

# AI Auto Tracking PTZ Camera

TR310/ TR311/TR313/TR331/TR333

\*NDI model: TR311HN/TR311N/

TR313N/TR331N/TR333N

## User Manual



## FCC NOTICE (Class A)



This device complies with Part 15 of the FCC Rules. The 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.

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 in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

## Class A ITE

Class A ITE is a category of all other ITE which satisfies the class A ITE limits but not the class B ITE limits. Such equipment should not be restricted in its sale but the following warning shall be included in the instructions for use:

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.

## European Community Compliance Statement (Class A)



This product is herewith confirmed to comply with the requirements set out in the Council Directives on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive 2014/30/EU.

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 to correct this interference.

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## **Remote Control Battery Safety Information**

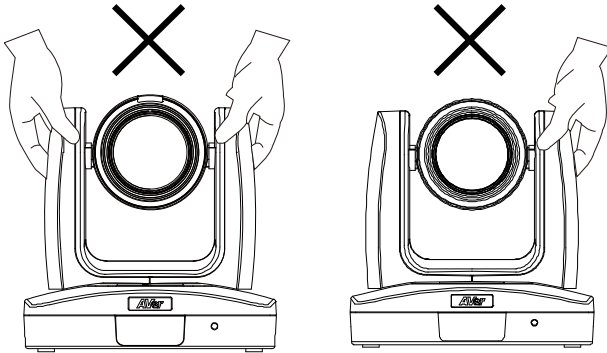
- Store batteries in a cool and dry place.
- Do not throw away used batteries in the trash. Properly dispose of used batteries through specially approved disposal methods.
- Remove the batteries if they are not in use for long periods of time. Battery leakage and corrosion can damage the remote control. Dispose of batteries safely and through approved disposal methods.
- Do not use old batteries with new batteries.
- Do not mix and use different types of batteries: alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium).
- Do not dispose of batteries in a fire.
- Do not attempt to short-circuit the battery terminals.

## **CAUTION**

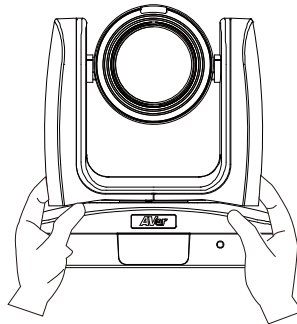
- Risk of explosion if battery is replaced by an incorrect type.
- Dispose of used batteries in a safe and proper manner.

## WARNING

- To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture. Warranty will be void if any unauthorized modifications are done to the product.
- Do not drop the camera or subject it to physical shock.
- Use the correct power supply voltage to avoid the damaging 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.
- Hold the bottom of the camera with both hands to move the camera. Do not grab the lens or lens holder to move the camera.



**OK**



# **Contents**

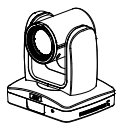
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# Package Contents

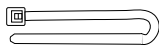
## Package Contents



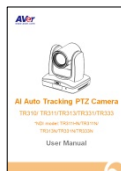
Camera unit



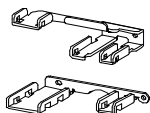
Remote control



Cable ties(x5)



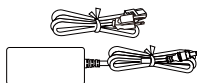
Quick Start Guide



Cable Fixing  
plates(x2)



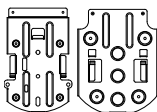
M2 x 4mm  
Screw(x4)



Power adapter &  
Power cord



1/4"-20L=6.5mm  
Screw(x3)



Ceiling mount  
bracket(x2)



M3 x 6mm  
Screw(x3)

\*The power cord will vary depending on the standard power outlet of the country where it is sold.

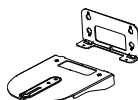
## Optional accessory



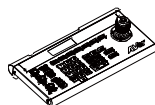
RS232 Din8 to  
D-Sub9 Cable



RS232 In/Out Y  
Cable



Wall mount  
bracket



Camera  
Controller (CL01)

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



# Product Introduction

## Sources

TR311 Intro Video

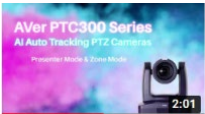
<https://www.youtube.com/watch?v=j25xQbkSmPc>

TR311 Series Feature Video

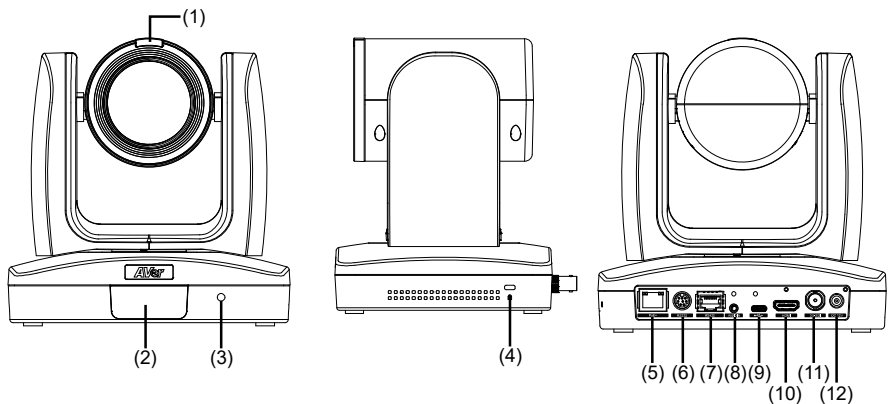
<https://www.youtube.com/watch?v=VJh1m5RWhLw>

AVer Tech (Setup)

[https://www.youtube.com/channel/UC8rQt7Pe3\\_4Rh-K4p1eXfNw](https://www.youtube.com/channel/UC8rQt7Pe3_4Rh-K4p1eXfNw)



## Overview



|                     |                       |                           |
|---------------------|-----------------------|---------------------------|
| (1) Tally Lamp (*1) | (5) PoE+ IEEE 802.3AT | (9) USB 3.0 Port (Type C) |
| (2) IR Sensor       | (6) RS232 Port        | (10) HDMI Port            |
| (3) Power Indicator | (7) RS422 Port        | (11) 3G-SDI Port (*2)     |
| (4) Kensington Lock | (8) Audio In          | (12) DC Power Jack        |

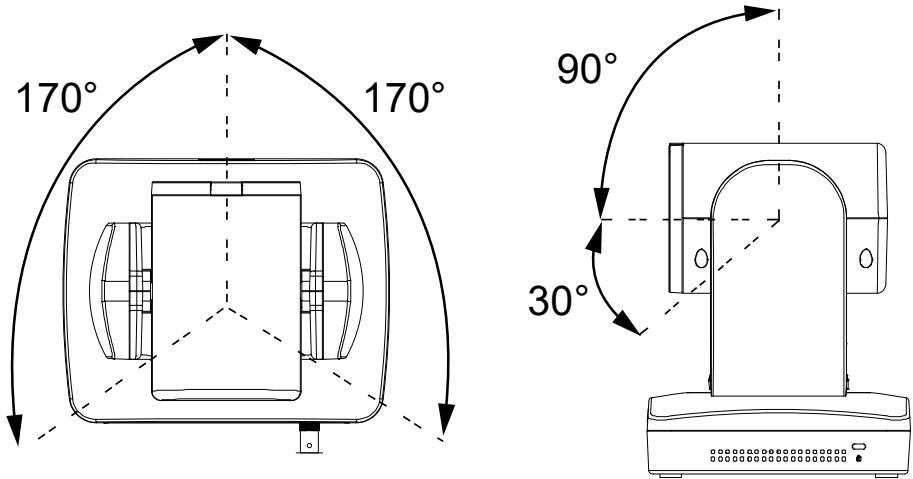
\*1: This feature(Tally) is not support on TR310.

\*2: This feature (3G-SDI) is not supported on TR310.

# LED Indicator

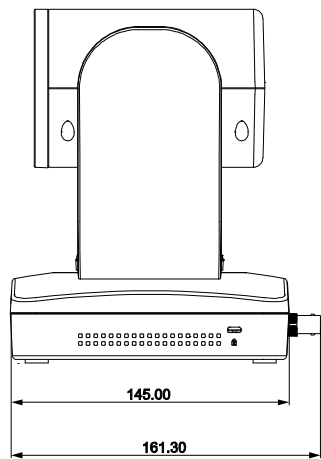
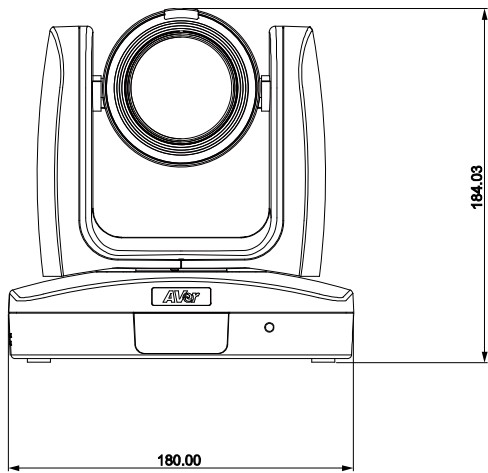
| LED              | Status                |
|------------------|-----------------------|
| Blue(Solid)      | Normal Operation      |
| Blue(Blinking)   | Auto Tracking On      |
| Orange(Blinking) | Camera Initialization |
| Orange(Solid)    | Standby               |
| Red(Blinking)    | FW Updating           |

# Pan and Tilt Angle

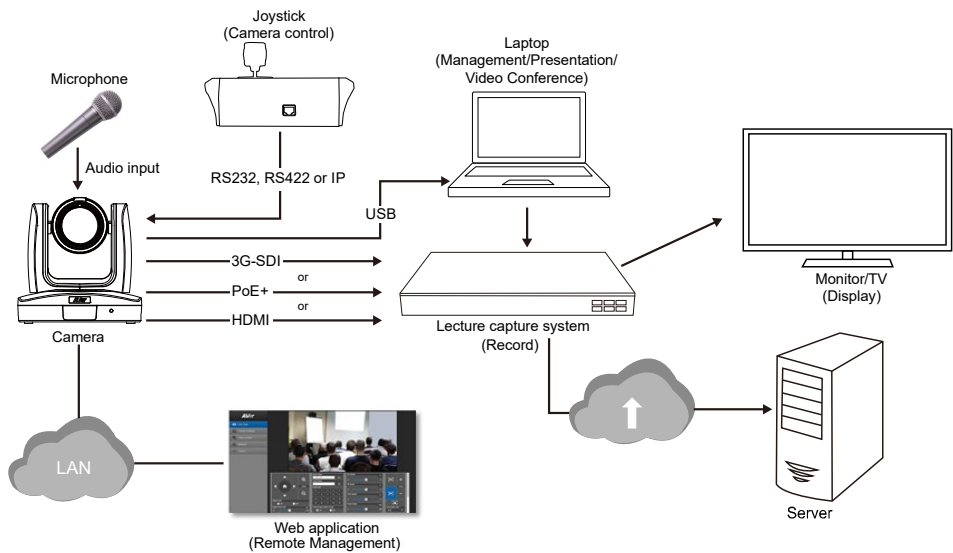


# Dimension

Unit: mm



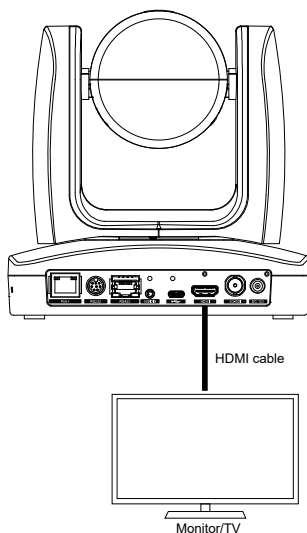
# Device Connection



## Video Output Connection

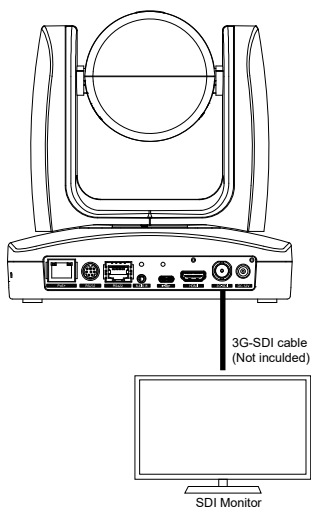
### ■ HDMI

Use the HDMI cable to connect with monitor or TV for video output.



### ■ 3G-SDI

Connect to 3G-SDI monitor for video output. (This feature "3G-SDI" is not supported on TR311 & TR311HN.)

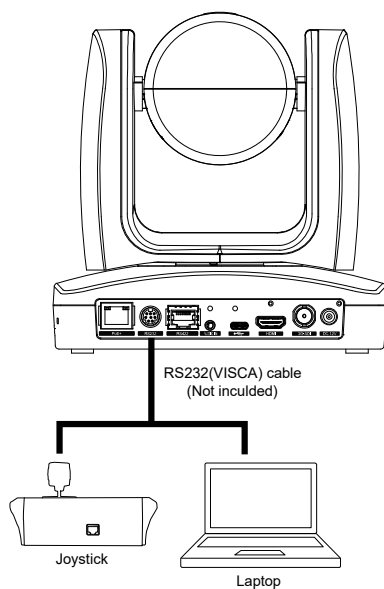


**[Note]** HDMI and 3G-SDI monitors can be connected to camera and output live video simultaneously; Assuming HDMI monitor is well connected before the camera turned on, the OSD menu will be displayed on HDMI monitor in default."

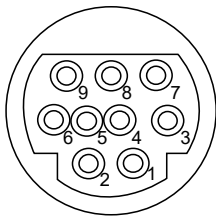
## RS232 and RS422 Connection

Connect through the RS232 or RS422 for camera control.

### ■ RS232

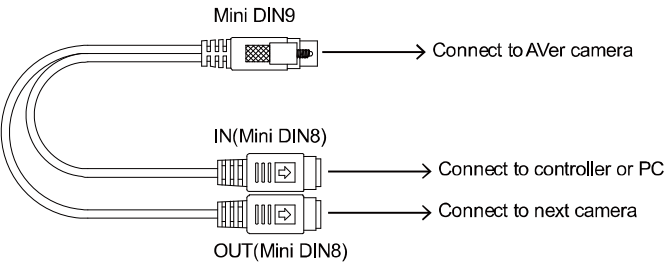


● **RS232 Port Pin Definition**

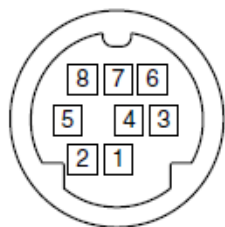


| Function  | Mini DIN9<br>PIN # | I/O Type | Signal | Description         |
|-----------|--------------------|----------|--------|---------------------|
| VISCA IN  | 1                  | Output   | DTR    | Data Terminal Ready |
|           | 2                  | Input    | DSR    | Data Set Ready      |
|           | 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                  | ---      | ---    | Not connect         |

● **RS232 mini DIN9 to mini DIN8 Cable Pin Definition**

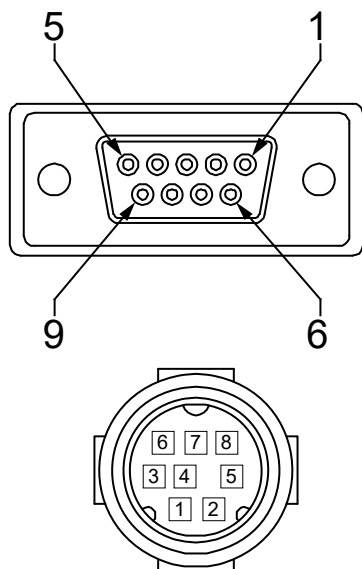


### Mini DIN8 Cable Pin Definition



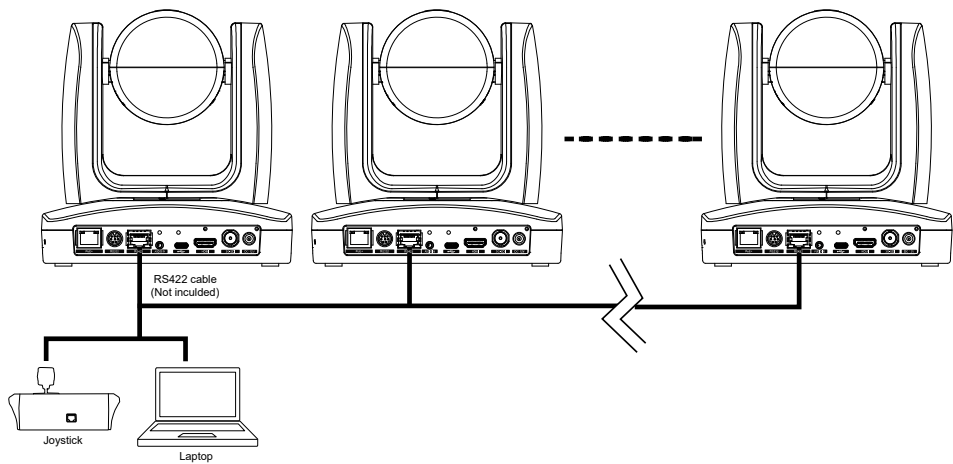
| No. | Signal |
|-----|--------|
| 1   | DTR    |
| 2   | DSR    |
| 3   | TXD    |
| 4   | GND    |
| 5   | RXD    |
| 6   | GND    |
| 7   | NC     |
| 8   | NC     |

