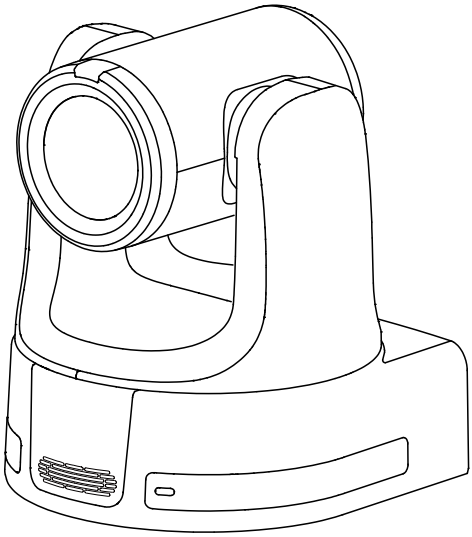
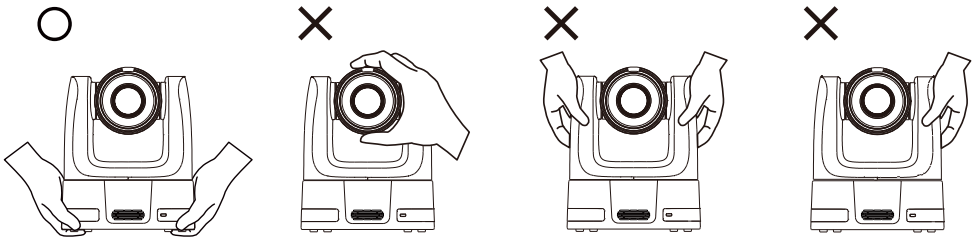


TR615 Auto Tracking Camera

— User Manual —

Firmware 0.0.0004.29

Warning



- Hold the bottom of the camera with both hands to carry the camera.
  Whether the camera is connected to power or not, do not grab any part of the lens or the lens holder to carry the camera or adjust pan and tilt.
- Do not drop the camera or subject it to physical shock.
- Ensure the power supply voltage is correct before using the camera.
- Do not place the camera where the cord can be stepped on as this may result in fraying or damage to the lead or the plug.
- To reduce the risk of fire or electric shock, do not expose the camera to rain or moisture. Warranty will be voided if any unauthorized modifications are done to the camera.

Federal Communications Commission

NOTE: 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 radiofrequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Warning

This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Caution

Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

PoE

The PoE++ port is connected only to PoE networks without routing to the outside plant.

PSTI Statement of Compliance

Please refer to the following website: https://www.aver.com/product-security-advisory

VCCI-A

この装置は、クラス A 機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。
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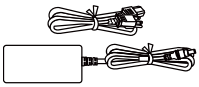
Tel: +82 (0) 2 722 8535

Contents

Overview

Package Contents

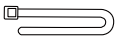
Camera



Power Adapter & Power Cord

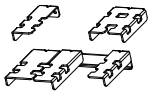
DIN8 to D-Sub9 Cable

Mini DIN9 to Mini DIN8 RS-232 Adaptor Cable

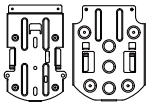


Cable Tie (x7)

Remote Control



Cable Fixing Plate (x3)

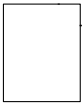


Ceiling Mount Bracket (x2)

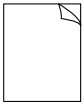
M2 x 4 mm Screw (x6)

1/4”-20, L=6.5 mm Screw (x2)

M3 x 6 mm Screw (x3)



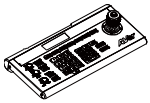
Drill Template



Quick Start Guide

Optional Accessories

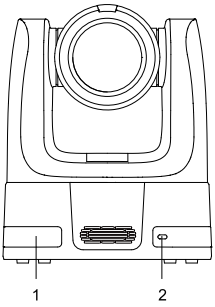
Wall Mount Bracket



Camera Controller (CL01)

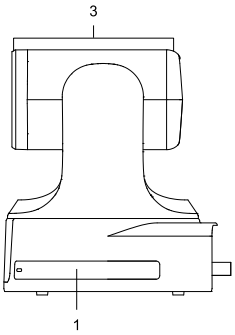
* For detail on optional accessories, consult your local dealer.

Parts Info



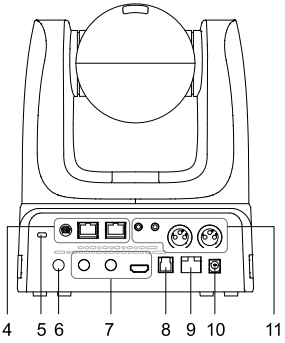
Front View

1. IR Sensor
2. LED Indicator



Side View

3. Tally Lamps (Front & Back)



Back View

4. Control Ports
   RS-232 / RS-422 In / RS-422 Out
5. Kensington Lock
6. G/L Port
7. Video Output Ports
   12G-SD1 / 12G-SDI 2 / HDMI
8. USB 3.0 Type-B Port
9. PoE++ 802.3bt Port
10. DC 12V Power Jack
11. Audio Input Ports*
    Mic / Line / XLR-R / XLR-L

* For audio input levels and power specifications, please refer to <Audio Input Connection>.

Tally Lamps

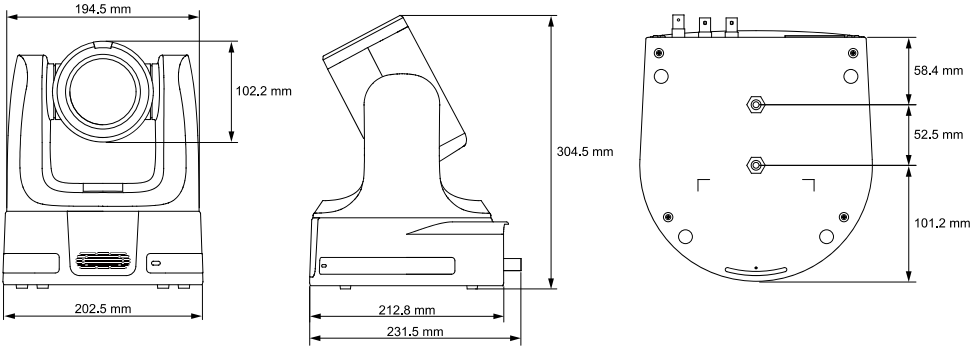
Programmable red, yellow, and green lights.
When video theme mode is set to Zoom and Teams:

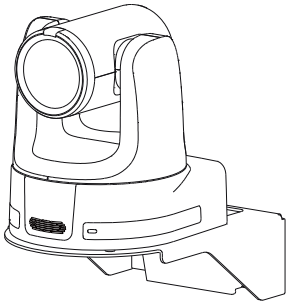
Color	Status
Red	Streaming over USB
No light	Not streaming over USB

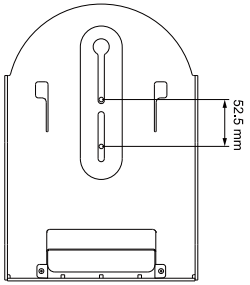
LED Indicator

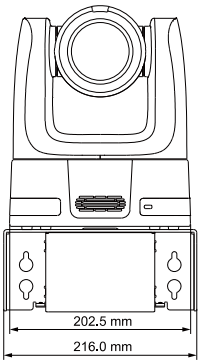
Color	Status
Flashing orange	Start-up *Ensure sufficient voltage to avoid repeated power cycling.*
Solid orange	Standby
Solid blue	Normal
Flashing blue	Auto tracking on
Flashing red	Firmware update

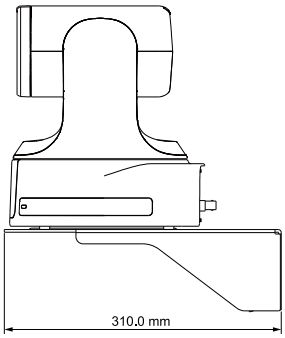
Dimensions

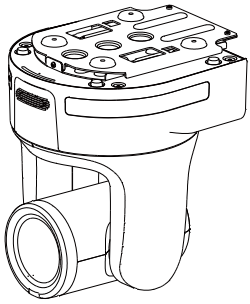


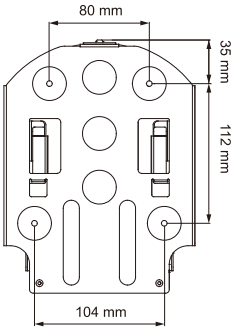


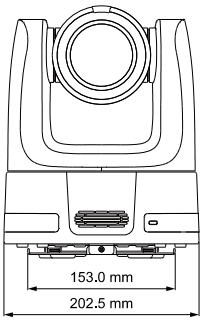

52.5 mm

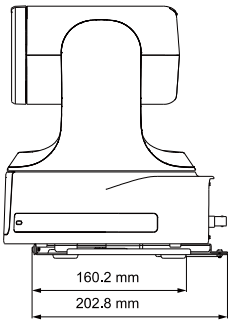

202.5 mm
216.0 mm


310.0 mm

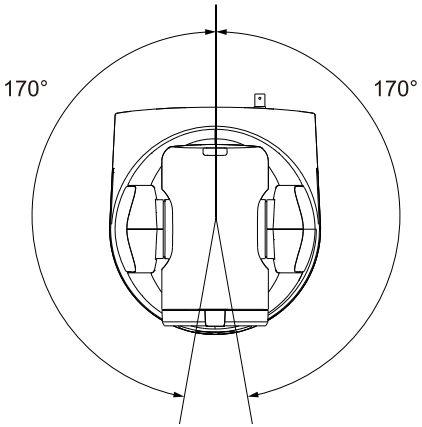


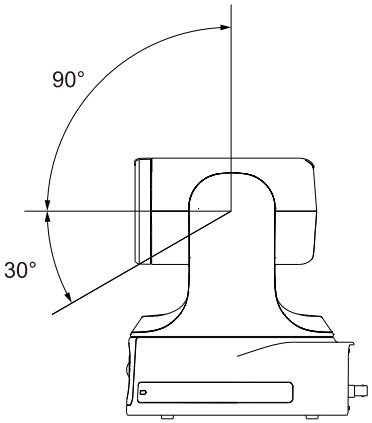

80 mm
35 mm
112 mm
104 mm


153.0 mm
202.5 mm

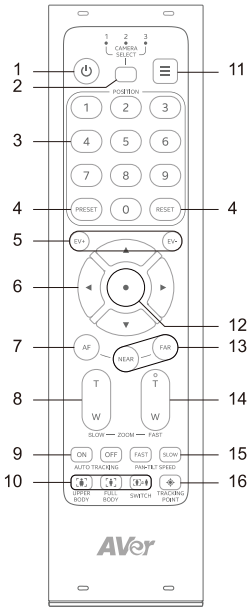

160.2 mm
202.8 mm

Pan and Tilt Angle





Remote Control



Name	Function
1. Power	Enter Standby Mode or wake up.
2. Camera Select	No selection is required by default to operate the camera. ● Both the camera and the remote control are set to 1 at the factory. ● To assign a number to the camera, go to **System** > **Camera Selector** in the OSD menu.
3. Number Buttons	Press a **Number button (0-9)** to load defined preset 0-9.
4. Preset/Reset	● To save a preset, press and hold **Preset**, then press a **Number button (0-9)**. ● To reset a preset, press and hold **Reset**, then press a **Number button (0-9)**.
5. EV +/-	● Press to adjust exposure value. ● Press and hold **EV+** to turn on RTMP. ● Press and hold **EV-** to turn off RTMP.
6. Pan-Tilt Control	Control pan and tilt directions.
7. Auto Focus	Turn on Auto Focus.
8. Zoom Slowly	Zoom in or out slowly.
9. Auto Tracking	Turn Auto Tracking on or off.
10. Frame Presenter	● Upper Body: Frame presenter's upper body. ● Full Body: Frame presenter's full body. ● Switch: Switch the presenter.
11. Menu	Open or close the OSD menu during HDMI output.
12. Enter	● Confirm a selection in the OSD menu. ● Press to One Push Focus (auto-focus once).
13. Near / Far	Press **Near** or **Far** to adjust focus manually.
14. Zoom Fast	Zoom in or out quickly.
15. Pan-Tilt Speed	Adjust pan-tilt speed.
16. Tracking Point	Load tracking point (Preset 1).

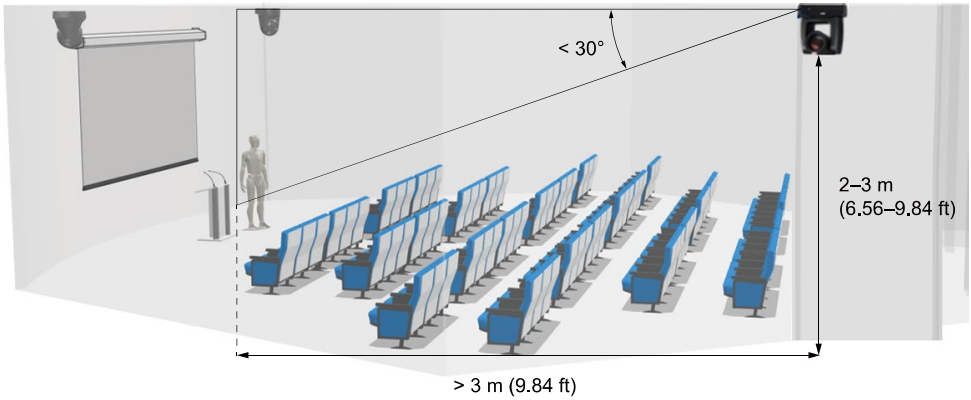
Shortcuts

Press	To
6 six times (666666)	Reset the device to factory default settings.
7 seven times (7777777)	Display the human tracking frame on the HDMI output.
8 eight times (88888888)	Set the network setting to static IP 192.168.1.168.
9 nine times (999999999)	Clear the web interface login. You'll be prompted to change the username and password on your next login.

