# 4K PTZ Camera

# User manual
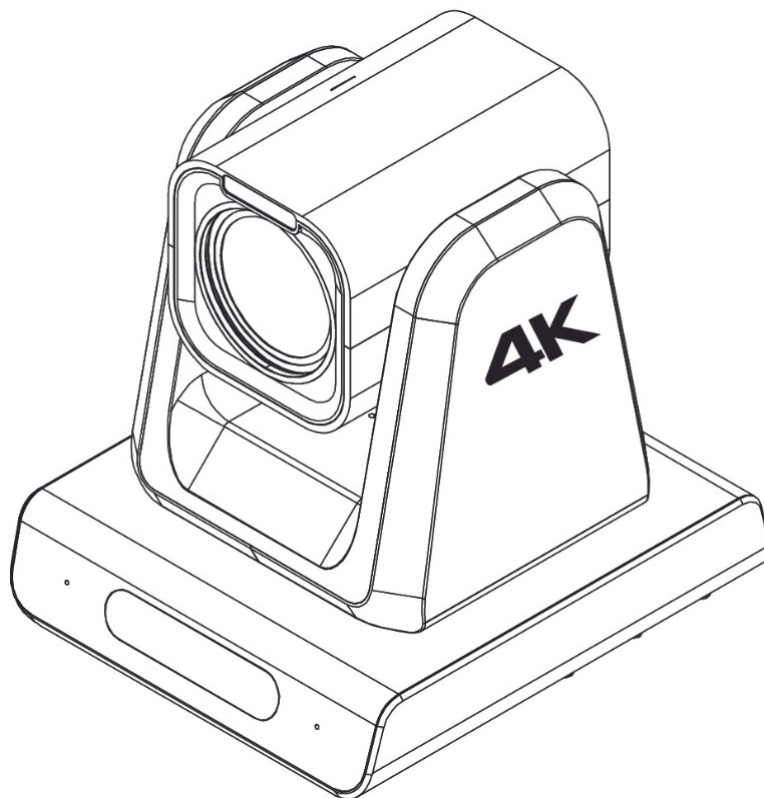
# Attention

The purpose of this user manual is to ensure that users can use the product correctly and avoid danger and damage in operation. Before using this product, please read this user manual carefully and keep it properly for future reference.

# Statement

The descriptions in this manual may differ from the version you are using. If you are having trouble using this manual, please contact our technical support for assistance. The contents of this manual will be updated, and our company reserves the right to leave it without notice.

*Zowietek Electronics, Ltd.*

# 1  Contents

# Warnings and Precautions

1. Read all of these warnings and save them for later reference.

2. Follow all warnings and instructions marked on this unit.

3. Unplug this unit from the Power Adapter before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.

4. Do not use this unit in or near water.

5. Do not place this unit on an unstable cart, stand, or table. The unit may fall, causing serious damage.

6. Slots and openings on the cabinet slides and bottom are provided for ventilation. To ensure this unit's safe and reliable operation and protect it from overheating, do not block or cover these openings. Do not place this unit on a bed, sofa, rug, or similar surface, as the ventilation openings on the bottom of the cabinet will be blocked.

7. This unit should never be placed near or over a heat register or radiator. This unit should not be placed in a built-in installation unless proper ventilation is provided.

8. This product should only be operated from the type of power source indicated on the marking label of the AC adapter. If you are not sure of the type of power available, consult your ZowiePTZ dealer or your local power company.

9. Do not allow anything to rest on the power cord. Do not locate this unit where the power cord will be walked on, rolled over, or otherwise stressed.

10. If an extension cord must be used with this unit, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord rating.

11. Never push objects of any kind into this unit through the cabinet ventilation slots, as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind onto or into this unit.

12. Except as specifically explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks, and will void your warranty. Refer all service issues to qualified service personnel.

13. Unplug this product from the Power Adapter and refer to qualified service personnel under the following conditions:

    a) When the liquid has spilled into the unit.

    b) When the product has been exposed to rain or water.

    c) When the product does not operate normally under normal operating conditions. Adjust only those controls covered by the operating instructions in this manual; improper adjustment of other controls may damage the unit and often require extensive work by a qualified technician to restore the unit to normal operation.

    d) When the product has been dropped or the cabinet has been damaged.

    e) When the product exhibits a distinct change in performance, indicating a need for service.

# Disposal

**For EU Customers only - WEEE Marking**

This symbol on the product or its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service, or the shop where you purchased the product.

# 1.   General

## 1.1  Overview

ZowiePTZ streaming video camera is the latest 4K Ultra HD PTZ camera from Zowietek, featuring NDI®| HX3, SDI, HDMI and simple versatile controls for live video production workflow. It is very cost effective and professional grade to replace existing 1080p cameras to enter 4K video era.

ZowiePTZ equips Sony Ultra-HD 4K back-illuminated and stacked Exmor R CMOS sensor that offers crystal clear and rich color accurate video with improved low light sensitivity. It delivers truly stunning pictures in all shoot modes and conditions. The camera varies  in  12x, 18x and 25x lossless optical zoom lens that is capable of zoom-in  with  high  magnification for detailed close-up view. The camera can output 4K quality video via HDMI, 3G SDI video and NDI simultaneously with embedded audio.

The camera is also IP based camera and NDI-capable up to NDI® | HX3 that is well-known for its high quality, low latency. The video streaming is an easy way to connect live video in LAN, feed to OBS, vMix, zoom, teams, Skype, YouTube and Facebook etc.

Features most comprehensive web control with live web preview, shortcut of streaming, recording, OSD, NDI and decoding streaming. Full control ZowiePTZ camera, all from a super easy to use web by iPad, Phone, PC, web Joystick and Xbox  joystick.  Pan,  Tilt,  Zoom, Preset set/recall, preview, all major camera control can be easily, user friendly performed at the ZowieWeb UI.

Built-in front tally light for multi-camera live production ensure on air talent will always know which one is live. And the tally status can instantly visible and live at all phone, PC and Pad connected, far more than 360 degree. Built-in MIC is also available.

The Neutral Density-ND filter mount is designed to use any density standard ND, UV or polarized lens to assure capturing high quality video footage possible in any light conditions. ZowiePTZ can be controlled remotely via IP VISCA, or via serial PELCO, VISCA RS232, RS485/422 from a PC or dedicated camera controller. Meanwhile, the camera can also be controlled by NDI.

RESTful API is available for own DIY automation and system integrator. The API is across all Zowietek Eco system of PTZ cameras, POV cameras, encoders, decoders and future cloud support. Plus, the discover feature can discover all above devices and display their name, IP in a glance. The camera can be powered by either DC or PoE, this make it can be power up to one hundred meters away, accessed and controlled by network. Single cable for Video, Audio, Power and Tally in addition to  NDI.

The ZowiePTZ is an affordable professional grade PTZ camera that can be used in a wide variety of broadcast and professional A/V applications.

## 1.2  Features

- Sony Ultra-HD 4K back illuminated and stacked 1/2.3″ sensor
- Crisply-detail, low noise 4K video
- High quality 12x, 18x and 25x optical zoom lens
- Built-in tally light PVW/PGM in multi-camera productions
- AAE, ASE, AE and manual multiple exposure modes with zone option
- Auto, manual, color temp, one push white balance
- Multiple focus zones, Auto, Manual, One Push focus supported
- Simultaneous 4K HDMI and 3G SDI outputs with embedded audio
- Up to 4K30 hardware video encoder
- H.264 HP/MP/BP or H.265/HEVC MP codec
- NDI® | HX3 support with better quality and very smallest delay
- Up to 50mbps bitrate, high bandwidth video stream for best quality
- NDI® | HX3, RTSP, SRT, RTMP(s) steaming up to 4K30
- Low latency SRT streaming
- Direct standalone streaming to CDN like YouTube etc, no PC required.
- Video scale down, Vertical/Portrait crop and rotation streaming support
- Simultaneous live out in different RTMP SRT RTSP and multiple CDN
- Adaptive AAC audio for both embedded audio and analog
- Analog stereo line in audio input
- 255 preset position and 10 shortcuts supported
- RS232/485/422 PELCO/VISCA, IP VISCA remote control
- Simple setup and configuration via login protected web interface
- Comprehensive control via by PC, smartphone, iPad, Controller and Panel
- Live video feed to PC, phone and iPad
- Flexible WYSIWYG OSD, text, logo and stamp image overlay, user-friendly
- Automatic gyroscope mount direction detection
- Rich and clear working or operating status in front LED display at a glance
- Easy access and plug-and-play installation by mDNS or hotspot
- Standard ND UV Polarized lens thread
- With standard camera tripod mount
- RESTFUL API supported for DIY automation and system integrator
- OEM/ODM support

# 2. Quick Start Guide

## 2.1 Packing List

| Name | Unit | Quantity |
|---|---|---|
| 4K PTZ Camera | PCS | 1 |
| Power Adapter | PCS | 1 |
| RS232 Cable | PCS | 1 |
| Ceiling Mount | PCS | 1 |
| Quick Start Guide | PCS | 1 |
| Wall Mount | PCS | 1 |
| Remote Control | PCS | 1 |

## 2.2 Connections and Controls
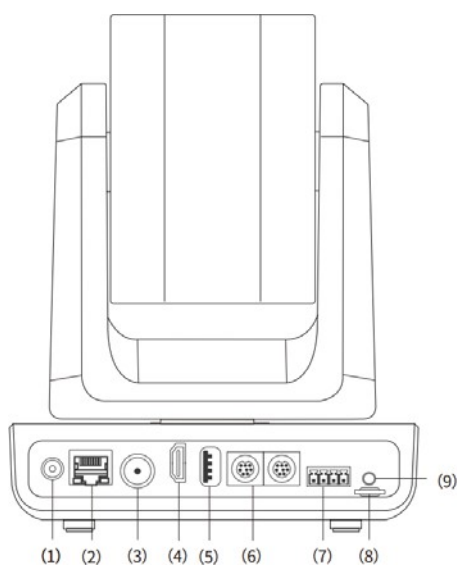


**Physical Connections**

| Num | Interface | Description |
|---|---|---|
| 1 | DC 12V | 12VPower Supply |
| 2 | LAN/PoE+/NDI®|HX3 | Network Interface |
| 3 | SDI output | 3G SDI Output, maximum output1080p60 |
| 4 | HDMI output | HDMI Output, maximum output 4k30 |
| 5 | USB port | USB port |

| 6 | RS232 Connector | Communication serial port, connection method see the prompt below |
|---|---|---|
| 7 | RS485/422 Connector | Communication serial port, connection method see the prompt below |
| 8 | TF card | Storage Device Interface |
| 9 | 3.5mm line in | 3.5mm line in |

a. The RS232 pin definition is as follows:
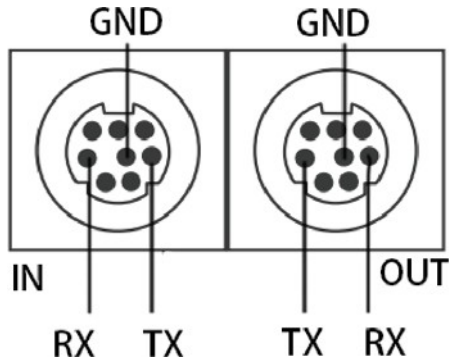


In order to control ZowiePTZ correctly, please read the RS232 pin definition carefully and use the correct serial port cable to connect.
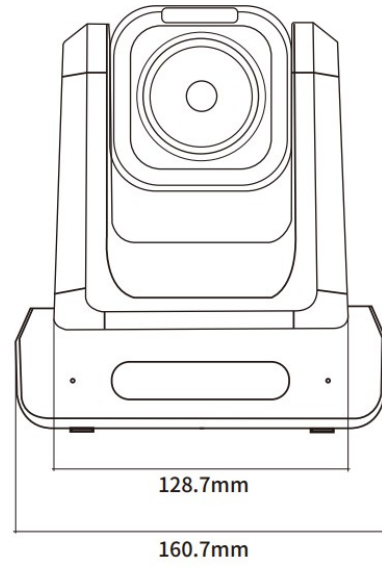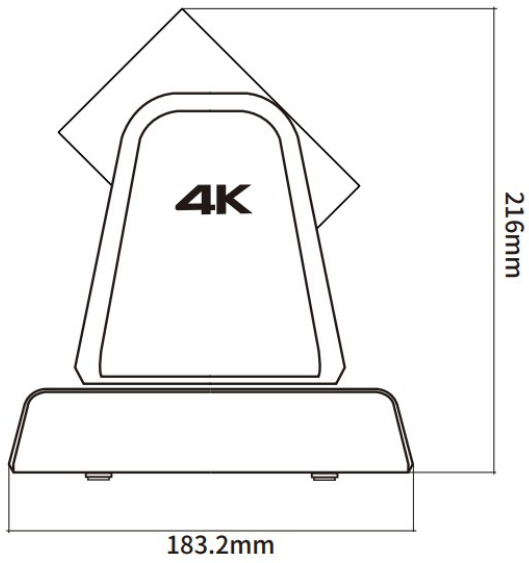
b. For the RS485 interface, please select the direct connection method for connection. The connection method is as shown in the figure below:
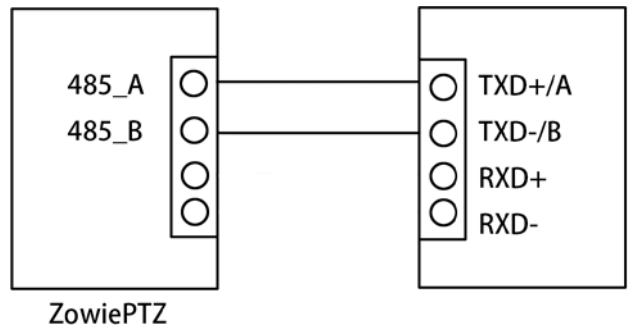


c. For the RS422 interface, please select the direct connection method for connection. The connection method is as shown in the figure below:
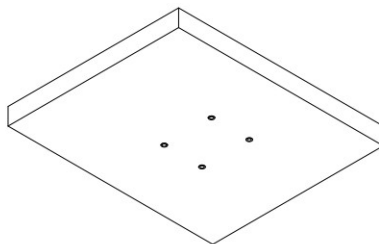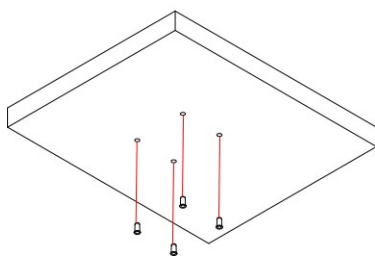
## 2.3  Dimensions

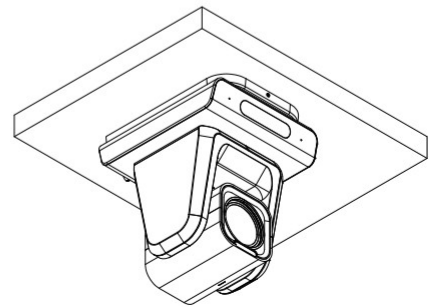216mm

4K

183.2mm

128.7mm
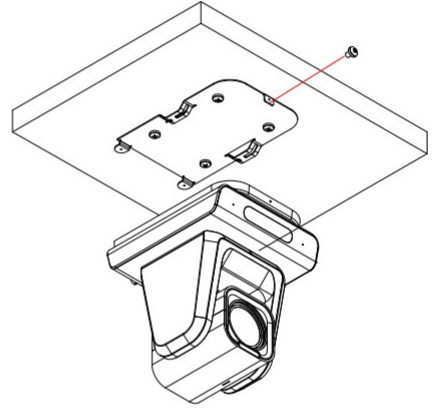
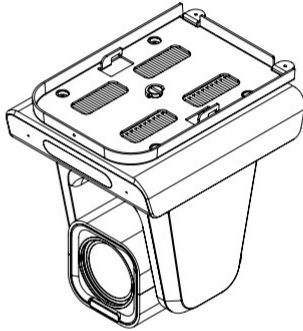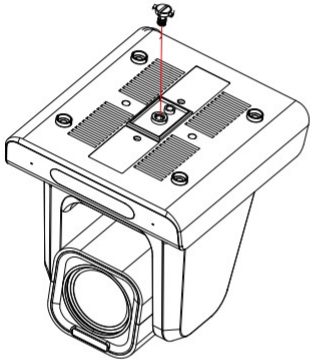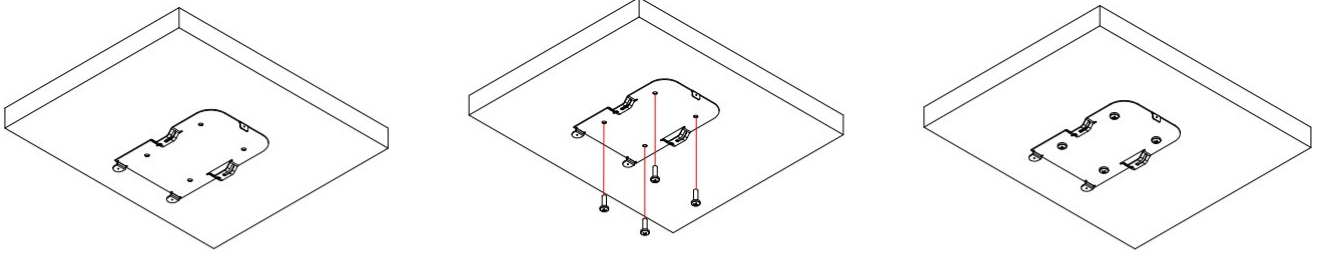160.7mm