### ● Din8 to D-Sub9 Cable Pin Definition

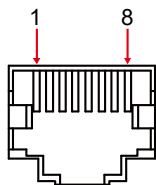




## ■ RS422

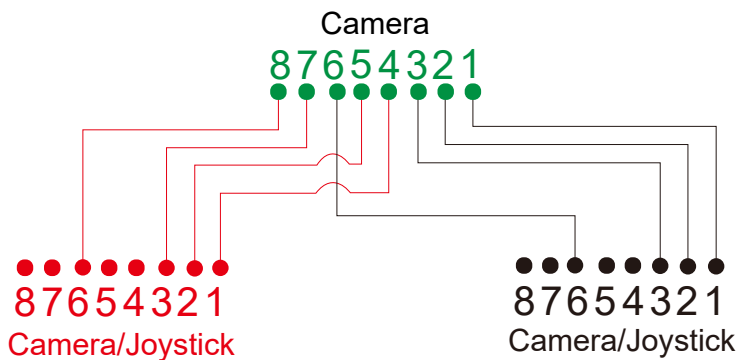


**[Note]** Use cat5e splitter for multi-camera connection.



| RS422 Pin |     |     |     |
|-----------|-----|-----|-----|
| No.       | Pin | No. | Pin |
| 1         | TX- | 5   | TX+ |
| 2         | TX+ | 6   | RX+ |
| 3         | RX- | 7   | RX- |
| 4         | TX- | 8   | RX+ |

Cat5e splitter pin assignment:

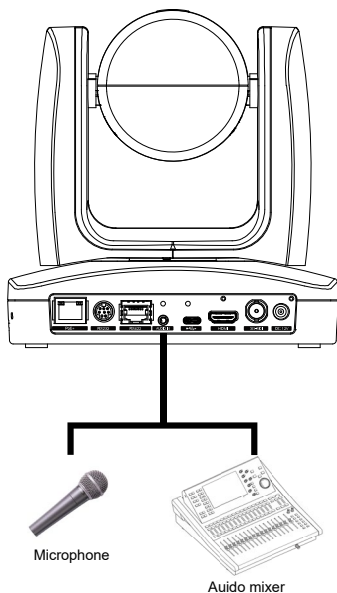


## Audio Input Connection

Connect the audio device for audio receiving.

### [Note]

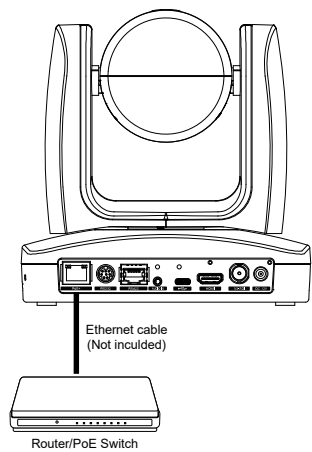
- Line input level: 1Vrms (max.).
- Mic input level: 50mVrms (max.); Supplied voltage:2.5V.



# PoE Connection

Connect the camera to the router or switch through the PoE+ port.

**[Note]** Only support IEEE 802.3AT PoE+ standard.

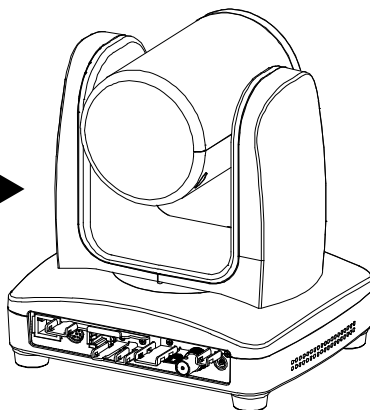
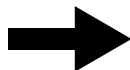
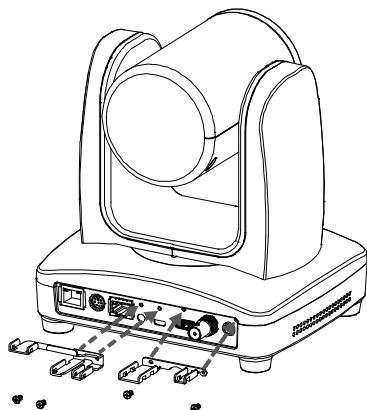


## Install Cable Fixing Plate

①

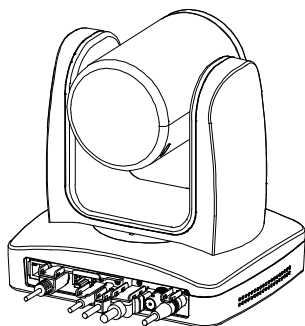
Secure the cable fixing plate to the camera with screws.

Screw: 4screws, M2 x 4mm(Included in the package)



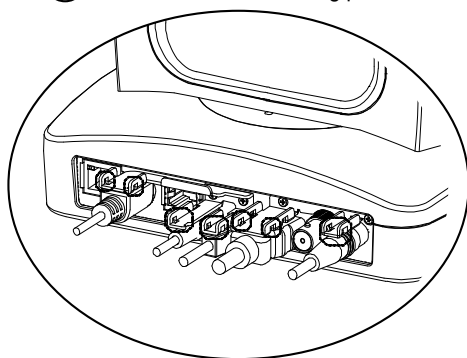
②

Plug-in cables.



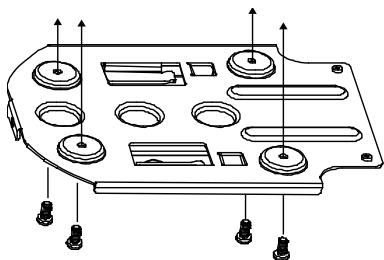
③

Using cable ties to secure the cable and cable fixing plate.

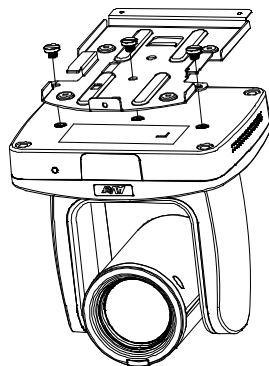


## Ceiling installation

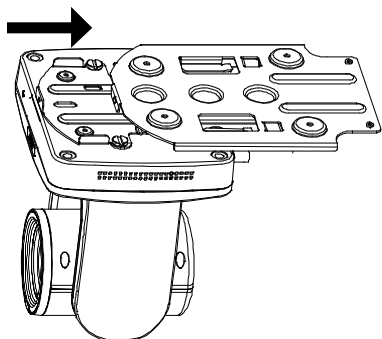
1. Secure the mount bracket on the ceiling.  
Screw: 4 screws, M4 x 10mm(Not Included in the package)



2. Install the mount bracket on the camera.  
Screw: 3 screw , 1/4"-20 L=6.5mm(Included in the package)

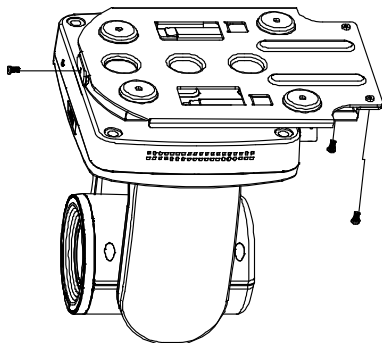


3. Slide the mount bracket with the camera into the mount bracket which secured on the ceiling.



**[Note]** Connects necessary cables after sliding the camera into the mount bracket.

4. Secure the camera with screws.  
Screw: 3 screws, M3 x 6mm( Not Included in the package)

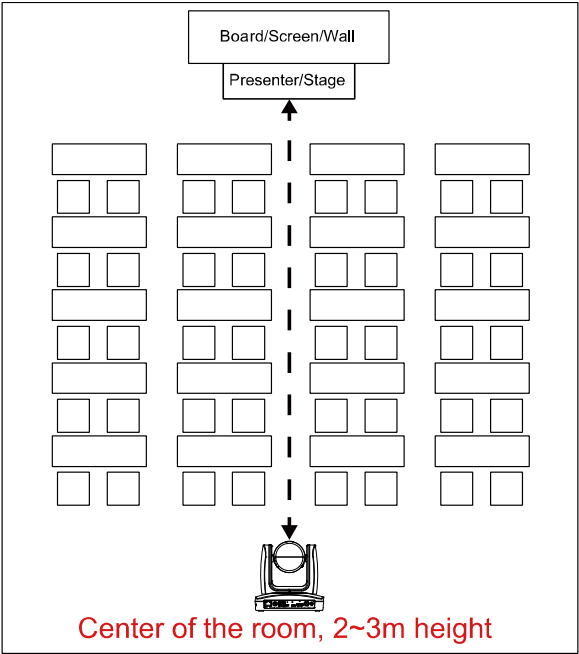


# Installation for Auto Tracking Performance

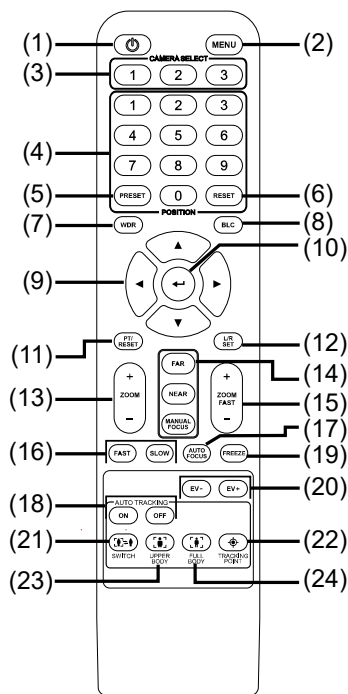
- Maximum/Minimum distance from the camera to tracking target

|       | Upper body tracking | Full body tracking |
|-------|---------------------|--------------------|
| TR311 | 1.3~16 meters       | 2.2~28 meters      |
| TR331 | 1.4~44 meters       | 2.5~76 meters      |

- Installed 2~3 meters high from the floor.
- No human-outline figure on posters/screens/monitors/TVs in the background.
- Less than three people in a single camera view.



## Remote Control



| Name              | Function   |
|-------------------|--|
| (1) Power         | Turn the unit on/standby.  |
| (2) Menu          | Open and exit the OSD menu.  |
| (3) Camera Select | CAM1 to CAM3 button<br>Selects a camera to operate.  |
| (4) Numeric Pad   | <ul style="list-style-type: none"> <li>■ Use for setting the preset position 0~9.</li> <li>■ Press number button (0~9) to move the camera to pre-configure preset position 0~9.</li> </ul> |
| (5) Preset        | Press and hold <b>"Preset"</b> + <b>"Number button (0~9)"</b> to set the preset position.  |
| (6) Reset         | Press and hold <b>"Reset"</b> + <b>"Number button (0~9)"</b> to cancel pre-configure preset position.  |
| (7) WDR           | Turn on/off WDR function.  |
| (8) BLC           | Turn on/off backlight compensation.  |
| (9) ▲, ▼, ◀, ▶    | Pan and tilt the camera.   |
| (10) Enter        | When open the OSD menu and Confirm the selection or make a selection in OSD menu.  |
| (11) PT Reset     | Reset the Pan-Tilt position. (Re-calibration)  |

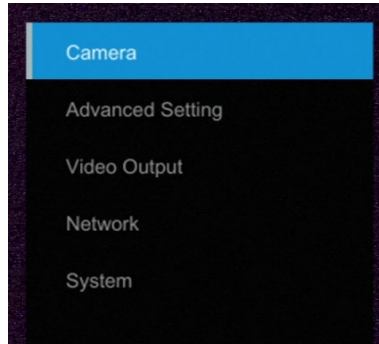
| Name                    | Function  |
|-------------------------|---|
| (12) L/R DIR            | <p>Left and right orientation setting.</p> <ul style="list-style-type: none"> <li>- Press and hold <b>"L/R DIR"</b> button + number button <b>"1"</b> to set the direction of the camera panning movement opposite to that indicated by the arrow of the ◀/▶ buttons.</li> <li>- Press and hold <b>"L/R DIR"</b> button + number button <b>"2"</b> to set the direction of the camera panning movement same as the arrow of the ◀/▶ buttons.</li> </ul> |
| (13) Zoom +/-           | Zoom in/out slow.   |
| (14) MF/Far/Near        | Enable manual focus. Use Far/Near to adjust the focus.  |
| (15) Zoom Fast +/-      | Zoom in/out fast.   |
| (16) Pan-tilt Fast/Slow | Pan-Tilt speed adjustment.(24-speed)  |
| (17) AF                 | Auto focus.   |
| (18) Auto Tracking      | Auto Tracking on/off.   |
| (19) Freeze             | Freeze the live image   |
| (20) EV +/-             | EV level adjustment.  |
| (21) Switch             | Change presenter (Tracking target)  |
| (22) Tracking Point     | <p>When presenter enters this area, the camera will start tracking.</p> <p>Short press the button will recall preset1,</p> <p>Long press(over 0.5sec) the button will switch Tracking mode (Presenter and Zone).</p>  |
| (23) Upper Body         | Presenter's size on screen is upper body.   |
| (24) Full Body          | Presenter's size on screen is Full body.  |



# Setup the Camera

## OSD Menu

Press **MENU** button on the remote controller to call out the OSD menu and use ▲, ▼, ◀, ▶ and ↵ button to operate the OSD menu.



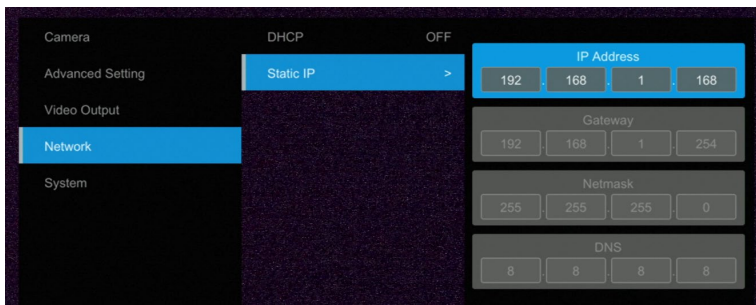
## Setup IP Address of the Camera

### Static IP

1. Press **MENU** button on the remote controller to call out OSD menu.
2. Go to **Network** > **Static IP**.

**[Note]** Turn the DHCP off before setup static IP (Network > DHCP > Off).

3. Select the **IP address**, **Gateway**, **Mask**, and **DNS** to configure. Press ↵ and use ◀, ▶, number pad to enter the data.

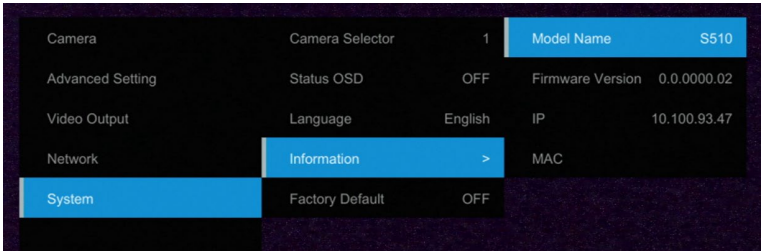


# DHCP

- 1. Press **MENU** button on the remote controller to call out OSD menu.
- 2. Go to **Network > DHCP > On**.



- 3. After turn the DHCP on, the user can go to **System > Information** to view IP address.