Installation

Mounting Measurements

- Motion tracking

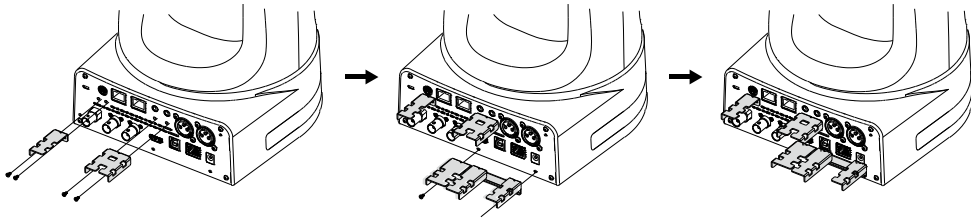


- Voice tracking (with 3rd party microphones)

Optical zoom	Distance from subject	Height	Can be inverted
12X	1.6-12 m	1.8-3 m	Yes
21X	2.0-20 m	1.8-3.5 m	Yes
30X	1.8-30 m	1.8-3.8 m	Yes

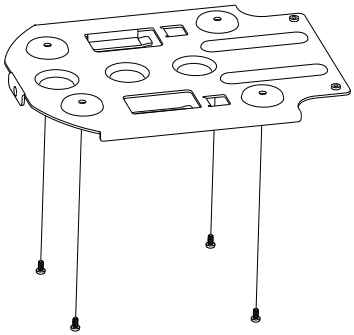
Cable Fixing Plate Installation

1. Secure the cable fixing plate to the camera with the included M2 x 4 mm screws.
2. Connect the cables.
3. Use the cable ties to secure the cables to the cable fixing plate.

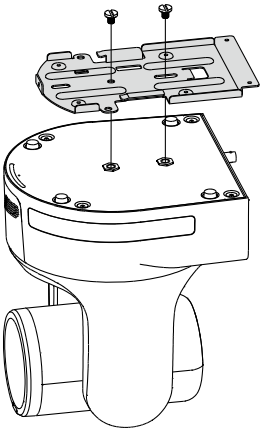


Ceiling Mount Installation

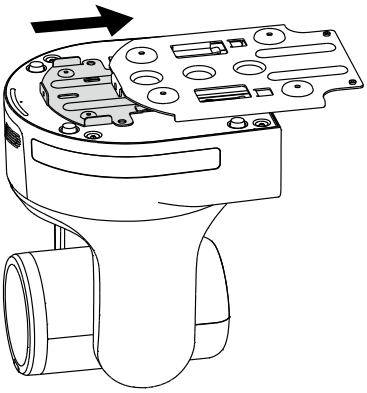
1. Secure the mount bracket to the ceiling.
   Screw: 4 screws, M4 x 10 mm (not Included)



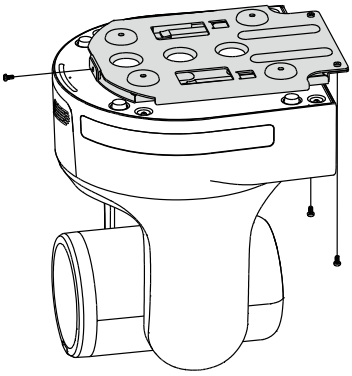
2. Secure the mount bracket to the camera.
   Screw: 2 screws, 1/4"-20 L=6.5 mm (included)



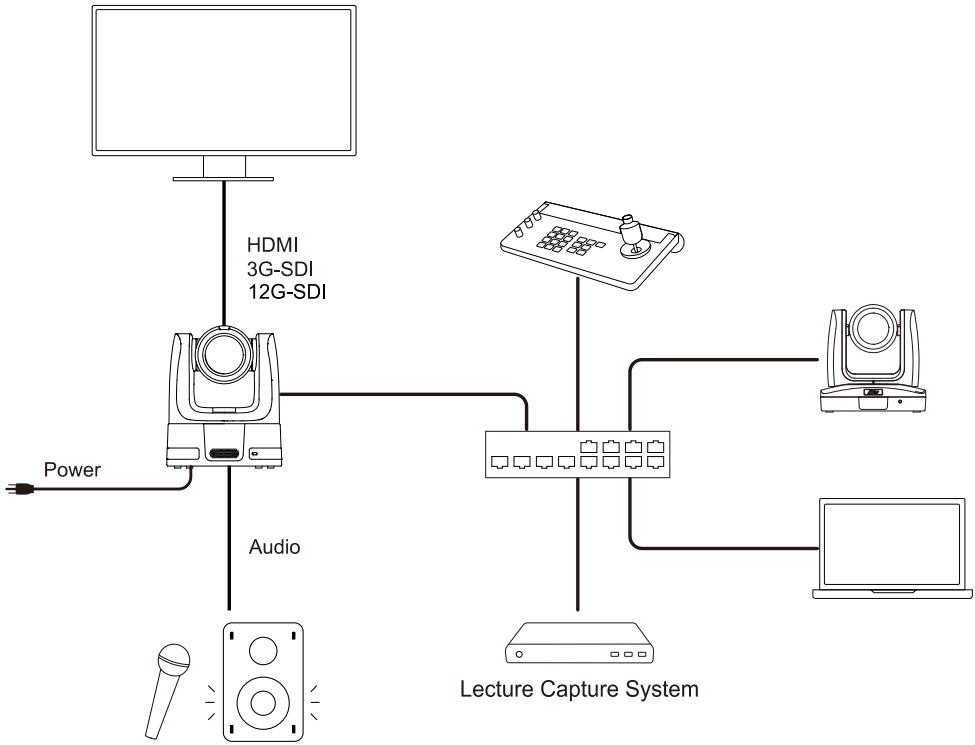
3. Slide the mount bracket with the camera into the mount bracket secured to the ceiling. Then connect the cables.



4. Secure the two mount brackets with screws.
   Screw: 3 screws, M3 x 6 mm (included)



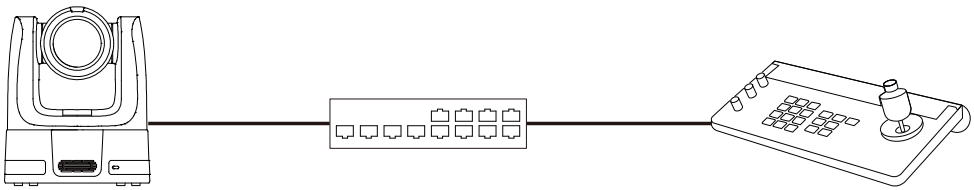
Connections



IP Connection

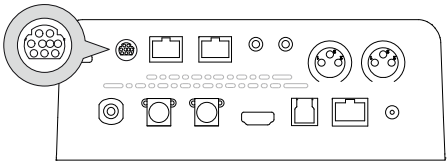
1. Connect the camera PoE++ 802.3bt port to a port on the Ethernet switch. The switch must provide PoE++ if you are not using a power adapter.

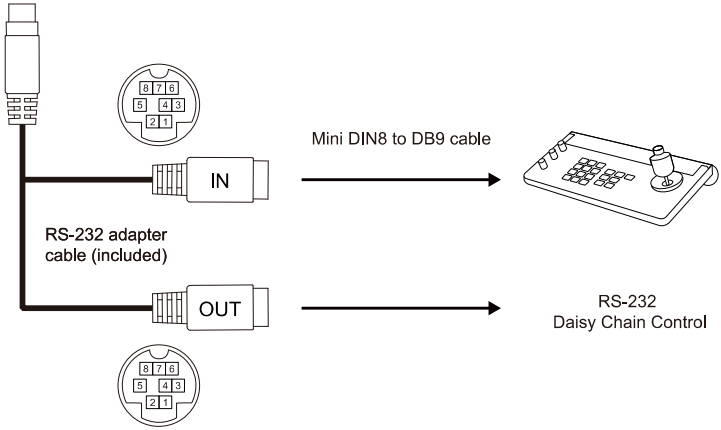
2. Connect the Camera Controller's IP port to a port on the Ethernet switch.



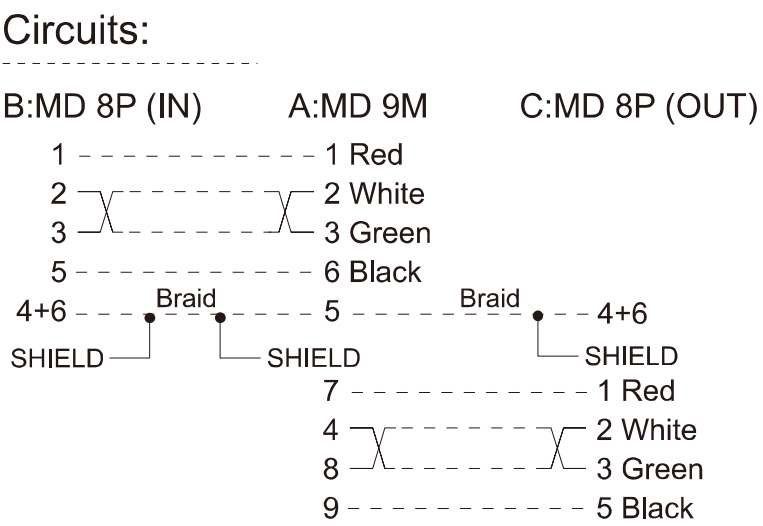
RS-232 Connection

Use the included mini DIN9 to mini DIN8 RS-232 adapter cable to make a RS-232 connection to your control device.

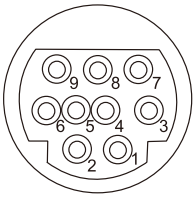




- **Mini DIN9 to Mini DIN8 RS-232 Adaptor Cable Pin Definition**

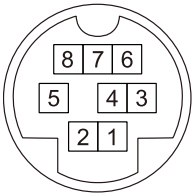


- **RS-232 Pin Definition**



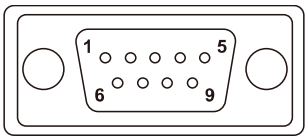
Function	Mini DIN9 Pin #	I/O Type	Signal	Description
VISCA IN	1	Output	DTR	Data Terminal Ready
	2	Input	DSR	Data Set Ready
	3	Output	TXD	Transmit Data
	6	Input	RXD	Receiver Data
VISCA OUT	7	Output	DTR	Data Terminal Ready
	4	Input	DSR	Data Set Ready
	8	Output	TXD	Transmit Data
	9	Input	RXD	Receiver Data
	5	Input	I/O	Detect DIN8/DIN9
---	Shield	---	GND	Ground

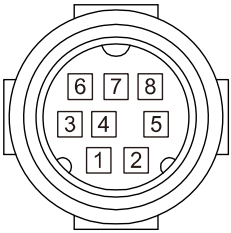
- **Mini DIN8 Cable Pin Definition**

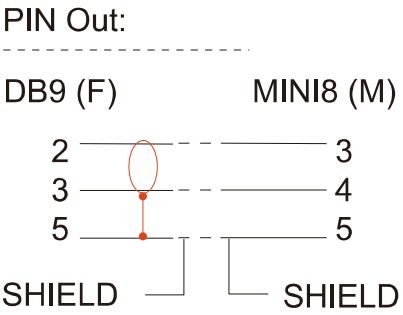


Pin #	Signal
1	DTR
2	DSR
3	TXD
4	GND
5	RXD
6	GND
7	NC
8	NC

- **Din8 to D-Sub9 Cable Pin Definition**

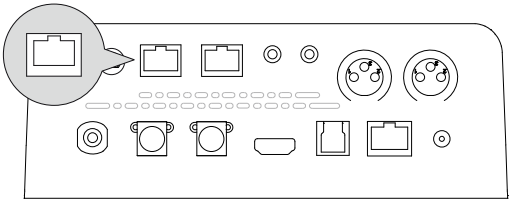


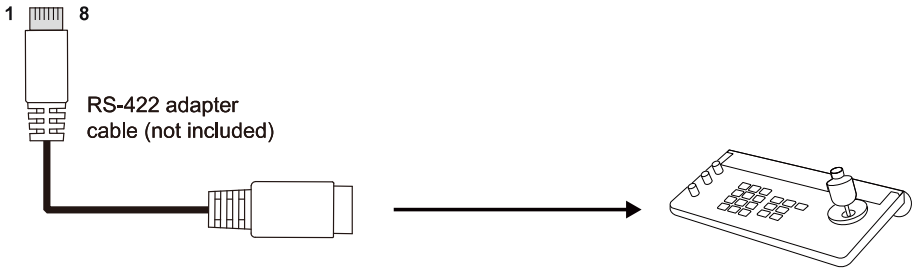


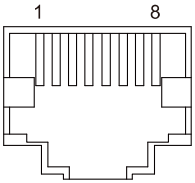


RS-422 Connection

Use an RS-422 adapter cable to make a RS-422 connection to your control device.

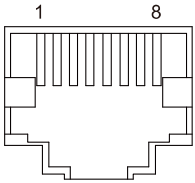






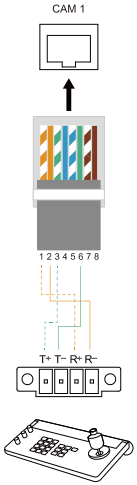
Pin #	Pin
1	TX-
2	TX+
3	RX-
4	GND
5	GND
6	RX+
7	N.C.
8	N.C.

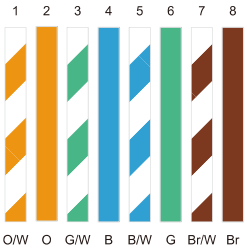
RS-422 Input Port Pin Definition



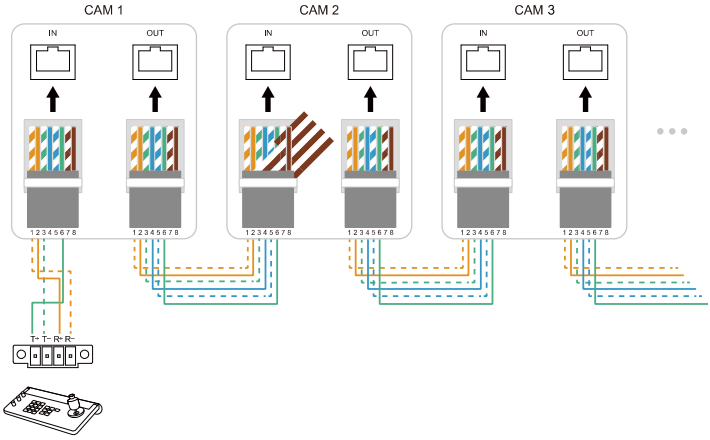
Pin #	Pin
1	RX-
2	RX+
3	TX-
4	GND
5	GND
6	TX+
7	N.C.
8	N.C.

