UV570

PTZ Auto-Tracking Camera – 20x Zoom

Version: 79068-A20_G2_2025V1.0

Preface

Read this user manual carefully before using the product. The pictures shown in this manual are for reference only. Different product model specifications may vary.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated in January 2025. In order to continue improving the product, we reserve the right to make function or parameter changes without notice or obligation. Please refer to the dealers for the latest details.

FCC Statement

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. It 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 commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacturer would void the user's authority to operate the equipment.

Safety Precautions

To ensure the best performance from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully, and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock, and injury
- Do not dismantle the housing or modify the product (electrical shock or burn hazard)
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration, or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazards, do not expose the unit to rain or moisture, or install this product near water.
- Do not put any heavy items on the product's power cable.
- Do not remove the housing of the device, as opening or removing the housing may expose you to dangerous voltages or other hazards.
- Install the device in a place with sufficient ventilation to avoid damage caused by overheating.
- Keep the product away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills onto the housing, unplug the product immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.
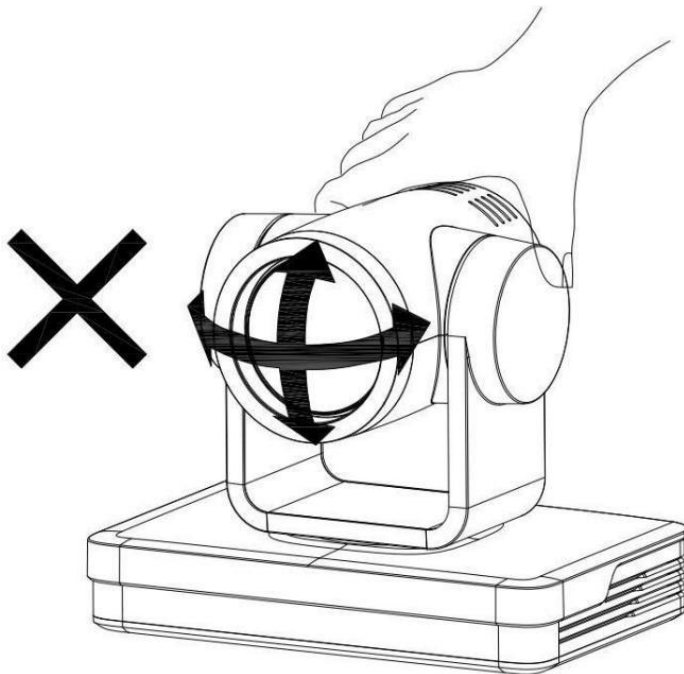
Attention

- Improper operations may damage the product structure and result in mechanical failure. Please note the following tips:
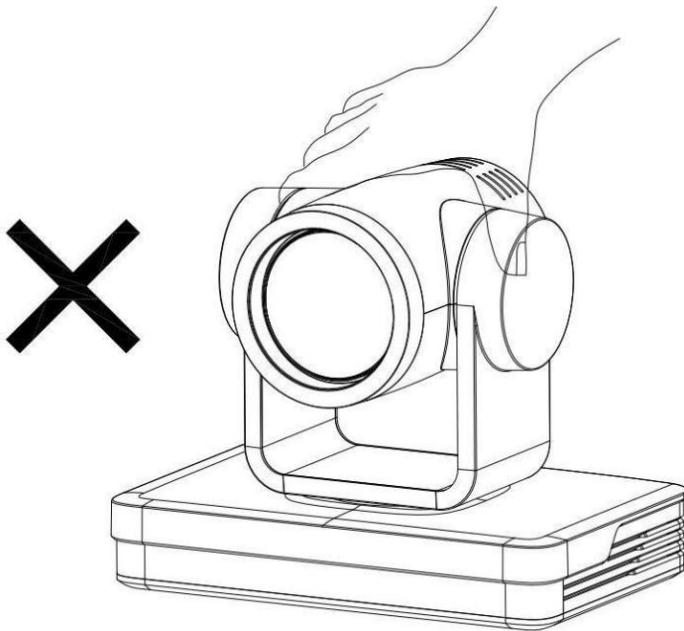
Do not move the camera by grabbing the head.

Move the camera by holding the bottom with one or both hands.

Please do not manually rotate the lens or holder, whether the camera is powered on or off. Doing so may damage the camera's structure, result in a self-check failure, and prevent the camera from starting.