85.7mm

89.7mm
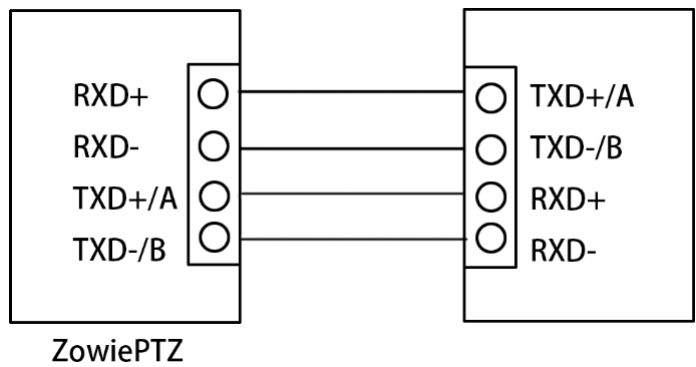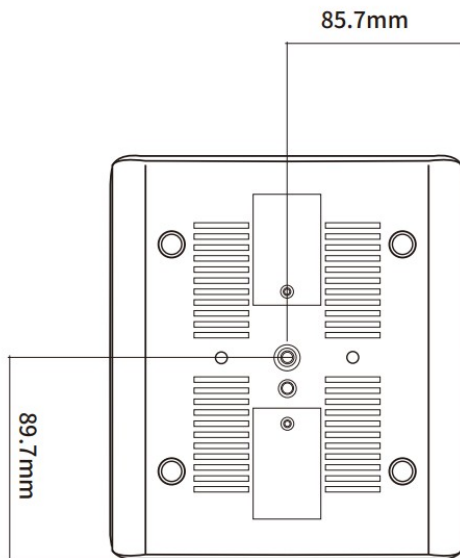
**Note:**
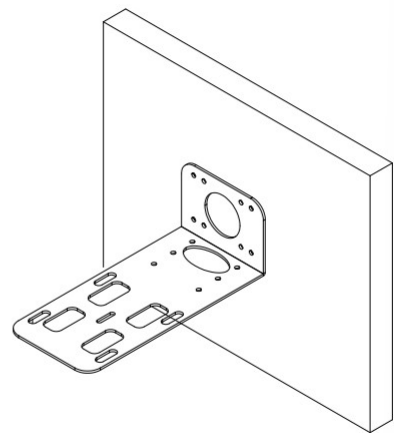Please read the label on the bottom carefully and take photos to document before installation.
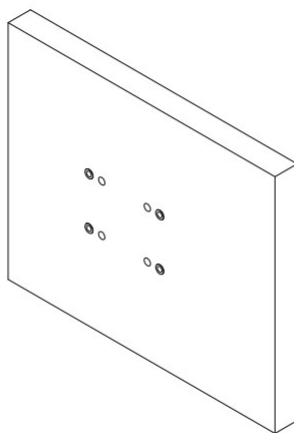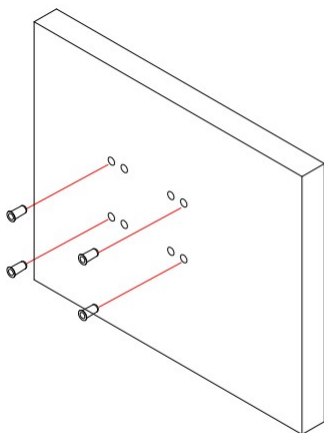
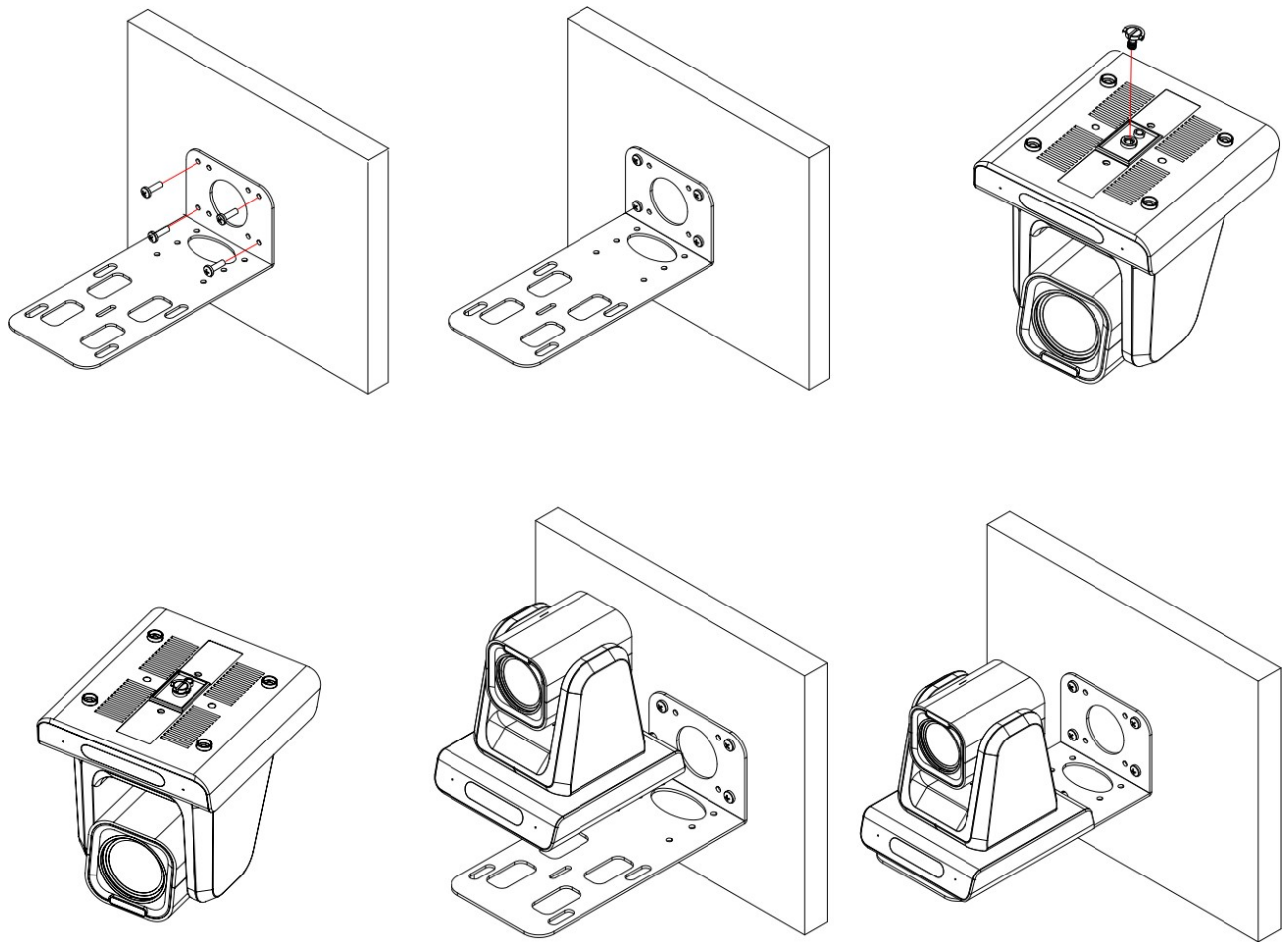# 2.4 Device Installation and Connection

**1) Installation**

(1) Celling mounting
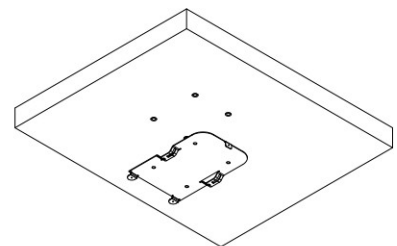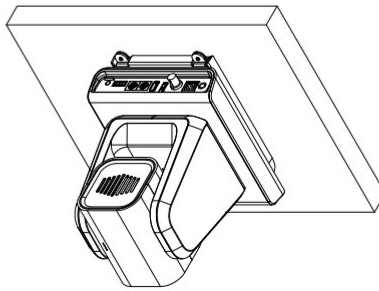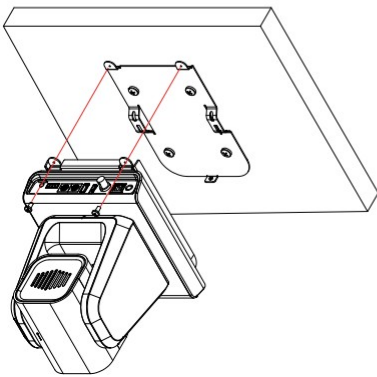
(2) Wall mounting

**2）System configuration diagram**
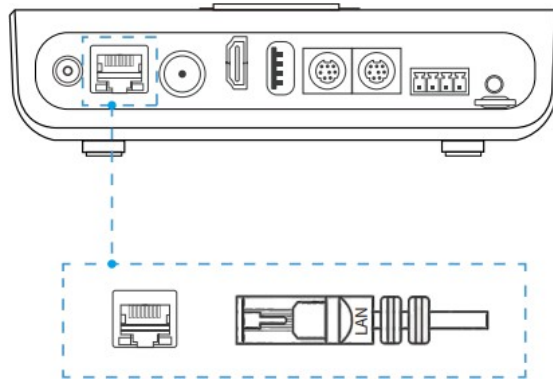


HDMI Cable

SDI Cable

Vedio Monitor

Lan Cable

Router

PC

iPhone/Pad
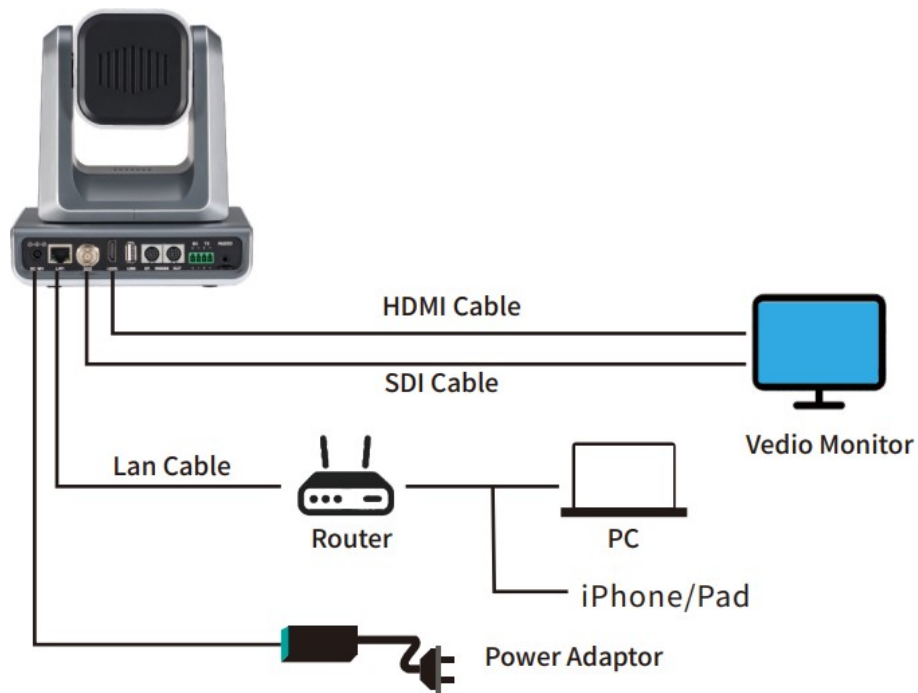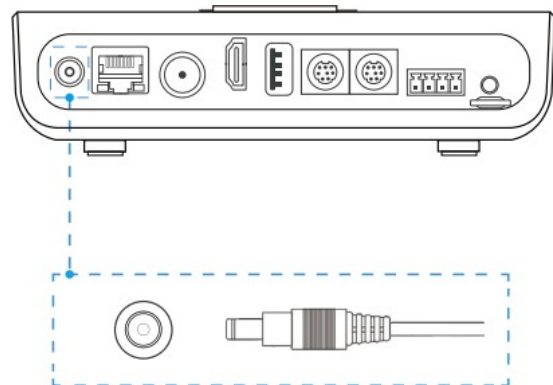
Power Adaptor

**3）Connect Network**

Connect the ZowiePTZ to a network with router or DHCP capability using a network cable.

## 4） Connect power supply

(1) DC

After the DC power adapter supplies power to the ZowiePTZ, the status indicator will light up.



(2) POE

ZowiePTZ can also be powered by Power over Ethernet (PoE/ PoE+). You needn't prepare a power adapter. To take advantage of PoE, the LAN cable has to be connected to a PoE Network Switch, but at least a CAT5e LAN cable is required for PoE.

## 5） Login the web console

ZowiePTZ provides five easy, quick ways to log into the WEB console. Please make sure the phone, PC, or iPad is on the same LAN or WIIFI as the ZowiePTZ.

1） Login ZowiePTZ by mDNS

Please enter http://ZowiePTZ-xxxxx.local in the browser of your computer or mobile phone. (mDNS URL is on the bottom of the ZowiePTZ.)
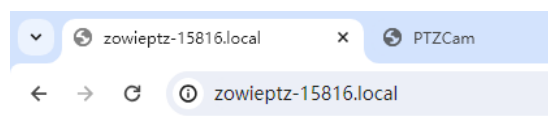


2） IP Address

The DHCP of ZowiePTZ is enabled by default. Please connect the HDMI/SDI output to the monitor. After ZowiePTZ is turned on, the IP address will automatically display in the upper left corner for a while; or click the MENU button on the remote control to call out the OSD menu to view the IP address. Enter the IP address in the browser of the mobile phone or computer in the same LAN to log in to the web control interface.
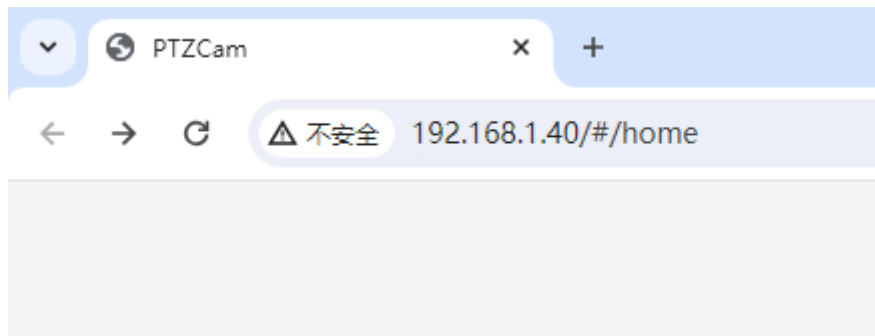
**3）Login ZowiePTZ by Hotspot**

Direct connect to ZowiePTZ without a LAN or WIFI network. Connect the mobile device to ZowiePTZ's hotspot, it is default on. Please find its SID and password at the bottom of ZowiePTZ. After connecting to the hotspot, enter http:// 170.128.88.1 in the browser to log into the Web console. When connecting to the hotspot, the phone may prompt that there is no Internet, which is normal, please continue to connect.



**4K PTZ Camera**

Model: ZowiePTZ       P/N: 30511-102
Input: DC 12V 2A

Hotspot(SSID): ZowiePTZ-15058  Password: 12345678
Hotspot IP Addr: 170.128.88.1
URL: http://ZowiePTZ-15058.local
Fail-safe IP Addr: 192.168.5.168
User Name: admin    Password: admin

**MADE IN CHINA**

**4）Login ZowiePTZ by Device Discovery**

If you already own any ZowiePTZ or ZowieTek products, you can also log into a new device by Device Discover.

Log in to the Web console, and click "Setting > Dashboard" to use the discover function. After clicking the "Scan" button, find the device serial number on the bottom label corresponding to the new ZowiePTZ and click it to quickly jump to the device's Web console.
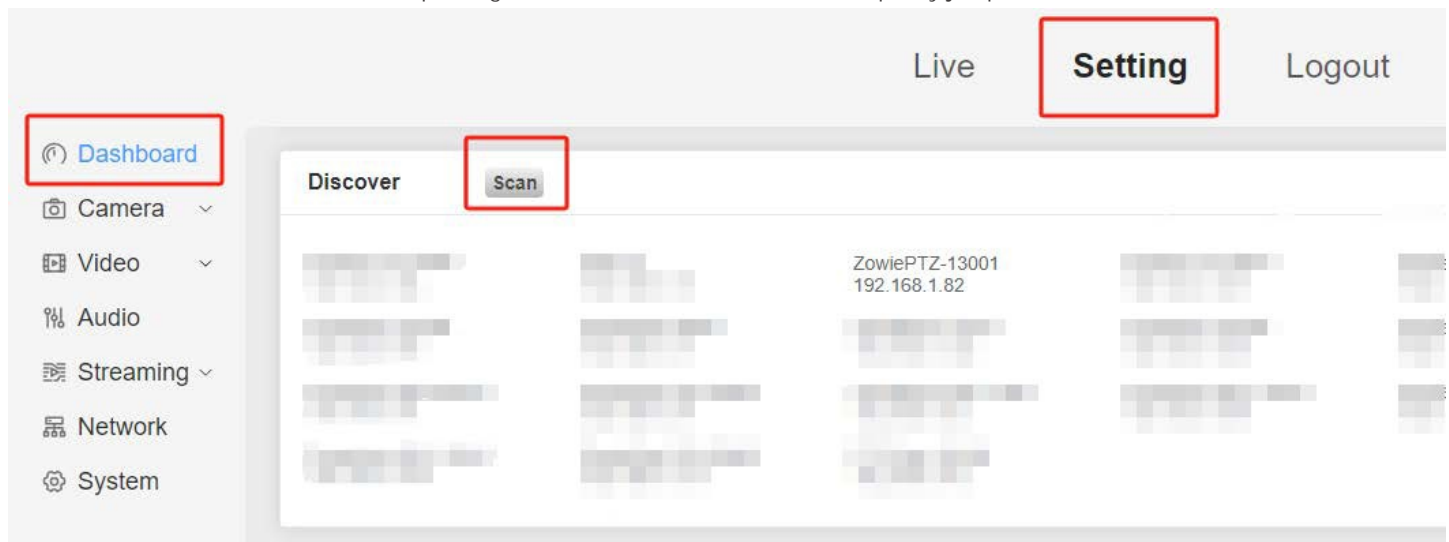


**5）Failsafe IP**

When the connected network does not have the DHCP or directly connects ZowiePTZ to the PC via LAN cable, or other unknown errors occur, the IP of ZowiePTZ will become a failsafe IP (192.168.5.168). Please add a 5-segment address to the computer to log in to the web console.