## OSD Tree

### Camera

Setup camera parameters – Exposure mode, White balance, Pan-Tilt Zoom, Noise reduction, Frequency, Saturation, Contrast, Sharpness, Mirror, and Flip.

| 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           | Iris Level/Shutter Speed/Gain Level  |
|        | Bright           | 0 - 31   |
|        | White Balance    | Auto/AWT/Indoor/Outdoor/One Push/Manual<br><b>[Note]</b> AWB auto range is about 3500K color temperature, when the color temperature is less than 3500K, please use AWT. |
|        | R Gain           | 0~255  |
|        | B Gain           | 0~255  |
|        | Pan Tilt Zoom    | Pan/Tilt Slow /Preset Speed/Digital Zoom/Digital Zoom Limit  |
|        | Noise Filter     | OFF/Low/Medium/High  |
|        | Saturation       | 0~10   |
|        | Contrast         | 0~4  |
|        | Sharpness        | 0~3  |
|        | Mirror           | OFF/ON   |
|        | Flip             | OFF/ON   |

## Advanced Setting

|                  |                   |                        |
|------------------|-------------------|------------------------|
| Advanced Setting | Audio             |                        |
|                  | Input Type        | Mic in/Line in         |
|                  |                   |                        |
|                  | Auto Gain Control | OFF/ON                 |
|                  |                   |                        |
|                  | Noise Suppression | OFF/Low/Normal         |
|                  |                   |                        |
|                  | Audio Volume      | 0 ~ 10                 |
|                  |                   |                        |
|                  | Control           |                        |
|                  | Type              | RS232/RS422            |
|                  |                   |                        |
|                  | Protocol          | VISCA/Pelco-P/ Pelco-D |
|                  |                   |                        |
|                  | Camera Address    | 1~7                    |
|                  |                   |                        |
|                  | Baud Rate         | 2400/4800/9600/38400   |
|                  |                   |                        |
|                  | Tracking          | ON/OFF                 |

## Video Output

Select video resolution.(2160p is supported on TR313 and TR333 only)

|               |                   |             |          |             |
|---------------|-------------------|-------------|----------|-------------|
| Priority Mode | 2160P/1080P       |             |          |             |
| Frequency     | 50Hz/59.94Hz/60Hz |             |          |             |
| Video Format  | 2160p/30          | 2160p/29.97 | 2160p/25 | 1080p/60    |
|               | 1080p/59.94       | 1080p/30    | 1080i/60 | 1080i/59.94 |
|               | 720p/60           | 720p/59.94  | 1080p/50 | 1080p/25    |
|               | 1080i/50          | 720i/50     |          |             |

## Network

Setup IP mode – DHCP or static IP.

|         |           |            |
|---------|-----------|------------|
| Network | DHCP      | Off/On     |
|         | Static IP | IP Address |
|         |           | Gateway    |
|         |           | Netmask    |
|         |           | DNS        |

## System

- **Status OSD:** Enable/disable Preset status (Save Preset, Call Preset, Cancel Preset) display on the screen.
- **Camera Selector:** Set the camera ID 1~3 for using remote controller on multiple cameras control (also see [\(2\) Camera select](#) in Remote Control chapter).
- **NDI:** Enable/disable NDI function. For detail setting refer to [Setup NDI Function](#) chapter.
- **Tally:** Enable tally function.

|        |                 |                                     |
|--------|-----------------|-------------------------------------|
| System | Camera Selector | 1~3                                 |
|        | Status OSD      | OFF/ON                              |
|        | Language        | English/繁中                          |
|        | NDI             | OFF/ON                              |
|        | Tally           | Disable/Enable                      |
|        | Information     | Model Name/Firmware Version/IP /MAC |
|        | Factory Default | OFF/ON                              |

# Web Setup

Connect the camera from a remote site through the internet.

## Using the AVer IPCam Utility to Find the Camera

To find the IP address of your cameras, you can execute the IPCam Utility installer. Follow the below steps to find the IP address of the camera.

1. Download the IPCam Utility from <http://www.aver.com/download-center>.
2. Run the IPCam Utility
3. Click Search, and all available devices will be listed on the screen
4. Select a camera from the list.
5. The corresponding fields of IP address will display.
6. Double-click on the IP address of the camera from the list can connect to the camera through the browser.

**[Note]** If IPCam utility cannot find the camera, please check following:

1. Please make sure the Ethernet connection of camera is well connected.
2. The camera and PC (IPCam utility) are in the same LAN segment.

AVer IPCam Utility v2.7.1029.34

Network Device  
Realtek PCIe GBE Family Controller  
Search

Login  
User ID  
Password

Network Setting | Date/Time Setting | Maintenance | Import/Export Config

Search Result

Select All

| No.                        | Status  | Progress | Model Name | Device Name | FW version  | IPv4 Address     | MAC Address       | IPv6 Address |
|----------------------------|---------|----------|------------|-------------|-------------|------------------|-------------------|--------------|
| <input type="checkbox"/> 1 | Working |          | Fone540    | Fone540     | 0.0.7000.24 | 10.100.93.86:80  | 00:18:1a:04:30:1b | :::80        |
| <input type="checkbox"/> 2 | Working |          | TR311      | TR311       | 0.0.0000.03 | 10.100.93.123:80 | 34:32:34:34:34:23 | :::80        |
| <input type="checkbox"/> 3 | Working |          | TR311      | TR311       | 0.0.0000.03 | 10.100.93.119:80 | 00:00:00:00:00:00 | :::80        |
| <input type="checkbox"/> 4 | Working |          | TR311      | TR311       | 0.0.0000.03 | 192.168.1.168:80 | 00:18:1c:99:55:66 | :::80        |
| <input type="checkbox"/> 5 | Working |          | TR311      | TR311       | 00.00.00.00 | 10.100.93.67:80  | 26:f7:3b:99:5b:8d | :::80        |

Settings

Device Name:

☐ DHCP  
☐ Static IP

\*Auto search will start after settings changed!  
☐ Don't start auto search this time!

Start IP Address:

End IP Address:

Subnet Mask:

Gateway:

Primary DNS:

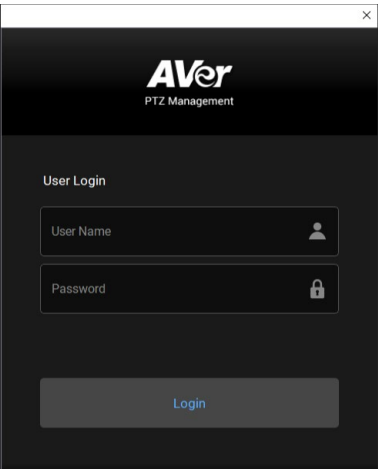
Secondary DNS:

Apply

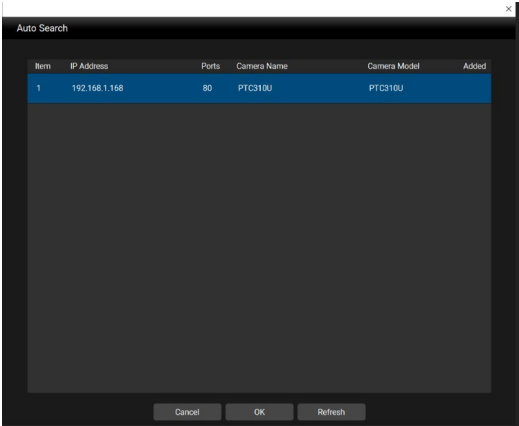
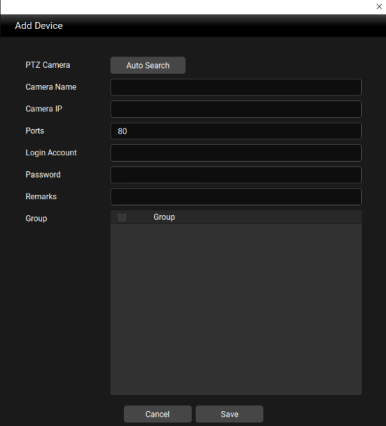
# Using AVer PTZ Management Software to Find the Camera

To find the IP address of your cameras, you can download the install the AVer PTZ Management Software. Follow the below steps to find the IP address of the camera.

- 1. Download the AVer PTZ Management Software from <https://www.aver.com/download-center>
- 2. Select the “Software” tab and download the Windows program and install it.
- 3. After setting up the user ID and password, login to the software(default Username/Password: admin/admin) then

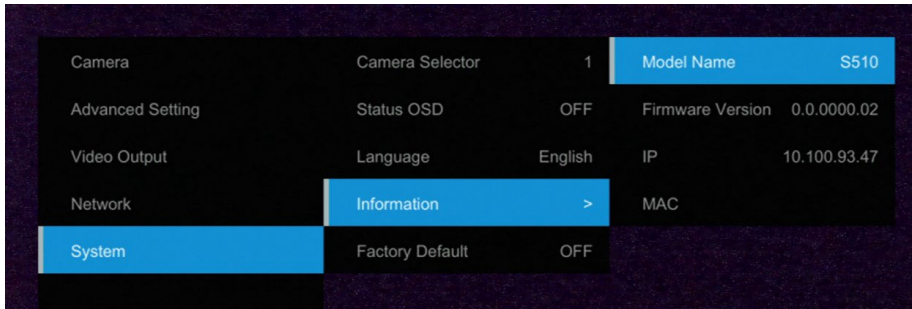


- 4. Select “Setup”, “Add” and then “Auto Search”.



## Make a Connection to the Camera via Browser

1. Find the IP address of the camera. Call out OSD menu and select **"System" > "Information"** Or use AVer IPCam utility to find the IP address of the camera.



2. Open the browser and enter the IP address of the camera. The PC/laptop is required an internet access.  
After connecting to the camera, enter the user account and password (default is **admin/admin**) to login Web.












# Live View

In live view, the user can setup Camera Control (zoom in/out, focus, camera direction control), Preset setting, and Tracking Control(on, off, tracking mode).

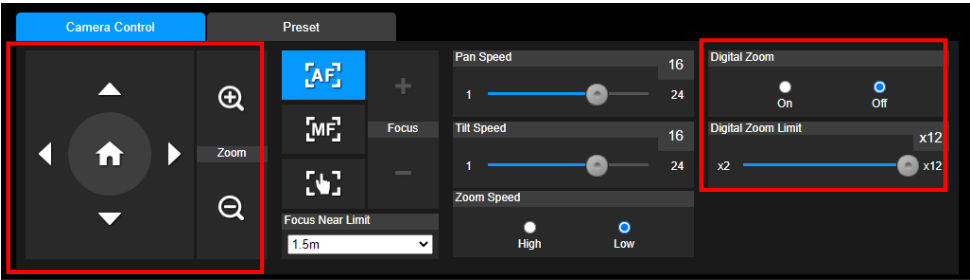


# Pan-Tilt-Zoom Control

To operate the PTZ Camera motion.

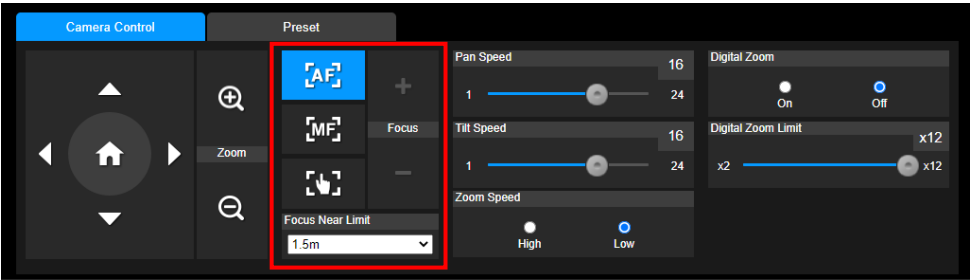
Use , , , and  to adjust the camera view position and use  and  to zoom. Select  to back to default position.

**Digital Zoom:** Enable/disable digital zoom function. Move the scroll to adjust the limit of digital zoom.



## Focus

Switch to auto (AF) or manual (MF) focus. The manual focus use + and – to adjust focus. Press “+” to adjust focus to the far end and focusing on a far subject; press “-” to adjust focus to near end and focusing on a near subject.



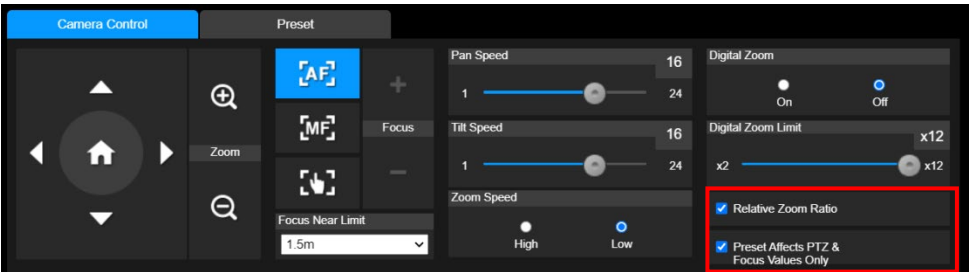
**One push focus** (Hand icon): By clicking the button to adjust Lens focus automatically once.

**Focus Near Limit:** Set the focus distance limit.

## Manual Pan-Tile-Zoom and Preset Speed Adjustment

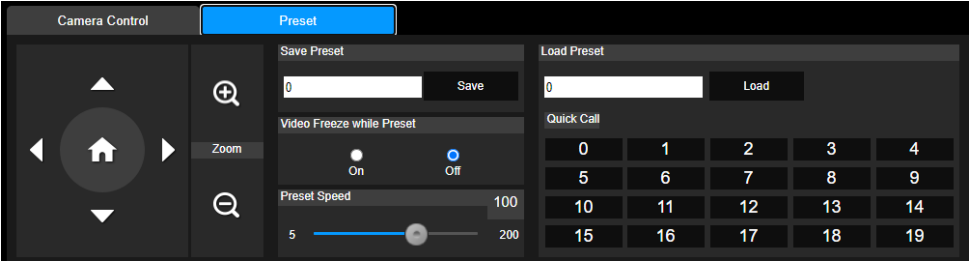
Adjust the speed of manual Pan-Tilt-Zoom and Preset operation. Enable/Disable the slow mode for manual pan-tilt operation. There are totally 24 levels for manual pan-tilt speed adjustment and 2 levels (Low/High) for zoom speed adjustment. There are 5 levels for preset speed adjustment.





- **Pan/Tilt Slow:** When this option is set to ON, the maximum speed of manual pan-tilt operation is 40°/sec; when this option is set to Off, the maximum speed of manual pan-tilt operation is 100°/sec.
- **Relative Zoom Ratio:** When the camera zoomed in to a high ratio, pan and tilt movement will automatically slow down.
- **Preset Affects PTZ & Focus Values Only:** When enable this button, the preset point affects PTZ & Focus values only.



# Preset Setting

Setup preset position and view preset position.

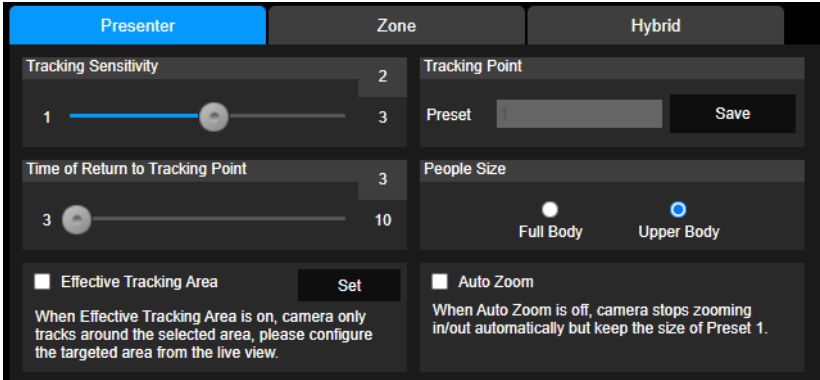


- 1. Select the “Preset” tab in live view interface.
- 2. Use , , , and  to adjust camera view position.
- 3. Enter preset position number (0~255) in **Save Preset** column and select “**Save**” to save the position.
- 4. To call the preset position, enter a preset number (0~255) in **Load Preset** column or select the preset number (0~19) from **Quick Call** section.(Recalling preset will disable auto tracking)
- 5. **Video Freeze with Preset:** On/Off the screen view freeze function. When “**Video Freeze with Preset**” is on, during the preset operation, the screen will freeze until the operation is done.

# Tracking Control

Enable/disable tracking function, select tracking mode, and operate one-click tracking function.