RS-422 Output Port Pin Definition





T-568B Cable



Audio Input Connection

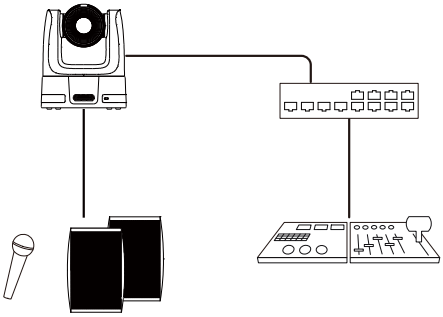
Connect to your audio devices to receive audio.

Audio jack input level (max):

- MIC level: 50mV(rms), supplied voltage 2.5V
- Line level: 1V(rms)

XLR 3-pin balance input level (max):

- MIC level: -40dBu
- Line level: 4dBu
- Supply phantom power voltage 47±2V

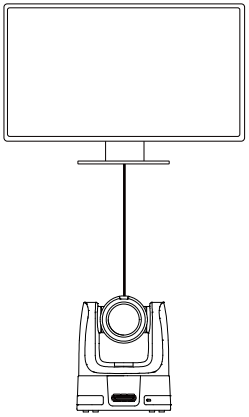


Video Output Connection

Use the HDMI cable (not included) to connect to a monitor or TV. Or you can use a 12G-SDI cable to connect to a 12G-SDI display. Please wait about 25 seconds for the video display to activate.

Note:

- The camera can stream video via HDMI and 12G-SDI simultaneously.
- Press and hold the **Menu** button on the remote control to open the OSD menu.



Get Started

Power the Device On and Off

The device turns on when you plug it into a power source. The device doesn't have a power button, so you must unplug the power cable to power it off.

Reset the Device

To reset the device to factory default settings, do any of the following:

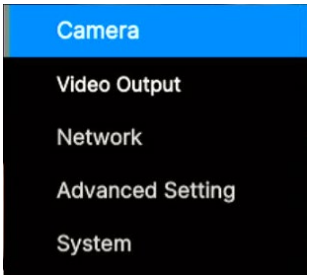
OSD menu: Go to **System** > **Factory Default** > **On**.
Web interface: Go to **System** > **Factory Default** > **Reset to Factory Default**.

Factory Default Settings

IP address	DHCP
Hostname	[Model name]-[last 6 digits of MAC Address] Find the MAC address on the bottom or rear of the device.
Web interface login	None
Theme Mode	All modes reset to **Standard Mode**, except **Zoom** and **Teams**, which will remain unchanged.

Access the OSD Menu

During HDMI output, Press the **Menu** button (MENU) on remote control to open the OSD menu.

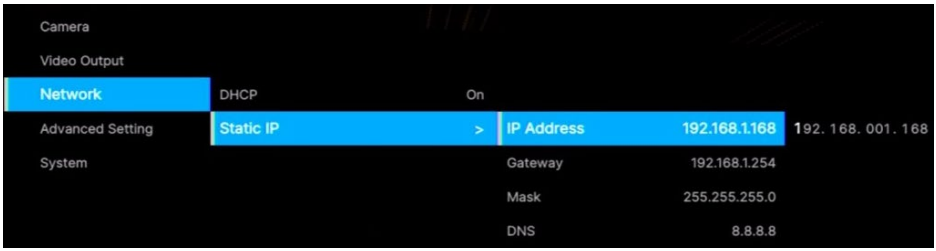


Change Your Network Setting

Note: The camera's default network is DHCP.

- **Static IP**

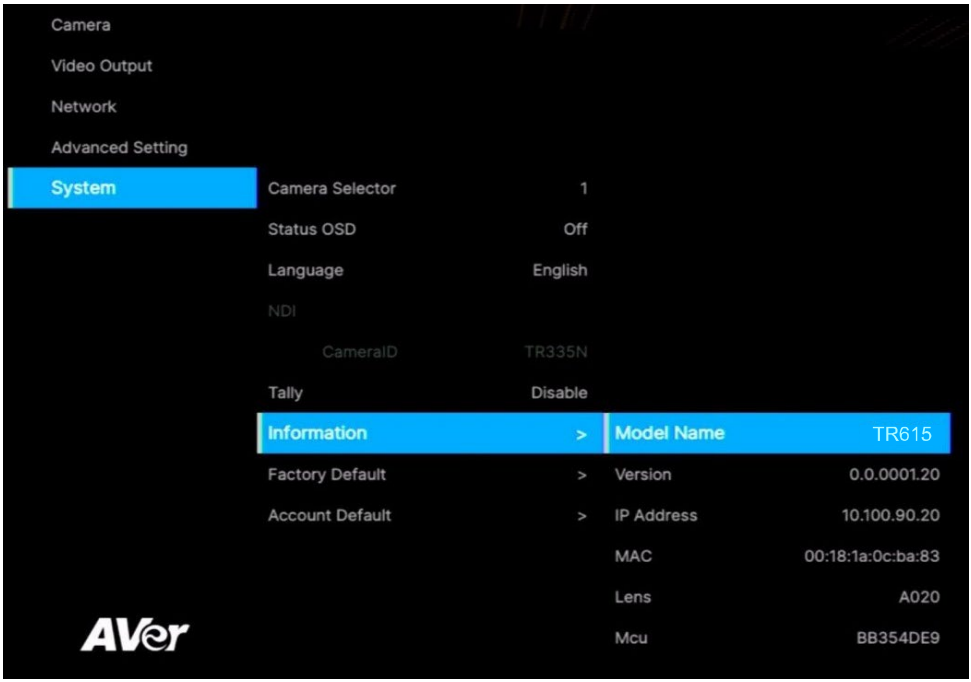
1. Press the (MENU) button on remote control to open the OSD menu.
2. Go to **Network** > **DHCP** > **Off.**
3. Then go to **Network** > **Static IP**.
   Select and enter **IP Address**, **Gateway**, **Mask** and **DNS** to configure.



- **DHCP**

1. Press the (MENU) button on remote control to open the OSD menu.
2. Go to **Network** > **DHCP** > **On**.

3. Then go to **System** > **Information** to see the IP address.



Note: If the DHCP server fails to assign an IP address after 30 seconds, the device defaults to 192.168.1.168. Multiple devices will be assigned random IPs within 192.168.1.1 – 192.168.1.254.

To troubleshoot, make sure your DHCP server is running, then disconnect and reconnect the camera LAN cable. Or go to **Network** on the OSD menu > Switch **DHCP** off and on.

OSD Menu Tree

1st Level	2nd Level	3rd Level	4th Level
Camera	Exposure Mode	Full Auto	Exposure Value
			Gain Limit Level
			Slow Shutter
		Shutter Priority	Exposure Value
			Shutter Speed
			Gain Limit Level
		Iris Priority	Exposure Value
			Iris Level
			Gain Limit Level
			Slow Shutter
		Manual	Shutter Speed
			Iris Level
			Gain Level
		Bright	Bright value
	White Balance	Auto	
		ATW	
		Indoor	
		Outdoor	
		One push	
		Manual	R gain
			B gain
	Pan Tilt Zoom	Preset Speed	5, 25, 50, 100, 150, 200
		Digital Zoom	Off / On
		Digital Zoom Limit	x2, x3, x4, x5, x6, x7, x8, x9, x10, x11, x12
		Pan/Tile Slow	Off / On
		L/R Set	Default / Reverse
		Mirror	Off / On
		Flip	Off / On
		Pan/Tilt Reset	
	Noise Reduction	Off / Low / Middle / High	
	Saturation	0 1 2 3 4 5 6 7 8 9 10	
	Contrast	0 1 2 3 4	
	Sharpness	0 1 2 3	
	WDR	Off / On	
	Back Light Compensation (BLC)	Off / On	
	LDC		
	Theme	Standard	

Video Output		ZOOM	
		TEAMS	
		NDI	
	Frequency	50	
		59.94	
		60	
	HDMI Resolution	2160p60	
		2160p59.94	
		2160p50	
		2160p30	
		2160p29.97	
		2160p25	
		1080p60	
		1080p59.94	
		1080p50	
		1080p30	
		1080p29.97	
		1080p25	
		720p60	
		720p59.94	
		720p50	
	HDMI1/HDMI2 Source	PTZ Camera	
		Wide Angle Camera	
		PIP/PBP	
Network	DHCP	OFF	
		ON	
	Static IP	IP Address	192.168.1.168
		Gateway	192.168.1.254
		Mask	255.255.255.0
		DNS	168.95.1.1
Advanced Setting	Audio	Input Type	Line in / Mic in
		Audio Volume	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
	Control	Serial Port	RS232 / RS422
		Protocol	VISCA / PELCO D/PELCO P
		Camera Address	1 2 3 4 5 6 7
		Baud Rate	4800 / 9600 / 38400
	Tracking	Off / On	
	Tracking Mode	Presenter / Zone / Hybrid	
System	Camera Selector	1,2,3	
	Status OSD	OFF	
		ON	
	Language	English / 繁體中文 / 日本語	

	NDI	Camera ID TR615	
	Tally	Disable/ Enable	
	Information	Model Name	TR615
		Version	0.0.0000.00
		IP Address	192.168.1.168
		MAC	00:18:1a:04:9e:81
		Lens	A206
		MCU	BFBCD15
	Factory Default	Off/On	
	Account Default	Off/On	

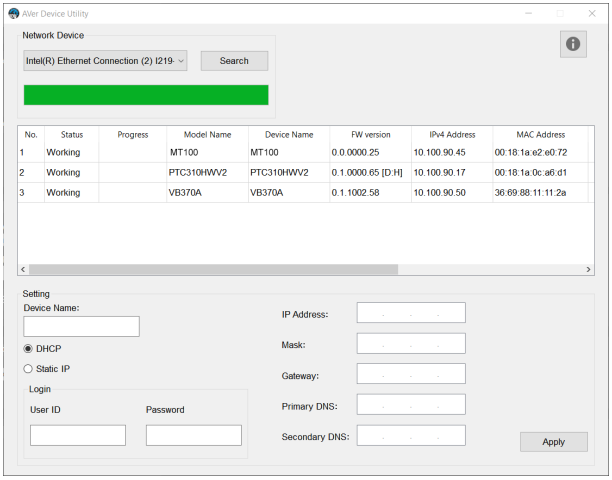
Access the Web Interface

To access the web interface of the camera, you can use any of the following software to find its IP address:

- AVer Device Utility
- AVer Enterprise Management

Note: The camera default network is DHCP.

AVer Device Utility



To access the web interface:

1. Download AVer Device Utility from AVer Download Center (https://www.aver.com/download-center) and launch the software.

2. Click **Search** to see available devices on the same local area network (LAN).

   Note:
   - Make sure your camera has internet.
   - AVer Device Utility and camera must be on the same LAN.

3. Double-click on your camera's IP address in the **IPv4 Address** column to open the web interface in your browser. For first-time login, you'll be prompted to change the username and password.

To change your network to DHCP or static IP:

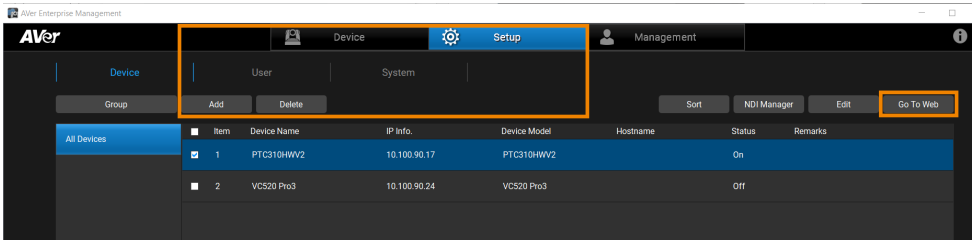
1. Select the checkbox of your camera.

2. Enter the changed username and password in the **Login** field.

3. Select **DHCP** or **Static IP**, then enter your network settings if applicable in the **Settings** section.

4. Click **Apply**.

AVer Enterprise Management



Note: The AVer Enterprise Management default username and password is **admin**/**admin**.

1. Download AVer Enterprise Management from AVer Download Center (https://www.aver.com/download-center) and launch the software.

2. Log in with the AVer Enterprise Management default username and password **admin**/**admin**.

3. Go to **Setup** > **Add**, then click **Auto Search** to see available devices on the same local area network (LAN).

4. Click to select your camera, enter the changed camera username and password, then click **Save** to add the camera to the device list.

5. Select the checkbox of your camera, then click **Go to Web** button to open the web interface in your browser.

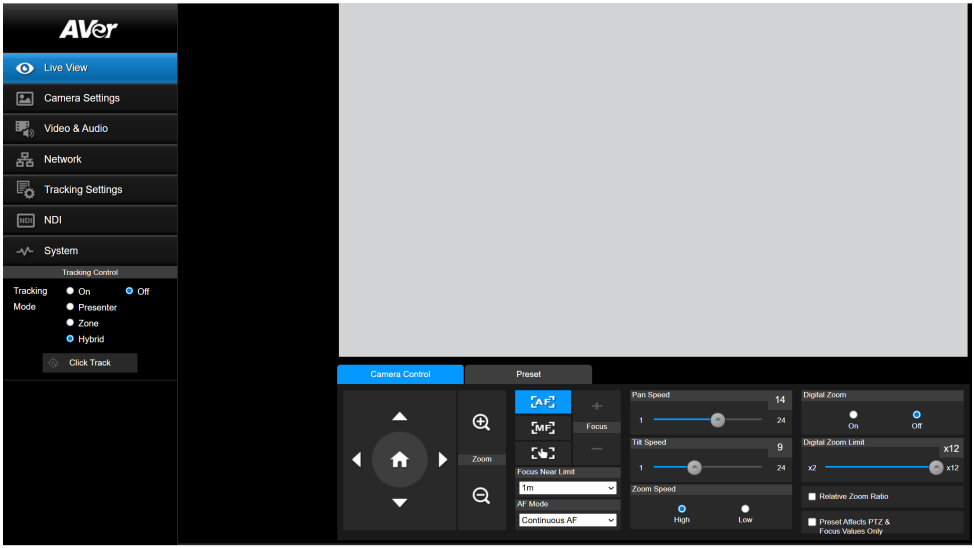
Log in for the First Time

When you log in for the first time, you'll be prompted to change the username and password. The username and password cannot be the same.