**6) Switching control devices**

If the user needs to log in to the web control interface using a mobile phone after logging in to the web control interface on the computer, there are two ways.

1) Make sure the mobile phone and ZowiePTZ are in the same LAN, then scan the first QR code to log in to the mobile web control interface.

2) Click the hotspot icon and scan the QR code that appears to connect to the hotspot. Make sure the mobile phone and ZowiePTZ are in the same hotspot. Then, scan the first QR code to log in to the mobile web control interface.
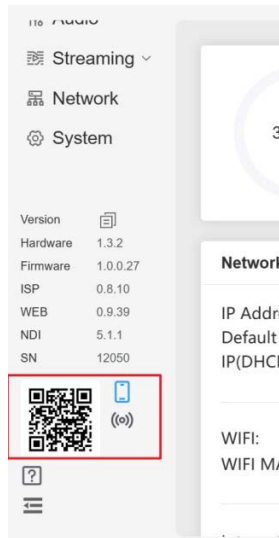
### Windows

(1)  Press Win+R, then type cmd and enter.
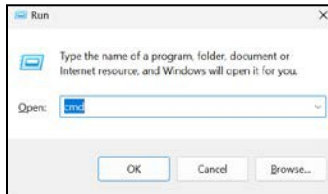
(2)  Type ipconfig in the window and enter.
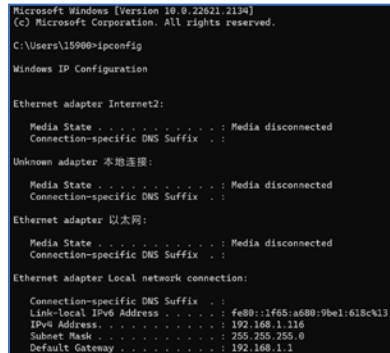
(3)  Type ncpa.cpl in the same window and enter.
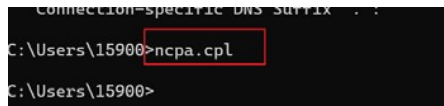
(4) Right-click Local Network connection and select Properties, then click Internet Protocol Version 4(TCP/IPv4) and Properties.
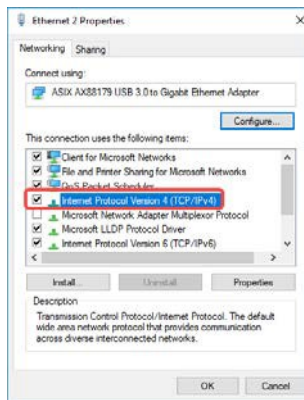


(5) Type in IP address, subnet mask and default gateway found.

(6) Use 192.168.1.1 as the Preferred DNS server address and 8.8.8.8 as the Alternate DNS server.
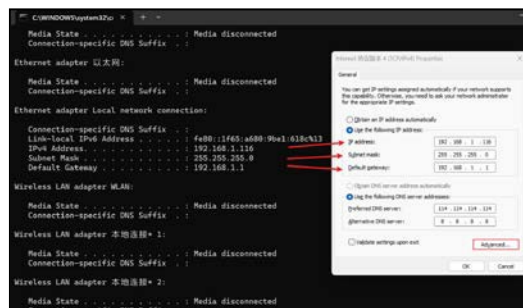


(7) Click Advanced. Add a new IP address, whose first three segments are the same as the failsafe IP address (192.168.5.168). Type 192.168.5.116 for example. The subnet mask remains the default.
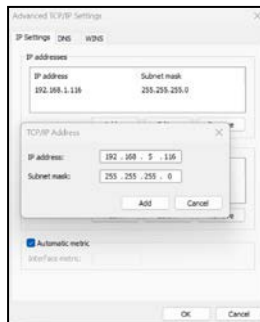


(8) Save setting.

**macOS**

(1) Enter the system setting interface and click Network Settings.
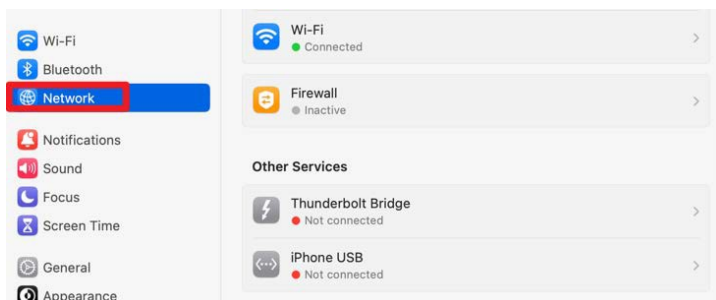
(2) Click the lower right corner and select **Add Service...**
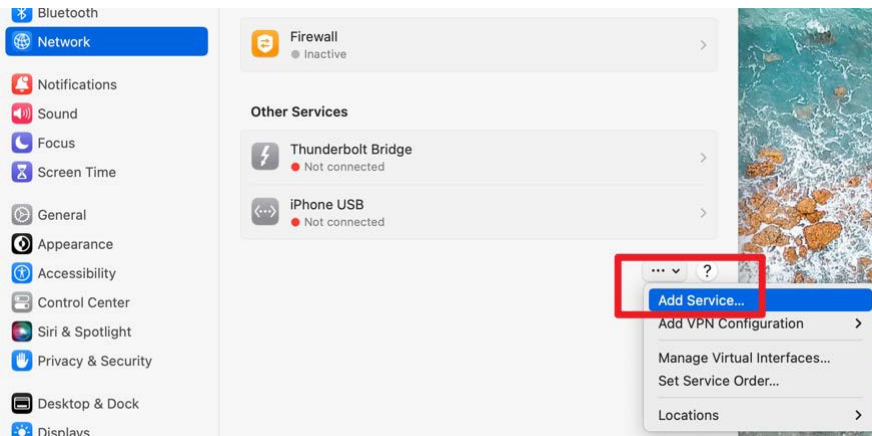


(3) Select the interface on the same LAN as ZowiePTZ and enter a customized name.
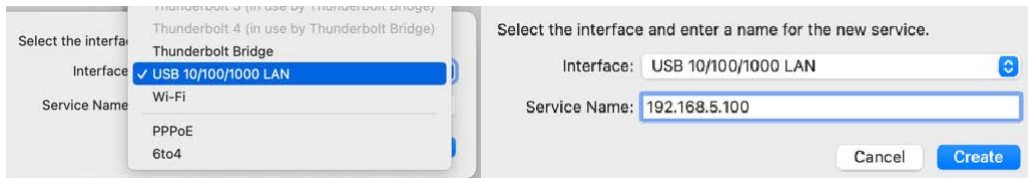


(4) After the addition is successful, click on the network service just added.
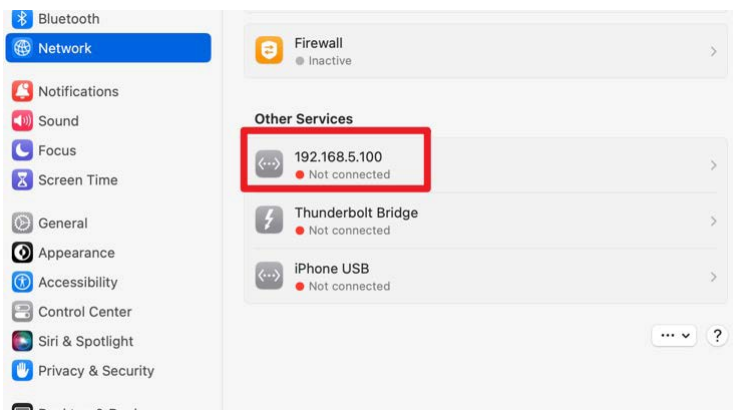


(5) Click Details.
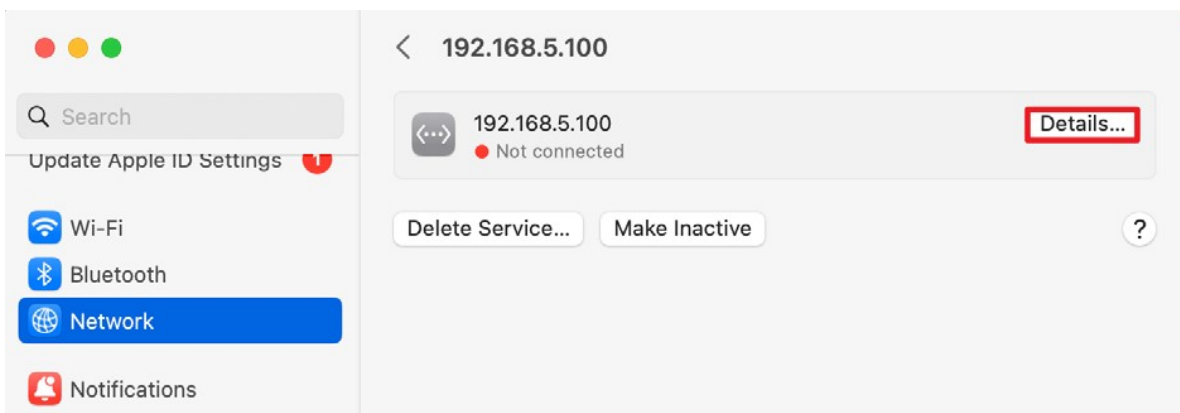
(6) Change the IPv4 configuration method to manually, the IP address to 192.168.5.x and the router to 192.168.5.1
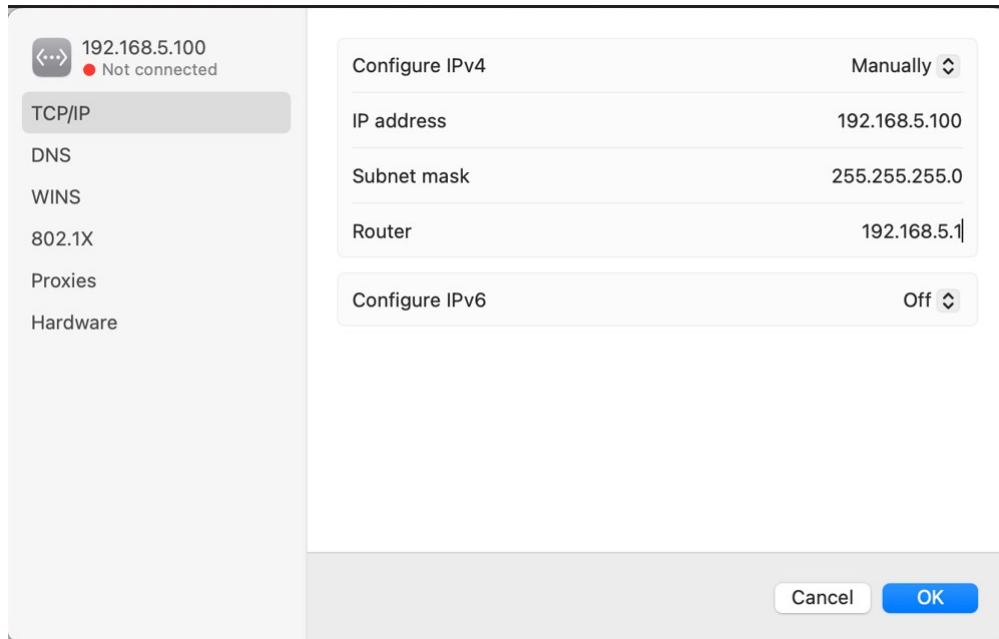


(7) Click Save and the status of the network service will change to Connected.

NOTE

    **a.**   *Login administrator Username:* **admin**; *Password:* **admin**

    **b.**   *Login super Username:* **super**; *Password:* **super**

    **c.**   *Login basic Username:* **basic**; *Password:* **basic**

    *d.*   Failsafe IP address: 192.168.5.168

# 3. Tally Light

## 3.1 Tally light

When the tally light of ZowiePTZ is set to auto mode and the encoding mode is NDI encoding, if the NDI encoding is output to other NDI receivers (such as vMix, OBS, etc.), ZowiePTZ will change the color of the tally light according to whether the receiver switches to program mode (PGM) or preview mode (PVM).

| Color | Description |
|---|---|
| Yellow | Powering on |
| Green | PVM |
| Red | PGM |

## 3.2 LED Indicator

| POWER | STATUS | Description |
|---|---|---|
| red | closure | Powering on |
| green | closure | Standby |
| yellow | closure | Lens self-test |
| green | Green Flash | Short Press the Remote |
| green | Green Flashing | Long press the Remote |
| green | Red Flash | Wrong remote control address code |
| Off | Yellow | Sleeping |
| green | Yellow flashing | Upgrading |
| green | Red | Recoverable failure |
| red | Off | Fatal Failure |

# 4. IR remote

## 4.1 Remote control shortcut buttons

| Name | Description |
|------|-------------|
| Power | TurnZowiePTZ On/Standby |
| PT Fast/Slow | Set Pan/Tilt Speed |
| Zoom Fast/Slow | Set Zoom Speed |
| Auto | Auto Focus |
| Manual | Manual Focus |
| Zoom T/W | Zoom Tele/Wide |
| Focus Far/Near | Focus Far/Near |
| Preset | Press Preset+ Number（0~9）to set the preset position |
| Reset | Press Reset+Number（0~9）to clear the preset position |
| ∨ 〈 〉 ∧ | Pan/Tilt the camera |
| Home | Move the camera to Home position |
| BLC | Turn on/off Blacklight Compensation |
| Menu | Open/Exit the OSD Menu |
| Numeric Pad 你们 | Move the Camera to Pre-configured Preset Position0~9 |
| CAM SELECT | Select the Camera Address to Control |
| Camera Address | *+#+F1~F4:Setthe Camera Address |
| 【*】+【#】+【3】 | Set the system language to Chinese |
| 【*】+【#】+【4】 | Set the system language to English |
| 【*】+【#】+【6】 | Restore default settings |
| 【*】+【#】+【9】 | Switch image flip mode |
| 【*】+【#】+【Auto】 | Enter/exit aging cruised mode |
| 【*】+【#】+【Manual】 | Restore default password and IP setting |
| 【#】+【#】+【2】 | Switch the output resolution to 4KP30 |
| 【#】+【#】+【3】 | Switch the output resolution to 4KP25 |
| 【#】+【#】+【4】 | Switch the output resolution to 1080P60 |
| 【#】+【#】+【5】 | Switch the output resolution to 1080P50 |
| 【#】+【#】+【6】 | Switch the output resolution to 1080I60 |
| 【#】+【#】+【7】 | Switch the output resolution to 1080I50 |
| 【#】+【#】+【8】 | Switch the output resolution to 1080P30 |
| 【#】+【#】+【9】 | Switch the output resolution to 1080P25 |
| 【#】+【#】+【#】 | Clear all presets |

## 4.2 OSD Menu

**[Menu]**

**[Camera]:** Set exposure/color/image

parameters **[Video]** : Set output

resolution/menu direction

15

**[P/T/Z]:** Set focus mode, speed and digital zoom

**[Setup]:** Set VISCA/PECLO-D/PECLO-P protocol

**Restore Default:** Reset your device to factory

settings

**[System Info]:** View network and version

information **Language:** Set OSD and webpage
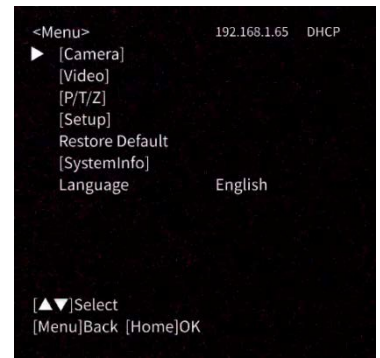
language, Chinese/English

    **:** Select menu

**Menu:** Return to the previous menu

**Home :** confirm

**[Camera]**

Set the camera's exposure, white balance, brightness, style, noise reduction, sharpness and

other parameters.

**[Exposure ]**

**Mode:** Auto/Manual/AAE/SAE

**EV Level:** -3 ~3

**BLC:** On/Off (effective in Auto or Iris mode)

**Gain limit:** 0 ~16 (effective in auto/shutter priority/aperture priority mode)

**Flicker:** Off / 50 HZ / 60 HZ / Auto

**Metering:** Average (mainly used for landscape photography), Center (mainly used for

portrait photography), Spot (mainly used for scenes with ultra-bright spots such as

surgery ), Matrix (used for scenes such as driving records)

**Gain:** 0 ~16

**Shutter:** 1/25 , 1/30 , 1/50 , 1/60 , 1/90 , 1/100 , 1/120 , 1/125 , 1/180 , 1/250 ,

1/300 , 1/350 , 1/500 , 1/600 , 1/725 , 1/1000 , 1/1500 , 1/2000 , 1/3000 , 1/4000 ,

1/6000 , 1/10000 ( Effective in Manual / SAE)

**Iris:** Close, F 11.0 , F 9.6 , F 8.0 , F 6.8 , F 5.6 , F 4.8 , F 4.0 , F 3.4 , F 2.8 , F 2.4 , F

2.0 , F 1.8

(Modified in Manual/AAE, the optional values will change as the zoom value changes)

**[Color]**

WB Mode: automatic/manual/one-key white balance/specified color temperature

RG: 0 ~255 (effective in manual mode)

BG: 0 ~255 (effective in manual mode)

Saturation: 1 ~100

Hue: -180 ~180

VAR: 3000K, 3500K, 4000K, 4500K, 5000K, 5500K, 6000K, 6500 K (effective at specified

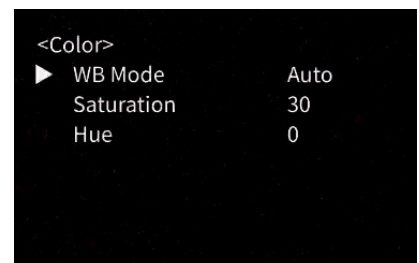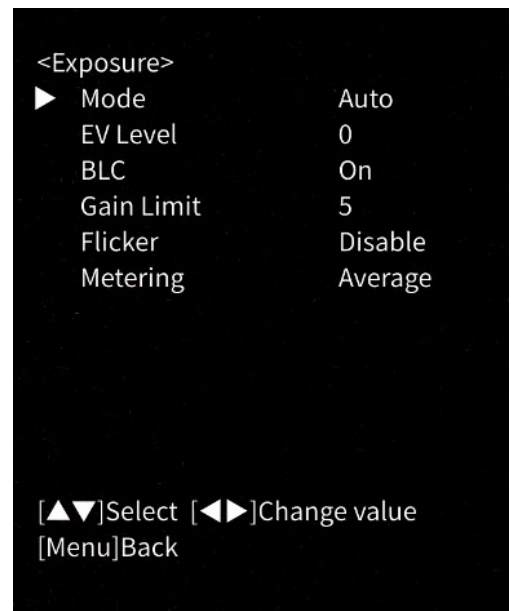color temperature) OnePush: In onepush mode, select this option again to set OnePush

WB mode.