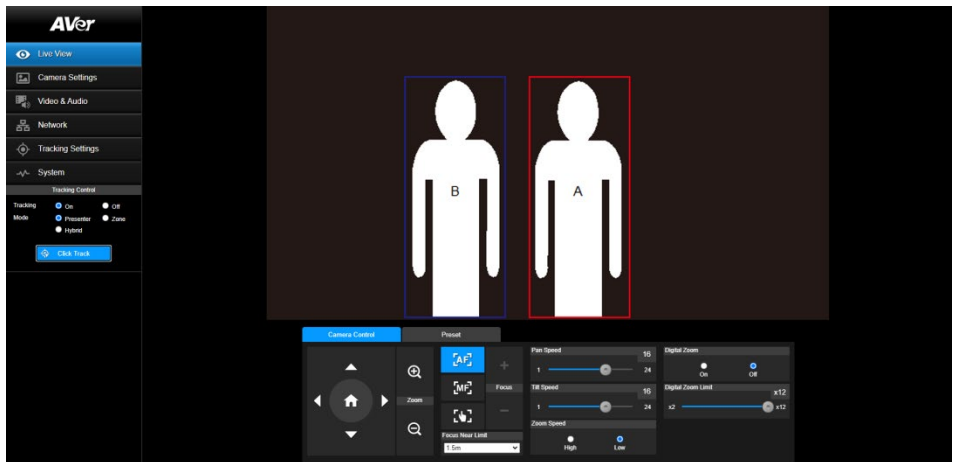
- Tracking mode(Tracking mode setup refer to [Tracking Settings](#) section)
  - **Presenter:** Camera will start tracking when object enter the tracking point (preset point) and the face of object is detected.
  - **Zone:** Camera will start tracking when object is moving between the preset tracking block area.
  - **Hybrid:** Mix the Presenter mode and Zone mode together.



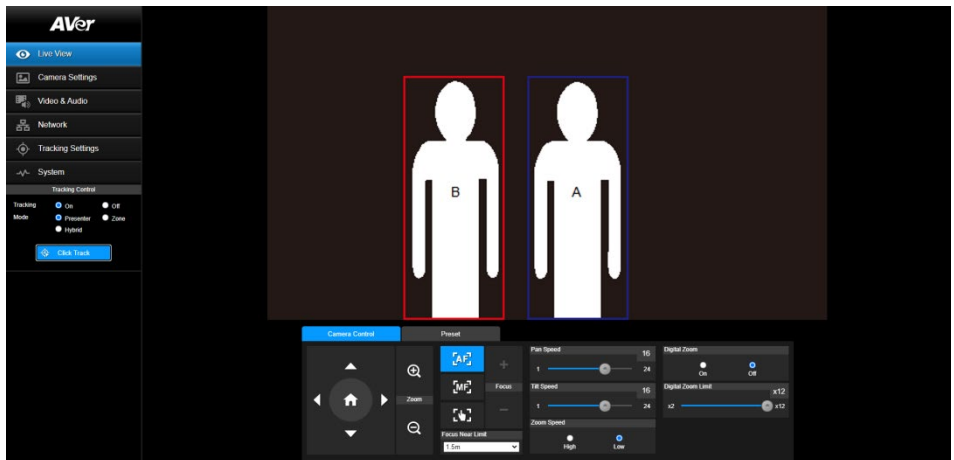
## Click Tracking Function

This function allows user to change tracking object while auto tracking.

1. Select **Click Track** button. A red frame is targeted on the tracking object and a blue frame is targeted on another object on the live screen.



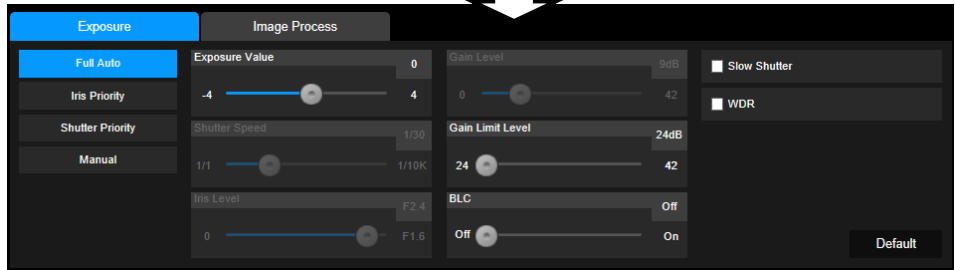
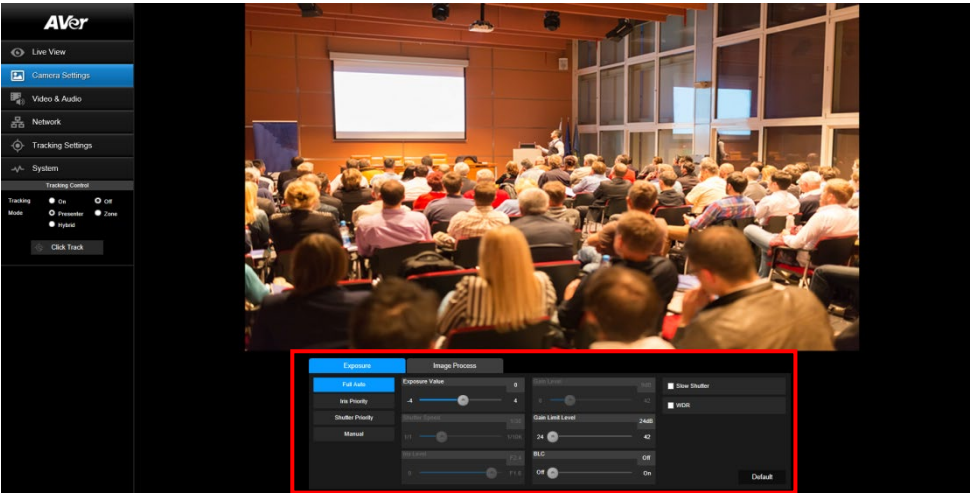
2. Click the object and when frame change to red means the tracking object is changed to the selected one.



# Camera Settings

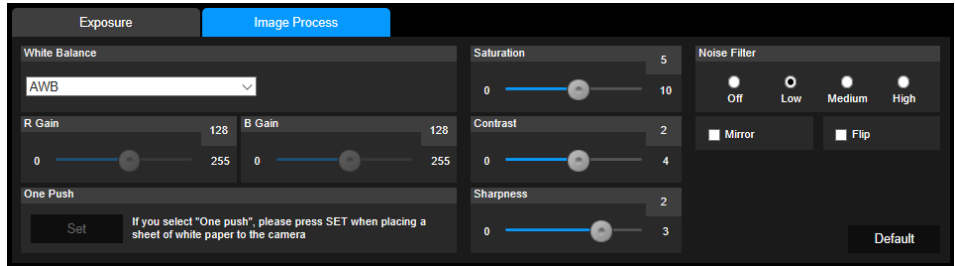
## Exposure

Setup the exposure type -- Full auto, Iris priority, Shutter priority, or manual.



## Image Process

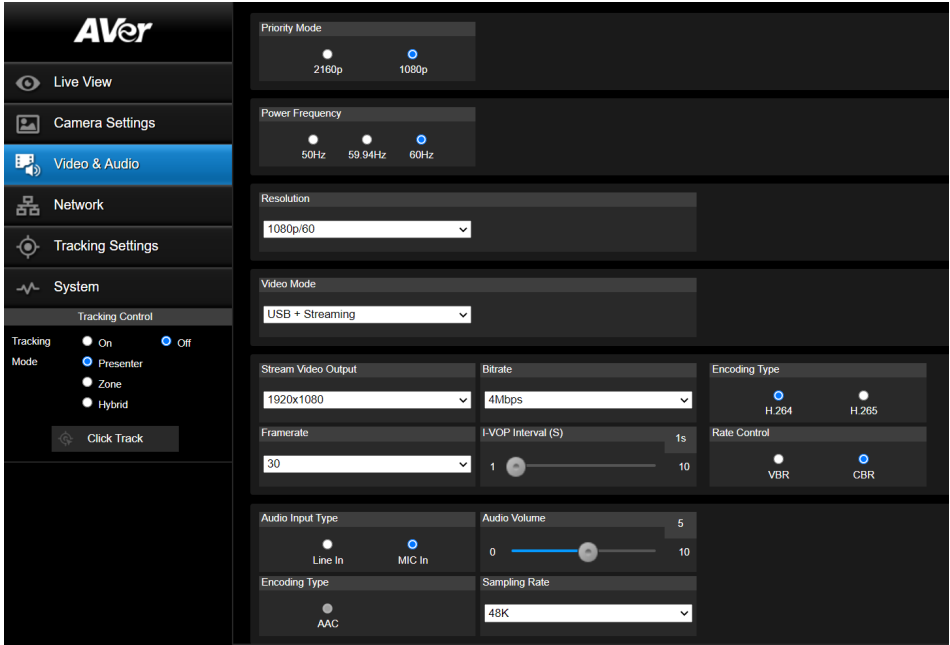
Setup the white balance, saturation, contrast, sharpness, noise filter, power frequency, flip, and mirror.  
Select the "Image Process" tab in camera setting interface.



# Video & Audio

The user can setup Video Mode, Video output, Framerate, Bitrate, I-VOP internal, Encode type, Rate control, Audio input type, Audio volume, and Sampling Rate.

Video mode in the stream only, the frame rate is up to 60fps and in USB+ Streaming mode is up to 30fps.



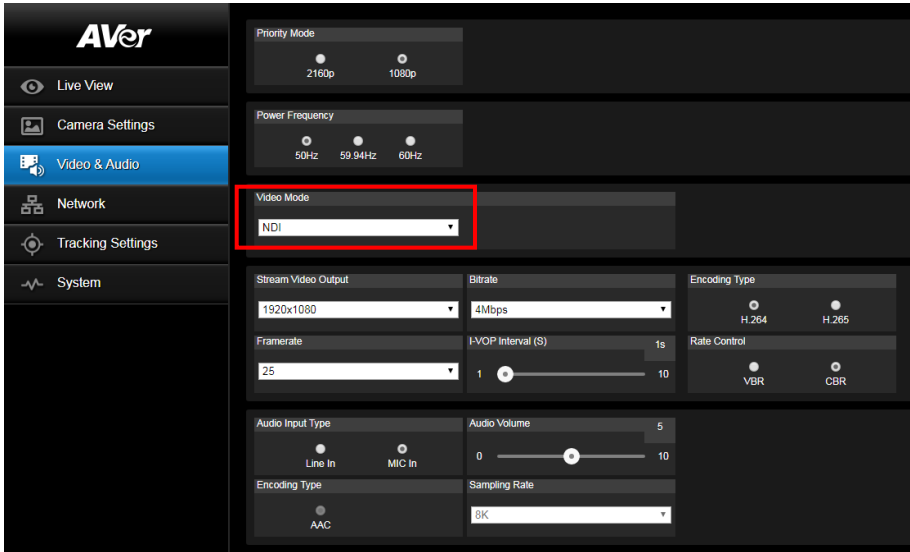
## Get 4K (2160p) output

1. Make sure that your HDMI monitor and cable support 4K (HDMI2.0 or above), select 2160p at Priority Mode via either web or OSD menu. Select 2160p/30 resolution at OSD menu to get 4K HDMI output. (3G-SDI does not support 4K)
2. Select “USB Only” at Video Mode to get 4k USB output(live stream will be off)
3. Select “Stream Only” at Video Mode to get 4k live stream output (USB will be disabled)

## Setup NDI Function

### NDI service only support on NDI models: TR311HN/TR311N/TR313N/TR331N/TR333N.

1. Enable NDI mode by selecting “**NDI**” as video mode in Video & Audio page. To disable the NDI function, select other mode. The camera will reboot after selecting NDI mode.



2. User can setup the following functions:
  - **Stream Video Output:** Select video output resolution.
  - **Framerate:** Select framerate of the camera.
  - **Encoding Type:** Select encoding type – **H.264** or **H.265**.
  - **Sampling Rate:** Select sampling rate value.
  - **Audio Input Type:** select audio input type – **Line In** or **MIC In**.
  - **Bitrate:** Select bitrate value – **521kbps, 1Mbps, 2Mbps, 4Mbps, 8Mbps, 16Mbps, 32Mbps**.
  - **I-VOP interval(S):** Move scroll bar to set the value – **1s** to **10s**.
  - **Audio Volume:** Move scroll bar to set the volume value – **0** to **10**.
  - **Rate control:** select the rate control type – **VBR** or **CBR**.

3. Set the identity name for display on NDI interface. Select **System > Camera ID(NDI)**. Enter the name as user wanted. The maximum character is 10. After entering the name, select the **Set** button to save and manually restart the PTZ camera for the settings to take effect.
- The following characters can be displayed for camera ID:

|  |   |
|--|---|
| Numeric characters                                 | 0123456789  |
| Alphabetical characters<br>(upper and lower cases) | ABCDEFGHIJKLMNOPQRSTUVWXYZ<br>abcdefghijklmnopqrstuvwxyz  |
| Symbols  | !@#\$%^&*() , . \ ; : " ' + = < > ? [ ] { }   - _ ` ~ \ / |

Camera ID(NDI)

AVer\_NDI\_Camera

Set



## Network

Setup IP address of camera – DHCP or static IP, netmask, gateway, and DNS. After setting, select “**Confirm**” to apply settings.

**Hostname:** To change the display of Hostname, allow to name the camera in other device ex IP Router. The default Hostname of camera is AVer.

The screenshot shows the AVer camera's web interface with the 'Network' menu selected. The left sidebar contains options: Live View, Camera Settings, Video & Audio, Network (highlighted), Tracking Settings, System, and Tracking Control. The main area is divided into several sections: DHCP (On/Off), Hostname (AVer), IP (10.100.91.49), Netmask (255.255.255.0), Gateway (10.100.91.254), DNS (8.8.8.8), a Confirm button, RTMP Settings (Server URL, Stream Key, Start Stream, STOP), RTSP Security (On/Off), and SRT Settings (Destination IP, Port, Encryption, Latency, Passphrase, Connect Status, Start Stream, STOP).

## RTMP Setting

Setup for uploading the camera's live view to the broadcasting platform (ex: Youtube).

The screenshot shows a dialog box titled 'RTMP Settings'. It contains two text input fields: 'Server URL' and 'Stream Key'. Below these fields are two buttons: 'Start Stream' and 'STOP'.

Get the RTMP server URL and stream key from the broadcasting platform and enter in “**Server URL**” and “**Stream key**” column.

Select “**Start stream**” to begin uploading the live video of the camera to the broadcasting platform.

Select “**Stop**” to stop uploading the video.

**[Note]** To get the RTMP server URL and stream key, please refer to the instruction of broadcasting.

## Using RTSP Connect to Camera

To use RTSP player connecting to the camera; please enter the following RTSP URL in your application such as VLC, PotPlayer or Quick Time.

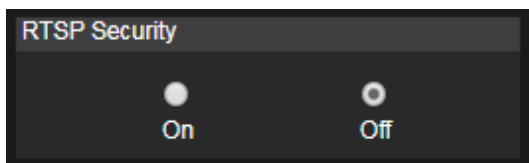
“rtsp://IP address of camera/live\_st1”

For Example: rtsp://192.168.1.168/live\_st1

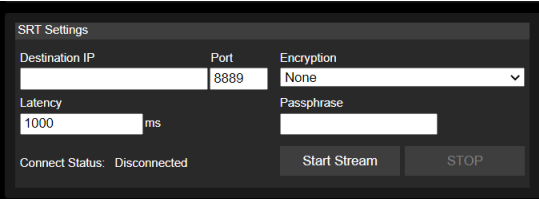
(the camera default IP address: 192.168.1.168)

Enable/disable RTSP security function if needed.

(When RTSP Security is On, the RTSP stream ID/Password will be synced to the web login User name/ Password.)

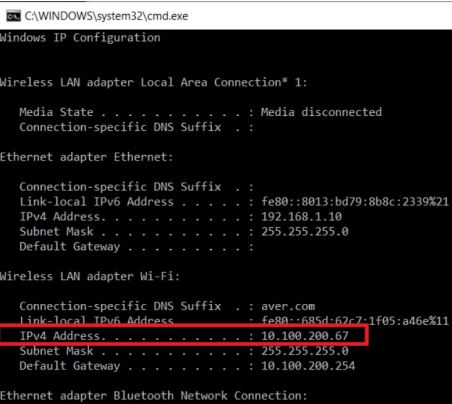


SRT Stream

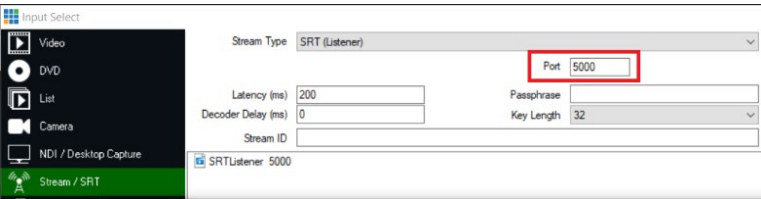


Example 1 vMix:

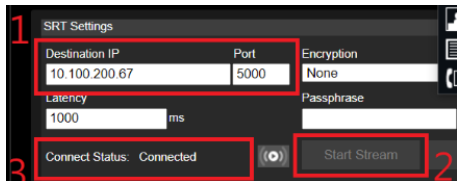
Set the workstation and the TR311 camera in the same network. Check the workstation's IP address (Destination IP). Example:



Select SRT(Listener) from Stream Type in vMix Input Select window.