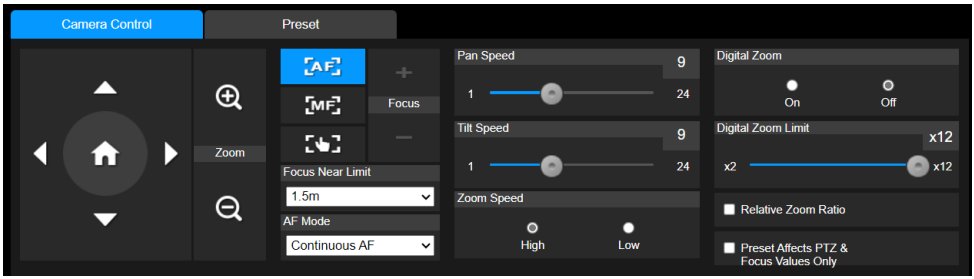
- Username: Use 1-32 characters.
- Password: Use 8-32 characters and a combination of uppercase letters, lowercase letters, and, numbers. Symbols (!$%'()*+,-./<=>?@[\]^_{}~) are optional.

Web Interface

Live View



Camera Control

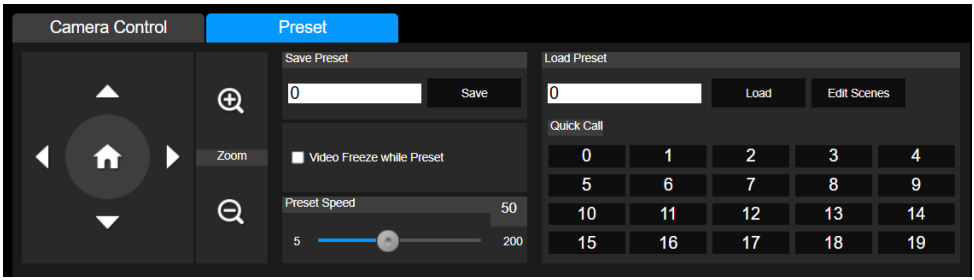


Item	Description
Pan, Tilt, Zoom Controls	Use pan, tilt, and zoom controls to position the camera.
Home	Reset the pan-tilt position to the center.
Auto Focus AF	Focus automatically with an autofocus mode: • AF Trigger after PTZ: Automatically focus after each pan, tilt or zoom.

AF Mode	• Continuous AF (default): Automatically focus continuously.
	• Face Priority AF:
	  ○ Tracking on: Focuses on the tracked face.
	  ○ Tracking off: Focuses on the face closest to the screen center.

Manual Focus	Focus manually with + - buttons.
One Push Focus	Focus automatically once.
Focus Near Limit	Select the nearest focus limit.
Pan Speed	Adjust pan, tilt and zoom speed.
Tilt Speed	
Zoom Speed	
Digital Zoom	Turn digital zoom on or off.
Digital Zoom Limit	Select the digital zoom limit.
Relative Zoom Ratio	Select to automatically adjust pan and tilt speeds based on the zoom ratio.
Preset Affects PTZ & Focus Values Only	A preset typically includes pan, tilt, zoom, focus, and 3A (autofocus, auto exposure, auto white balance) values. Select to save only pan, tilt, zoom and focus values for presets.

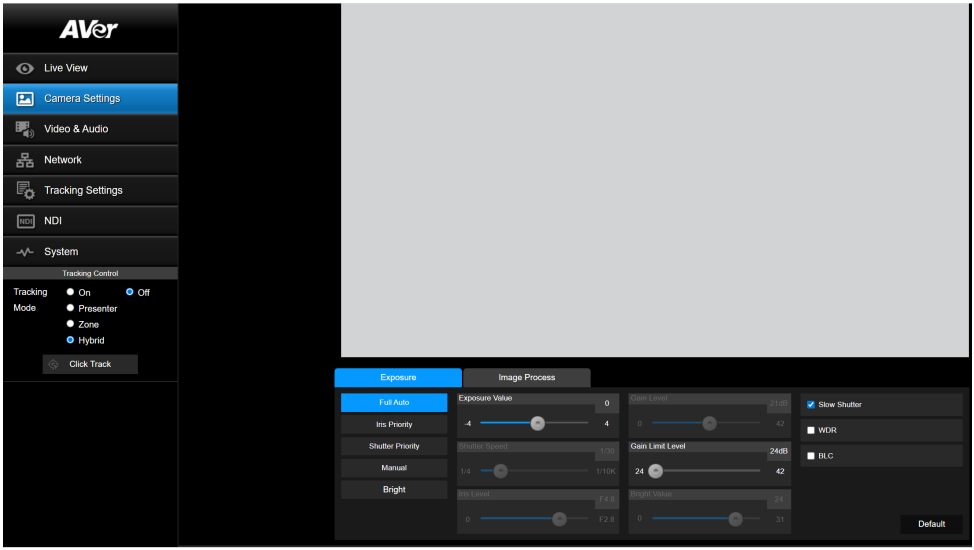
Preset



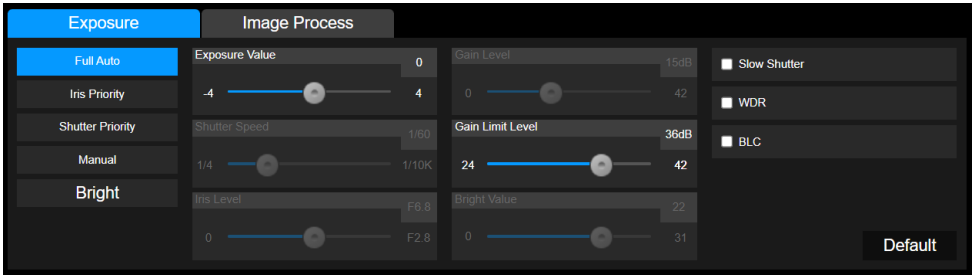
Item	Description
Save Preset	1. Position the camera using pan, tilt and zoom controls. 2. Enter a preset number (0–255) in the **Save Preset** field and click **Save**.
Load Preset	1. Enter a preset number (0–255) in the **Load Preset** field and click **Load**. 2. Or click a preset number (0–19) in the **Quick Call** section.
Video Freeze while Preset	Select to display only the live view from presets. The live view from the moving path will not be displayed.
Preset Speed	Adjust the camera speed when moving to presets.
Edit Scenes	To customize camera functions for preset 0–9: 1. Click **Edit Scenes**.

	2. Select **Scenes 0**–**9** from the **Scenes List** to add up to 10 CGI commands. 3. Select a scene from the **Set Scenes** drop-down list for each preset.

Camera Settings



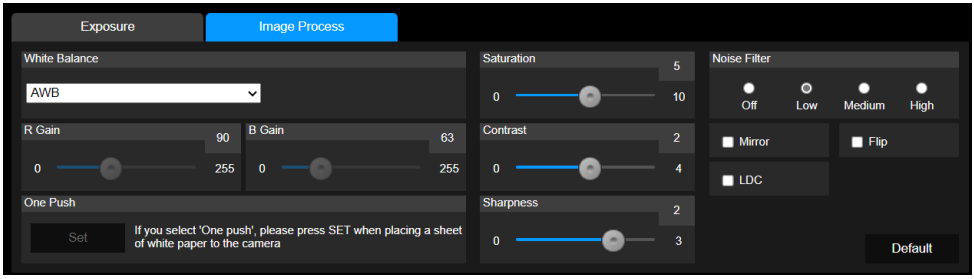
Exposure



Item	Description
Exposure Mode	Select an exposure mode to adjust image brightness: • Full Auto: Automatically adjusts shutter speed (ISO), iris (aperture), and gain for optimal brightness in most environments. • Iris Priority: You set the iris, and the camera adjusts shutter speed and gain. Useful for controlling depth of field. • Shutter Priority: You set the shutter speed, and the camera adjusts iris and gain. Ideal for capturing motion with minimal blur.

	• Manual: Manually adjust shutter speed, iris, and gain. • Bright: Drag the bright value slider to manually increase brightness by adjusting iris and gain.
Exposure Value	Fine-tunes overall image brightness.
Gain Limit Level	Sets the maximum gain the camera is allowed to use automatically. Helps balance between brightness and image noise.
Slow Shutter	Makes the image brighter in low light by slowing down shutter speed. May cause motion blur.
WDR (Wide Dynamic Range)	Enhances visibility in scenes with both very bright and very dark areas so details aren't lost in shadows or highlights.
BLC (Backlight Compensation)	Brightens subjects in front of bright backgrounds (like windows).
Default	Reset Exposure to factory default settings.

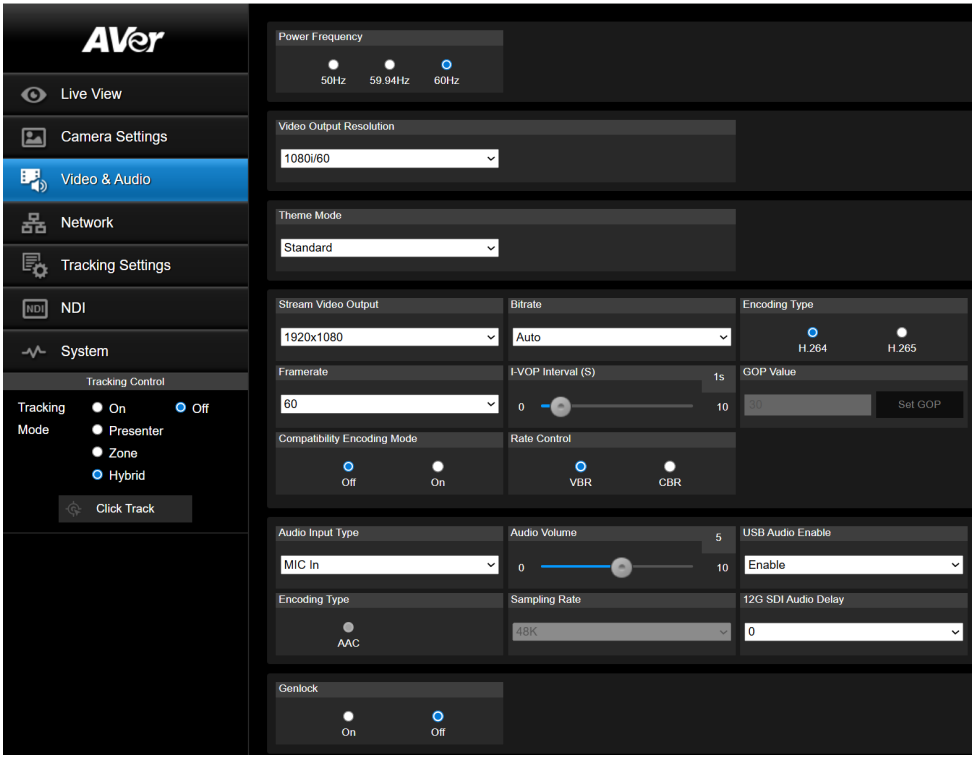
Image Process



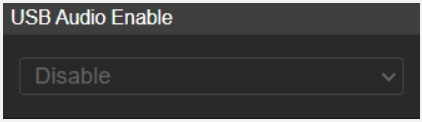
Item	Description
White Balance	Select a white balance mode to match the lighting conditions and ensure accurate color: • AWB (Auto White Balance): Automatically adjusts white balance based on the current lighting. Best for stable indoor lighting. • ATW (Auto Tracking White Balance): Continuously adapts to changing lighting conditions. Ideal for dynamic or mixed lighting environments. • Indoor: Fixes red and blue gain for a color temperature of 3200 K. • Outdoor: Fixes red and blue gain for a color temperature of 5800 K. • One Push: Calibrates white balance using a white reference. Place a white sheet of paper in front of the lens and click **Set** to capture accurate color balance based on the current lighting. • Manual: Manually adjust the red and blue gain.
Saturation	Adjust saturation, contrast and sharpness.
Contrast	

Sharpness	
Noise Filter	Select a noise filtering level.
Mirror	Flip the image horizontally.
Flip	Flip the image vertically.
LDC (Lens distortion correction)	Correct lens distortion.
Default	Reset Image Process to factory default settings.

Video & Audio



Item	Description
Power Frequency (Hz)	Select **50Hz**, **59.94Hz** or **60Hz** based on your country or region.
Video Output Resolution	Select a resolution to display on your video output device. Please wait about 18 seconds when switching resolutions.
Theme Mode	Select a video mode based on the output interface you want to use. **Note:** ● For details on resolution, please refer to <Output Interface and Resolution Table> ● Zoom Mode: USB audio is disabled. ● Teams Mode: USB audio is disabled. Video is limited to USB output only.

	
Stream Video Output	Choose a streaming output resolution for the live view.
Bitrate	Choose a bit rate.
Encoding Type	Select **H.264** or **H.265**.
Framerate	Choose a frame rate
I-VOP Interval (S)	Sets how often a keyframe (or I-frame) is inserted in the video stream. A keyframe is a full image frame used as a reference point in video. Shorter intervals improve video quality, but increase file size.
GOP Value (Group of Pictures Value)	Sets the number of frames between two keyframes. This controls how often keyframes are inserted in the video stream. ● When I-VOP Interval = 0, keyframes are inserted based on the GOP Value. ● When I-VOP Interval > 0, keyframes are inserted based on the set time interval, and GOP Value is ignored.
Compatibility Encoding Mode	When enabled, the camera uses Multi-Slice encoding to improve compatibility and performance when playing UHD video on certain devices. **Note:** We recommend turning this on only if required for specific decoder compatibility. Otherwise, keep the default setting (Off).
Rate Control	Select **VBR** or **CBR**.
Audio Input Type	Select the appropriate input setting based on the audio device and environment to achieve optimal signal level and audio quality: ● Line In: Line input. ● MIC In: Microphone input. ● XLR Line In 0 dB: For standard line-level devices (e.g., keyboards, mixers). ● XLR Line In 4 dB: For devices requiring a slight signal boost. ● XLR Line In 10 dB: For higher-level professional audio equipment. ● XLR Mic In: For dynamic microphones (no external power). ● XLR Mic In +48V: For condenser microphones; provides phantom power.
Audio Volume	Drag the slider to adjust the microphone volume.
USB Audio Enable	Turn off to stop transmitting audio over USB.
Encoding Type	AAC
Sampling Rate	48K

12G SDI Audio Delay	Delays the audio output (ms) to ensure synchronization with the video. This is useful when high-resolution video processing may cause a slight delay relative to the audio.
Genlock	Turn on to synchronize the live view across multiple video outputs.