**[Image]**

Style: Default/Normal/Clarity/Bright/Soft/Beauty
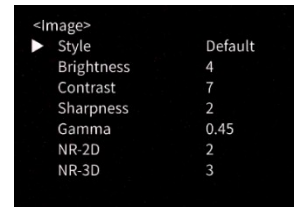
Brightness: 0 ~8

Contrast: 0 ~15

Sharpness: 0 ~10

**Gamma:** 0.38 , 0.42 , 0.45 , 0.5 , 0.55 , 0.63 ,

0.71 , 0.83 , 1 **NR-2D:** Off, 1 ~ 8

**NR-3D:** Off, 1 ~ 8

```
<Image>
► Style          Default
  Brightness     4
  Contrast       7
  Sharpness      2
  Gamma          0.45
  NR-2D          2
  NR-3D          3
```
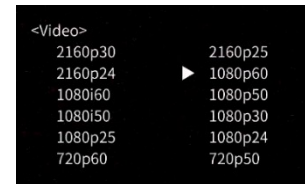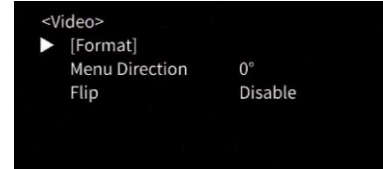
### [Video]

Set the output resolution, menu direction, screen flip and other parameters

of ZowiePTZ . **[Format]:** Modify the output resolution

**Menu Direction:** 0°, 90 ° , 270 °, 180 °

**Flip:** Disable, H-Flip,V-Flip and HV-Flip

```
<Video>
► [Format]
  Menu Direction     0°
  Flip               Disable
```

### [Video Format]

Set the HDMI and SDI output resolution of

ZowiePTZ . The SDI output resolution is up to

1080p60 .

```
<Video>
  2160p30          2160p25
  2160p24      ►   1080p60
  1080i60          1080p50
  1080i50          1080p30
  1080p25          1080p24
  720p60           720p50
```

### [P/T/Z]

Set the focus, zoom, PT speed, focus mode and left and right mode of ZowiePTZ .

Pan Speed: 1 ~10

Tilt Speed: 1 ~10

Digital Zoom: 1~12X
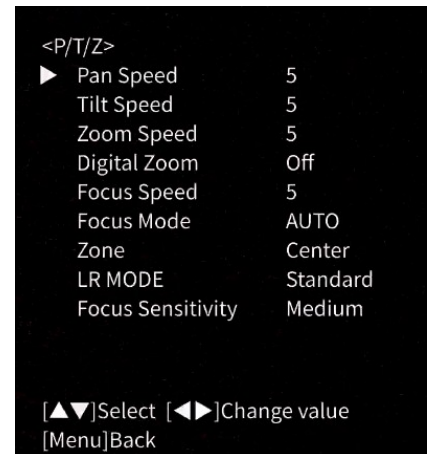
Zoom Speed: 1 ~10 (optical zoom speed)

Focus Speed: 1 ~10

Focus mode: AUTO, MANUAL, ONE_PUSH focus

OnePush focus: In OnePush focus mode, click this button again to focus.

Zone: All,Point, Top, Center, Bottom, Left, Right

LR mode: Standard, Reversal (in standard mode, the left and right movement of PTZ is based

on the video) Focus Sensitivity: High, Medium, Low, ultra low

```
<P/T/Z>
► Pan Speed           5
  Tilt Speed          5
  Zoom Speed          5
  Digital Zoom        Off
  Focus Speed         5
  Focus Mode          AUTO
  Zone                Center
  LR MODE             Standard
  Focus Sensitivity   Medium


[▲▼]Select [◄►]Change value
[Menu]Back
```

### [Setup]

Set VISCA and PECLO parameters and modify the camera's IP address and network port.

**VISCA Address:** 1 ~7

**VISCA Address Fix:** on/off

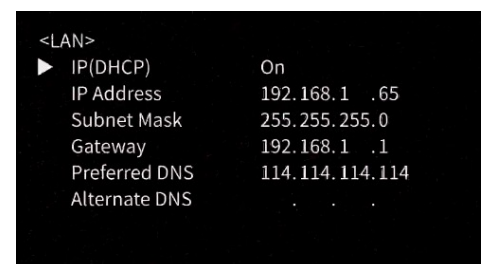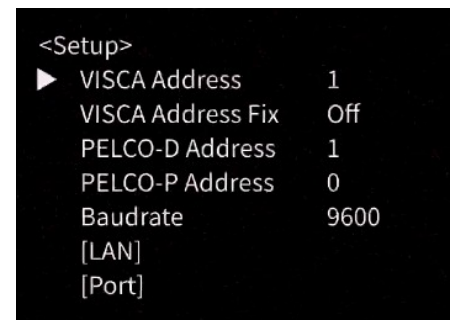**PELCO-D Address:** 1 ~255

**PELCO-P Address:** 0 ~ 31

**Baudrate:** 2400 , 4800 , 9600 , 11920 , 38400

**[LAN] :** Modify IP address

**[Port]:** Modify the port

```
<Setup>
► VISCA Address        1
  VISCA Address Fix    Off
  PELCO-D Address      1
  PELCO-P Address      0
  Baudrate             9600
  [LAN]
  [Port]
```

### [LAN]

Change the IP address of ZowiePTZ and enable/disable the DHCP

function. Please disable the DHCP function before changing the IP.

Please follow the IP address specifications when modifying the IP

address. After the modification is successful, the device will restart,

please wait patiently.

```
<LAN>
► IP(DHCP)          On
  IP Address        192.168.1 .65
  Subnet Mask       255.255.255.0
  Gateway           192.168.1 .1
  Preferred DNS     114.114.114.114
  Alternate DNS         .   .   .
```

17

**[Port]**

Modify the relevant ports of ZowiePTZ . After the modification is successful, please restart the system to take effect.

Any two port values cannot be the same. **Port Web:** 80 , 1025 ~65530

**Port ONVIF:** 1025~65530

**Port Soap:** 1025~65530

**Port RTMP:** 1025~65530

**Port RTSP:** 554 , 1025 ~65530

**VISCA TCP:** 1025~65530

**VISCA UDP:** 1025~65530

**Port WebSocket:** 1025~65530

**Port RTP:** 1025~65530

**[System]**

View the current remote control address, network information and version information
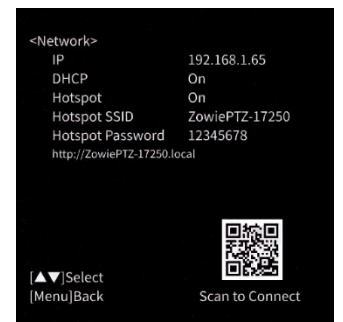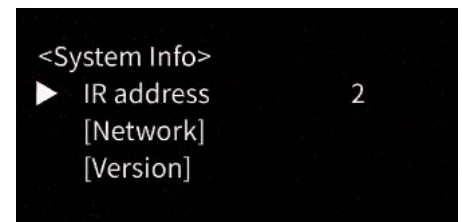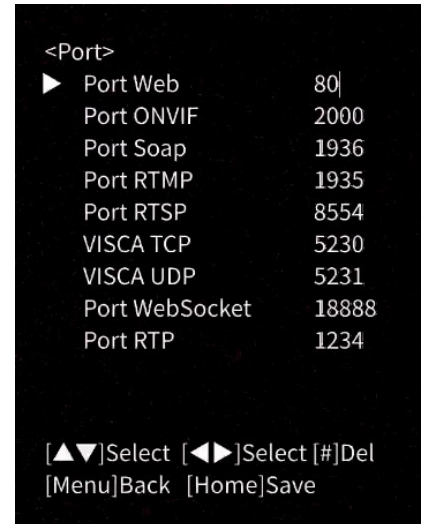
**[Network]**

View the IP address, hotspot name and password, DHCP status, and mDNS. You can use your mobile phone to scan the QR code to log in directly to the web backend.

**[Version]**

Check the software and hardware version, NDI version and serial number of ZowiePTZ .

# 5. Web Parameter Setting

After connecting the ZowiePTZ, follow the steps of the quick start guide in the previous chapter, users can control the Web Control User Interface now by PC or Phone. When the mobile device and ZowiePTZ are in the same LAN, you can use the mobile device to log in to the ZowiePTZ web page to set parameters. When returning to the previous level on the mobile terminal, please swipe right directly. The various settings and functions of the ZowiePTZ webpage will be introduced in detail below:

## 5.1 Live

After logging into the web console, the web will be shown as follows:
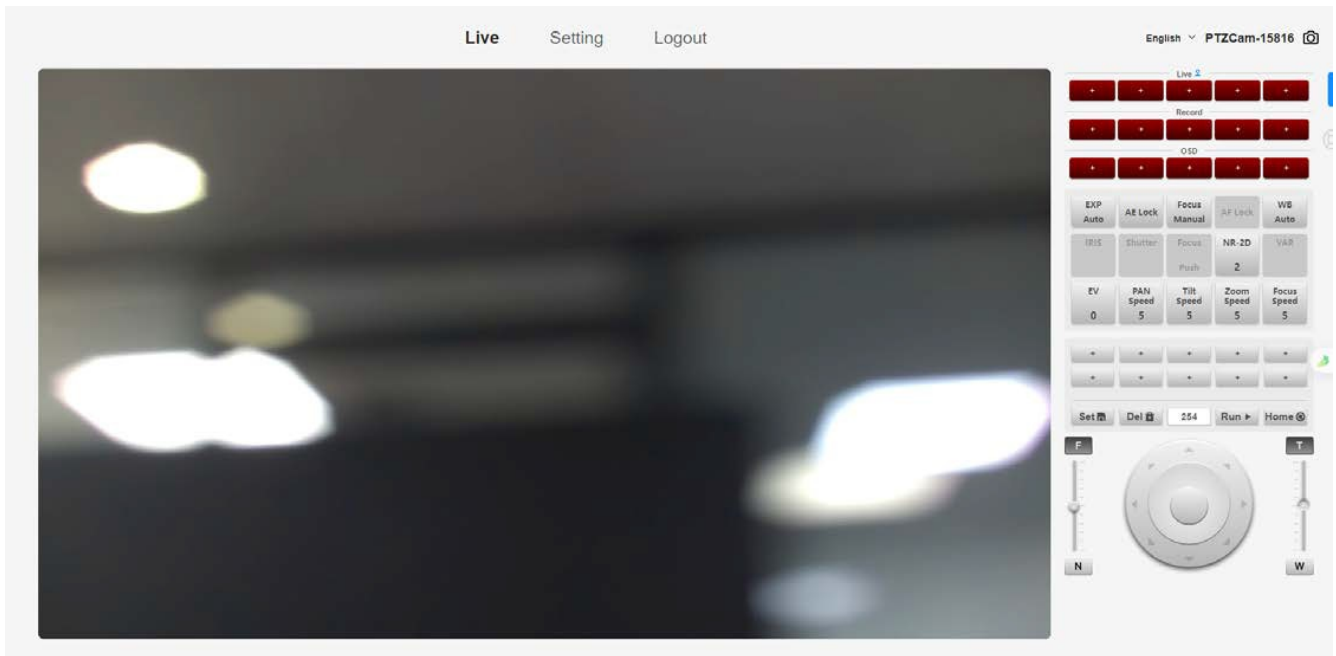
**Preview**

View the encoded video status in real-time on the left side. Through the buttons on the lower right corner, users can perform

mute,full screen, primary and secondary stream switching, zoom in, zoom out, rotate, move, and reset operations on the screen in

sequence.

If preview is not possible, an error message will be displayed on the web.　　 It indicates that the main stream encoding format is

H.265, and the main stream does not support the preview of the H.265 format.

**One-click streaming**

In encoding mode, click the red button on the right to easily open the Internet stream that has been set. If the Internet stream has

not been set, click "+" to automatically jump to the Internet stream interface for setting.

**One-click Record**

After plugging in the storage device or mounting the NAS successfully, click the button to quickly start recording.

**OSD**

After successfully setting the canvas on the OSD interface, you can quickly open and close the canvas on this interface.

**Image parameters**

Set image parameters in this area. For details, please click to jump to the image parameters page.

**Presets**

Save, delete, and call presets in this area. Press and hold the preset button to modify the name. Up to 255 presets can be saved.

When preset 0 is set, the next time the device is started, it will default to preset 0.

The preset will also save the PTZ speed when the preset is set.

**Focus/Zoom Control**

Use this area to control Zoom and Focus. When operating Focus, make sure the focus mode is in Auto mode.

NOTE

a.　 *When there is a blue icon to the right of the name, use the number keys of the keyboard to quickly enable the button.*

　　 *Use the Tab key to quickly switch the position of the blue icon.*

b.　 *Internet stream, OSD, record, decoder, and NDI decoder will form multiple alias shortcut buttons on the Preview interface.*

c.　 *To use the red shortcut button on the right, please click the + button to jump to the interface for quick configuration, and click the name above to*

　　 *quickly jump to the specified location to view how to configure. After the configuration is completed, the + will change to a customized name, and*

　　 *please activate it by clicking on the name.*

## 5.2 Dashboard

After clicking the "Dashboard", the page of the Dashboard will be shown as follows.

This page shows the basic configuration information of ZowiePTZ. Users can view information such as CPU usage, device temperature, streaming, recording status, encoding settings, and network information settings.



**Ping**

Click the two ping buttons to quickly check whether ZowiePTZ is successfully connected to the Internet and LAN.

**Discover**

The scan button can scan all Zowietek devices in the same LAN, and display the IP address and name of the scanned device. Click the IP address to quickly jump to the corresponding web control interface. The name of the ZowiePTZ defaults to ZowiePTZ-Serial Number, which matches the hotspot name and can be viewed on the bottom of the device.

## 5.3 Image Parameter Setting

After logging into the web control interface, click Setting- > Camera- > Image in sequence, and set all parameters related to image settings on this interface.
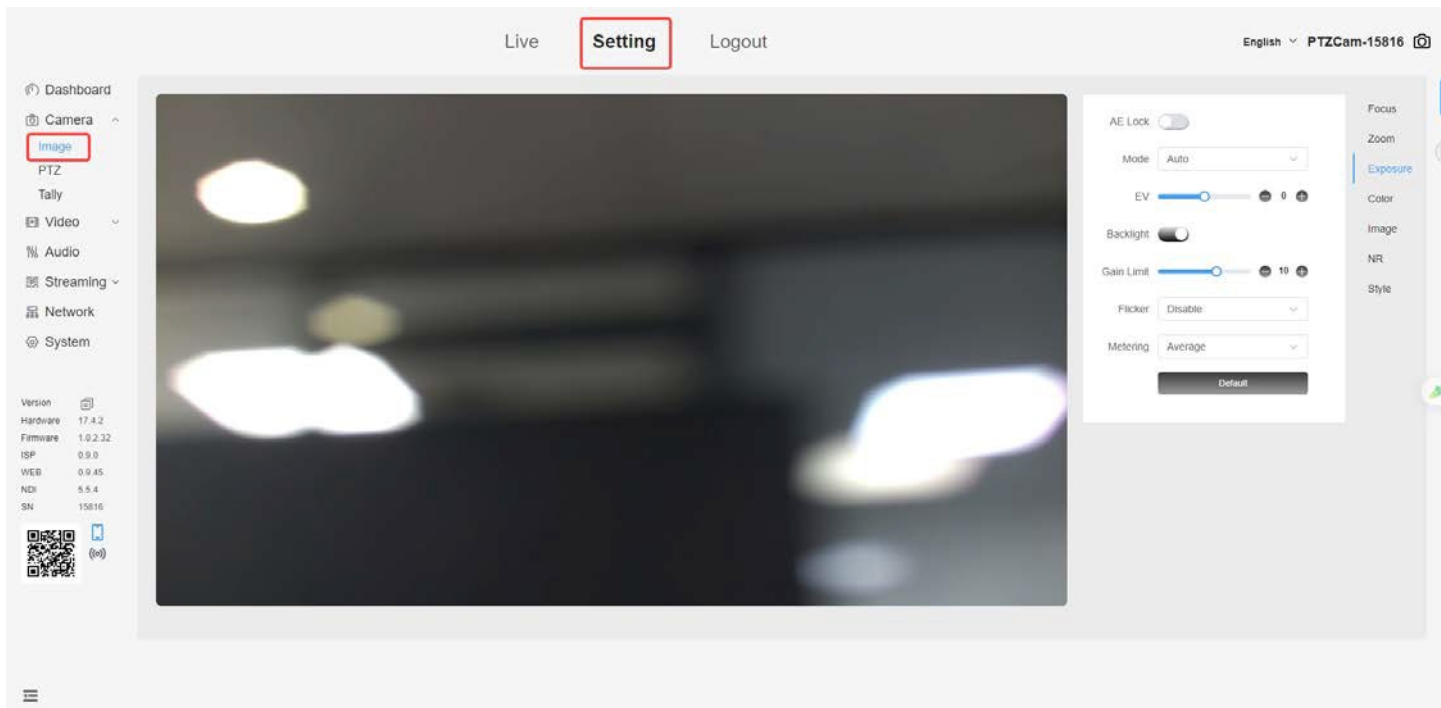
**(1) Focus**

**Focus Mode:**

Auto: In auto focus mode, whenever the image changes, ZowiePTZ will automatically focus again. Manual: In manual mode, when the video changes, ZowiePTZ will not refocus and the focus needs to be adjusted manually .