Enter the information into the SRT Settings TR311 web interface, then click on “Start Stream”, Connect Status shows “Connected”.



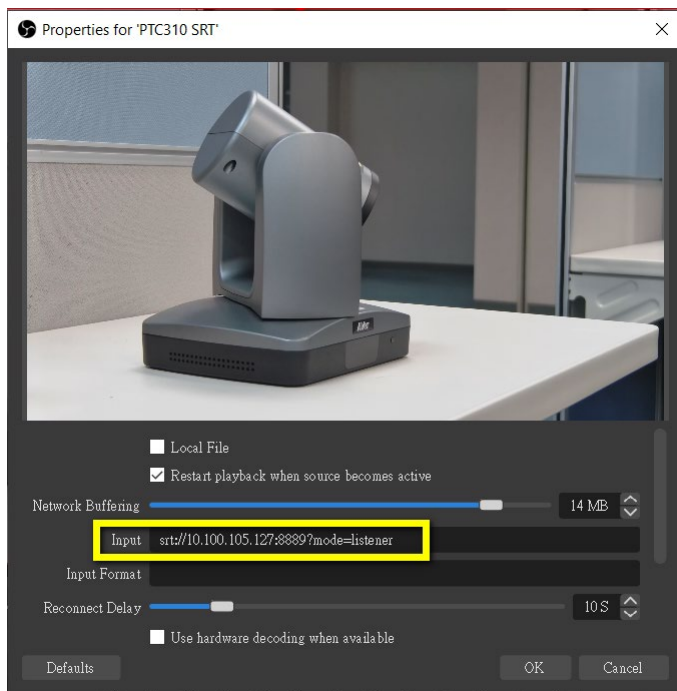
## Example2 OBS (Open Broadcaster Software)

Set the workstation and the TR311 camera in the same network. Check the workstation's IP address (Destination IP). Example:

```
Connection-specific DNS Suffix . : aver.com
Link-local IPv6 Address . . . . . : fe80::fldc:bcda:87bd:acle%12
IPv4 Address. . . . . : 10.100.105.127
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 10.100.105.254
```

Open OBS, add a scene, add a source, enter srt://Work Station IP:port?mode=listener

Example: srt://10.100.105.127:8889?mode=listener









**[Note]** If there is no image, please try right click on the source->Transform->Fit to screen to re-scale image.

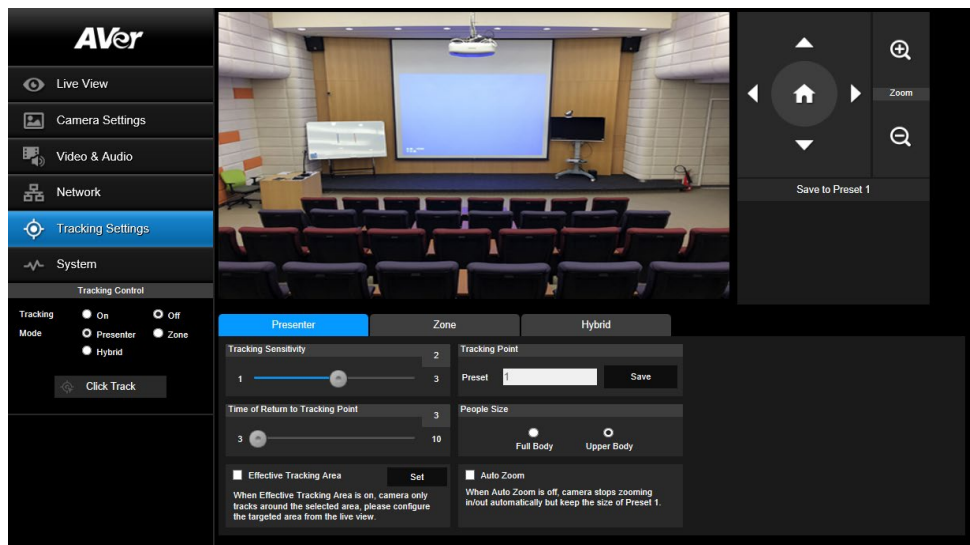
## Tracking Setting

Set up Tracking mode – Presenter, Zone, and Hybrid mode.

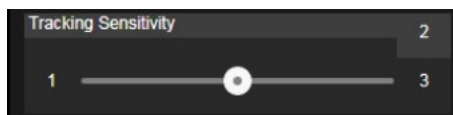
### Presenter Mode

Camera will start tracking when object enters the tracking point (preset point).

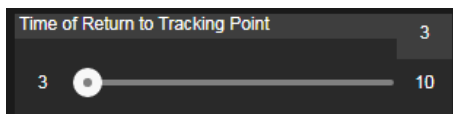
1. Use , , , ,  and  to adjust the camera to tracking point (preset position).
2. Then, select **Save to Preset 1** to save the tracking point.



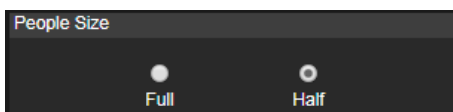
3. **Tracking Sensitivity:** Set the sensitive level of tracking. Move bar to set the value. The current value is displayed at upper right corner.



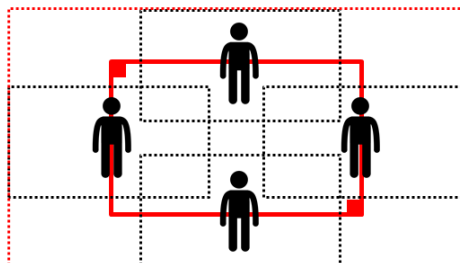
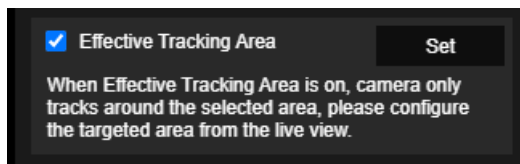
4. **Time of Return to Tracking Point:** Set the idle time for camera returning to tracking point. Move bar to set the value (in seconds). The current value is displayed at upper right corner.



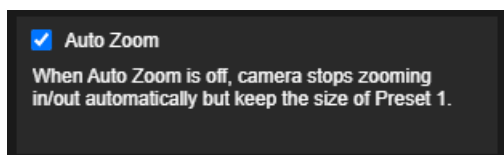
5. **People Size:** Select the people in full or half size while tracking.



6. **Effect Tracking Area:** When Effective Tracking Area function is on, camera only tracks around the selected area. Check the box to turn on the Effective Tracking Area function then click Set to configure the targeted area in the live view. Move the upper left corner and the lower right corner of the red solid frame to define the targeted area.



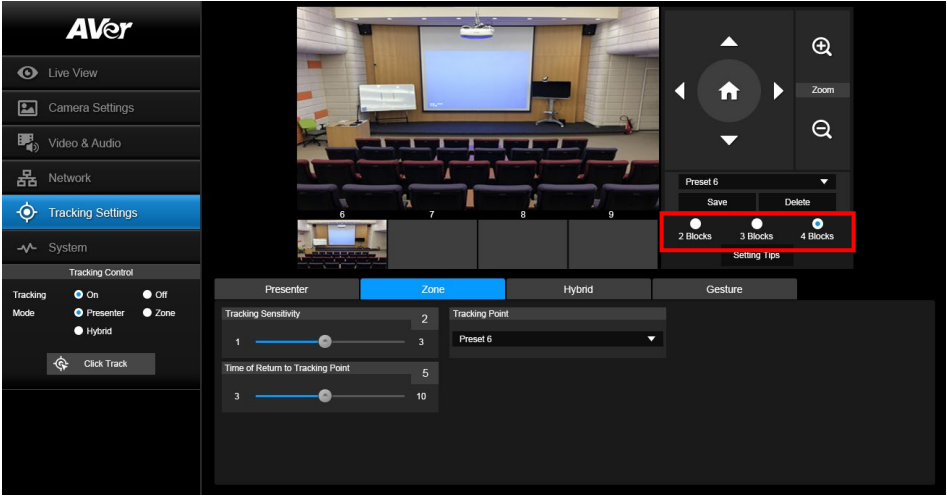
- [Note]** The position of the red solid frame corresponds to the central position of the presenter. The black dotted frames represent the tracking areas for different positions of the presenter. Therefore, the red dotted frame is the actual effective tracking area of the red solid frame.
7. **Auto Zoom:** When Auto Zoom is off, camera stops zooming in/out automatically but keep the size of Preset 1.









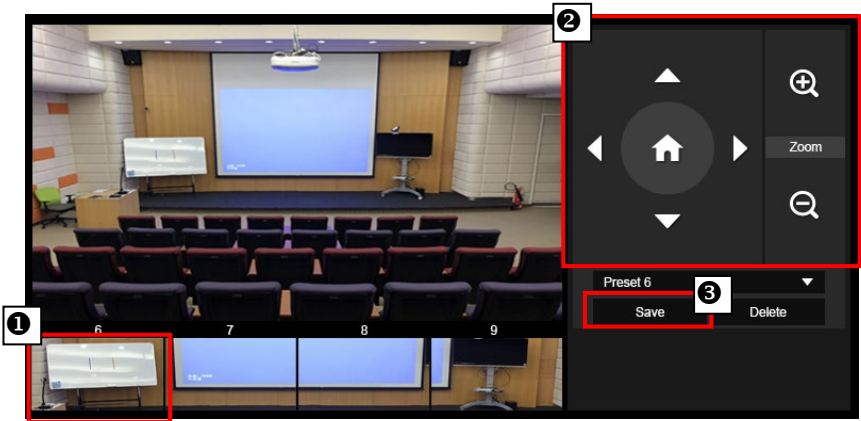
# Zone Mode

Setup the block area for the camera to detect object and follow-up the object to move the camera when the object is in block area that user has set.

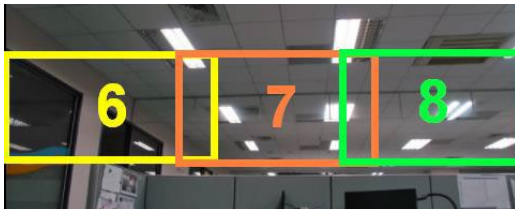
1. Select the **Blocks** (2, 3, or 4). Each block is corresponding to one preset position. The maximum is 4 blocks (4 preset positions).



2. Select the block and Set the preset positions in order (preset 6 to preset 9). Use , , , ,  and  to move the camera to wanted position and select “Save” to save the preset position. And, a snapshot of the preset image will show at corresponding image display box. Repeat the step to set another preset position.



**[Note]** Set each preset overlapping the next preset view (one man width overlap), no or less zoom between presets. Examples below:

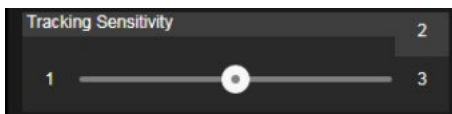


**[Note]** Set the preset view to clearly see at least 60% upper body of the presenter to ensure tracking accuracy. Make sure there is no any other human-outline poster/TV/monitor in the background.

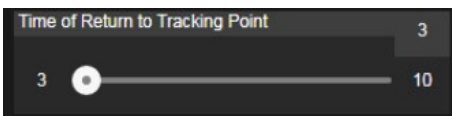
Preset for Zone Mode, Example:



3. **Tracking Sensitivity:** Set the sensitive level of tracking. Move bar to set the value. The current value is displayed at upper right corner.



4. **Time of Return to Tracking Point:** Set the idle time for camera returning to tracking point. Move bar to set the value (in seconds). The current value is displayed at upper right corner.





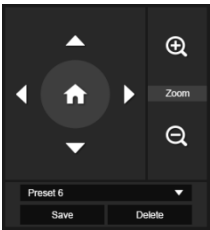
## Hybrid Mode

This function allows the user to use two types of tracking modes: “Presenter mode” and “Zone mode” at the same time. When the presenter enters selected preset points, it will change to Zone position; when the presenter leaves the preset points, camera will follow presenter to do Auto Tracking function.

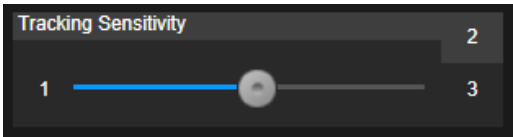
1. Mix two tracking modes “Presenter” and “Zone” at the same time. For Hybrid mode, do not set Zone preset points overlapping or close to each other. It is recommended to leave some distance between Zone preset points.



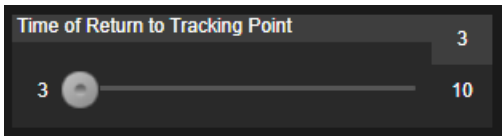
2. Use direction control panel to move the camera to desired position and select “save” to save the preset position. And, a snapshot of the preset image will show at corresponding image display box. Select preset position and select “Delete” to delete the saved preset position.(Preset 10,11,12,13)



3. Set the sensitive level of tracking. Move bar to set the value. The current value is displayed at upper right corner.



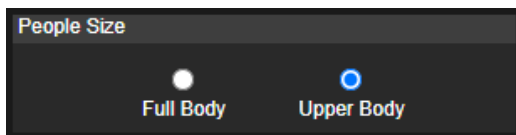
4. Set the idle time for camera returning to tracking point. Move bar to set the value (in seconds). The current value is displayed at upper right corner.



5. When losing tracking target and going back to Tracking Point.



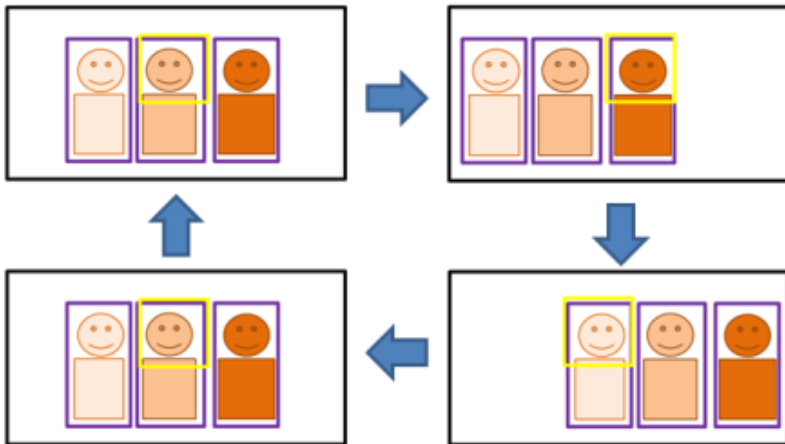
6. Presenter size, Full body will show the whole Body on screen and Upper will only show half body.



## Quick Setup for Tracking

### Presenter Mode

1. Use IR remote to adjust the camera view properly then save to preset1 as the initial position
2. Press tracking "On" button on IR remote, here you go!
3. Press "UPPER BODY" key to get closer view (up to 60% body), or FULL BODY to see entire presenter in the view.
4. Press "Switch" key to switch between presenters. Initially the camera tracks the one who is in the center of view. Every switch follows the sequence: left to right, then back to far left one in the camera view(see picture below). To see which presenter is being tracked, press numeric key"7" for seven times to call/cancel engineering mode while tracking, you will see purple boxes shown on all human-outline objects, and who under yellow box is being tracked.



### Zone Mode

2 blocks initially selected and preset 6 is initially the start position. But if you prefer 3 or 4 blocks for Zone mode tracking and prefer another preset as start position, go to web setting.

1. Use IR remote to adjust the camera view properly then save to preset6, preset7
2. Long press "Tracking Point" to switch tracking mode from Presenter Mode to Zone Mode (the hotkey supported at firmware v0.0.0000.21 or later)
3. Press "ON", here you go!

## System

- **System information:** It displays **Model Name, IP Address, Serial Number, MAC Address** and **Firmware Version**.
- **Factory Default:** Reset the camera back to factory default value.
- **Login in:** The default login in name and password are **admin/admin**. User can change if needed.
- **Status OSD:** Enable/disable Preset status (Save Preset, Call Preset, Cancel Preset) display on the screen.
- **Language:** Change the Web UI language.
- **Camera ID (NDI):** Set the camera ID as identification for NDI function. To setup NDI function, please refer to [NDI Function](#) section.
- **Power Up to Preset/ Power off to preset:** If enabling Power Up/Off to Preset function, the camera will move to the saved preset point in the field when the camera powers up/off.
- **Reboot:** To restart the camera from web page.
- **Customized Function:** Ability to execute some specific functions by using VISCA command.