Cautions

- Avoid damage to the product caused by heavy pressure, strong vibration, or immersion during transportation, storage, and installation.
- Do not use the product beyond the specified temperature, humidity, or power supply specifications.
- Wipe it with a soft, dry cloth when cleaning the camera lens. Wipe it gently with a mild detergent if needed. Do not use strong or corrosive detergents to avoid scratching the lens and affecting the image.
- This product contains no parts that can be maintained by users themselves. Any damage caused by dismantling the product by a user without permission is not covered by warranty.

Electrical Safety

- Installation and use of this product must strictly comply with local electrical safety standards. The power supply of the product is ±12V, and the max electrical current is 2A.
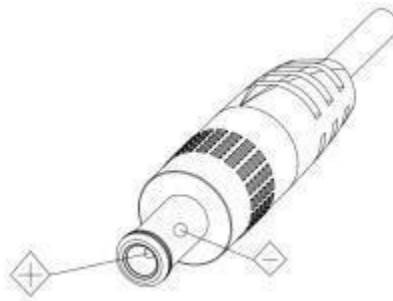
Install

- Do not rotate the camera head violently, otherwise, it may cause mechanical failure;
- This product should be placed on a stable desktop or other horizontal surface. Do not install the product obliquely, otherwise, it may display an inclined image.
- Ensure there are no obstacles within the rotation range of the holder.
- Do not power it on before completing installation.

Magnetic Interference

- Electromagnetic fields at specific frequencies may affect the video image. This product is Class A. It may cause radio interference in household applications. Appropriate measure is required.

Table of Contents

1.   Product Introduction

TEKVOX's UV570 is a professional-grade PTZ auto-tracking camera. With 20x optical zoom and support for full HD (1080p @ 60Hz) resolution, the UV570 delivers stunning video quality in any space. Advanced AI-driven auto-tracking keeps presenters in view at all times, without requiring any on-site configuration. The UV570 features simultaneous HDMI, USB 3.0, SDI, and LAN video outputs, guaranteeing seamless compatibility with any system. The UV570 also includes a gravity sensor to automatically re-orient the image when mounted upside-down for fast, easy installations. The camera is controllable via RS232, RS422, RS485, VISCA, PELCO-D, PELCO-P, or IR remote.

With exceptional auto-tracking performance, vivid image quality, extremely quiet and smooth PTZ movement, and effortless installation, the UV570 is the perfect option for demanding HyFlex, streaming, and conferencing applications.

1.1.   Features

- Simultaneous HDMI, SDI, USB 3.0, and LAN video outputs
- Support full-HD resolutions with up to 60Hz frame rates
- 20x optical zoom for exceptional, lossless zoom in any space
- Advanced, AI-driven auto-tracking and auto-focus algorithms
- Outstandingly quiet and smooth PTZ motion with a wide range of motion
- Controllable via RS232/422/485, VISCA, PELCO-D/P, and IR remote
- Supports power via PoE network connection or included power supply

1.2.   Package List

- Power adapter
- RS232 cable
- User manual
- USB3.0 cable (only for models with USB3.0 output)
- Warranty card
- Wireless remote control (optional)
- Ceiling mount (optional)
- Wall mount (optional)
- Infrared remote control (optional)

Note: Please contact your distributor immediately if any damage or defect in the components is found.