One-Push mode: In one-push mode, ZowiePTZ will not refocus when the video changes, and will focus once each time the one-push button is clicked.

**Lock:** When focus lock is turned on, the focus-related parameters cannot be modified again, and in the locked state, ZowiePTZ will not focus even if the video changes.

**Sensitivity:** Focus sensitivity, that is, the sensitivity to the changes in the video. The higher the sensitivity, the more sensitive it is to changes in the video, and the more frequently focusing occurs.

(When the texture and clarity of the focused image are low, it is recommended to change the sensitivity to ultra-low)

**Zone:** Set the focus area of the image. When the focus mode is Auto/OnePush Focus and the focus area is selected as Point Focus, ZowiePTZ will focus according to the position selected by the user.

**Focus speed:** The larger the value, the faster the focusing speed during manual focusing.
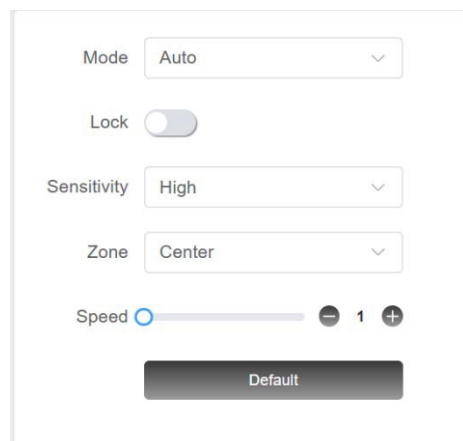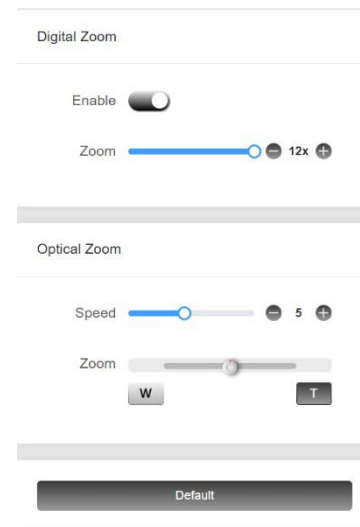
**(2) Zoom**

**Digital zoom:** You can use digital zoom to magnify the image. The maximum supported is 12X. If the digital zoom is too large, it may cause image jitter or loss of clarity. It is recommended to use optical zoom first.

**Zoom speed:** Adjust the zoom speed of the optical zoom.

**Optical zoom:** The image can be enlarged through optical zoom.

## (3) Exposure

**AE Lock**: When exposure is locked, ZowiePTZ will not re-expose due to changes in light, and user cannot modify exposure-related parameters.

**Exposure Mode:**

Automatic: When the ambient light changes, ZowiePTZ will automatically adjust the aperture shutter and other parameters according to the ambient light to achieve the best exposure.

Manual: Allows users to modify parameters such as aperture, shutter, and photosensitive gain.

SAE: Allows users to manually modify the shutter speed, and ZowiePTZ will automatically modify the aperture value and other parameters according to the ambient light to achieve the best exposure.

AAE: Allows users to manually modify the aperture, and ZowiePTZ will automatically modify the shutter value and other parameters according to the ambient light 2 to achieve the best exposure.

**EV** : Set in automatic mode and aperture priority mode, select the required exposure compensation value - 3~3

**Backlight:** Set in automatic mode and aperture priority mode to choose whether to turn on backlight. Use it when the image is too bright or too dark to achieve a better exposure effect.

**Gain limit:** Set in automatic mode, AAE and SAE mode, select the maximum gain value from 0 to 16 to prevent overexposure in some cases .

**Gain:** Set in manual mode, select the gain from 0 to 16 .

**Shutter:** In Manual mode or SAE mode, select the desired shutter value: 1/25 , 1/30 , 1/50 , 1/60 , 1/90 , 1/100 , 1/120 , 1/125 , 1/180 ,

1/250, 1/300, 1/350, 1/500, 1/600, 1/725, 1/1000, 1/2000, 1/3000, 1/4000, 1/6000, 1/10 000

**IRIS:** In Manual mode or AAE mode, select the desired aperture value: Close, F 11.0 , F 9.6 , F 8.0 , F 6.8 , F 5.6 , F 4.8 , F 4.0 , F 3.4 , F 2.8 , F 2.4 ,

F 2.0 , F 1.6 (The maximum aperture value will change according to the zoom ratio)

**Flicker:** When the ambient light has flicker, select the same frequency as the ambient light for anti-strobe.

**Metering:** Select different metering modes according to different usage environments.

Average: It is recommended to use the average metering mode when shooting landscapes, etc.

Center: It is recommended to use the center metering mode when shooting people.

Spot: It is recommended to use the spot mode in environments with strong spot light, such as operating rooms.

Matrix: It is recommended to use multi-zone metering mode in environments such as driving records

## (4) color

**White balance mode:**

Auto: When the ambient color temperature changes, the white balance will be calibrated automatically

Manual: White balance calibration is achieved by modifying the red gain and blue gain values

VAR: White balance calibration at a specific color temperature
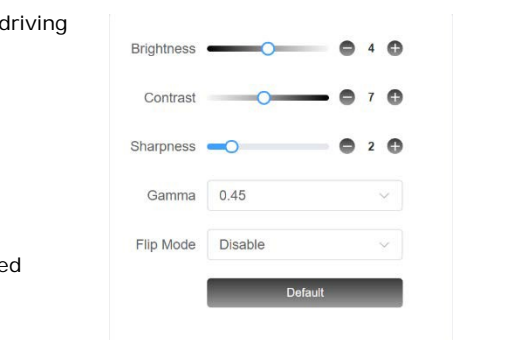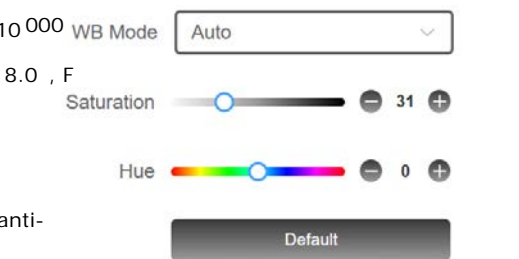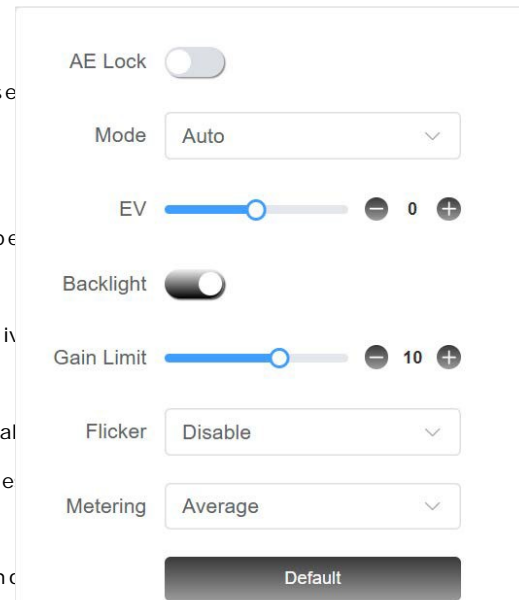
OnePush: When the ambient color temperature changes, the automatic white balance calibration will not be performed. ZowiePTZ will perform a white balance calibration each time the one-click white balance button is clicked.

RG tuning: In manual white balance mode, perform red fine-tuning

BG tuning: In manual white balance mode, perform blue fine-tuning

VAR: In the specified color temperature mode, select the desired color temperature for white balance calibration: 3000K, 3500K, 4000K, 4500K, 5000K, 5 500K, 6000K, 6 500K

Saturation: Modify the required saturation: 1 ~ 100

Hue: Modify the required hue: -180~180

**(5) Image**

Brightness: 0 ~8 (Adjust the overall brightness of the image)

Contrast: 0 ~15 (Adjust the contrast between light and dark in the picture)

Sharpness: 0 ~10 (adjust the image plane clarity and edge sharpness)

Gamma: 0.38 , 0.42 , 0.45 , 0.5 , 0.55 , 0.63 , 0.71 , 0.83 , 1 (select different gamma curve values to achieve different visual effects )

**Flip mode:** Off, Horizontal Flip, Vertical Flip, Horizontal and Vertical Flip, Auto. (The encoding screen will restart when the flip mode is in progress, which takes about 2~3 seconds)

**(6) Noise reduction**

**2D NR:** Off, 1~8 (Noise reduction based on noise detection in a single frame )

**3D NR:** Off, 1 ~ 8 (noise reduction is performed based on multiple frames, combined with the content of

multiple frames before the current frame . Too large the value may cause ghosting)
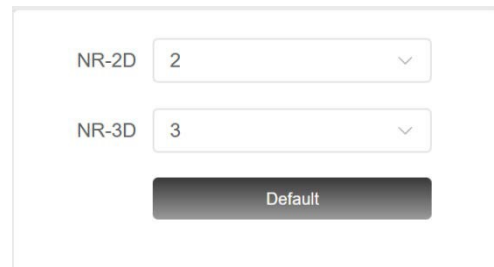
**(7 ) Style**

Default, Normal, Clarity, Bright, Soft, Beautify

The camera comes with preset styles. After selecting a style, the image parameters will automatically change values as the style changes to achieve the preset effect.
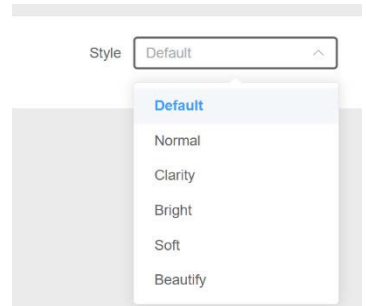
# 5.4  Tally

After clicking the "Tally" option, the page of Tally will be shown as follows.

Tally has two modes, manual and automatic mode. After the tally light is set successfully, the color of the camera icon in the upper right corner of the web page will also change with the tally light.

**Manual**

There is an option to set the tally light to green, red or off. The Tally lights will remain in this color after the setup is complete.

**Auto**

In automatic mode, the tally light will change according to the working status of ZowiePTZ.

The specific rules are as follows:

| Color | Description |
|---|---|
| Green | PVM |
| Red | PGM |

## 5.5 Encoder

After clicking the "Encoder" option, the page of Encoder will be shown as follows. Set the parameters of the main and secondary streams on this page. These parameters include Codec, Profile, Resolution, Rate Control, Image Quality, Bitrate, Frame Rate, I Frame Interval and.

**Codec:** H.264 by default for main and secondary streams, H.265 optional

**Profile:** Profile Mode Setting (BP by default for main and secondary streams, HP. MP optional)

**Resolution:** 1920*1080 by default for mainstream,3840*2160. 2560*1440. 1280*720. 1080*1920. 720*1080 optional;  1280*720 by default for the secondary stream,640*360. 320*180 optional

**Rate Control:** CBR (Constants Bitrate) by default for main and secondary streams, VBR (Variable Bitrate) optional

**Bitrate:** NDI is turned off (12000kbps by default for mainstream, 64kbps~51200kbps optional; 6000kbps by default for secondary stream, 64kbps~25600kbps optional)

The bitrate changes with the state of the NDI. When NDI is enabled, only the percentage is displayed. For the specific value, please jump to the NDI page of the guide to view it.

NDI is turned on (100% by default for main and secondary streams, 50%~125% optional)

**Frame Rate:** There is no fixed default value for the frame rate of the main and secondary streams, and it will change as the output frame rate changes. The frame rate of the output signal will be an integer multiple of the encoded frame rate. For example, when the output frame rate is 60fps, the encoding frame rate is 15fps or 30fps, or 60fps.

**I Frame Interval：** 20 ~240 optional.



NOTE

a.  No matter which "Save" button is pressed, the mainstream and secondary stream information will be saved together.

b.  The resolution and bitrate options are limited by the output resolution.

## 5.6 Output

After clicking the "Output" option, the page of Output will be shown as follows.

**Output Format:** 1080P60 by default, 2160p30. 2160p25, 1080p50, 1080p30, 1080p25,1080p24, 1080i60, 1080i50, 720p60, 720p50 optional. When output is set to 4k, the SDI output will automatically be set to the corresponding 1080p resolution

**Mute:** Turn off the sound of the HDMI and SDI output after turning on the mute button.
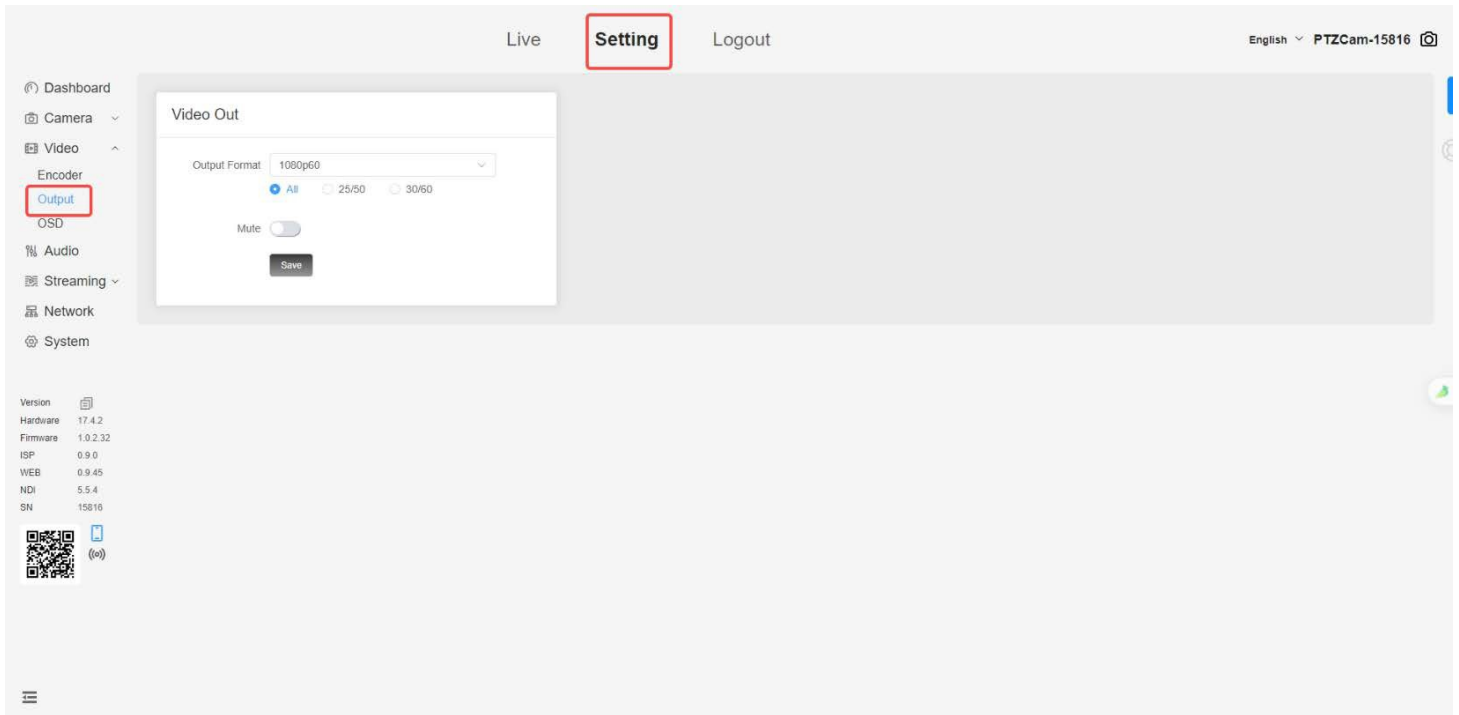
## 5.7 OSD

After clicking the "OSD" option, the web page of OSD will be shown as follows.
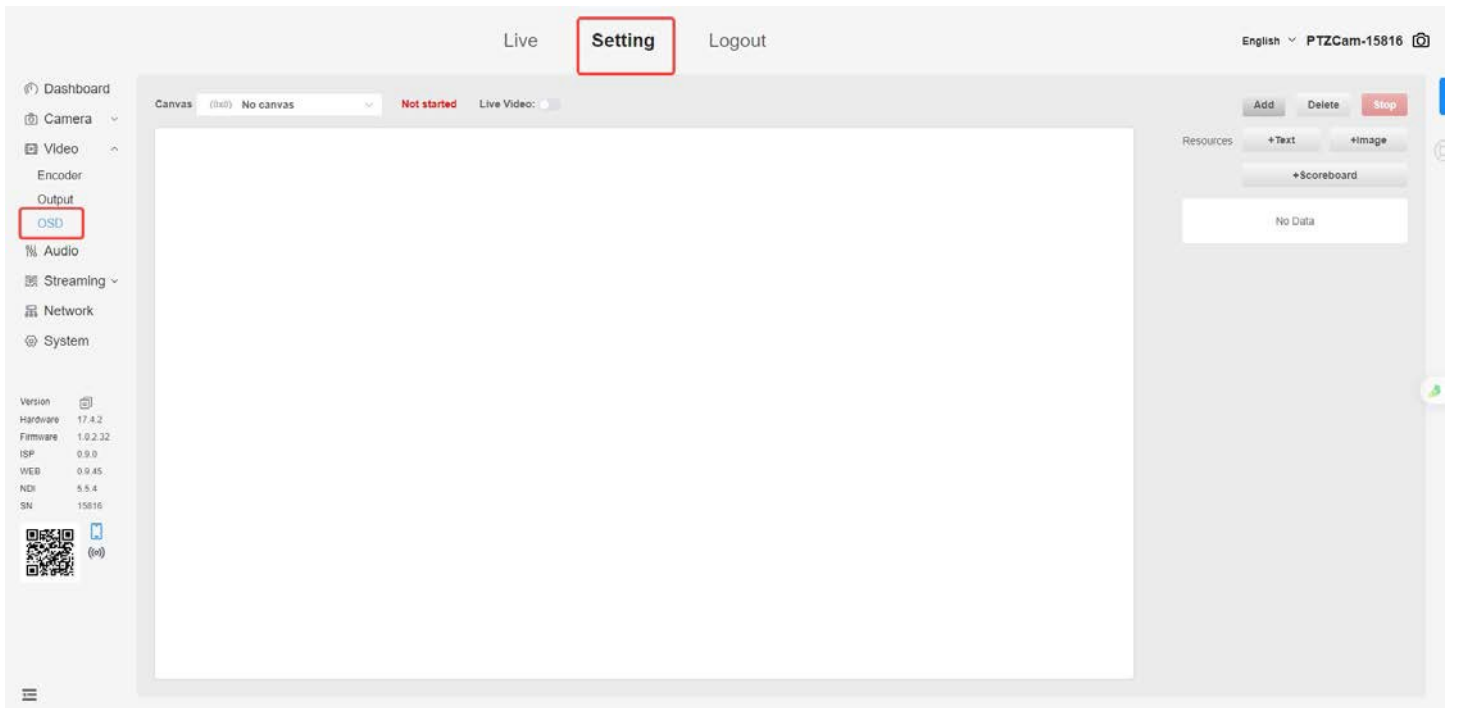


**Add/Enable Canvas**

When using the OSD function, please add a canvas first, and the resolution of the canvas can be 3840x2160, 2560x1440,1920x1080, 1280x720,2160x3840,1440x2560,1080x1920 or 720x1280. ZowiePTZ supports adding up to four canvases, but only one canvas can be enabled at the same time.