The screenshot displays the AVer camera web interface. On the left is a sidebar with navigation options: Live View, Camera Settings, Video & Audio, Network, Tracking Settings, and System (which is highlighted in blue). Below the System option is a 'Tracking Control' section with radio buttons for 'On' and 'Off' (selected), and a 'Click Track' button. The main content area is titled 'System' and contains several sections: 'Upgrade firmware' with a 'Upgrade' button; 'Factory Default' with a 'Reset To Factory Default' button; 'Model Name' and 'Serial Number' fields; 'MAC Address' and 'Firmware Version' fields; 'Lens Firmware Version' and 'MCU Firmware Version' fields; 'Login' section with 'Login Name' and 'Login Password' fields and 'Change' and 'Cancel' buttons; 'Language' dropdown menu set to 'English' and a 'Reboot' button; 'Status OSD' section with 'On' and 'Off' radio buttons (selected); 'Setting' section with 'Import Setting' and 'Export Setting' buttons; 'Power Up to Preset' and 'Power Off to Preset' sections, each with a numeric input field set to '0' and a 'Save' button; and a 'Customized Function' section at the bottom.

## Upgrade Firmware

1. Download the newest firmware from <http://www.aver.com/download-center>.
2. Connect to the camera through the browser.
3. Select **System** > **Browse** the FW file > **Upgrade** firmware
4. Select the firmware and select the “**Upgrade**” button.
5. After updating, refresh the browser.

The screenshot displays the AVer camera web interface. On the left is a sidebar menu with options: Live View, Camera Settings, Video & Audio, Network, Tracking Settings, and System (which is highlighted in blue). Below the System menu is a 'Tracking Control' section with 'Tracking' set to 'Off' and 'Mode' set to 'Presenter'. A 'Click Track' button is also visible. The main content area shows the 'Upgrade firmware' dialog box, which is highlighted with a red rectangle. This dialog contains three buttons: '選擇檔案' (Select File), '未選擇任何檔案' (No file selected), and 'Upgrade'. Below the dialog, the 'Factory Default' section has a 'Reset To Factory Default' button. To the right, a table lists camera specifications: Model Name (S510), IP Address (10.100.105.59), Serial Number (5310755400028), MAC Address (00:18:1A:06:E9:85), Firmware Version (0.0.0000.34), Lens Firmware Version (AA34), and MCU Firmware Version (4A0C8587). Other visible settings include a 'Login' section with fields for 'Login Name' (containing '1') and 'Login Password', a 'Language' dropdown set to 'English', a 'Reboot' button, a 'Status OSD' section with 'On' selected, a 'Setting' section with 'Import Setting' and 'Export Setting' buttons, and two 'Power' sections ('Power Up to Preset' and 'Power Off to Preset') each with a value of '0' and a 'Save' button. At the bottom, there is a 'Customized Function' section.

# VISCA RS232 Command Table

| Command Set                      | Command           | Command Packet                            | Comments   |
|----------------------------------|-------------------|---|--|
| CAM_Power                        | On                | 8x 01 04 00 02 FF                         |  |
|                                  | Off               | 8x 01 04 00 03 FF                         | Power ON/OFF   |
| CAM_Zoom                         | Stop              | 8x 01 04 07 00 FF                         |  |
|                                  | Tele(Variable)    | 8x 01 04 07 2p FF                         |  |
|                                  | Wide(Variable)    | 8x 01 04 07 3p FF                         | p=0 (Low) to 7 (High)  |
| CAM_Focus                        | Stop              | 8x 01 04 08 00 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 17 00 0q 0r 0s FF                | pgs: Zoom Position<br>Normal Auto                                |
| CAM_WB                           | Auto              | 8x 01 04 35 00 FF                         |  |
|                                  | 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                            |
| CAM_Shutter                      | Bright            | 8x 01 04 39 0D FF                         | Bright Mode (Manual control)                                     |
|                                  | 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                         |  |
|                                  | 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                         |  |
|                                  | Reset             | 8x 01 04 3F 00 pp FF                      |  |
| CAM_Preset                       | Set               | 8x 01 04 3F 01 pp FF                      | pp: Preset Number 0x00-0xFF                                      |
|                                  | Recall            | 8x 01 04 3F 02 pp FF                      |  |
| CAM_Menu                         | On/Off            | 8x 01 06 06 10 FF                         | Display ON/OFF   |
|                                  | Up                | 8x 01 06 01 VV WW 03 01 FF                |  |
| Pan-tilt Drive                   | 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                | VV: Pan speed setting 0x01 (low speed) to 0x18 (high speed)      |
|                                  | Up/Left           | 8x 01 06 01 VV WW 01 01 FF                | WW: Tilt speed setting 0x01 (low speed) to 0x18 (high speed)     |
|                                  | Up/Right          | 8x 01 06 01 VV WW 02 01 FF                |  |
|                                  | Down/Left         | 8x 01 06 01 VV WW 01 02 FF                |  |
|                                  | Down/Right        | 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                            |  |
| Absolute Position (v26 or above) |                   | 8x 01 06 02 VV WW 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 8A14 to 763C (CENTER 0000)                    |
|                                  |                   |   | ZZZZ: Tilt Position 468B to E898 (Image Flip: OFF) (CENTER 0000) |
| 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                    |                   | 8x 01 7E 01 0A 00 02 FF                   |  |
| Tally Lamp OFF                   |                   | 8x 01 7E 01 0A 00 03 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                      | pp: 0x00 To 0xFF normal preset                                   |
|                                  |                   |   | pp: 0x5F => Trun on OSD menu                                     |
|                                  |                   |   | pp: 0xA0 => Full Body  |
|                                  |                   |   | pp: 0xA1 => Upper Body   |
|                                  |                   |   | pp: 0xA2 => Tracking Point                                       |
|                                  |                   |   | pp: 0xA3 => Switch   |
|                                  |                   |   | pp: 0xA4 => Presenter mode (support with v25 or newer firmware)  |
|                                  |                   |   | pp: 0xA5 => Zone mode (support with v25 or newer firmware)       |



## CGI command

### 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 |

### 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,3,1&(random) |       |       |           |
| Tracking off:            | /cgi-bin?Set= | trk_tracking,3,0&(random) |       |       |           |
| Tracking Presenter Mode: | /cgi-bin?Set= | trk_mode,3,1&(random)     |       |       |           |
| Tracking Zone Mode:      | /cgi-bin?Set= | trk_mode,3,2&(random)     |       |       |           |

# Specification

## TR311

| Camera                     |  |
|----------------------------|--|
| Image Sensor               | 1/2.8" 1080p Exmor CMOS  |
| Effective Picture Elements | 2 Megapixels   |
| Output Resolutions         | Auto<br>1080p/60, 1080p/59.94, 1080p/50, 1080p/30,<br>1080p/29.97, 1080p/25, 720p/60, 720p/59.94, 720p/50,<br>720p/30, 720p/29.97, 720p/25 |
| Minimum Illumination       | 0.4 lux (IRE50, F1.6, 30fps)   |
| S/N Ratio                  | ≥ 50 dB  |
| Gain                       | Auto, Manual   |
| TV Line                    | 900 (Center)   |
| Shutter Speed              | 1/1 s to 1/10,000 sec  |
| Exposure Control           | Auto, Manual, Bright mode, Priority AE (Shutter, IRIS),<br>BLC, WDR  |
| White Balance              | Auto, ATW, Indoor, Outdoor, One push, Manual   |
| Optical Zoom               | 12X  |
| Digital Zoom               | 12X  |
| Sensor Zoom                | 2X   |
| Viewing Angles             | DFOV : 78° (Wide) to 9° (Tele)<br>HFOV : 70° (Wide) to 8° (Tele)<br>VFOV : 42° (Wide) to 5° (Tele)   |
| Focal Length               | f = 3.9 mm (Wide) to 39 mm (Tele)  |
| Aperture (Iris)            | F = 1.6 (Wide) to 3.0 (Tele)   |
| Minimum Working Distance   | 0.3 m (Wide), 1.5 m (Tele)   |
| Camera                     |  |
| Pan / Tilt Angles          | Pan : ±170°, Tilt : +90° / -30°  |

|                                   |   |
|-----------------------------------|---|
| Pan / Tilt Speed (Manual)         | Pan : 0.1° to 100° / sec, Tilt : 0.1° to 100° / sec |
| Preset Speed                      | Pan : 200° / sec, Tilt : 200° / sec                 |
| Preset Positions                  | 10 (IR), 255 (RS-232)                               |
| Camera Control - Interface        | RS-232 (DIN8), RS-422 (RJ45), IP                    |
| Camera Control - Protocols        | VISCA / PELCO-D (RS-232 / RS-422 / IP), CGI (IP)    |
| Image Processing                  | Noise Reduction (2D / 3D), Flip, Mirror             |
| Power Frequency                   | 50 Hz, 60 Hz  |
| <b>AI Auto Tracking Functions</b> |   |
| Tracking Mode                     | Presenter Mode, Zone Mode                           |
| <b>Audio</b>                      |   |
| Channel                           | 2ch Stereo  |
| Codec                             | AAC (48 / 44.1 / 32 / 24K), G.711, PCM (8K)         |
| Sample Rate                       | 48 KHz  |
| <b>Interface</b>                  |   |
| Video Outputs                     | HDMI, IP, USB, 3G-SDI                               |
| Audio Outputs                     | HDMI, IP, USB                                       |
| Audio Inputs                      | MIC in, Line in                                     |
| <b>General</b>                    |   |
| Power Requirement                 | AC 100 - 240V to DC 12V/2A or above                 |
| Power Consumption                 | 18W   |
| PoE                               | PoE+  |
| Dimensions (W x D x H)            | W180*D145*H183.5mm                                  |
| Net Weight                        | 1.7 (±0.1) kg                                       |
| Application                       | Indoor  |
| Tally                             | Yes   |
| Security                          | Kensington Slot                                     |
| Remote Control                    | Infrared  |

|   |  |
|---|--|
| Operating Conditions                    | Temperature : 0 °C to +40 °C ; Humidity : 20% to 80%                                     |
| Storage Conditions                      | Temperature : -20°C to +60°C ; Humidity: 20% to 95%                                      |
| <b>IP Streaming</b>                     |  |
| Resolution                              | 1080p 60fps  |
| Network Video Compress Formats          | H.264, H.265, MJPEG  |
| Maximum Frame Rate                      | 1080p 60fps  |
| Bit-rate Control Modes                  | VBR, CBR (selectable)  |
| Range of Bit-rate Setting               | 512 Kbps to 32 Mbps  |
| Network Interface                       | 10 / 100 / 1000 Base-T   |
| Multi-stream Capability                 | 2<br>(RTSP / Web Page), 1080p 60fps (max.)   |
| Network Protocols                       | IPv6, IPv4, TCP, UDP, ARP, IMCP, IGMP, HTTP, DHCP, RTP / RTCP, RTSP, RTMP, VISCA over IP |
| NDI®   HX Capability                    | No   |
| <b>USB</b>                              |  |
| Connector                               | USB 3.0  |
| Video Format                            | MJPEG  |
| Maximum Video Resolution                | 1080p  |
| USB Video Class (UVC)                   | UVC 1.1  |
| <b>Web UI</b>                           |  |
| Live Video Preview                      | Yes  |
| Camera PTZ Control                      | Pan, Tilt, Zoom, Focus, Preset Control   |
| Camera / Image Adjustment               | Exposure, White Balance, Picture   |
| Network Configuration                   | DHCP, IP Address, Gateway, Subnet Mask, DNS  |
| <b>Software Tools</b>                   |  |
| Device IP Searching, Configuration Tool | Support Windows® 7 or later  |

| Warranty    |         |
|-------------|---------|
| Camera      | 3 Years |
| Accessories | 1 Year  |

## TR311HN

| Camera                     |  |
|----------------------------|--|
| Image Sensor               | 1/2.8" HD Exmor CMOS   |
| Effective Picture Elements | 2 Megapixels   |
| Output Resolutions         | Auto<br>1080p/60, 1080p/59.94, 1080p/50, 1080p/30,<br>1080p/29.97, 1080p/25, 720p/60, 720p/59.94, 720p/50,<br>720p/30, 720p/29.97, 720p/25 |
| Minimum Illumination       | 0.4 lux (IRE50, F1.6, 30fps)   |
| S/N Ratio                  | ≥ 50 dB  |
| Gain                       | Auto, Manual   |
| TV Line                    | 900 (Center)   |
| Shutter Speed              | 1/1 s to 1/10,000 sec  |
| Exposure Control           | Auto, Manual, Bright mode, Priority AE (Shutter, IRIS),<br>BLC, WDR  |
| White Balance              | Auto, ATW, Indoor, Outdoor, One push, Manual   |
| Optical Zoom               | 12X  |
| Digital Zoom               | 12X  |
| Sensor Zoom                | 2X   |
| Viewing Angles             | DFOV : 78° (Wide) to 7° (Tele)<br>HFOV : 70° (Wide) to 6° (Tele)<br>VFOV : 42° (Wide) to 3° (Tele)   |
| Focal Length               | f = 3.9 mm (Wide) to 46.8 mm (Tele)  |
| Aperture (Iris)            | F = 1.6 (Wide) to 2.8 (Tele)   |
| Minimum Working Distance   | 0.3 m (Wide), 1.5 m (Tele)   |

| Camera                     |   |
|----------------------------|---|
| Pan / Tilt Angles          | Pan : $\pm 170^{\circ}$ , Tilt : $+90^{\circ}$ / $-30^{\circ}$                          |
| Pan / Tilt Speed (Manual)  | Pan : $0.1^{\circ}$ to $100^{\circ}$ / sec, Tilt : $0.1^{\circ}$ to $100^{\circ}$ / sec |
| Preset Speed               | Pan : $200^{\circ}$ / sec, Tilt : $200^{\circ}$ / sec                                   |
| Preset Positions           | 10 (IR), 255 (RS-232)   |
| Camera Control - Interface | RS-232 (DIN8), RS-422 (RJ45), IP  |
| Camera Control - Protocols | VISCA / PELCO-D (RS-232 / RS-422 / IP), CGI (IP)  |
| Image Processing           | Noise Reduction (2D / 3D), Flip, Mirror   |
| Power Frequency            | 50 Hz, 60 Hz  |
| AI Auto Tracking Functions |   |
| Tracking Mode              | Presenter Mode, Zone Mode   |
| Audio                      |   |
| Channel                    | 2ch Stereo  |
| Codec                      | AAC (48 / 44.1 / 32 / 24K), G.711, PCM (8K)   |
| Sample Rate                | 48 KHz  |
| Interface                  |   |
| Video Outputs              | HDMI, IP, USB   |
| Audio Outputs              | HDMI, IP, USB   |
| Audio Inputs               | MIC in, Line in   |
| General                    |   |
| Power Requirement          | AC 100 - 240V to DC 12V/2A and above  |
| Power Consumption          | 18W   |
| PoE                        | PoE+  |
| Dimensions (W x D x H)     | W180*D145*H183.5mm  |
| Net Weight                 | 1.7 ( $\pm 0.1$ ) kg  |
| Application                | Indoor  |
| Tally                      | Yes   |

|                                |  |
|--------------------------------|--|
| Security                       | Kensington Slot  |
| Remote Control                 | Infrared   |
| Operating Conditions           | Temperature : 0 °C to +40 °C ; Humidity : 20% to 80%   |
| Storage Conditions             | Temperature : -20°C to +60°C ; Humidity: 20% to 95%  |
| <b>IP Streaming</b>            |  |
| Resolution                     | 4K 30fps, 1080p 60fps  |
| Network Video Compress Formats | H.264, H.265, MJPEG  |
| Maximum Frame Rate             | 4K 30fps, 1080p 60fps  |
| Bit-rate Control Modes         | VBR, CBR (selectable)  |
| Range of Bit-rate Setting      | 512 Kbps to 32 Mbps  |
| Network Interface              | 10 / 100 / 1000 Base-T   |
| Multi-stream Capability        | 2<br>(RTSP / Web Page), 1080p 60fps (max.)   |
| Network Protocols              | IPv6, IPv4, TCP, UDP, ARP, ICMP, IGMP, HTTP,<br>DHCP, RTP / RTCP, RTSP, RTMP, VISCA over IP, SRT |
| NDI®   HX Capability           | Yes  |
| <b>USB</b>                     |  |
| Connector                      | USB 3.0  |
| Video Format                   | MJPEG  |
| Maximum Video Resolution       | 1080p  |
| USB Video Class (UVC)          | UVC 1.1  |

| Web UI                                  |   |
|---|---|
| Live Video Preview                      | Yes   |
| Camera PTZ Control                      | Pan, Tilt, Zoom, Focus, Preset Control      |
| Camera / Image Adjustment               | Exposure, White Balance, Picture            |
| Network Configuration                   | DHCP, IP Address, Gateway, Subnet Mask, DNS |
| Software Tools                          |   |
| Device IP Searching, Configuration Tool | Support Windows® 7 or later                 |
| Warranty                                |   |
| Camera                                  | 3 Years                                     |
| Accessories                             | 1 Year                                      |