2.   Specifications

Camera Parameter			
Parameter/Model	12X	20X	30X
Focus	3.9 -- 46.8mm	5.2 -- 98mm	4.3 -- 129mm
FOV	6.3° (N) 72.5° (W)	3.2° (N) 56° (W)	2.34° (N) 65° (W)
Aperture Value	F1.8 -- F2.4	F1.5 -- F3.0	F1.6 -- F4.7
Effective Pixels	2.07, 1/2.8-inch high-quality CMOS sensor		
Video Format	**HDMI/SDI:** 1080P60, 1080P50, 1080P30, 1080P25, 720P60, 720P50, 1080P59.94, 1080P29.97, 720P59.94 **USB3.0: main stream: YUY2/NV12:** 1920×1080/1280×720/1024×576/800×600/800×448/640×360/640×480/480×270/320×180@30/25/20/15/10/5fps **MJPG/H264:** 1920×1080/1600×896/1280×720/1024×576/960×540/800×600/800×448/720×576/720×480/640×360/640×480/480×270/352×288/320×240@30/25/20/15/10/5fps **Sub-stream：YUY2/NV12:** 1920×1080/1280×720/1024×576/800×600/800×448/640×360/640×480/480×270/320×180@30/25/20/15/10/5fps **MJPG/H264:** 1920×1080/1600×896/1280×720/1024×576/960×540/800×600/800×448/720×576/720×480/640×360/640×480/480×270/352×288/320×240@30/25/20/15/10/5fps		
Minimum illumination	0.5Lux (F1.8, AGC ON)		
DNR	2D & 3D		
AWB	Automatic, manual, one-key white balance, specified color temperature		
Focus mode	Automatic, manual, one-key focus		
Exposure mode	Auto, manual, shutter priority, aperture priority, brightness priority		
Iris value	F1.8 -- F11,CLOSE		
Shutter Speed	1/25 -- 1/10000		
BLC	on/off		
Dynamic range	Off, 1 -- 8		
Image adjustment	Brightness, chroma, saturation, contrast, sharpness, black and white mode, gamma curve		

SNR	≥50dB
AI Function & Performance	
Real-Time Tracking	**Maximum Tracking Range:** 6-7 meters. Support speakers to walk at a speed of 3-4 meters
Regional Tracking	**Maximum Tracking Region:** 4. Support set the region within horizontal -170°~+170° and vertical -30°~+90°
Interface	
Product Interface	HDMI, LAN (POE), USB3.0 (B Type, Compatible with USB2.0), SDI, A-IN, RS232-IN, RS232-OUT, RS422 (Compatible with RS485), Rotary Switch, DC12V Power
Video Encoding Format	**LAN Interface：** Support main stream and sub-stream H.265, H.264 **USB3.0 Interface：** main stream support YUY2, MJPG, H264, NV12
Audio input interface	Dual channel 3.5mm linear input
Audio output interface	HDMI, SDI, LAN, USB3.0
Audio compression	AAC, MP3, G.711A
LAN interface	10M/100M/1000M adaptive Ethernet port, support POE power supply, support audio and video output
Network protocol	RTSP, RTMP, ONVIF, GB/T28181, VISCA OVER IP, IP VISCA, RTMPS, SRT Support remote upgrade, remote restart, remote reset
Control Interface	RS232-IN, RS232-OUT, RS422 compatible with RS485
Serial communication protocol	VISCA/Pelco-D/Pelco-P; support baud rate 115200/38400/9600/4800/2400
USB communication protocol	UVC (video communication protocol), UAC (audio communication protocol)
Power interface	HEC3800 Power socket (DC12V)
Power adapter	Input AC110V-AC220V; output DC12V/2.5A
Input voltage	DC12V±10%
Input currency	<1A
Consumption	<12W

PTZ	
Pan rotation	-170° -- +170°
Tilt rotation	-30° -- +90°
Pan speed	0.1°/s -- 100°/s
Tilt speed	0.1°/s -- 45°/s
Preset speed	**Pan**：100°/s **Tilt**：45°/s
Preset quantity	Maximum 255 preset positions can be set (10 via remote controls)
Other Parameters	
Storage temperature	-10°C -- +70°C
Storage humidity	20% -- 95%
Working temperature	-10°C -- +50°C
Working humidity	20% -- 80%
Dimension	181mm×115mm×149mm
Weight	1.15kg
Environment	Indoor
Accessories	
Standard accessory	Power adapter, RS232 control line, USB3.0 connection line, remote control, manual, warranty card & certificate
Optional accessory	Ceiling mounting bracket, wall mounting bracket

