Image flip not enabled	Enable OSD vertical flip (`Flip`).

Preventive Inspection & Periodic Safety Checks

Item / Check	Method	Recommended Frequency
Video output / Essential Performance check	Confirm live video output and PTZ response	Before each clinical use (and at least annually)
Pan/tilt movement range	Confirm pan/tilt range is free of obstacles	Before each use
Power cord / adapter	Visually inspect for damage, wear, or heat marks	Before each use / Monthly
Network and video cables	Visually inspect for damage or loose connections	Monthly
Ventilation openings	Remove dust accumulation with a dry soft cloth	Monthly (or as needed)
Electrical safety test	Performed by qualified Service Personnel per IEC 60601-1	Per facility policy / Annually