## TR311N

| Camera                     |  |
|----------------------------|--|
| Image Sensor               | 1/2.8" 1080p Exmor CMOS  |
| Effective Picture Elements | 2 Megapixels   |
| Output Resolutions         | Auto<br>1080p/60, 1080p/59.94, 1080p/50, 1080p/30,<br>1080p/29.97, 1080p/25, 720p/60, 720p/59.94, 720p/50,<br>720p/30, 720p/29.97, 720p/25 |
| Minimum Illumination       | 0.4 lux (IRE50, F1.6, 30fps)   |
| S/N Ratio                  | ≥ 50 dB  |
| Gain                       | Auto, Manual   |
| TV Line                    | 900 (Center)   |
| Shutter Speed              | 1/1 s to 1/10,000 sec  |
| Exposure Control           | Auto, Manual, Bright mode, Priority AE (Shutter, IRIS),<br>BLC, WDR  |
| White Balance              | Auto, ATW, Indoor, Outdoor, One push, Manual   |
| Optical Zoom               | 12X  |



|                                   |  |
|-----------------------------------|--|
| Digital Zoom                      | 12X  |
| Sensor Zoom                       | 2X   |
| Viewing Angles                    | DFOV : 78° (Wide) to 7° (Tele)<br>HFOV : 70° (Wide) to 6° (Tele)<br>VFOV : 42° (Wide) to 3° (Tele) |
| Focal Length                      | f = 3.9 mm (Wide) to 46.8 mm (Tele)  |
| Aperture (Iris)                   | F = 1.6 (Wide) to 2.8 (Tele)   |
| Minimum Working Distance          | 0.3 m (Wide), 1.5 m (Tele)   |
| <b>Camera</b>                     |  |
| Pan / Tilt Angles                 | Pan : ±170°, Tilt : +90° / -30°  |
| Pan / Tilt Speed (Manual)         | Pan : 0.1° to 100° / sec, Tilt : 0.1° to 100° / sec  |
| Preset Speed                      | Pan : 200° / sec, Tilt : 200° / sec  |
| Preset Positions                  | 10 (IR), 255 (RS-232)  |
| Camera Control - Interface        | RS-232 (DIN8), RS-422 (RJ45), IP   |
| Camera Control - Protocols        | VISCA / PELCO-D (RS-232 / RS-422 / IP), CGI (IP)   |
| Image Processing                  | Noise Reduction (2D / 3D), Flip, Mirror  |
| Power Frequency                   | 50 Hz, 60 Hz   |
| <b>AI Auto Tracking Functions</b> |  |
| Tracking Mode                     | Presenter Mode, Zone Mode  |
| <b>Audio</b>                      |  |
| Channel                           | 2ch Stereo   |
| Codec                             | AAC (48 / 44.1 / 32 / 24K), G.711, PCM (8K)  |
| Sample Rate                       | 48 KHz   |
| <b>Interface</b>                  |  |
| Video Outputs                     | 3G-SDI, HDMI, IP, USB  |
| Audio Outputs                     | 3G-SDI, HDMI, IP, USB  |
| Audio Inputs                      | MIC in, Line in  |
| <b>General</b>                    |  |

|                                |  |
|--------------------------------|--|
| Power Requirement              | AC 100 - 240V to DC 12V/2A and above   |
| Power Consumption              | 18W  |
| PoE                            | PoE+   |
| Dimensions (W x D x H)         | W180*D145*H183.5mm   |
| Net Weight                     | 1.7 (±0.1) kg  |
| <b>General</b>                 |  |
| Application                    | Indoor   |
| Tally                          | Yes  |
| Security                       | Kensington Slot  |
| Remote Control                 | Infrared   |
| Operating Conditions           | Temperature : 0 °C to +40 °C ; Humidity : 20% to 80%   |
| Storage Conditions             | Temperature : -20°C to +60°C ; Humidity: 20% to 95%  |
| <b>IP Streaming</b>            |  |
| Resolution                     | 1080p 60fps  |
| Network Video Compress Formats | H.264, H.265, MJPEG, NDI   |
| Maximum Frame Rate             | 1080p 60fps  |
| Bit-rate Control Modes         | VBR, CBR (selectable)  |
| Range of Bit-rate Setting      | 512 Kbps to 32 Mbps  |
| Network Interface              | 10 / 100 / 1000 Base-T   |
| Multi-stream Capability        | 2<br>(RTSP / Web Page), 1080p 60fps (max.)   |
| Network Protocols              | IPv6, IPv4, TCP, UDP, ARP, ICMP, IGMP, HTTP, DHCP, RTP / RTCP, RTSP, RTMP, VISCA over IP, SRT, NDI |
| NDI®   HX Capability           | Yes  |
| <b>USB</b>                     |  |
| Connector                      | USB 3.0  |

|   |   |
|---|---|
| Video Format                            | MJPEG                                       |
| Maximum Video Resolution                | 1080p                                       |
| USB Video Class (UVC)                   | UVC 1.1                                     |
| <b>Web UI</b>                           |   |
| Live Video Preview                      | Yes   |
| Camera PTZ Control                      | Pan, Tilt, Zoom, Focus, Preset Control      |
| Camera / Image Adjustment               | Exposure, White Balance, Picture            |
| Network Configuration                   | DHCP, IP Address, Gateway, Subnet Mask, DNS |
| <b>Software Tools</b>                   |   |
| Device IP Searching, Configuration Tool | Support Windows® 7 or later                 |
| <b>Warranty</b>                         |   |
| Camera                                  | 3 Years                                     |
| Accessories                             | 1 Year                                      |

## TR313

| Camera                     |  |
|----------------------------|--|
| Image Sensor               | 1/2.8" 4K Exmor CMOS   |
| Effective Picture Elements | 8 Megapixels   |
| Output Resolutions         | Auto<br>4K/30, 4K/29.97, 4K/25, 1080p/60, 1080p/59.94,<br>1080p/50, 1080p/30, 1080p/29.97, 1080p/25, 720p/60,<br>720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/25 |
| Minimum Illumination       | 0.4 lux (IRE50, F1.6, 30fps)   |
| S/N Ratio                  | ≥ 50 dB  |
| Gain                       | Auto, Manual   |
| TV Line                    | 1400 (Center)  |
| Shutter Speed              | 1/1 s to 1/10,000 sec  |
| Exposure Control           | Auto, Manual, Bright mode, Priority AE (Shutter, IRIS),<br>BLC, WDR  |
| White Balance              | Auto, ATW, Indoor, Outdoor, One push, Manual   |
| Optical Zoom               | 12X  |
| Digital Zoom               | 12X  |
| Sensor Zoom                | 2X   |
| Viewing Angles             | DFOV : 78° (Wide) to 7° (Tele)<br>HFOV : 70° (Wide) to 6° (Tele)<br>VFOV : 42° (Wide) to 3° (Tele)   |
| Focal Length               | f = 3.9 mm (Wide) to 46.8 mm (Tele)  |
| Aperture (Iris)            | F = 1.6 (Wide) to 2.8 (Tele)   |
| Minimum Working Distance   | 0.3 m (Wide), 1.5 m (Tele)   |
| Pan / Tilt Angles          | Pan : ±170°, Tilt : +90° / -30°  |
| Pan / Tilt Speed (Manual)  | Pan : 0.1° to 100° / sec, Tilt : 0.1° to 100° / sec  |

| Camera                     |  |
|----------------------------|--|
| Preset Speed               | Pan : 200° / sec, Tilt : 200° / sec              |
| Preset Positions           | 10 (IR), 255 (RS-232)                            |
| Camera Control - Interface | RS-232 (DIN8), RS-422 (RJ45), IP                 |
| Camera Control - Protocols | VISCA / PELCO-D (RS-232 / RS-422 / IP), CGI (IP) |
| Image Processing           | Noise Reduction (2D / 3D), Flip, Mirror          |
| Power Frequency            | 50 Hz, 60 Hz                                     |
| AI Auto Tracking Functions |  |
| Tracking Mode              | Presenter Mode, Zone Mode                        |
| Audio                      |  |
| Channel                    | 2ch Stereo                                       |
| Codec                      | AAC (48 / 44.1 / 32 / 24K), G.711, PCM (8K)      |
| Sample Rate                | 48 KHz   |
| Interface                  |  |
| Video Outputs              | 3G-SDI, HDMI, IP, USB                            |
| Audio Outputs              | 3G-SDI, HDMI, IP, USB                            |
| Audio Inputs               | MIC in, Line in                                  |
| General                    |  |
| Power Requirement          | AC 100 - 240V to DC 12V/2A and above             |
| Power Consumption          | 18W  |
| PoE                        | PoE+   |
| Dimensions (W x W x H)     | W180*D145*H183.5mm                               |
| Net Weight                 | 1.7 (±0.1) kg                                    |
| Application                | Indoor   |
| Tally                      | Yes  |
| Security                   | Kensington Slot                                  |

| General                        |   |
|--------------------------------|---|
| Remote Control                 | Infrared  |
| Operating Conditions           | Temperature : 0 °C to +40 °C ; Humidity : 20% to 80%  |
| Storage Conditions             | Temperature : -20°C to +60°C ; Humidity: 20% to 95%   |
| IP Streaming                   |   |
| Resolution                     | 4K 30fps  |
| Network Video Compress Formats | H.264, H.265, MJPEG   |
| Maximum Frame Rate             | 4K 30fps or 1080p 60fps   |
| Bit-rate Control Modes         | VBR, CBR (selectable)   |
| Range of Bit-rate Setting      | 512 Kbps to 32 Mbps   |
| Network Interface              | 10 / 100 / 1000 Base-T  |
| Multi-stream Capability        | 2<br>(RTSP / Web Page), 1080p 60fps (max.)  |
| Network Protocols              | IPv6, IPv4, TCP, UDP, ARP, ICMP, IGMP, HTTP, DHCP, RTP / RTCP, RTSP, RTMP, VISCA over IP, SRT |
| NDI®   HX Capability           | No  |
| USB                            |   |
| Connector                      | USB 3.0   |
| Video Format                   | MJPEG   |
| Maximum Video Resolution       | 2160p   |
| USB Video Class (UVC)          | UVC 1.1   |

| Web UI                                  |   |
|---|---|
| Live Video Preview                      | Yes   |
| Camera PTZ Control                      | Pan, Tilt, Zoom, Focus, Preset Control      |
| Camera / Image Adjustment               | Exposure, White Balance, Picture            |
| Network Configuration                   | DHCP, IP Address, Gateway, Subnet Mask, DNS |
| Software Tools                          |   |
| Device IP Searching, Configuration Tool | Support Windows® 7 or later                 |
| Warranty                                |   |
| Camera                                  | 3 Years                                     |
| Accessories                             | 1 Year                                      |

## TR313N

| Camera                     |  |
|----------------------------|--|
| Image Sensor               | 1/2.8" 4K Exmor CMOS   |
| Effective Picture Elements | 8 Megapixels   |
| Output Resolutions         | Auto<br>4K/30, 4K/29.97, 4K/25, 1080p/60, 1080p/59.94,<br>1080p/50, 1080p/30, 1080p/29.97, 1080p/25, 720p/60,<br>720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/25 |
| Minimum Illumination       | 0.4 lux (IRE50, F1.6, 30fps)   |
| S/N Ratio                  | ≥ 50 dB  |
| Gain                       | Auto, Manual   |
| TV Line                    | 1400 (Center)  |
| Shutter Speed              | 1/1 s to 1/10,000 sec  |
| Exposure Control           | Auto, Manual, Bright mode, Priority AE (Shutter, IRIS),<br>BLC, WDR  |
| White Balance              | Auto, ATW, Indoor, Outdoor, One push, Manual   |

|                           |  |
|---------------------------|--|
| Optical Zoom              | 12X  |
| Digital Zoom              | 12X  |
| Sensor Zoom               | 2X   |
| Viewing Angles            | DFOV : 78° (Wide) to 7° (Tele)<br>HFOV : 70° (Wide) to 6° (Tele)<br>VFOV : 42° (Wide) to 3° (Tele) |
| Focal Length              | f = 3.9 mm (Wide) to 46.8 mm (Tele)  |
| Aperture (Iris)           | F = 1.6 (Wide) to 2.8 (Tele)   |
| Minimum Working Distance  | 0.3 m (Wide), 1.5 m (Tele)   |
| Pan / Tilt Angles         | Pan : $\pm 170^\circ$ , Tilt : $+90^\circ / -30^\circ$   |
| Pan / Tilt Speed (Manual) | Pan : $0.1^\circ$ to $100^\circ$ / sec, Tilt : $0.1^\circ$ to $100^\circ$ / sec                    |



| Camera                     |  |
|----------------------------|--|
| Preset Speed               | Pan : 200° / sec, Tilt : 200° / sec              |
| Preset Positions           | 10 (IR), 255 (RS-232)                            |
| Camera Control - Interface | RS-232 (DIN8), RS-422 (RJ45), IP                 |
| Camera Control - Protocols | VISCA / PELCO-D (RS-232 / RS-422 / IP), CGI (IP) |
| Image Processing           | Noise Reduction (2D / 3D), Flip, Mirror          |
| Power Frequency            | 50 Hz, 60 Hz                                     |
| AI Auto Tracking Functions |  |
| Tracking Mode              | Presenter Mode, Zone Mode                        |
| Audio                      |  |
| Channel                    | 2ch Stereo                                       |
| Codec                      | AAC (48 / 44.1 / 32 / 24K), G.711, PCM (8K)      |
| Sample Rate                | 48 KHz   |
| Interface                  |  |
| Video Outputs              | 3G-SDI, HDMI, IP, USB                            |
| Audio Outputs              | 3G-SDI, HDMI, IP, USB                            |
| Audio Inputs               | MIC in, Line in                                  |
| General                    |  |
| Power Requirement          | AC 100 - 240V to DC 12V/2A and above             |
| Power Consumption          | 18W  |
| PoE                        | PoE+   |
| Dimensions (W x W x H)     | W180*D145*H183.5mm                               |
| Net Weight                 | 1.7 (±0.1) kg                                    |
| Application                | Indoor   |
| Tally                      | Yes  |
| Security                   | Kensington Slot                                  |

| General                        |   |
|--------------------------------|---|
| Remote Control                 | Infrared  |
| Operating Conditions           | Temperature : 0 °C to +40 °C ; Humidity : 20% to 80%  |
| Storage Conditions             | Temperature : -20°C to +60°C ; Humidity: 20% to 95%   |
| IP Streaming                   |   |
| Resolution                     | 4K 30fps  |
| Network Video Compress Formats | H.264, H.265, MJPEG   |
| Maximum Frame Rate             | 4K 30fps or 1080p 60fps   |
| Bit-rate Control Modes         | VBR, CBR (selectable)   |
| Range of Bit-rate Setting      | 512 Kbps to 32 Mbps   |
| Network Interface              | 10 / 100 / 1000 Base-T  |
| Multi-stream Capability        | 2<br>(RTSP / Web Page), 1080p 60fps (max.)  |
| Network Protocols              | IPv6, IPv4, TCP, UDP, ARP, ICMP, IGMP, HTTP, DHCP, RTP / RTCP, RTSP, RTMP, VISCA over IP, SRT |
| NDI®   HX Capability           | Yes   |
| USB                            |   |
| Connector                      | USB 3.0   |
| Video Format                   | MJPEG   |
| Maximum Video Resolution       | 2160p   |
| USB Video Class (UVC)          | UVC 1.1   |

| Web UI                                  |   |
|---|---|
| Live Video Preview                      | Yes   |
| Camera PTZ Control                      | Pan, Tilt, Zoom, Focus, Preset Control      |
| Camera / Image Adjustment               | Exposure, White Balance, Picture            |
| Network Configuration                   | DHCP, IP Address, Gateway, Subnet Mask, DNS |
| Software Tools                          |   |
| Device IP Searching, Configuration Tool | Support Windows® 7 or later                 |
| Warranty                                |   |
| Camera                                  | 3 Years                                     |
| Accessories                             | 1 Year                                      |