3.   Camera Installation

3.1.   Camera Introduction
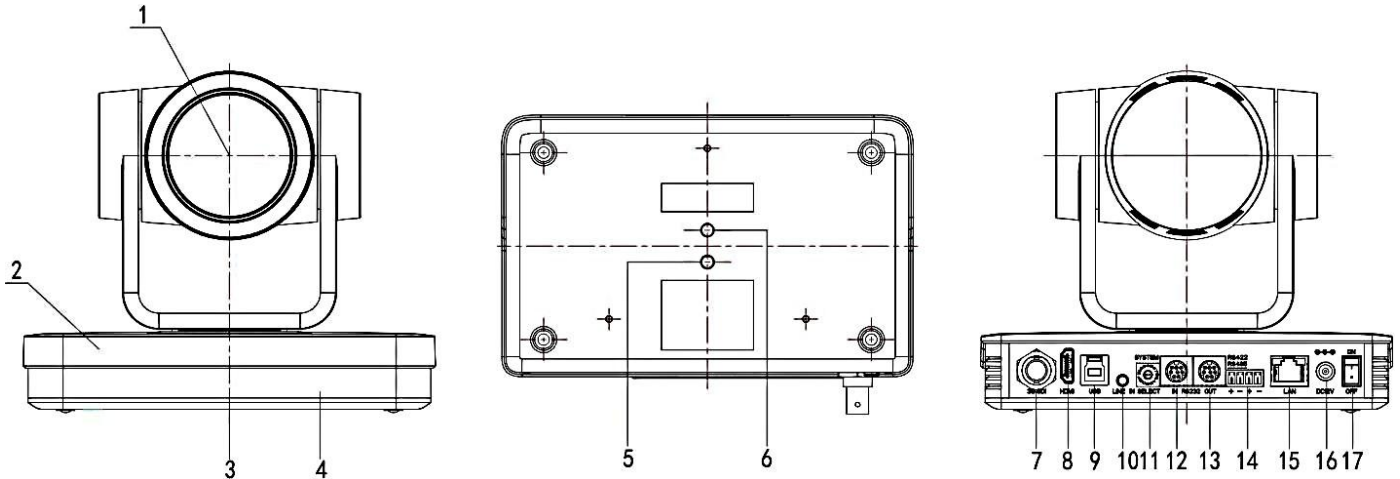
Interface of SU (standard) Model

①   Camera Lens

②   Camera Base

③   Remote Control Receiving Indicator

④   Infrared Receiver

⑤   Tripod Screw Hole

⑥   Screw Hole for Tripod

⑦   SDI Output Interface

⑧   HDMI

⑨   U3

⑩   Audio Input Interface(LINE-IN)

⑪   Rotary Dial Switch

⑫   RS232 Input Interface (input)

⑬   RS232 Output Interface (Output)

⑭   RS422 Compatible with RS485 Interface

⑮   LAN Port

⑯   Power Input Socket(DC12V)