Output Interface and Resolution Table

Mode	Video Quality	Output Interface	Comment
Standard (default)	Standard	HDMI, SDI, IP, USB, NDI XH2	N/A
Zoom	Zoom certified	HDMI, SDI, IP, USB, NDI XH2	The camera rotates towards the I/O ports (preset 20) when not streaming over USB. To change the sleep mode position, go to **System** > **Sleep to Preset** on the web interface.
Teams	Teams certified	USB	
NDI	Standard	HDMI, SDI, IP, NDI XH3	N/A

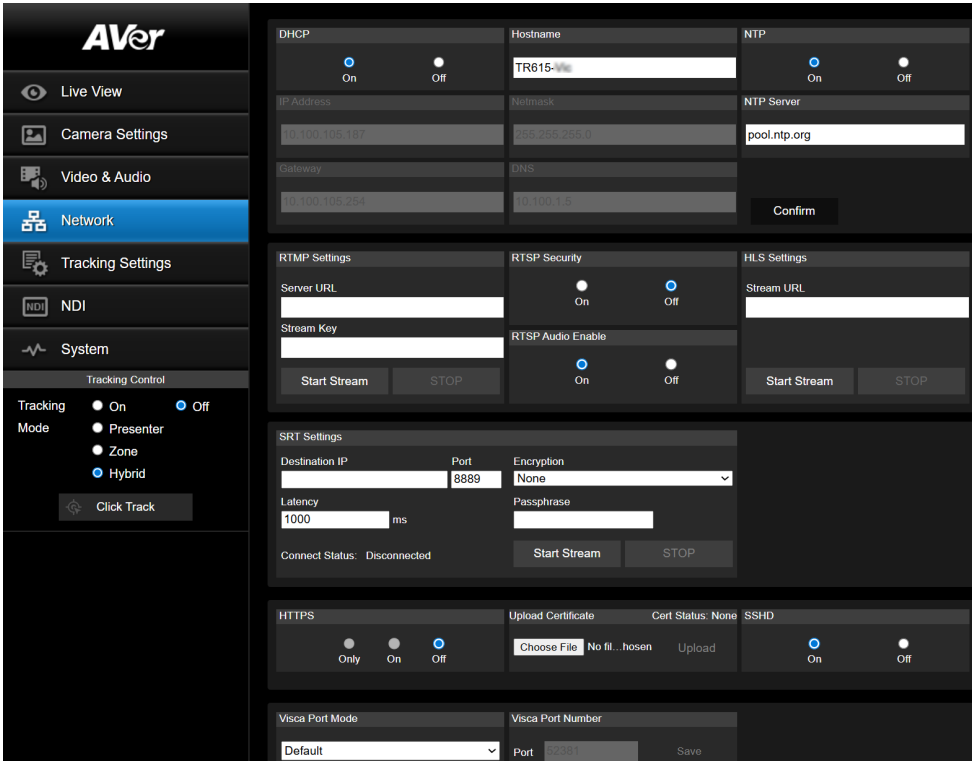
Mode	Output Interface Support Resolution					
	HDMI	12G-SDI	USB	IP	NDI HX2	NDI HX3
Standard (default)	2160p60	2160p60	2160p60	2160p60	2160p60	-
Zoom	2160p60	2160p60	2160p60	2160p60	2160p60	-
Teams	-	-	2160p60	-	-	-
NDI	2160p60	2160p60	2160p60	2160p60	2160p60	2160p60

Difference between NDI HX2 (Standard Mode) and NDI HX3 (NDI Mode)?

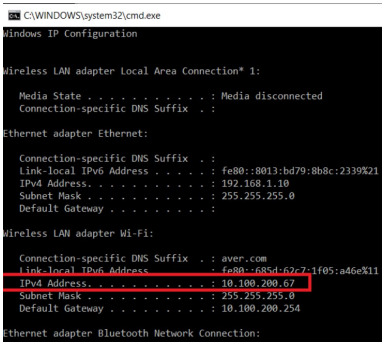
- **NDI HX3** delivers higher quality, lower latency video and audio over HX2. To be certified, HX3 devices need to support low latency, constant bitrate (CBR) encoding, and meet stricter demands such as keyframe response times and a fixed GOP size.
- **NDI HX2** devices follow a more relaxed set of requirements. These devices may have slower latency or keyframe or a larger GOP.

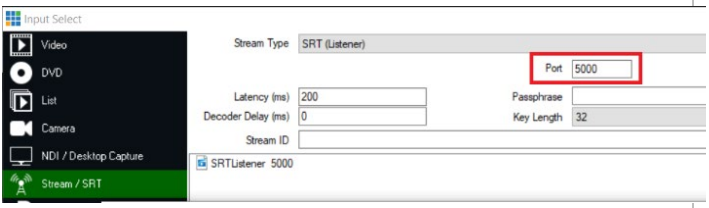
Note: For detailed technical requirements, please refer to the NDI documentation (https://docs.ndi.video/all/developing-with-ndi/ndi-certified/certification-guidelines/technical-requirements).

Network

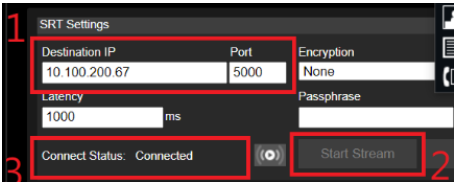


Item	Description
DHCP	Set the network to DHCP or Static IP. • DHCP: Turn on **DHCP** and click **Confirm** to save the setting. The camera will be assigned IP settings automatically. • Static IP: Turn off **DHCP**, enter **IP Address**, **Netmask**, **Gateway** and **DNS**, and click **Confirm** to save the settings.
Hostname	Enter a hostname that is displayed on devices such as an IP router. • The default hostname is [Model name]-[last 6 digits of MAC Address].
NTP	Turn Network Time Protocol (NTP) on or off.
NTP Server	Enter your NTP server.
RTMP Setting	Stream live video to a video platform such as YouTube. 1. Enter the **Server URL** and **Stream Key** of your video platform. Please refer to the instruction of your platform to obtain the server URL and stream key. 2. Click **Start Stream** to start streaming, **Stop** to stop streaming.
RTSP Security	Protect your video stream on media players such as VLC, PotPlayer and QuickTime by ensuring that only authorized users can access it.

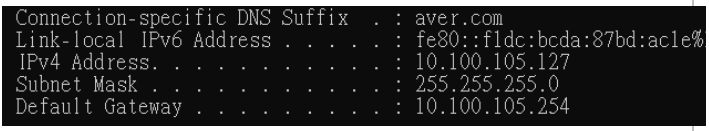
	• When **Security** is turned off: 1. Enter your camera's RTSP URL into the media player. 2. PTZ camera: rtsp://[camera IP address]:554/live_st1 Wide-angle camera: rtsp://[camera IP address]:8554/live_st2 Example: rtsp://192.168.1.100:554/live_st1 • When **Security** is turned on: 1. Enter your camera's RTSP URL, username and password into the media player. 2. PTZ camera: rtsp://[username:password]@[camera IP address] :554/live_st1 Wide-angle camera: rtsp://[username:password]@[camera IP address] :8554/live_st2 Example: rtsp://1:1@192.168.1.100:554/live_st1 3. Username and password: camera's web interface login
RTSP Audio Enable	Enable audio output during video stream on media players.
HLS Settings	Configure HTTP Live Streaming (HLS) settings to provide adaptive bitrate streaming, which ensures smooth playback and minimizes buffering. 1. Enter the stream URL obtained from the streaming service or server. 2. Click **Start Stream** to start streaming, **Stop** to stop streaming.
SRT Settings	• vMix 1. Make sure the vMix workstation and your camera are on same network. Copy the workstation's IP address.  2. Go to **Stream** tab > select **SRT (Listener)** from the **Stream Type** drop-down list. Copy the **Port** value.



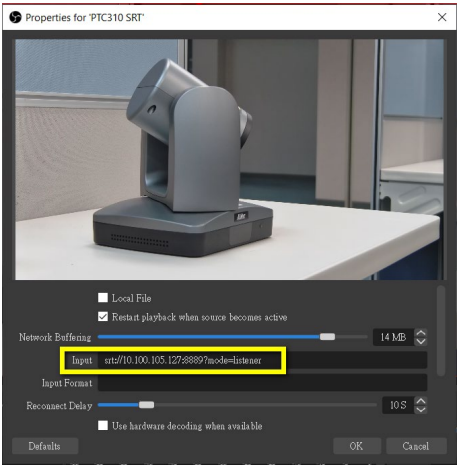
3. Paste the IP address and Port value into **SRT Settings** fields and click **Start Stream**. **Connect Status** will change to **Connected**.



- OBS (Open Broadcaster Software)
  1. Make sure the OBS workstation and your camera are on same network. Copy the workstation's IP address.



  2. Open OBS. Add a scene and a source.
  3. Enter "srt://[Workstation IP]:[port]?mode=listener" in the **Input** field.
     Example: srt://10.100.105.127:8889?mode=listener

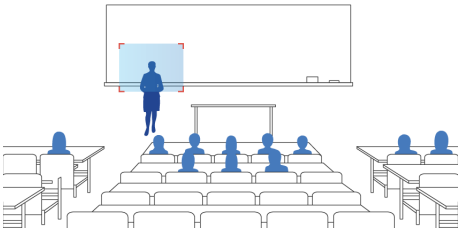


  4. If there is no image, right-click on the source > **Transform** > **Fit to screen** to re-scale image.

HTTPS	Enable HTTPS to establish a secure connection between your browser and your camera. To enable HTTPS access on your camera: 1. Obtain a SSL certificate for encryption and decryption in base-64 encoded format and use a private key in PKCS#8 format (unencrypted). 2. Package the required certificate content into PEM format. The SSL certificate uploaded to the camera must be in PEM format. 3. Click **Choose File** to select the certificate file, and then click **Upload**. 4. Turn on HTTPS.
SSHD	Turn remote debugging from AVer on or off.
Visca Port Mode	Select a VISCA port mode.
VIsca Port Number	Enter a VISCA port number.
802.1X Enable	Turn 802.1X Enable on or off. When **802.1x Enable** is turned on, select an Eap method. Based on your Eap method, complete the authentication and click **Confirm**.
Eap Method	
Eap Setting	
FreeD	Turn the FreeD protocol on to send camera positioning data to a virtual reality production system. When FreeD is turned on, enter the following information: • Your **Camera ID.** • The **IP Address** and **Port** of the device receiving your camera's positioning data. • Manually enter pan and tilt backlash amount to ensure accurate aiming.

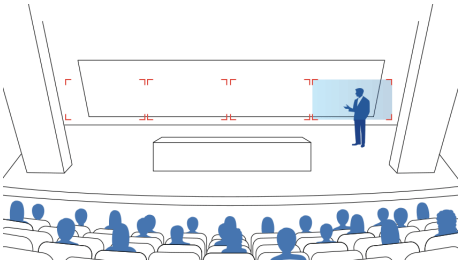
Tracking Settings

For details on settings, please refer to their respective chapters.



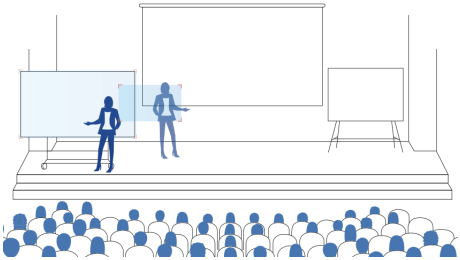
Presenter

Frames and follows the presenter on screen.



Zone

Frames and follows the presenter on screen using up to four presets. When the presenter exits the previous preset, the camera will follow and move to the next preset.



Hybrid

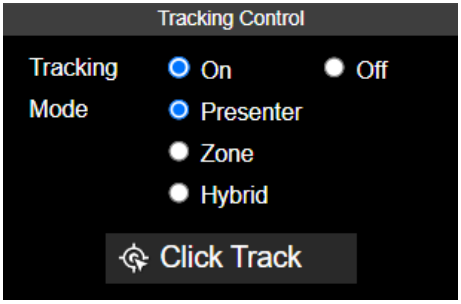
Combines Presenter Mode and Zone Mode.

Uses presets when the presenter is inside of presets, frames and follows the presenter when they are outside of presets.

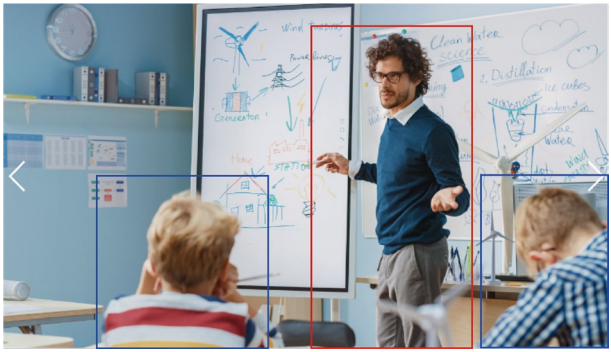
Compare Tracking Modes

Tracking Mode	Tracking Point	Available presets	Click Track
Presenter	Preset 1	–	✓
Zone	Preset 6 (or selected preset)	Presets 6–9	✓
Hybrid	Preset 1	Presets 10–13	✓

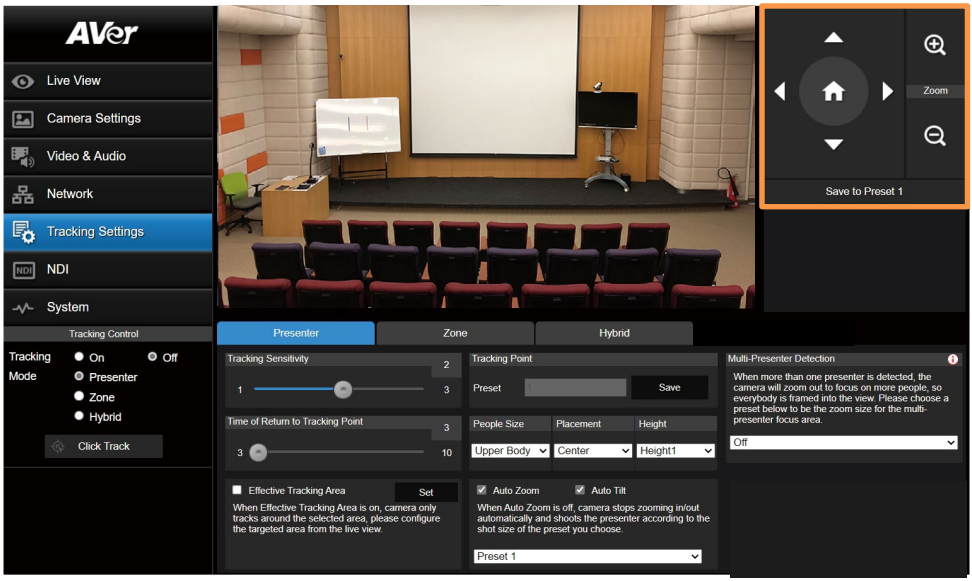
Tracking Control Panel



- **Tracking:** Turn tracking on or off.
- **Mode:** Select a tracking mode to frame and follow the presenter. For details on tracking settings, please refer to respective chapters.
- **Click Track:** Switch the presenter you want to track. Click **Click Track** to frame everyone on screen in bounding boxes and click to select the presenter you want to track. Selected presenter will be in a red frame.