When the canvas is enabled, it is recommended that the canvas resolution is consistent with the encoding resolution, otherwise, the displayed image will be enlarged or reduced, or displayed incompletely.

The OSD function is only valid for the mainstream, not for the secondary stream.

After the canvas is successfully created, the OSD canvas shortcut buttons will be automatically generated on the preview interface for the

convenience of the next use.

**+ Image**

When adding a picture, enter the name of the picture to facilitate management when adding multiple pictures. Click "Select File" to select the desired picture. Currently, images in JPG and PNG formats are supported. The size of the picture cannot exceed 1.70M, and the resolution of the picture cannot exceed the resolution of the canvas, otherwise it will not be able to be added.



**+ Text**

Text name: Easy to manage when adding multiple texts, supports 1-16 characters

Content: Support input 1-50 characters

Size: support setting 16-128px

Thickness: Support normal, bold, or lighter

Font: Support setting more than 20 fonts

Font color: Support RGB color modification and transparency modification

Background color: Support RGB color modification and transparency modification

Stroke color: Support RGB color modification and transparency modification



**Add Timestamp**

Click the **+Text** button and select the type as Timestamp.

Text name: convenient for management after adding multiple elements, supports 1-16 characters

Time display: select the order of time and date display.

Time format: select the format of time and type display respectively.

Size: supports setting 16-128px

Font color: supports RGB color modification and transparency modification

Background color: supports RGB color modification and transparency modification

Timestamp cannot be modified after it is added. If you need to modify the color and size of the timestamp, please add it again.

The style of the timestamp displayed on the canvas is not the actual style. Please refer to the actual style.



**Add Scoreboard**

Click **+Scoreboard**, enter the scoreboard name and size ratio.

Click the position to be modified, and the modifiable parameters will be displayed on the right.
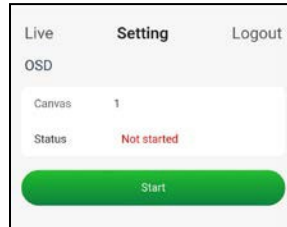


**Modify element information**

Click the first button to hide the element

Click the second button to modify the element information

Click the third button to delete the element

Long press the element name and drag to modify the layer order

On the OSD page on mobile, users can only choose to switch between existing canvases, and cannot edit elements or canvases.



# 5.8  Audio

After clicking the "Audio" option, the page of Audio will be shown as follows. Audio off affects both encoded sound and HDMI and SDI output sound.

Parameters include Format, Sampling Rate, Sampling Bits, Bitrate, Channel, Volume, and Source.

**Format:** AAC by default, MP3 optional
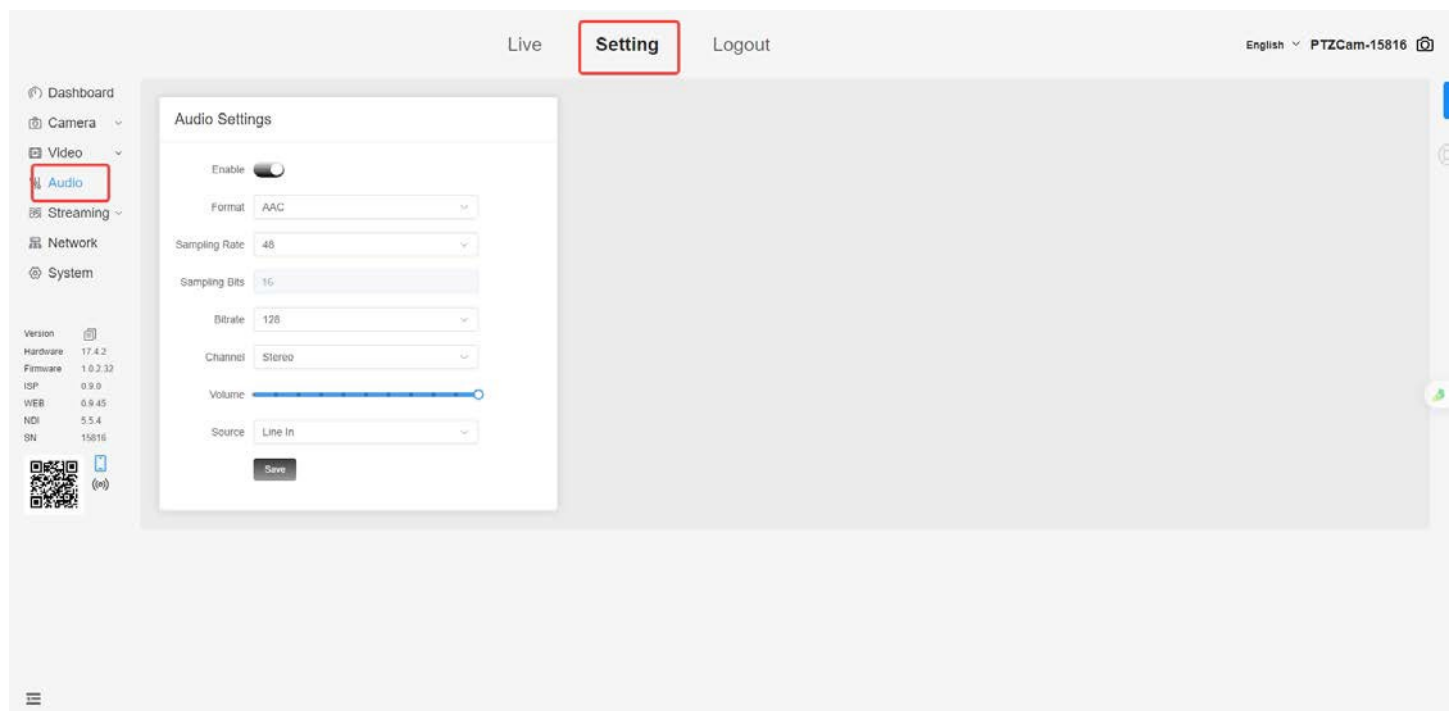
**Sampling Rate:** 48 by default,16,32, 44.1 optional

**Sampling Bits:** Fixed value

**Bitrate:** 128 by default, 32, 48, 64, 96,192,256 optional

**Channel:** Stereo by default, Mono optional

**Volume:** 100 by default,0~100 optional

**Source:** Line In by default, MIC optional



NOTE

*a.*   *When the sampling rate is set to 16kHz, HDMI sound will not play.*

*b.*   *Web preview, video preview interface, RTSP, and NDI currently cannot play audio in MP3 format.*

*c.*   *The SDI output audio sampling rate supports 48Hz. Other sampling rates may cause audio noise, pitch change, silence, and other problems.*

# 5.9   Local Video Stream

After clicking the "Local" option, the page Local will be shown as follows.

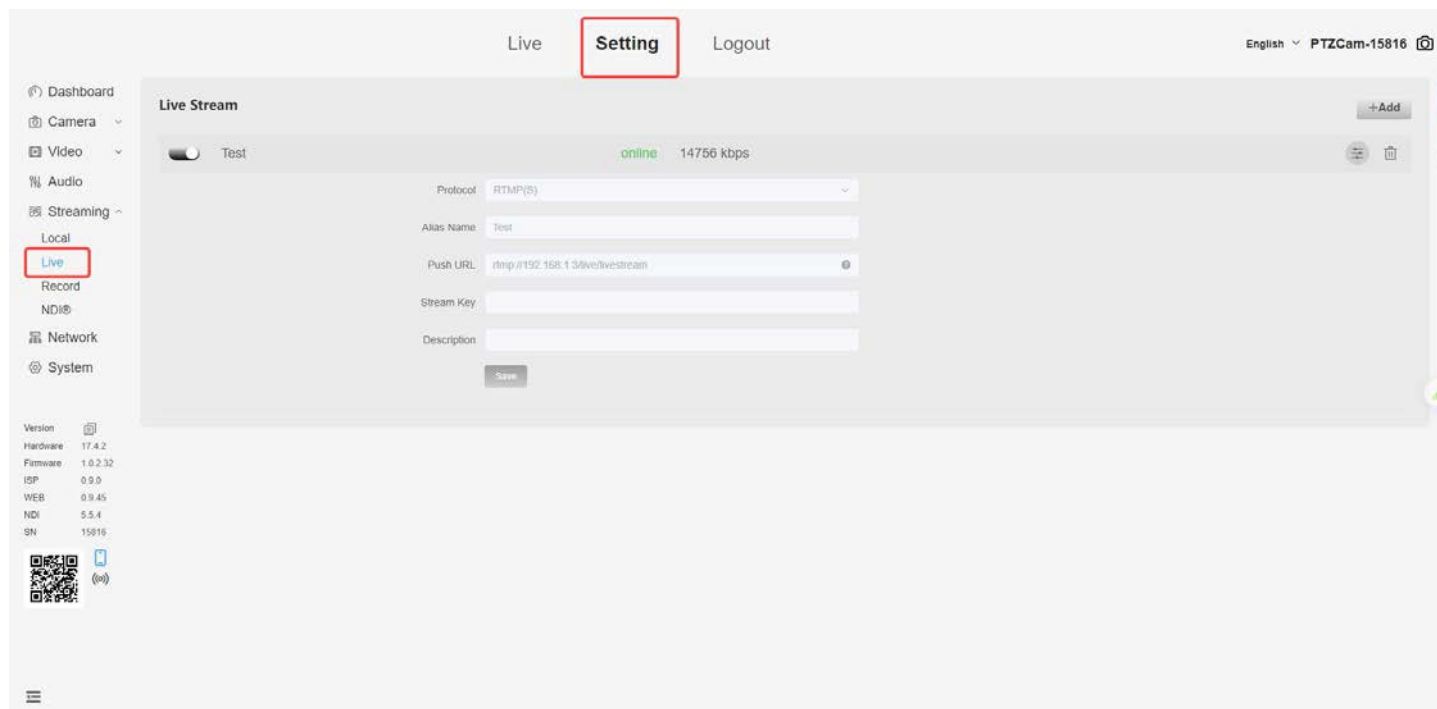Users can view the effect of encoder settings in real-time through local streams on the same LAN.

Click the button on the right to quickly copy the address.
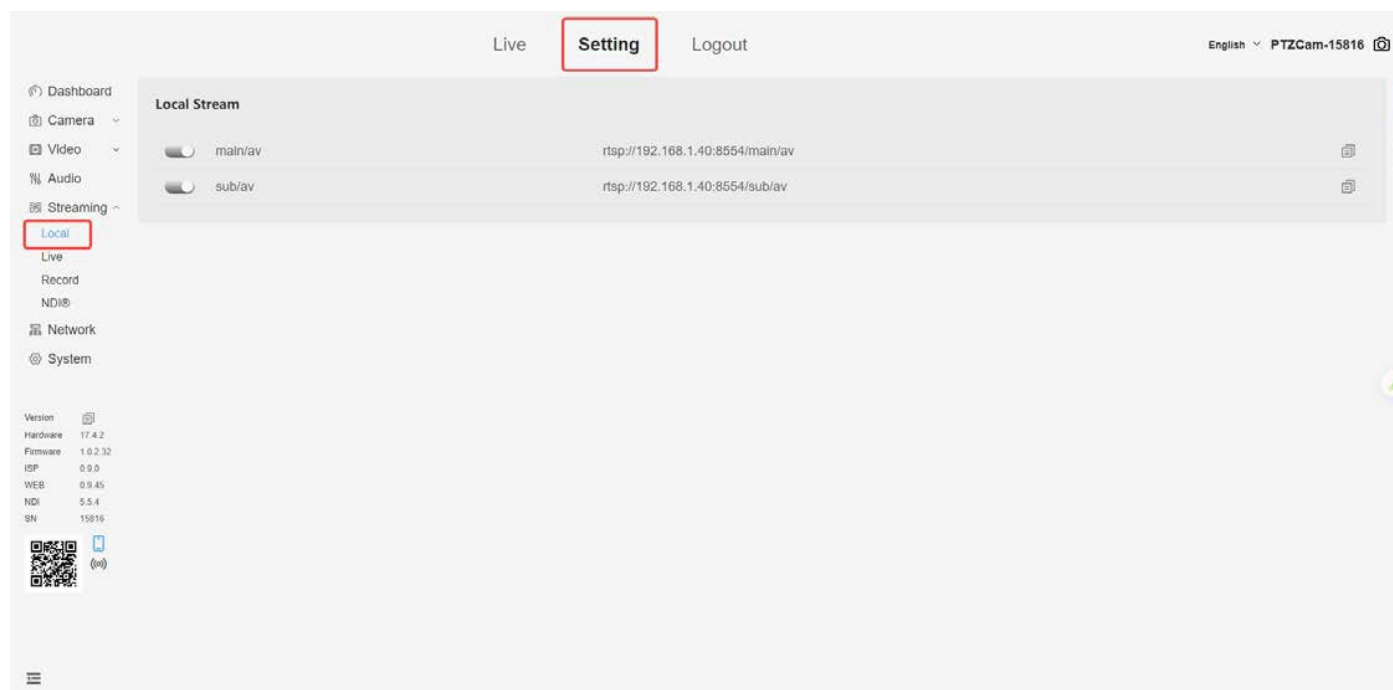


## 5.10  Internet Video Stream

After clicking the "Internet" option, the page of the Internet will be shown as follows.

Click the "+Add" button to add a new stream task, and multiple tasks cannot be added at the same time.



**Service:** Select enter a custom URL or log in to YouTube to get the YouTube URL.

**Protocol:** Select RTMP or SRT protocol.

**Alias Name:** It supports 1-16 characters.

**Stream URL:** Enter the required stream URL, which must be consistent with the protocol and cannot be the same as the stream URL of other

tasks.

**Stream key:** Enter the required stream key, which can be empty.

**Description:** Notes for this task.

**Status bar:** Switch, Alias Name, Push Status, Push Bitrate, Edit Button, Delete Button.

| ⬤ | Test | online | 10668 kbps | ⚙ | 🗑 |

ZowiePTZ supports multi-channel streaming and supports simultaneous streaming of two channels of RTMP and SRT.

# 5.11 Record

After clicking the "Record" option, the page of Record will be shown as follows.

At present, ZowiePTZ supports TF cards, USB, and NAS recording. Currently supports storage devices in FAT32 and EXFAT formats. After inserting the TF card, or USB or mounting the NAS successfully, the recording task will be created automatically. Click the "refresh" button to refresh the recording task. Please click the link for how to mount the NAS (3.15.6).

**Video List**

Click the first button of the recording task to get the recording video list, where the file name, stream type, start time, end time, file size, download, online preview, and delete operations of the video will be displayed.

**Set recording parameters**

Click the second button of the recording task to set the recording parameters.

**Auto**

After the auto mode is turned on, it will automatically start recording the next time the device is started.

**Loop**

After the loop recording is turned on, the earliest video file will be automatically deleted when the memory is insufficient to ensure continuous recording.

**Alias**
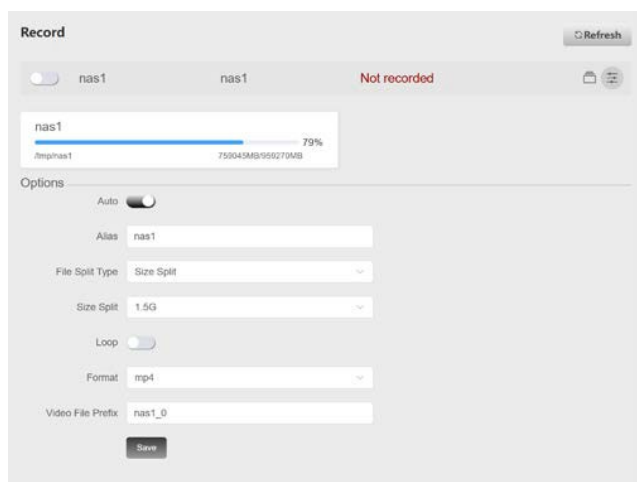
Recording task name.

**Format**

Supports recording video files in ts, mp4 and mov formats.