⑰   Power Switch Button

3.2. Interfaces and Connection
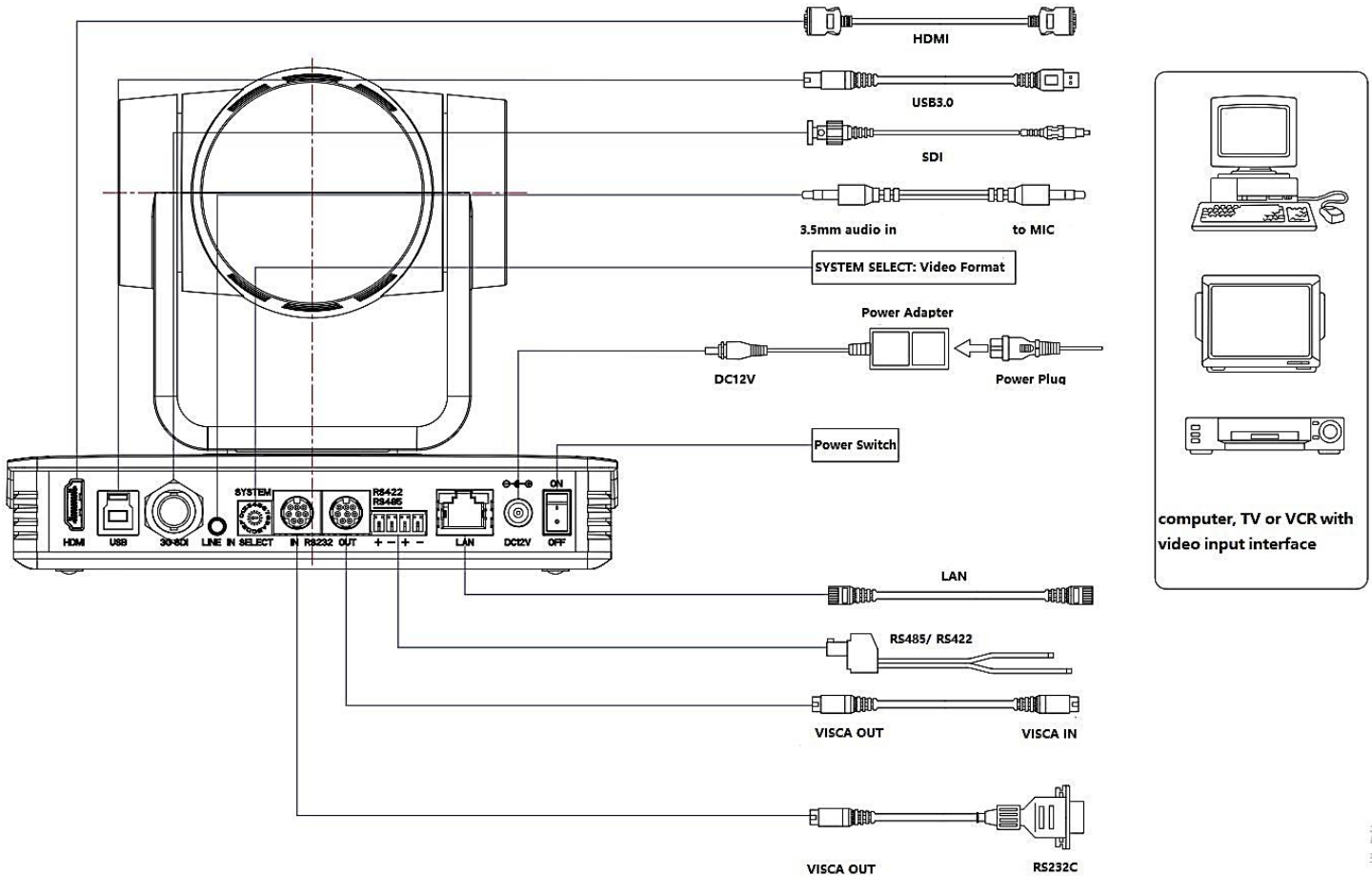
Wiring Diagram

1) After powering on and self-check, the camera will automatically return to the preset 0 position if it's pre-set.
2) The default address for the IR remote control is 1#.
   If the menu is restored to factory defaults, the remote-control default address will restore to 1#.