Presenter Mode



Presenter Mode frames and follows the presenter on screen, and returns to the tracking point (Preset 1) when no one is on screen.

To set up Presenter Mode:

1. Go to **Tracking Settings** > **Presenter**.

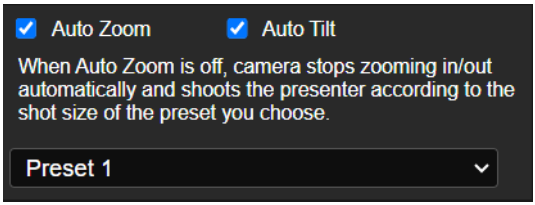
2. Use pan, tilt and zoom controls to position your camera and click **Save to Preset 1** to save the **Tracking Point**.

3. Configure additional settings:

Item	Description
Tracking Sensitivity	Drag the slider to adjust tracking sensitivity.
Time of Return to Tracking Point	Drag the slider to set an idle time (second) before the camera return to the tracking point.
Effective Tracking Area	Define an effective tracking area. The camera only tracks the presenter inside that area. 1. Select the checkbox and click **Set**. 2. Drag the upper-left or the lower-right corner of the red square to adjust the size of the tracking area.
Tracking Point	If no one is on screen, the camera will return to the tracking point (Preset 1).

<table>
<tr><td>People Size, Placement, Height</td><td>• Frame the presenter's full body or upper body.
• Horizontally align the presenter to the left, center or right.
• Vertically align the presenter to the center or bottom.</td></tr>
<tr><td>Auto Zoom

Auto Tilt</td><td>• When Auto Zoom is turned off, the zoom ratio will be based on your selected preset from the drop-down list.
• When Auto Tilt is turned off, the tilt angle will be based on your selected preset from the drop-down list.

 
</td></tr>
<tr><td>Multi-Presenter Detection</td><td>When multiple presenters are detected, the camera will go to your selected Multi-Presenter Detection preset and frame entire group on screen.

1. Go to Tracking Settings > Presenter.

2. Make sure Auto Zoom is turned on.

3. Select a preset from the Multi-Presenter Detection drop-down list to turn on Multi-Presenter Detection.

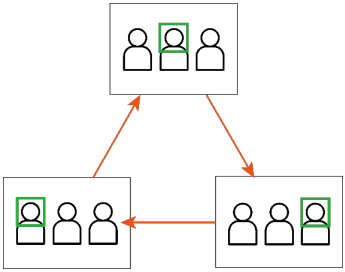
Note:
• Make sure you have defined the required preset.
• The preset should cover a wide area where multiple presenters may appear.</td></tr>
</table>

4. Turn on **Tracking** and select **Presenter Mode** on the **Tracking Control** panel.

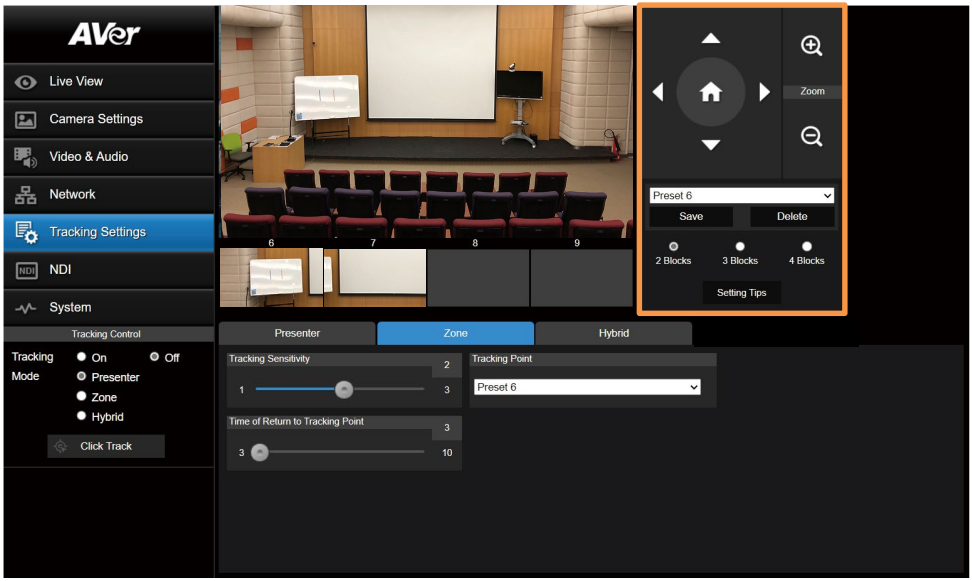
Note: Presenter Mode lets you switch the presenter you want to track. Click the **Click Track** button to frame everyone on screen in bounding boxes and click to select the presenter you want to track. Selected presenter will be in a red frame.

To set up Presenter Mode with the remote control:

1. Use directional buttons to position your camera. Press and hold **Preset**, then press **Number button 1** to save the tracking point (Preset 1).
2. Press **Auto Tracking ON** to turn on Presenter Mode.
3. Press **Upper Body** or **Full body**.
4. To switch presenters, press **Switch**. With each press, cycle through presenters clockwise, starting from the center.



Zone Mode



Zone Mode uses up to 4 presets to frame and follow the presenter on screen. When the presenter exits the previous preset, the camera will follow and move to the next preset.

When no one is in the presets, the camera returns to the tracking point (Preset 6 or selected preset).

Note: Zone Mode detects any faces or human silhouettes entering the presets. Beside the presenter, make sure there are no other faces or human silhouettes on a poster in the presets to avoid interference.

To set up Zone Mode:

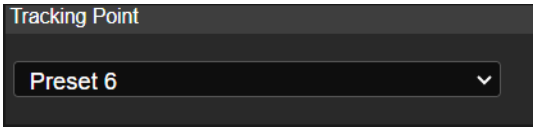
1. Go to **Tracking Settings** > **Zone**.
2. Select the number of **Blocks** (presets) you want to track.
3. Select the presets you want to save from the drop-down list. Presets 6–9 are available.

2 Blocks	3 Blocks	4 Blocks
Preset 6, 7	Preset 6, 7, 8	Preset 6, 7, 8, 9

4. Use pan, tilt and zoom controls to position your camera and click **Save** to save that position. A thumbnail will appear in the preview. Repeat these steps for all presets.

Note: Define overlapping presets from left to right for a smooth transition. When the presenter exits the previous preset, the camera will follow and move to the next preset.

5. Configure additional settings:

Item	Description
Tracking Sensitivity	Drag the slider to adjust tracking sensitivity.
Time of Return to Tracking Point	Drag the slider to set an idle time (second) before the camera return to the tracking point.
Tracking Point	If no one is in the presets, the camera will return to the tracking point (Preset 6 or selected preset). 

6. Turn on **Tracking** and select **Zone Mode** on the **Tracking Control** panel.

To set up Zone Mode with the remote control:

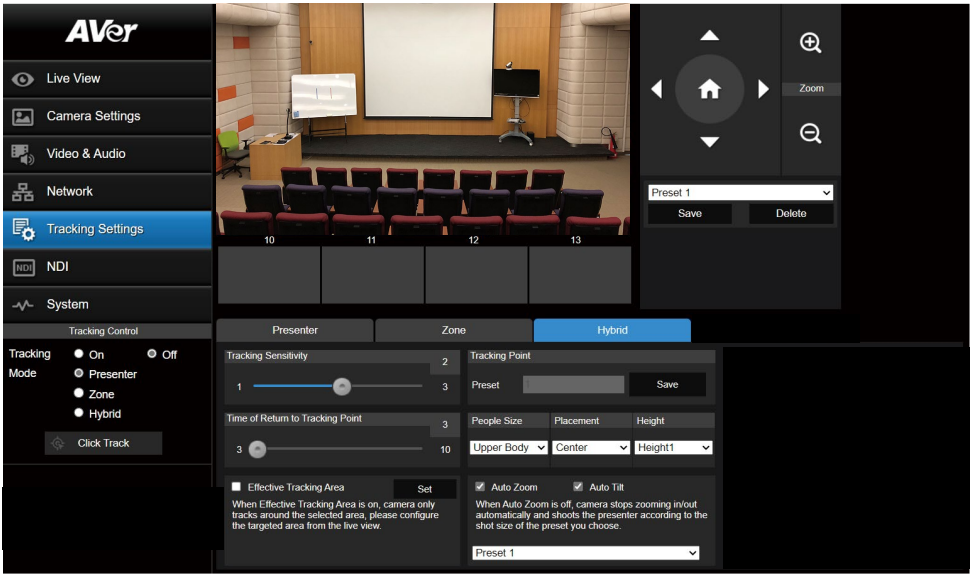
1. Use directional buttons to position your camera. Press and hold **Preset**, then press **Number button 6** to save Preset 6. Repeat these steps for Preset 7.

   Note: Zone Mode has 2 blocks by default. To select more blocks, access the web interface.

2. Press **Auto Tracking ON** to turn on Presenter Mode

3. Then press and hold **Tracking Point** to switch tracking mode from Presenter Mode to Zone Mode.

Hybrid Mode



Hyrbid Mode combines Presenter Mode and Zone Mode. Uses presets when the presenter is inside of presets, frames and follows the presenter when they are outside of presets.

When no one is on screen, the camera returns to the tracking point (Preset 1).

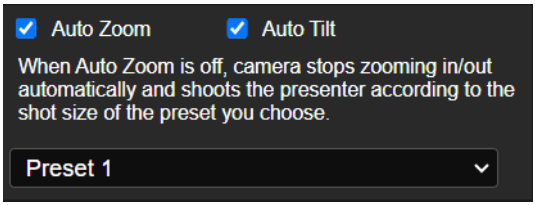
To set up Hybrid Mode:

1. Go to **Tracking Settings** > **Hybrid**.
2. Use pan, tilt and zoom controls to position your camera and click **Save to Preset 1** to save the **Tracking Point**.
3. Then, select the presets you want to save from the drop-down list. Presets 10–13 are available.

4. Use pan, tilt and zoom controls to position your camera and click **Save** to save that position. A thumbnail will appear in the preview. Repeat these steps for all presets.

Note: Do not overlap presets. Leave ample room between presets for a smooth transition.

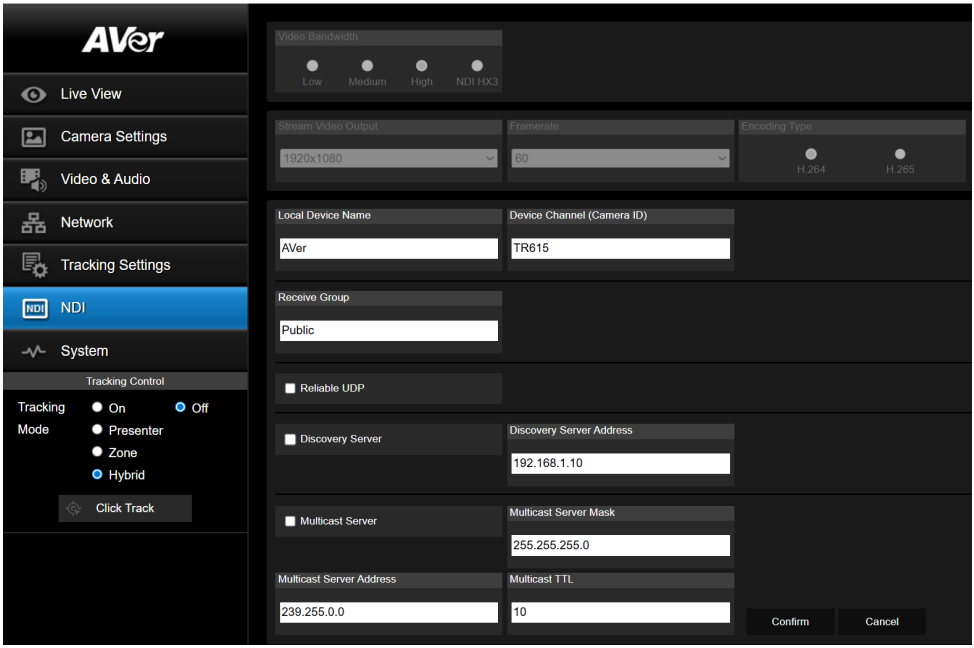
5. Configure additional settings:

Item	Description
Tracking Sensitivity	Drag the slider to adjust tracking sensitivity.
Time of Return to Tracking Point	Drag the slider to set an idle time (second) before the camera returns to the tracking point.
Effective Tracking Area	Define an effective tracking area. Only presenters inside the area will be tracked. 1. Select the checkbox and click **Set**. 2. Drag the upper-left or the lower-right corner of the red frame to adjust the size of the tracking area.
Tracking Point	If no one is on screen, the camera will return to the tracking point (Preset 1).
People Size, Placement, Height	• Frame the presenter's full body or upper body. • Horizontally align the presenter to the left, center or right. • Vertically align the presenter to the center or bottom.
Auto Zoom	• When **Auto Zoom** is turned off, the zoom ratio will be based on your selected preset from the drop-down list. • When **Auto Tilt is** turned off, the tilt angle will be based on your selected preset from the drop-down list.
Auto Tilt	

6. Turn on **Tracking** and select **Hyrbid Mode** on the **Tracking Control** panel.

Note: Presenter Mode lets you switch the presenter you want to track. Click the **Click Track** button to frame everyone on screen in bounding boxes and click to select the presenter you want to track. Selected presenter will be in a red frame.