**File Split Type**

It supports splitting by size or by time. After the selection is complete, select the specific split size or time in the selection box below.

**Video File Prefix**

The name prefix of the recording file, the specific format is "file prefix-device year, month, day, hour, minute, second".

**Eject storage device**

Click the third button of the recording task to eject the device.

**Format**

Click the fourth button of the recording task to format the storage device into FAT32 or exFAT format.

# 5.12 NDI ®

After clicking the "NDI" option, the page of NDI will be shown as follows.

This page will not be displayed until NDI is activated.

The NDI function is disabled by default. To enable it, please click the "NDI" button and restart the ZowiePTZ.

After NDI is enabled, the bitrate setting on the Encoder page will change to a slider, ranging from 50% to 125%.



**Quality:** Currently ZowiePTZ supports HX, HX2 and HX3 formats

**Device name:** Set the device name when discovering NDI

**Group:** Set the NDI discovery group. After setting, it can only be discovered in the same group

**Multicast:** Convert NDI to NDI multicast. NDI multicast has high network requirements and may cause devices in the same LAN to be unable to discover NDI devices. Please use it with caution

**NDI discovery:** Use NDI across network segments or specify a decoding device to discover ZowiePTZ's NDI. Please turn on NDI discovery and enter the IP address of the decoding device.

NOTE

a.   On the NDI page, the modified information needs to be restarted to take effect.

b.   Compatible Software: OBS. Xsplit. vMix. Wirecast. NewTek Studio Monitor software and other NewTek NDI-enabled encoding or stream media software.



c.    If the computer cannot find all NDI devices:

(a)  Check whether the computer can log in to the ZowiePTZ Web page.

(b)  Please close the VPN and other related software.

(c)  Please check whether the computer is using a private network or a public network, and check whether the NDI software is allowed to pass in "Allow an app through firewall".
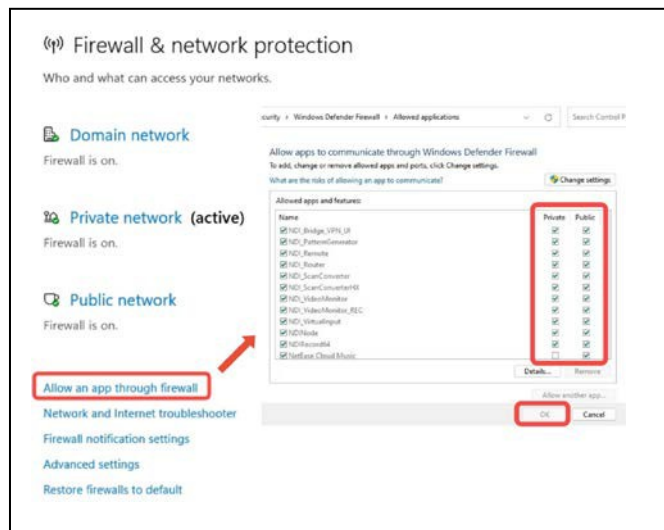


# 5.13 Network

Modify network-related configurations on this interface.

**LAN**

DHCP is enabled by default, and the IP address, subnet mask, default gateway, and DNS can be modified after DHCP is disabled. After modification, please click "Save" and "Restart".

Live     **Setting**

- (⌃) Dashboard
- (◎) Camera ⌄
- (▣) Video ⌄
- (⑃) Audio
- (▤) Streaming ⌄
- (品) Network
- (⚙) System

Version (▤)
Hardware 17.4.2
Firmware 1.0.2.32
ISP 0.9.0
WEB 0.9.45
NDI 5.5.4
SN 15816

LAN    Hotspot    WIFI    Port    mDNS    NAS

IP(DHCP)  ●──○
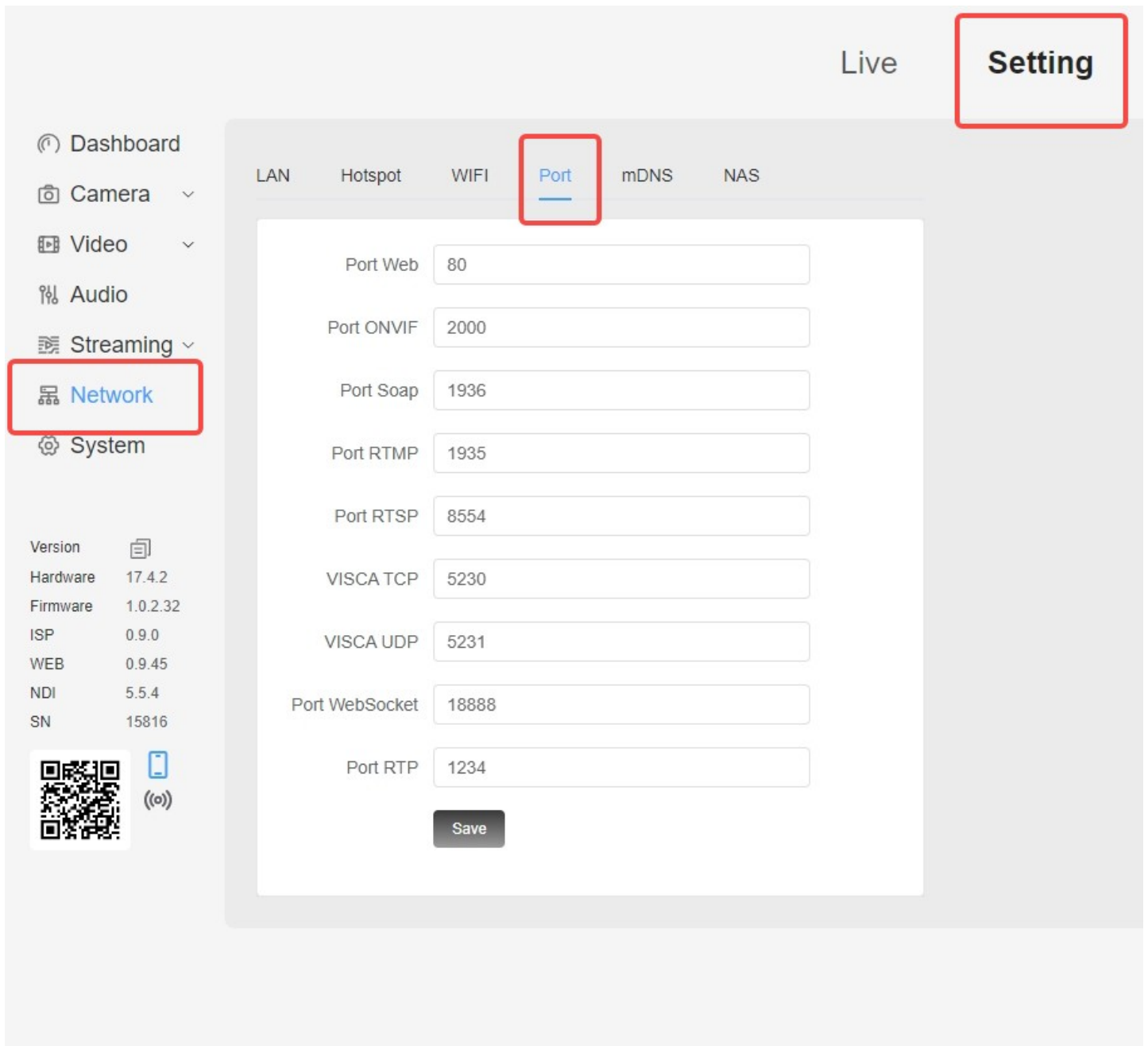
IP Address         192.168.1.40

Subnet Mask        255.255.255.0

Default Gateway    192.168.1.1

MAC Address        00:58:82:19:cf:01

Preferred DNS      114.114.114.114

Alternate DNS

Save

**Hotspot**

When the button is turned off, users can change the SSID and password of the hotspot.

When the button is on, users can use other mobile devices to search for this hotspot and connect. After the connection is successful, it can jump to the webpage of the ZowiePTZ.

After turning on the hotspot, you can directly search for the hotspot on the mobile device or scan the QR code on the left side of the navigation bar to connect. When connecting to the hotspot, the phone may prompt that there is no internet, which is normal, please continue to connect.



**WIFI**

After turning on WiFi, click the "Add" button to directly add the network for use.

Or click the "Scan" button to get all available WiFi. After entering the correct password and connecting successfully, click "Refresh" to get WiFi details.

When the ZowiePTZ is turned on next time or the Wi-Fi function is turned on again, the ZowiePTZ will automatically connect to the last connected Wi-Fi.

## Port

Modify the ports of various parameters in this interface. All port numbers are factory defaults. If you need to modify the port number, please fill in the port number according to the valid range of the port. Click the save button at the bottom and restart the device and the port will take effect. The port number of each port cannot be repeated.

After modifying the web port, please add the port number after the IP address, otherwise the web cannot be accessed.

## mDNS

Users can log in to ZowiePTZ' s web console through mDNS without knowing the IP address, and mDNS can be customized and modified to make it easier for users to remember and distinguish.

Please restart after modifying mDNS. When using mDNS, please make sure that the mobile phone or computer is in the same LAN as ZowiePTZ. Users can click the address below to directly copy the mDNS address.



## NAS

The full name of NAS is Network Attached Storage, which can store data in large-capacity devices through the network, such as computer disks or dedicated network storage servers.

Please confirm the server IP and folder path that can be shared.

**+ Add**

Click "+Add" to add a new NAS

**Name**

Enter the NAS name for easy management of NAS information.

**NAS Type**

NAS type currently only supports CIFS.

**Host IP**

The IP address of the storage network location. E.g. 192.168.1.7

**Share Directory**

Enter all addresses following the folder path/ here. Example: Please enter home\test in the share directory if the folder path is \\192.168.1.7\home\test .

**Mount options**

Enter the username and password after "=", if there is no password, please clear the text box.

Click the button after the addition is successful, and the NAS will display that the mount is successful.

After the mount is successful, the NAS option will appear on the recording interface.



## 5.14 System

In this interface, modify the system-related configuration.

**Device name and language modification**

On this page, users can modify the language displayed on the web page and the name of the device.

After modifying the device name, the scanned device name will not be modified in real time, and it needs to be restarted to take effect.

The **Live page configuration button** can change the display and number of shortcut keys in the preview interface
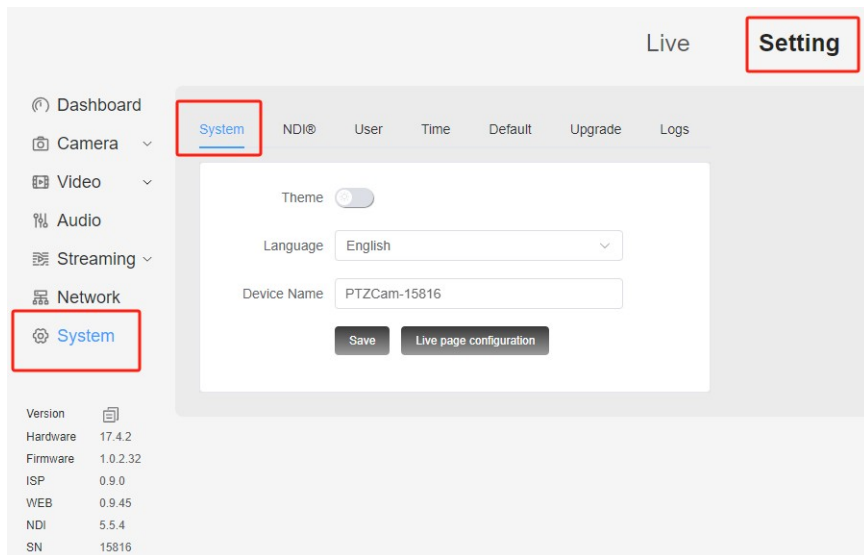
## NDI

Displays whether ZowiePTZ has the NDI function activated.

If ZowiePTZ does not activate the NDI function, please fill in the correct activation code with the admin user privilege and activate it. To obtain an activation code, please contact dealer or manufacturer.
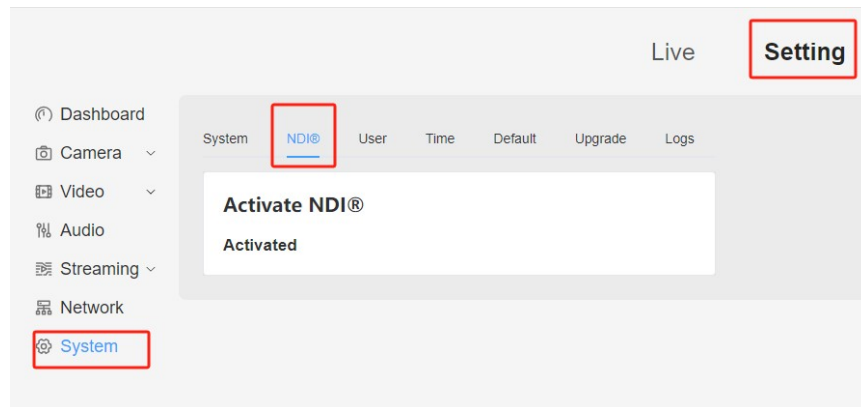


## User

ZowiePTZ provides three types of permissions for users: administrator permissions, super permissions and basic permissions.

### Admin

The default username and password are admin.

Users with administrator privileges can perform any operations on ZowiePTZ.

Log in to the webpage with administrator privileges, and the user can modify, add, and delete the usernames and passwords of all accounts.

When adding or removing accounts, the user must authenticate again with administrator privileges.

The administrator privilege account is unique, and the old password needs to be verified when modifying the administrator password.
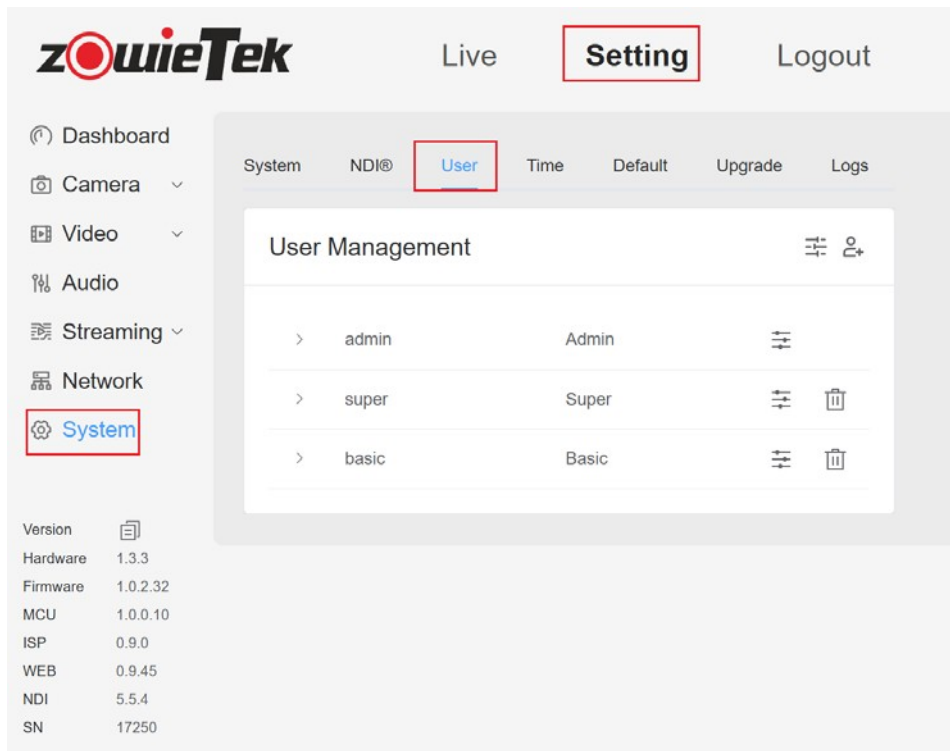
### Super

The default username and password are super.

Users with super privileges can perform operations on ZowiePTZ other than activating NDI and upgrading.
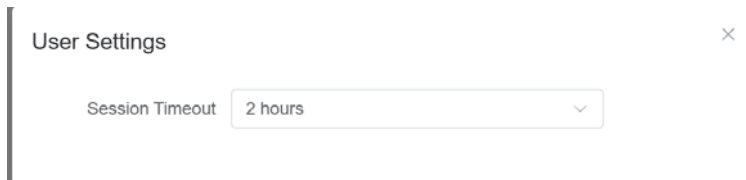
### Basic

The default username and password are basic.

Users with basic permissions can only enter the preview interface of ZowiePTZ.

Click the button in the upper right corner to set the session timeout.



## Time

ZowiePTZ provides three ways to modify the time, manually modify, follow the computer time, and use the NTP service.

**Synchronize with computer time**

When using time synchronization with a computer, directly click the "Save" button, and ZowiePTZ will automatically obtain the time of the computer.