## TR331

| Camera                     |  |
|----------------------------|--|
| Image Sensor               | 1/2.5" 2M Exmor CMOS   |
| Effective Picture Elements | 2 Megapixels   |
| Output Resolutions         | Auto<br>1080p/60, 1080p/59.94, 1080p/50, 1080p/30,<br>1080p/29.97, 1080p/25, 720p/60, 720p/59.94, 720p/50,<br>720p/30, 720p/29.97, 720p/25 |
| Minimum Illumination       | 0.7 lux (IRE50, F1.5, 30fps)   |
| S/N Ratio                  | ≥ 50 dB  |
| Gain                       | Auto, Manual   |
| TV Line                    | 900 (center/wide)  |
| Shutter Speed              | 1/1 to 1/32,000 sec  |
| Exposure Control           | Auto, Manual, Priority AE (Shutter, IRIS), BLC, WDR  |
| White Balance              | Auto, Manual   |

|                                   |   |
|-----------------------------------|---|
| Optical Zoom                      | 30X   |
| Digital Zoom                      | 12X   |
| Sensor Zoom                       | 2X  |
| Viewing Angles                    | DFOV : 72.9° (Wide) to 2.64° (Tele)<br>HFOV : 65.1° (Wide) to 2.34° (Tele)<br>VFOV : 38.4° (Wide) to 1.36° (Tele) |
| Focal Length                      | f = 4.3 mm (Wide) to 129 mm (Tele)  |
| Aperture (Iris)                   | F = 1.6 (Wide) to 4.7 (Tele)  |
| Minimum Working Distance          | Wide 0.01 m,<br>Tele 1.2 m  |
| Pan / Tilt Angles                 | Pan : ±170°, Tilt : +90° / -30°   |
| Pan / Tilt Speed (Manual)         | Pan : 0.1° to 100° / sec, Tilt : 0.1° to 100° / sec   |
| <b>Camera</b>                     |   |
| Preset Speed                      | Pan : 200° / sec, Tilt : 200° / sec   |
| Preset Positions                  | 10 (IR), 255 (RS-232)   |
| Camera Control - Interface        | RS-232 (DIN8), RS-422 (RJ45), IP  |
| Camera Control - Protocols        | VISCA / PELCO-D (RS-232 / RS-422 / IP), CGI (IP)  |
| Image Processing                  | Noise Reduction (2D / 3D), Flip, Mirror   |
| Power Frequency                   | 50 Hz, 60 Hz  |
| <b>AI Auto Tracking Functions</b> |   |
| Tracking Mode                     | Presenter Mode, Zone Mode, Hybrid Mode  |
| <b>Audio</b>                      |   |
| Channel                           | 2ch Stereo  |
| Codec                             | AAC-LC (48 / 44.1 / 32 / 24K), G.711, PCM (8K)  |
| Sample Rate                       | 48 / 44.1 / 32 / 24 / 16 / 8 KHz  |
| <b>Interface</b>                  |   |

|                                |  |
|--------------------------------|--|
| Video Outputs                  | 3G-SDI, HDMI, IP, USB  |
| Audio Outputs                  | 3G-SDI, HDMI, IP, USB  |
| Audio Inputs                   | MIC in, Line in  |
| <b>General</b>                 |  |
| Power Requirement              | AC 100 - 240V to DC 12V/2A and above   |
| Power Consumption              | 18W  |
| PoE                            | PoE+   |
| Dimensions (W x D x H)         | W180*D145*H183.5mm   |
| Net Weight                     | 1.7 (±0.1) kg  |
| Application                    | Indoor   |
| Tally                          | Yes  |
| Security                       | Kensington Slot  |
| Remote Control                 | Infrared   |
| <b>General</b>                 |  |
| Operating Conditions           | Temperature : 0 °C to +40 °C ; Humidity : 20% to 80%                                     |
| Storage Conditions             | Temperature : -20°C to +60°C ; Humidity: 20% to 95%                                      |
| <b>IP Streaming</b>            |  |
| Resolution                     | 1080p60  |
| Network Video Compress Formats | H.264, H.265, MJPEG  |
| Maximum Frame Rate             | 1080p 60fps  |
| Bit-rate Control Modes         | VBR, CBR (selectable)  |
| Range of Bit-rate Setting      | 512 Kbps to 32 Mbps  |
| Network Interface              | 10 / 100 / 1000 Base-T   |
| Multi-stream Capability        | 2<br>(RTSP / Web Page), 1080p 60fps (max.)   |
| Network Protocols              | IPv6, IPv4, TCP, UDP, ARP, ICMP, IGMP, HTTP, DHCP, RTP / RTCP, RTSP, RTMP, VISCA over IP |

|   |   |
|---|---|
| NDI®   HX Capability                    | No  |
| <b>USB</b>                              |   |
| Connector                               | USB 3.0                                     |
| Video Format                            | MJPEG                                       |
| Maximum Video Resolution                | 1080p                                       |
| USB Video Class (UVC)                   | UVC 1.1                                     |
| USB Audio Class (UAC)                   | UAC 1.0                                     |
| <b>Web UI</b>                           |   |
| Live Video Preview                      | Yes   |
| Camera PTZ Control                      | Pan, Tilt, Zoom, Focus, Preset Control      |
| Camera / Image Adjustment               | Exposure, White Balance, Picture            |
| Network Configuration                   | DHCP, IP Address, Gateway, Subnet Mask, DNS |
| <b>Software Tools</b>                   |   |
| Device IP Searching, Configuration Tool | Support Windows® 7 or later                 |
| <b>Warranty</b>                         |   |
| Camera                                  | 3 Years                                     |
| Accessories                             | 1 Year                                      |

# TR331N

|                            |  |
|----------------------------|--|
| <b>Camera</b>              |  |
| Image Sensor               | 1/2.5" 2M Exmor CMOS   |
| Effective Picture Elements | 2 Megapixels   |
| Output Resolutions         | Auto<br>1080p/60, 1080p/59.94, 1080p/50, 1080p/30,<br>1080p/29.97, 1080p/25, 720p/60, 720p/59.94, 720p/50,<br>720p/30, 720p/29.97, 720p/25 |
| Minimum Illumination       | 0.7 lux (IRE50, F1.5, 30fps)   |

|                            |   |
|----------------------------|---|
| S/N Ratio                  | ≥ 50 dB   |
| Gain                       | Auto, Manual  |
| TV Line                    | 900 (center/wide)   |
| Shutter Speed              | 1/1 to 1/32,000 sec   |
| Exposure Control           | Auto, Manual, Priority AE (Shutter, IRIS), BLC, WDR   |
| White Balance              | Auto, Manual  |
| Optical Zoom               | 30X   |
| Digital Zoom               | 12X   |
| Sensor Zoom                | 2X  |
| Viewing Angles             | DFOV : 72.9° (Wide) to 2.64° (Tele)<br>HFOV : 65.1° (Wide) to 2.34° (Tele)<br>VFOV : 38.4° (Wide) to 1.36° (Tele) |
| Focal Length               | f = 4.3 mm (Wide) to 129 mm (Tele)  |
| Aperture (Iris)            | F = 1.6 (Wide) to 4.7 (Tele)  |
| Minimum Working Distance   | Wide 0.01 m,<br>Tele 1.2 m  |
| Pan / Tilt Angles          | Pan : ±170°, Tilt : +90° / -30°   |
| Pan / Tilt Speed (Manual)  | Pan : 0.1° to 100° / sec, Tilt : 0.1° to 100° / sec   |
| <b>Camera</b>              |   |
| Preset Speed               | Pan : 200° / sec, Tilt : 200° / sec   |
| Preset Positions           | 10 (IR), 255 (RS-232)   |
| Camera Control - Interface | RS-232 (DIN8), RS-422 (RJ45), IP  |
| Camera Control - Protocols | VISCA / PELCO-D (RS-232 / RS-422 / IP), CGI (IP)  |
| Image Processing           | Noise Reduction (2D / 3D), Flip, Mirror   |
| Power Frequency            | 50 Hz, 60 Hz  |

| AI Auto Tracking Functions     |  |
|--------------------------------|--|
| Tracking Mode                  | Presenter Mode, Zone Mode, Hybrid Mode               |
| Audio                          |  |
| Channel                        | 2ch Stereo   |
| Codec                          | AAC-LC (48 / 44.1 / 32 / 24K), G.711, PCM (8K)       |
| Sample Rate                    | 48 / 44.1 / 32 / 24 / 16 / 8 KHz                     |
| Interface                      |  |
| Video Outputs                  | 3G-SDI, HDMI, IP, USB                                |
| Audio Outputs                  | 3G-SDI, HDMI, IP, USB                                |
| Audio Inputs                   | MIC in, Line in                                      |
| General                        |  |
| Power Requirement              | AC 100 - 240V to DC 12V/2A and above                 |
| Power Consumption              | 18W  |
| PoE                            | PoE+   |
| Dimensions (W x D x H)         | W180*D145*H183.5mm                                   |
| Net Weight                     | 1.7 (±0.1) kg  |
| Application                    | Indoor   |
| Tally                          | Yes  |
| Security                       | Kensington Slot                                      |
| Remote Control                 | Infrared   |
| General                        |  |
| Operating Conditions           | Temperature : 0 °C to +40 °C ; Humidity : 20% to 80% |
| Storage Conditions             | Temperature : -20°C to +60°C ; Humidity: 20% to 95%  |
| IP Streaming                   |  |
| Resolution                     | 1080p60  |
| Network Video Compress Formats | H.264, H.265, MJPEG                                  |
| Maximum Frame Rate             | 1080p 60fps  |



|   |  |
|---|--|
| Bit-rate Control Modes                  | VBR, CBR (selectable)  |
| Range of Bit-rate Setting               | 512 Kbps to 32 Mbps  |
| Network Interface                       | 10 / 100 / 1000 Base-T   |
| Multi-stream Capability                 | 2<br>(RTSP / Web Page), 1080p 60fps (max.)   |
| Network Protocols                       | IPv6, IPv4, TCP, UDP, ARP, ICMP, IGMP, HTTP, DHCP, RTP / RTCP, RTSP, RTMP, VISCA over IP |
| NDI®   HX Capability                    | Yes  |
| <b>USB</b>                              |  |
| Connector                               | USB 3.0  |
| Video Format                            | MJPEG  |
| Maximum Video Resolution                | 1080p  |
| USB Video Class (UVC)                   | UVC 1.1  |
| USB Audio Class (UAC)                   | UAC 1.0  |
| <b>Web UI</b>                           |  |
| Live Video Preview                      | Yes  |
| Camera PTZ Control                      | Pan, Tilt, Zoom, Focus, Preset Control   |
| Camera / Image Adjustment               | Exposure, White Balance, Picture   |
| Network Configuration                   | DHCP, IP Address, Gateway, Subnet Mask, DNS  |
| <b>Software Tools</b>                   |  |
| Device IP Searching, Configuration Tool | Support Windows® 7 or later  |
| <b>Warranty</b>                         |  |
| Camera                                  | 3 Years  |
| Accessories                             | 1 Year   |

## TR333

| Camera                     |  |
|----------------------------|--|
| Image Sensor               | 1/2.5" 4K Exmor CMOS   |
| Effective Picture Elements | 8 Megapixels   |
| Output Resolutions         | Auto<br>4K/30, 4K/29.97, 4K/25, 1080p/60, 1080p/59.94,<br>1080p/50, 1080p/30, 1080p/29.97, 1080p/25, 720p/60,<br>720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/25 |
| Minimum Illumination       | 2.7 lux (IRE50, F1.5, 30fps)   |
| S/N Ratio                  | ≥ 50 dB  |
| Gain                       | Auto, Manual   |
| TV Line                    | 1400 (Center)  |
| Shutter Speed              | 1/1 to 1/32,000 sec  |
| Exposure Control           | Auto, Manual, Priority AE (Shutter, IRIS), BLC, WDR  |
| White Balance              | Auto, Manual   |
| Optical Zoom               | 30X  |
| Digital Zoom               | 12X  |
| Sensor Zoom                | 2X   |
| Viewing Angles             | DFOV : 75° (Wide) to 3° (Tele)<br>HFOV : 68° (Wide) to 2.8° (Tele)<br>VFOV : 40° (Wide) to 1.6° (Tele)   |
| Focal Length               | f = 4.8 mm (Wide) to 144 mm (Tele)   |
| Aperture (Iris)            | F = 1.5 (Wide) to 3.4 (Tele)   |
| Minimum Working Distance   | 1.5 m to Infinity  |
| Pan / Tilt Angles          | Pan : ±170°, Tilt : +90° / -30°  |
| Pan / Tilt Speed (Manual)  | Pan : 0.1° to 100° / sec, Tilt : 0.1° to 100° / sec  |

| Camera                     |  |
|----------------------------|--|
| Preset Speed               | Pan : 200° / sec, Tilt : 200° / sec              |
| Preset Positions           | 10 (IR), 255 (RS-232)                            |
| Camera Control - Interface | RS-232 (DIN8), RS-422 (RJ45), IP                 |
| Camera Control - Protocols | VISCA / PELCO-D (RS-232 / RS-422 / IP), CGI (IP) |
| Image Processing           | Noise Reduction (2D / 3D), Flip, Mirror          |
| Power Frequency            | Auto, 50 Hz, 60 Hz                               |
| AI Auto Tracking Functions |  |
| Tracking Mode              | Presenter Mode, Zone Mode                        |
| Audio                      |  |
| Channel                    | 2ch Stereo                                       |
| Codec                      | AAC-LC (48 / 44.1 / 32 / 24K), G.711, PCM (8K)   |
| Sample Rate                | 48 / 44.1 / 32 / 24 / 16 / 8 KHz                 |
| Interface                  |  |
| Video Outputs              | 3G-SDI, HDMI, IP, USB                            |
| Audio Outputs              | 3G-SDI, HDMI, IP, USB                            |
| Audio Inputs               | MIC in, Line in                                  |
| General                    |  |
| Power Requirement          | AC 100 - 240V to DC 12V/2A and above             |
| Power Consumption          | 18W  |
| PoE                        | PoE+   |
| Dimensions (W x D x H)     | W180*D145*H183.5mm                               |
| Net Weight                 | 1.7 (±0.1) kg                                    |
| Application                | Indoor   |
| Tally                      | Yes  |
| Security                   | Kensington Slot                                  |
| Remote Control             | Infrared   |

| General                        |  |
|--------------------------------|--|
| Operating Conditions           | Temperature : 0 °C to +40 °C ; Humidity : 20% to 80%                                     |
| Storage Conditions             | Temperature : -20°C to +60°C ; Humidity: 20% to 95%                                      |
| IP Streaming                   |  |
| Resolution                     | 4K 30fps   |
| Network Video Compress Formats | H.264, H.265, MJPEG  |
| Maximum Frame Rate             | 4K 30fps or 1080p 60fps  |
| Bit-rate Control Modes         | VBR, CBR (selectable)  |
| Range of Bit-rate Setting      | 512 Kbps to 32 Mbps  |
| Network Interface              | 10 / 100 / 1000 Base-T   |
| Multi-stream Capability        | 2<br>(RTSP / Web Page), 1080p 60fps (max.)   |
| Network Protocols              | IPv6, IPv4, TCP, UDP, ARP, ICMP, IGMP, HTTP, DHCP, RTP / RTCP, RTSP, RTMP, VISCA over IP |
| NDI®   HX Capability           | No   |
| USB                            |  |
| Connector                      | USB 3.0  |
| Video Format                   | MJPEG  |
| Maximum Video Resolution       | 2160p  |
| USB Video Class (UVC)          | UVC 1.1  |
| USB Audio Class (UAC)          | UAC 1.0  |
| Web UI                         |  |
| Live Video Preview             | Yes  |
| Camera PTZ Control             | Pan, Tilt, Zoom, Focus, Preset Control   |
| Camera / Image Adjustment      | Exposure, White Balance, Picture   |
| Network Configuration          | DHCP, IP Address, Gateway, Subnet Mask, DNS  |

| Software Tools                          |                             |
|---|-----------------------------|
| Device IP Searching, Configuration Tool | Support Windows® 7 or later |
| Warranty                                |                             |
| Camera                                  | 3 Years                     |
| Accessories                             | 1 Year                      |