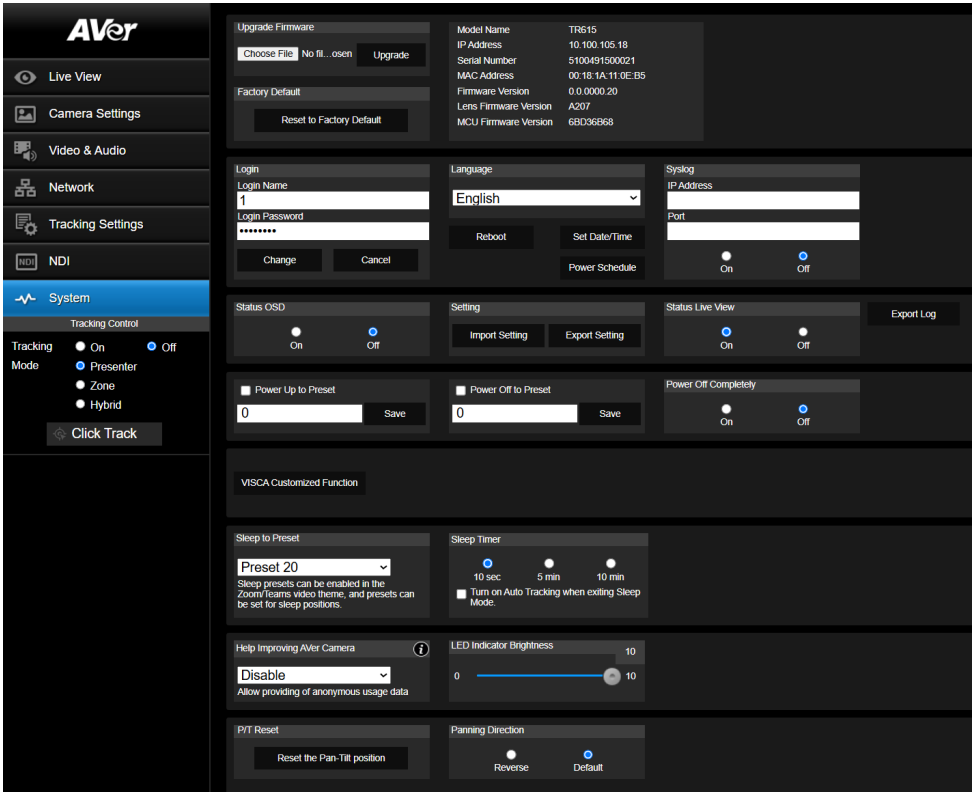
NDI



Item	Description
Video Bandwidth	Select a bandwidth. • In NDI HX3 Mode, framerate adjustment is restricted as per certification guidelines. It is possible with other bandwidths (Low, Medium, High). • The main difference between High and NDI HX3 Modes lies in the compression settings. Parameter / High / HX3 Bitrate / ~64 Mbps / ~ 90 Mbps GOP Value / 1 second (adjustable when I-VOP Interval = 0) / 20 frames (non-adjustable)
Stream Video Output	Choose a streaming output resolution for the live view.
Framerate	Choose a framerate.
Encoding Type	Select **H.264** or **H.265**.
Local Device Name	Enter a name that identifies your camera group on the NDI software. • The default is AVer.

Device Channel (Camera ID)	Enter a name that identifies your camera on the NDI software. • The default is your model name. • A name must have no more than 10 characters. Use number, upper and lower case letter, or special character (! @ % ^ , . / : + ? [ ] { } - _ ~).
Receive Group	Enter a name for a receive group. • All devices in the receive group receive the same NDI streams. • The receive group should remain **public**. If this is changed, you will need to join the group through NDI® Access Manager.
Reliable UDP	Select the checkbox to enable Reliable User Datagram Protocol (RUDP).
Discovery Server	Select the checkbox to enable discovery server to allow devices to discover and connect to each other on a network automatically.
Discovery Server Address	Enter the IP address of a server running a discovery server application.
Multicast Server	Select the checkbox to enable multicast server to allow efficient distribution of NDI streams to multiple receivers without overwhelming the network.
Multicast Server Mask	Enter the network mask to specify the range of IP addresses that are eligible to receive NDI streams.
Multicast Server Address	Enter the IP address of a group of recipients that receive NDI streams from a multicast server.
Multicast TTL	Enter a multicast time to live (TTL) value between 1-255 to control the distance multicast packets can travel.

System



Item	Description
Upgrade firmware	To upgrade the firmware: 1. Download the latest firmware from AVer Download Center (https://www.aver.com/Download-Center/professional-ptz-camera) 2. On the web interface, go to **System** > **Upgrade firmware**. 3. Click **Choose File** to select the firmware. 4. Click **Upgrade**. 5. Refresh the browser after the upgrade is complete. **Note:** Keep your camera connected to a power source during firmware upgrade. Network connection will be lost during the process and camera will reboot automatically after upgrading.
Factory Default	Reset the camera to factory default settings.
Login	Change the web interface login.

Language	Change the web interface language.
Reboot	Restart your camera.
Set Date/Time	Set the camera date and time.
Power Schedule	Schedule specific times for the camera to reboot or shut down.
Syslog	Turn on to receive technical supports. Enter the **IP Address** and **Port** of the receiving device for debug and problem analysis.
Status OSD	Turn on to display preset and zoom ratio on HDMI output.
Setting	Import or export your camera settings
Status Live View	Turn the camera live view on or off.
Export Log	Export system log.
Power Up to Preset	Move the camera to the defined preset after powering on. To enable: 1. Make sure the preset has been defined. 2. Select **Power Up to Preset** > enter a preset number > click **Save**.
Power Off to Preset	Move the camera to the defined preset before powering off. To enable: 1. Make sure the preset has been defined. 2. Select **Power Off to Preset** > enter a preset number > click **Save**.
Power Off Completely	Select a power setting for your camera: • On: Shuts down. • Off: Enters Standby mode.
VISCA Customized Function	Set VISCA customized functions and click **OK**.
Node-RED Enable	Enables the camera's built-in Node-RED server to support flow-based automation and IoT integration for camera control.
Go to Node-RED	Open the Node-RED web interface to design and manage custom control flows.
Sleep to Preset	Set up to move the camera to a preset after a delay, when you are not streaming video on Zoom/Teams over USB for enhanced privacy. • To enable: 1. Make sure you have defined the selected preset. 2. Go to **Video & Audio** > **Theme Mode** > select **Zoom** or **Teams**. 3. Go to **Systems** > **Sleep to Preset** > select a preset or use the default (preset 20, towards I/O ports). 4. Go to **Systems** > **Sleep Timer** > select a delay.
Sleep Timer	

	• To disable, select **Off** from the **Sleep to Preset** drop-down list.
Help Improving AVer Camera	Opt-in or opt-out of providing anonymous usage data.
LED Indicator Brightness	Drag the slider to adjust the brightness.
P/T Reset	Reset the pan-tilt position to the center.
Panning Direction	Invert or reset the pan direction.

Appendix

VISCA RS-232 Commands

Command Set	Command	Command Packet	Comments
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 (Variable)	8x 01 04 07 2p FF	p=0 (Low) to 7 (High)
	Wide (Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position， PTC310: 0x0000~0x6f20 PTC330: 0x0110~0x5490
CAM_Focus	Stop	8x 01 04 08 00 FF	
	Far (Standard)	8x 01 04 08 02 FF	Each 'Far/Near' needs a 'stop'
	Near (Standard)	8x 01 04 08 03 FF	
	Auto Focus	8x 01 04 38 02 FF	
	Manual Focus	8x 01 04 38 03 FF	
	One Push	8x 01 04 18 01 FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_AF Mode	AF Trigger After PTZ	8x 01 04 57 00 FF	
	Continuous AF	8x 01 04 57 01 FF	
	Face Priority AF	8x 01 04 57 02 FF	
CAM_WB	Auto	8x 01 04 35 00 FF	Normal Auto
	ATW	8x 01 04 35 04 FF	
	Indoor	8x 01 04 35 01 FF	
	Outdoor	8x 01 04 35 02 FF	
	One Push WB	8x 01 04 35 03 FF	One Push WB mode
	Manual	8x 01 04 35 05 FF	Manual Control mode
	One Push	8x 01 04 10 05 FF	One Push WB Trigger
CAM_RGain	Up	8x 01 04 03 02 FF	Manual Control of R Gain
	Down	8x 01 04 03 03 FF	
CAM_Bgain	Up	8x 01 04 04 02 FF	Manual Control of B Gain
	Down	8x 01 04 04 03 FF	
CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter Priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
	Iris Priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright Mode (Manual control)
CAM_Shutter	Up	8x 01 04 0A 02 FF	Shutter Setting
	Down	8x 01 04 0A 03 FF	
CAM_Iris	Up	8x 01 04 0B 02 FF	Iris Setting
	Down	8x 01 04 0B 03 FF	
CAM_Gain	Up	8x 01 04 0C 02 FF	Gain Setting
	Down	8x 01 04 0C 03 FF	
CAM_Bright	Up	8x 01 04 0D 02 FF	Bright Setting

	Down	8x 01 04 0D 03 FF	
CAM_Exposure Compensation	Up	8x 01 04 0E 02 FF	Exposure Compensation Amount Setting
	Down	8x 01 04 0E 03 FF	
CAM_Backlight	On	8x 01 04 33 02 FF	Back Light Compensation ON/OFF
	Off	8x 01 04 33 03 FF	
CAM_Preset	Reset	8x 01 04 3F 00 pp FF	pp: Preset Number 0x00~0xFF
	Set	8x 01 04 3F 01 pp FF	
	Recall	8x 01 04 3F 02 pp FF	
CAM_Menu	On/Off	8x 01 06 06 10 FF	Display ON/OFF
Pan-tilt Drive	Up	8x 01 06 01 VV WW 03 01 FF	VV: Pan speed setting 0x01 (low speed) to 0x18 (high speed) WW: Tilt speed setting 0x01 (low speed) to 0x18 (high speed)
	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	
	Home	8x 01 06 04 FF	
	Reset	8x 01 06 05 FF	
CAM_WDR	On	8x 01 04 3D 02 FF	WDR ON/OFF
	Off	8x 01 04 3D 03 FF	
CAM_MenuEnter		8x 01 7E 01 02 00 01 FF	Enter Submenu
Tally Lamp	ON (RED)	8x 01 7E 01 0A 00 02 FF	
	OFF	8x 01 7E 01 0A 00 03 FF	
	ON (AMBER)	8x 01 7E 01 0A 00 04 FF	
	ON (GREEN)	8x 01 7E 01 0A 00 05 FF	
Freeze	Freeze On	81 01 04 62 02 FF	Freeze On Immediately
	Freeze Off	81 01 04 62 03 FF	Freeze Off Immediately
	Preset Freeze On	81 01 04 62 22 FF	Freeze On When Running Preset
	Preset Freeze Off	81 01 04 62 23 FF	Freeze Off When Running Preset
Auto Tracking	On	8x 01 04 7D 02 FF	Auto tracking ON/OFF
	Off	8x 01 04 7D 03 FF	

CAM_Memory Special	Set	8x 01 04 3F 01 pp FF	These are changeable depending on VISCA Customized Functions web setting: pp: 0x00 To 0xFF normal preset pp: 0x5F => Turn on OSD menu pp: 0xA0 => Full Body pp: 0xA1 => Upper Body pp: 0xA2 => Tracking Point pp: 0xA3 => Switch pp: 0xA4 => Presenter mode (supported in FW v25 or newer) pp: 0xA5 => Zone mode (supported in FW v25 or newer) pp: 0xA6 => Hybrid mode (supported in FW v35 or newer)
Absolute Position	Set	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	VV: Pan speed setting 0x01 (low speed) to 0x18 (high speed) WW: Tilt speed setting 0x01 (low speed) to 0x18 (high speed) YYYY: Pan Position ZZZZ: Tilt Position
Auto Zoom	On	8x 01 04 A0 02 FF	
	Off	8x 01 04 A0 03 FF	
Effective Tracking area	On	8x 01 04 A1 02 FF	
	Off	8x 01 04 A1 03 FF	
RTMP	On	8x 01 04 A2 02 FF	
	Off	8x 01 04 A2 03 FF	
Video mode	Standard	8x 01 04 A3 00 FF	
	ZOOM	8x 01 04 A3 01 FF	
	Teams	8x 01 04 A3 02 FF	
	NDI	8x 01 04 A3 03 FF	
Reboot	On	8x 01 04 A4 FF	
Preset Affects PTZ & Focus Values Only	On	8x 01 04 A5 02 FF	
	Off	8x 01 04 A5 03 FF	
Relative Zoom Ratio	On	8x 01 04 A6 02 FF	
	Off	8x 01 04 A6 03 FF	
Auto Tilt	On	8x 01 04 A7 02 FF	
	Off	8x 01 04 A7 03 FF	
Auto Zoom/Tilt preset	Set	8x 01 04 A8 pp FF	pp: 0x00 To 0xFF normal preset
Multi presenter	On	8x 01 04 A9 02 FF	
	Off	8x 01 04 A9 03 FF	
Multi presenter preset	Set	8x 01 04 AA pp FF	pp: 0x00 To 0xFF normal preset