**Set manually**

When using the manual time setting, click the bottom text box to select the correct time and click "Save".
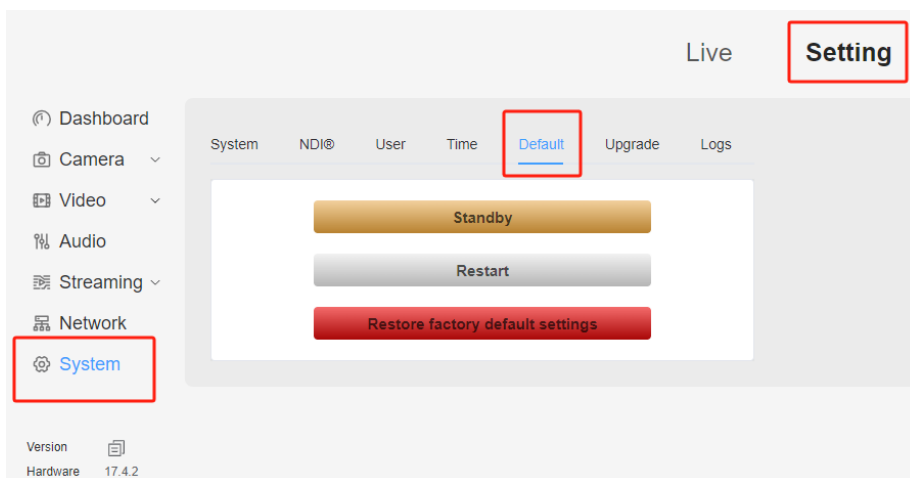
**Synchronize with the NTP server**

When using the NTP service, please select the correct time zone and click "Save".
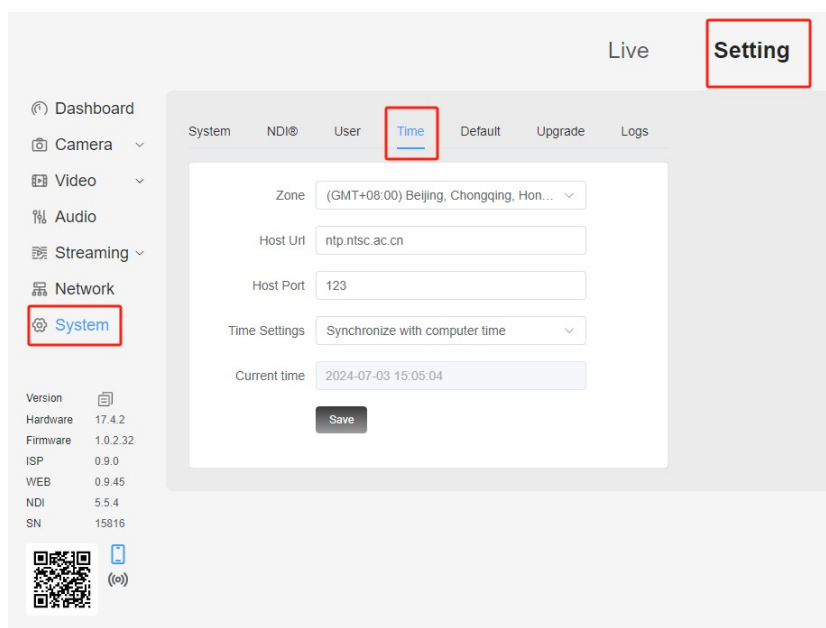
**Default**

On this interface, users can standby, restart or restore factory default settings.

Use the factory reset button sparingly, as it will change all configurations to their initial configurations.



**Update**

View hardware, firmware, web and NDI version numbers, and device serial numbers on this page.

If ZowiePTZ needs to be upgraded, upload the correct update file and click "Upgrade". Do not refresh the page or perform other actions while upgrading. After a few minutes, the page will automatically jump to the login page and prompt that the upgrade is successful. The upgrade operation will not modify the parameters of ZowiePTZ.

ZowiePTZ currently does not support upgrades on the mobile device.
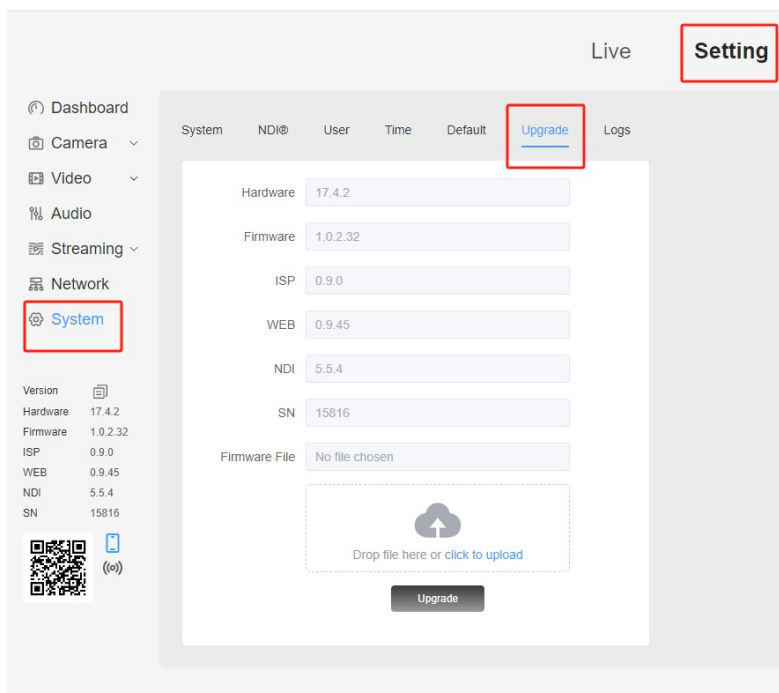


**Logs**

ZowiePTZ will log all actions so can assist with troubleshooting.

ZowiePTZ has a Main Service log and a Web Service log.

Logging is off by default, click the first button to turn on logging.

Click the second button to delete the log information when closing.

Click the third button to refresh the log.

Users can view the last 200 log messages on the web page. For more log information, please download the log.
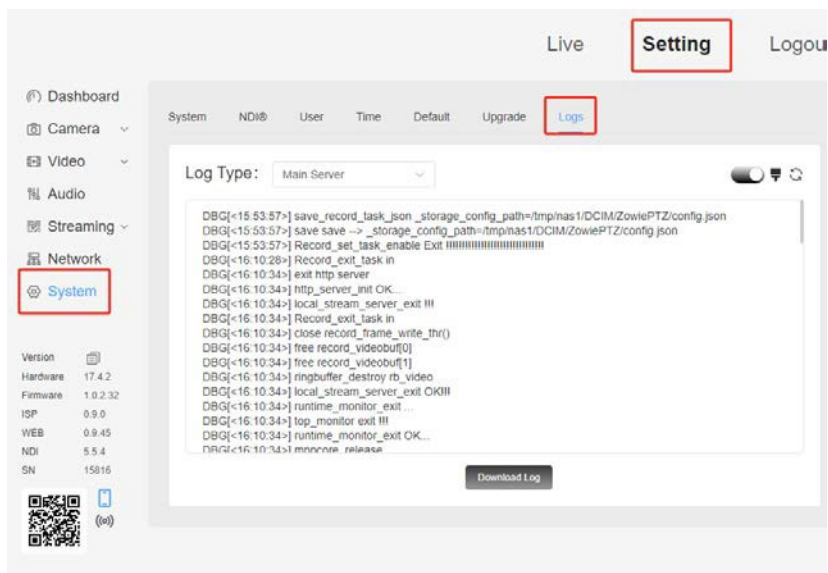
## 5.15 Version Copy

Through the ZowiePTZ version, serial number and other information, users can obtain the NDI activation code, lock the problem, and upgrade the firmware.

In order to copy version information, please log in to the web console on the PC first.

After successful login, click the **Setting** button, slide the left navigation bar to the bottom and click the copy button below to copy the version information.
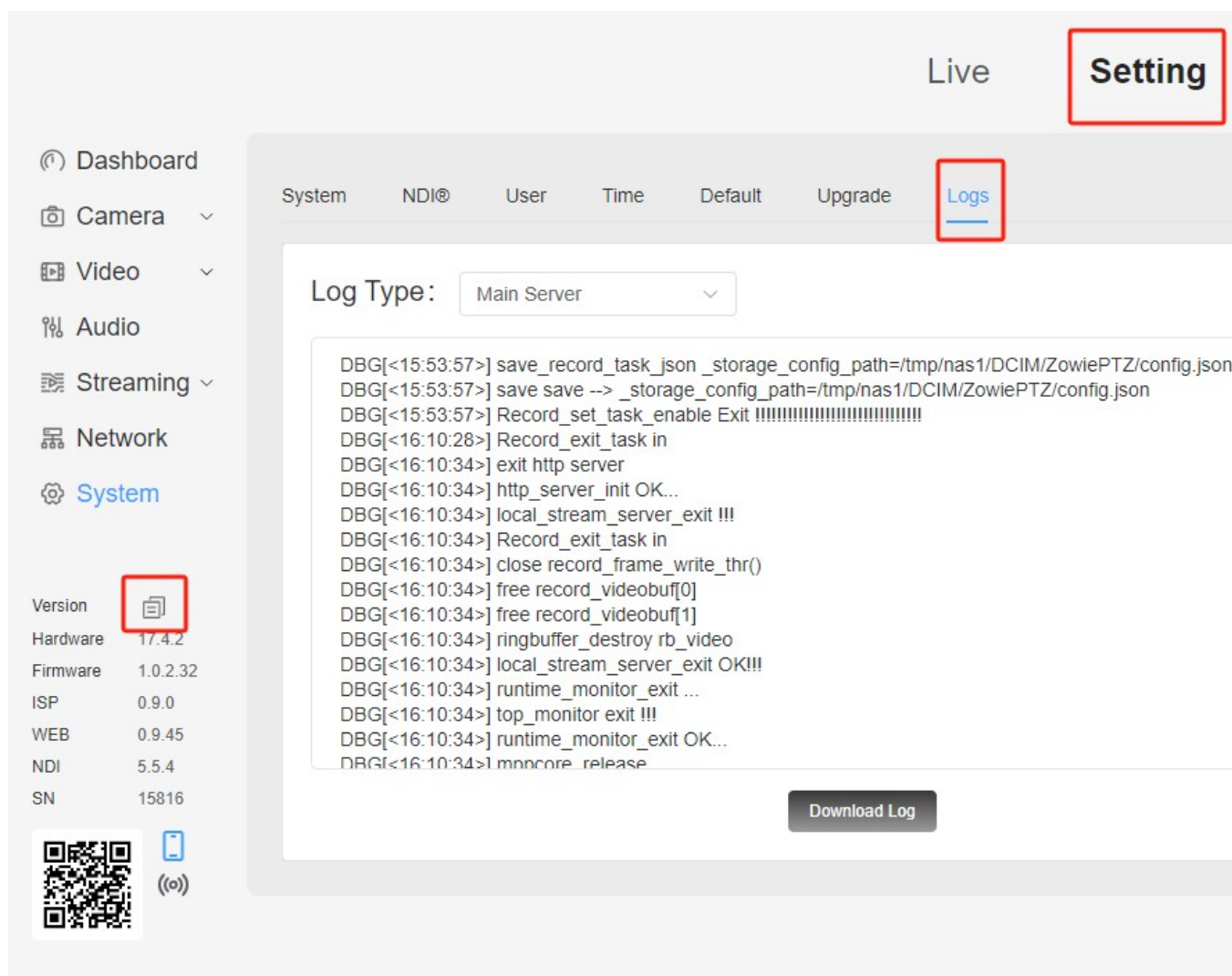
# 6. Serial port protocol settings

ZowiePTZ supports VISCA over IP , RS232 and RS422/485 . This chapter will introduce in detail how to configure the serial port information. When the camera is connected to a computer or keyboard via RS232 or RS422/485 cable, the computer or keyboard can be used to control the camera for operations such as direction and focusing.

Below are the default values of parameters related to serial port protocol, IP VISCA, VISCA, PELCO The P / D protocol is always enabled and will automatically detect the accepted protocol type when the serial port is connected successfully.

| name | value |
|------|-------|
| Baud rate | 9 600 |
| VISCA Address | 1 |
| VISCA address fixed | close |
| PECLO - D Address | 1 |
| PELCO - P Address | 0 |
| TCP port | 5230 |
| UDP Port | 5231 |

After logging into the web control interface, click Setting->Camera->PTZ to obtain and modify the relevant parameters of the control protocol.
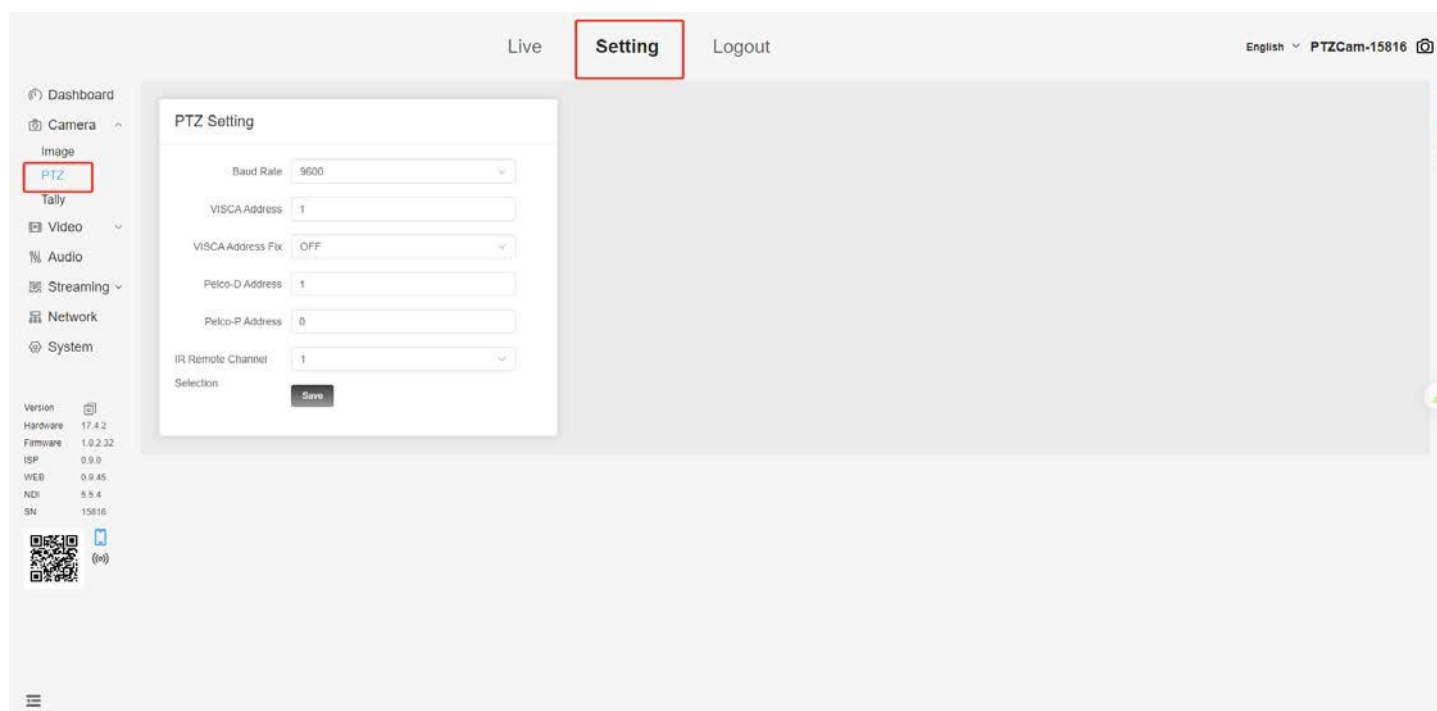


## 6.1 VISCA over IP

By VISCA over IP, users can use the PTZ controller or computer on the same LAN to control ZowiePTZ.

**VISCA over IP communication specifications:**

Interface: RJ-45 1000Mbps

Interface protocol: IPv4

Transport protocol: UDP/TCP

IP address: DHCP is enabled by default

TCP Port: 5230

UDP Port: 5231

**Control the camera via VISCA over IP:**

1、Connect ZowiePTZ to a network with routing

2、Connect control devices that support Visca over IP to the same network and ensure they are in the same network segment.

3、Select Visca over IP as the protocol for the control device, and enter the IP address and port of ZowiePTZ.

4、After saving successfully, you can use the control device to control ZowiePTZ.

# 6.2   RS-232 (VISCA/Peclo-D/P)

Users can use the RS232 interface to connect to a computer or PTZ keyboard and other devices to control the camera via the VISCA/Peclo-D/P protocol.
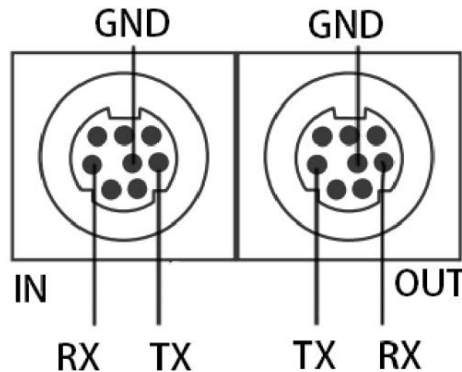
**Default Parameters**

Baud rate: 9600

VISCA Address: 1

Peclo-D Address: 1

Peclo-P Address: 0

**Pin definition:**



# 6.3   RS485/422 (VISCA/Peclo-D/P)

Users can use the RS485/422 interface to connect to a computer or PTZ keyboard and other devices, and control the camera via the VISCA/Peclo-D/P protocol.

**Default Parameters**

Baud rate: 9600

VISCA Address: 1

Peclo-D Address: 1

Peclo-P Address: 0

**Pin definition:**

1. RS485:



**ZowiePTZ**

2. RS422



**ZowiePTZ**
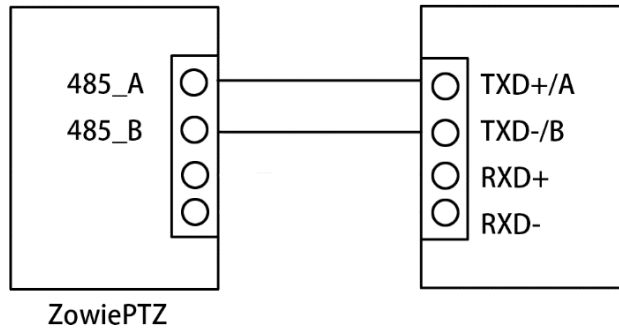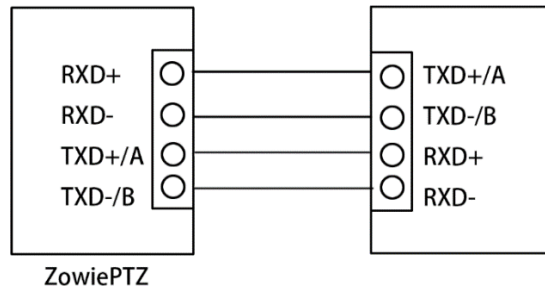
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