Inquiry Command	Command Packet	Reply Packet	Comments
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_WBModeInq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	In Door
		y0 50 02 FF	Out Door
		y0 50 03 FF	One Push WB
		y0 50 04 FF	ATW
		y0 50 05 FF	Manual
CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter Priority
		y0 50 0B FF	Iris Priority
		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_GainPosInq	8x 09 04 4C FF	y0 50 00 00 0p 0q FF	pq: Gain Position
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_FocusModeInq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
zoom_Pos_Inq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
PT_Pos_Inq	8x 09 06 12 FF	y0 50 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	YYYY: Pan Position ZZZZ: Tilt Position
CAM_Preset Inq	8x 09 04 3F FF	y0 50 pp FF	Return the last preset number which has been operated pp:01-FF
CAM_Tracking status	8x 09 36 69 02 FF	y0 50 01 FF	On
		y0 50 00 FF	Off
CAM_Tracking_mode	8x 09 36 69 01 FF	y0 50 01 FF	Presenter
		y0 50 02 FF	Zone
		y0 50 03 FF	Hybrid
CAM_Tracking body size	8x 09 36 69 03 FF	y0 50 01 FF	Full body
		y0 50 02 FF	Upper body
CAM_OSD MENU on/off	8x 09 7E 04 76 01 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_Tally	8x 09 7E 01 0A FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_WDR mode	8x 09 04 3D FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_BLC mode	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_Live Freeze	8x 09 04 62 01 FF	y0 50 02 FF	Freeze On
		y0 50 03 FF	Freeze Off
CAM_Preset Freeze	8x 09 04 62 02 FF	y0 50 02 FF	Preset Freeze On
		y0 50 03 FF	Preset Freeze Off

Firmware version	8x 09 36 69 04 FF	y0 50 0p 0q 0r 0s 0t 0u 0v 0w FF	fw_ver: p.q.rstu.vw
USB Status	8x 09 36 69 05 FF	y0 50 00 FF	USB cable plug out
		y0 50 01 FF	USB cable plug in
UVC Status	8x 09 36 69 06 FF	y0 50 00 FF	UVC stream off
		y0 50 01 FF	UVC stream on

VISCA over IP Settings

PORT

Internet protocol	IPv4
Transport protocol	UDP
Port address	52381

FORMAT

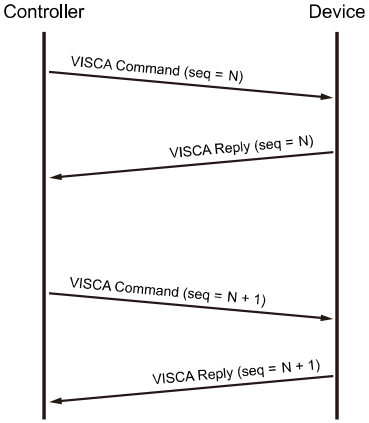
	byte 0	byte 1	byte 2	byte 3	byte 4	byte 5	byte 6	byte 7	byte8 ~~~ byte23
func	Payload type		Payload length		Sequence number				Payload (1 to 16 bytes)
data	Value1	Value2	1~16 (0x0001~0x0010)		0X00000000 ~ 0XFFFFFFFF				VISCA Packet (see page VISCA)

Payload type

Name	Value1	Value2	Description
VISCA command	0x01	0x00	Stores the VISCA command.
VISCA inquiry	0x01	0x10	Stores the VISCA inquiry.
VISCA reply	0x01	0x11	Stores the reply for the VISCA command or VISCA inquiry

For VISCA over IP command strings, **8x** represents a command from the controller, with x as the socket number—typically 1 (**x = 1 → 81**).

Command Set	Command	Command Packet	Comments
Pan-tilt Drive	Left	8x 01 06 01 VV WW 01 03 FF Example : 01 00 00 09 00 00 00 01 81 01 06 01 07 07 01 03 FF	VV: Pan speed setting 0x01 (low speed) to 0x18 (high speed) WW: Tilt speed setting 0x01 (low speed) to 0x18 (high speed)



CGI Commands

CGI List for Video Transmission					
CGI item name	**URL**	**Command**	**Parameter Name**	**Parameter value**	**Description**
Get JPEG	/snapshot				1280x720 jpg
Get RTSP stream	rtsp://ip/live_st1				

CGI List for Camera Control					
CGI item name	**URL**	**Command**	**Parameter Name**	**Parameter value**	**Description**
up start	/cgi-bin?SetPtzf=	1,0,1&(random)			
up end	/cgi-bin?SetPtzf=	1,0,2&(random)			
down start	/cgi-bin?SetPtzf=	1,1,1&(random)			
down end	/cgi-bin?SetPtzf=	1,1,2&(random)			
left start	/cgi-bin?SetPtzf=	0,1,1&(random)			
left end	/cgi-bin?SetPtzf=	0,1,2&(random)			
right start	/cgi-bin?SetPtzf=	0,0,1&(random)			
right end	/cgi-bin?SetPtzf=	0,0,2&(random)			
zoom_in start	/cgi-bin?SetPtzf=	2,0,1&(random)			
zoom_in end	/cgi-bin?SetPtzf=	2,0,2&(random)			
zoom_out start	/cgi-bin?SetPtzf=	2,1,1&(random)			
zoom_out end	/cgi-bin?SetPtzf=	2,1,2&(random)			
set preset:	/cgi-bin?ActPreset=	1,N&(random)			N : position
load preset:	/cgi-bin?ActPreset=	0,N&(random)			N : position
set preset speed	/cgi-bin?Set=preset_speed,3,val	val: {min: 1, max: 6}			
Absolute Position (Pan)	/cgi-bin?Set=ptz_p,3,val	val: {min: 5088, mid: 965104, max: 1925120}			Follows CGI preset speed
Absolute Position (Tilt)	/cgi-bin?Set=ptz_t,3,val	val: {min: 2048, mid: 962560, max: 650240}			Follows CGI preset speed

Absolute Position (Zoom)	/cgi-bin?Set=ptz_z,3,val	val: {min: 250, mid: 11618, max: 23002}			Follows CGI preset speed
Flip on	/cgi-bin?Set=img_flip,3,1				
Flip off	/cgi-bin?Set=img_flip,3,0				

USB Isochronous transfer mode	/cgi-bin?Set=usb_bulk_mode_en,3,val	val: {
		0: Isochronous
		1: Bulk
		}			

Set theme mode	/cgi-bin?Set=sys_theme_mode,3,val	val: {
		0 : Standard
		1 : Zoom
		2 : Teams
		3 : NDI
		4 : portrait
		7 : Dante
		}			

CGI List for Various Settings					
CGI item name	**URL**	**Command**	**Parameter Name**	**Parameter value**	**Description**
exposure value	/cgi-bin?Set=	img_expo_expo,3,N&(random)	value	1 ~ 9	N : value
saturation	/cgi-bin?Set=	img_saturation,3,N&(random)	value	0 ~ 10	N : value
contrast	/cgi-bin?Set=	img_contrast,3,N&(random)	value	0 ~ 4	N : value
Tracking on:	/cgi-bin?Set=	trk_tracking_on,3,1			
Tracking off:	/cgi-bin?Set=	trk_tracking_on,3,0			
Reboot	GET(Basic Authentication)	/cgi-bin?OnePush=!			
Factory Reset	GET(Basic Authentication)	/cgi-bin?OnePush=d			
Mode Presenter		/cgi-bin?Set=trk_mode,3,1&X	value	random number	X : value
Mode Zone		/cgi-bin?Set=trk_mode,3,2&X	value	random number	X : value
Mode Hybrid		/cgi-bin?Set=trk_mode,3,3&X			

Mode Get	GET(Basic Authentication)	/cgi-bin?Get=trk_mode,3&_=X	- Reply	Presenter trk_mode,3=1 Zone trk_mode,3=2 Hybrid trk_mode,3=3 Framing trk_mode,3=6	X : value
Click Track ON	GET(Basic Authentication)	/cgi-bin?Set=trk_update_detect,3,1			
Click Track OFF	GET(Basic Authentication)	/cgi-bin?Set=trk_update_detect,3,0			
Click Track Get detect zone (Humanoid outlines) number	GET(Basic Authentication)	/cgi-bin?Get=trk_detect_num,3			Need to be sent along with Click Track ON command
	- Reply	"trk_detect_num,3=X\r\n"	X: The amount of humanoid outlines, maximum: 50		
Click Track Get detect zone (Humanoid outlines) info	GET(Basic Authentication)	/cgi-bin?GetTrackingDetectZone=X	X: The amount of humanoid outlines, maximum: 50		
	- Reply	"focus:-1\nzone[00]:00,119,720,960\nzone[01]:-1502615204,-1366225632,01,-1366223544"	focus - The number of humanoid outline being tracked. zone[NN]:x,y,w,h - based on 1080P resolution	The upper left corner of the screen is the coordinate reference (0,0), x-coordinate/y-coordinate/w width/h height, based on the upper left corner of the humanoid outline. The number following indicates the number of the tracked person, for example, -1 means that no one is being tracked. If one of the three is being tracked, one of 0, 1 and 2 will appear after the 'focus'.	

Click Track Set target zone	GET(Basic Authentication)	/cgi-bin?Set=trk_assign_zone,3,X	X: The number of the human outlines		
	- Reply	http response: ok			
	GET(Basic Authentication)	/cgi-bin?SetString=TrackingFocusZone,[x,y,w,h]			
	- Reply	http response: ok			
Tracking On/Off Get	GET(Basic Authentication)	/cgi-bin?Get=trk_tracking_on,3&_=X	- Reply	On trk_tracking_on,3=1 Off trk_tracking_on,3=0"	X : value
RTMP Start streaming	/cgi-bin?Set=	vdo_rtmp_enable,3,1			
RTMP Stop streaming	/cgi-bin?Set=	vdo_rtmp_enable,3,0			
USB status	GET(Basic Authentication)	/cgi-bin?Get=usb_status_inquire,3			
	- Reply	"usb_status_inquire,3=X\r\n"	X: 0(plug out), 1(plug in)		
UVC status	GET(Basic Authentication)	/cgi-bin?Get=uvc_status_inquire,3			
	- Reply	"uvc_status_inquire,3=X\r\n"	X: 0(stream off), 1(stream on)		
Status get (Model name & mac & FW_VER)		/cgi-bin?GetString=sys_name&net_mac&sys_fw_version&_=1635216271678		http://10.100.105.110/cgi-bin?GetString=sys_name&net_mac&sys_fw_version&_=1635216271678	
Serial No. get		/cgi-bin?GetSerialNumber&_=1635216271680		http://10.100.105.110/cgi-bin?GetSerialNumber&_=1635216271680	
script (Using cURL to update firmware)	curl.exe -X POST --user NAME:PASSWORD -F file1=@./ISP_FILE "http://IP_ADD			Please download curl (curl for Windows), this is a command line tool for network transferring.	

	RESS/system/"			Put curl.exe and ISP file in the same folder. and then execute the script to upgrade camera. For example, ISP file is 0.0.0000.29.dat , IP address is 10.100.105.109 and username:password is 1:1 , you can enter this script to execute ISP process. curl.exe -X POST --user 1:1 -F file1=@./0.0.0000.29.dat "http://10.100.105.109/system/"	

Pelco-P Commands

PAN AND TILT COMMANDS P/T bit(byte4.0) = 0

	byte 1	byte 2	byte 3	byte 4	byte 5	byte 6	byte 7	byte 8
func	STX	ADDR	data1	data2	data3	data4	ETX	checksum
data	0xA0	0~7F	cmd 1	cmd 2	Pan speed	Tilt speed	0xAF	1~7 XOR

note : speed = 0x00~0x30

byte3 : command 1

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
NA	CAM ON	NA	CAM ON/OFF	NA	NA	NA	NA

note : power off : byte3.6 = 0 & byte3.4 = 1

byte4: command 2

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
NA	ZOOM Wide	ZOOM Tele	TILT Down	TILT Up	PAN Left	PAN Right	P/T bit 0(always)

EXTENDED COMMAND SET P/T bit(byte4.0) = 1

	byte 1	byte 2	byte 3	byte 4	byte 5	byte 6	byte 7	byte 8
func	STX	ADDR	data1	data2	data3	data4	ETX	checksum
Set Preset XX	0xA0	0~7	0x00	0x03	0x00	Preset #	0xAF	1~7 XOR
Go To Preset XX	0xA0	0~7	0x00	0x07	0x00	Preset #	0xAF	1~7 XOR
Track ON	0xA0	0~7	0x00	0x65	0x00	0x00	0xAF	1~7 XOR
Track OFF	0xA0	0~7	0x00	0x67	0x00	0x00	0xAF	1~7 XOR
WOL ON	0xA0	0~7	0x00	0x69	0x00	0x00	0xAF	1~7 XOR
WOL OFF	0xA0	0~7	0x00	0x6B	0x00	0x00	0xAF	1~7 XOR
Read Profile XX	0xA0	0~7	0x00	0x6D	0x00	Profile #	0xAF	1~7 XOR
Save To Profile XX	0xA0	0~7	0x00	0x6F	0x00	Profile #	0xAF	1~7 XOR

note : Preset # : 0x01 ~ 0xFF
Profile # : 0x01 ~ 0x05

Pelco-D Commands

PAN AND TILT COMMANDS P/T bit(byte4.0) = 0

	byte 1	byte 2	byte 3	byte 4	byte 5	byte 6	byte 7
func	SYNC	ADDR	cmd 1	cmd 2	data1	data2	checksum
data	0xFF	1~80	cmd 1	cmd 2	Pan speed	Tilt speed	2~6 SUM

note : speed = 0x00~0x30

byte3 : command 1

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
SENSE ON	NA	NA	NA	CAM ON/OFF	NA	NA	NA

note : power off : byte3.7 = 0 & byte3.3 = 1

byte4: command 2

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
NA	ZOOM Wide	ZOOM Tele	TILT Down	TILT Up	PAN Left	PAN Right	P/T bit 0(always)

EXTENDED COMMAND SET P/T bit(byte4.0) = 1

	byte 1	byte 2	byte 3	byte 4	byte 5	byte 6	byte 7
func	SYNC	ADDR	data1	data2	data3	data4	checksum
Set Preset XX	0xFF	1~8	0x00	0x03	0x00	Preset #	2~6 SUM
Go To Preset XX	0xFF	1~8	0x00	0x07	0x00	Preset #	2~6 SUM
Track ON	0xFF	1~8	0x00	0x65	0x00	0x00	2~6 SUM
Track OFF	0xFF	1~8	0x00	0x67	0x00	0x00	2~6 SUM
WOL ON	0xFF	1~8	0x00	0x69	0x00	0x00	2~6 SUM
WOL OFF	0xFF	1~8	0x00	0x6B	0x00	0x00	2~6 SUM
Read Profile XX	0xFF	1~8	0x00	0x6D	0x00	Profile #	2~6 SUM
Save To Profile XX	0xFF	1~8	0x00	0x6F	0x00	Profile #	2~6 SUM

note : Preset # : 0x01 ~ 0xFF

Profile # : 0x01 ~ 0x05