3.3. Mounting Brackets

Notes:
Ceiling or wall mounting brackets can only be mounted on wooden and concrete walls. For safety reasons, plasterboard is not recommended.
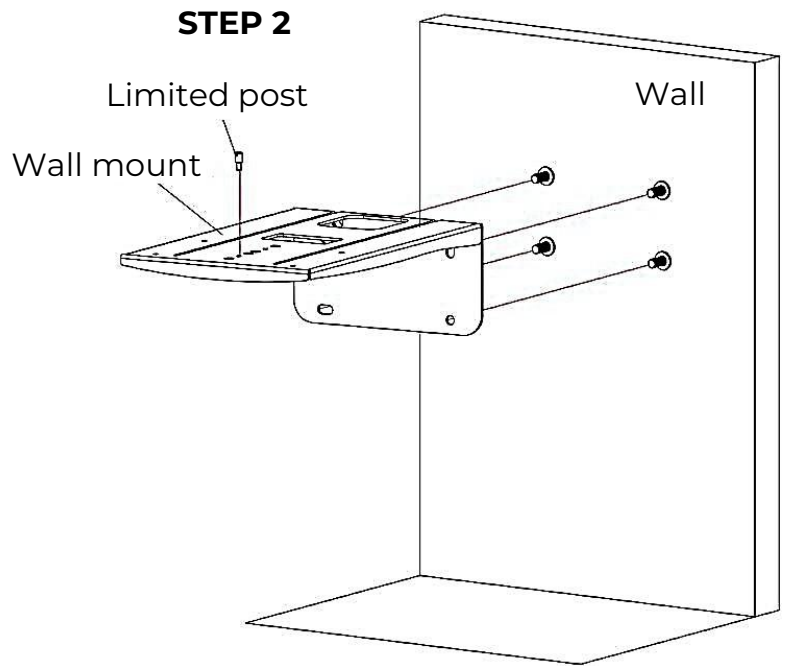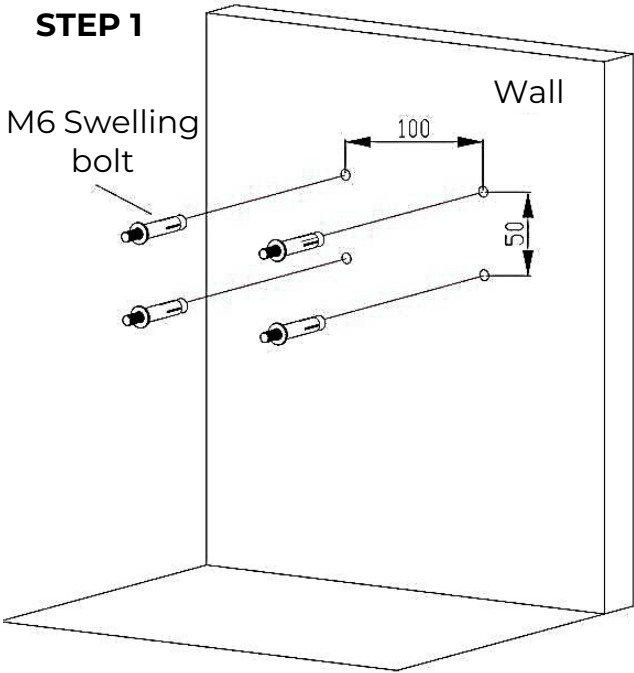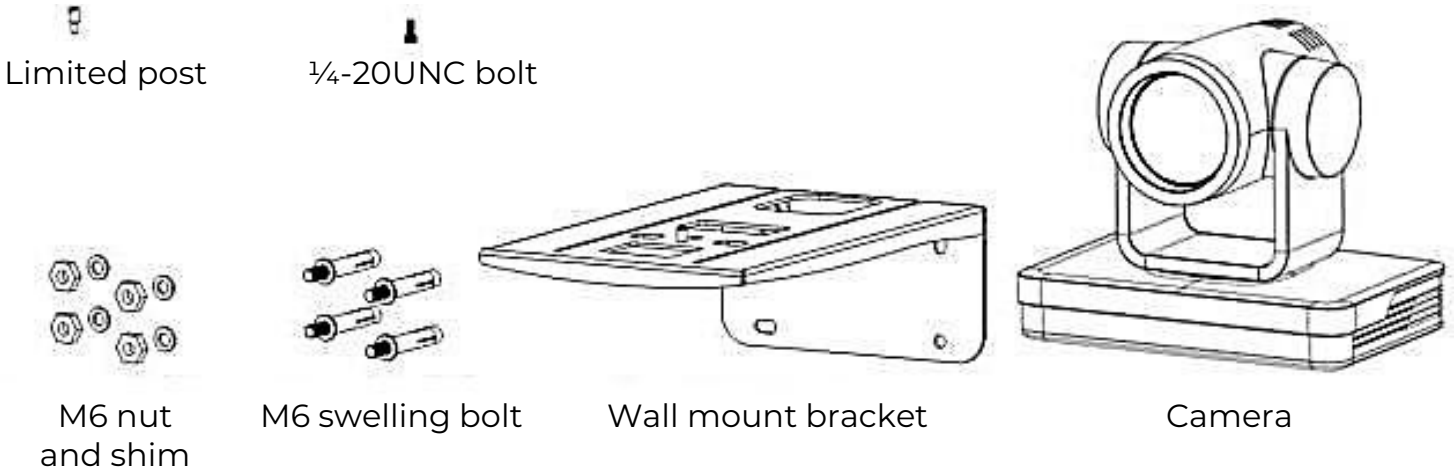
3.3.1.   Wall Mounting

Limited post   ¼-20UNC bolt

M6 nut and shim   M6 swelling bolt   Wall mount bracket   Camera

STEP 1

M6 Swelling bolt

Wall

100

50

STEP 2

Limited post

Wall mount

Wall

STEP 3

Wall mount

Wall

M6 Nut
and shim

STEP 4

Camera

Wall

Wall mount

¼-20UNC bolt

STEP 5

Wall

3.3.2. Ceiling Mounting

PA3X30 Self tapping screw

PM3x6 bolt

Screw stopper

¼-20UNC bolt

Upper cover plate

Lower cover plate

Camera

STEP 1

Ceiling

Screw stopper

STEP 2

Upper cover plate

Ceiling

PA3X30 Self tapping screw

STEP 3

¼-20UNC bolt

Lower cover plate

Camera

STEP 4

Ceiling

Upper cover plate

Lower cover plate

Camera

STEP 5

Ceiling

PM3x6 bolt

Camera
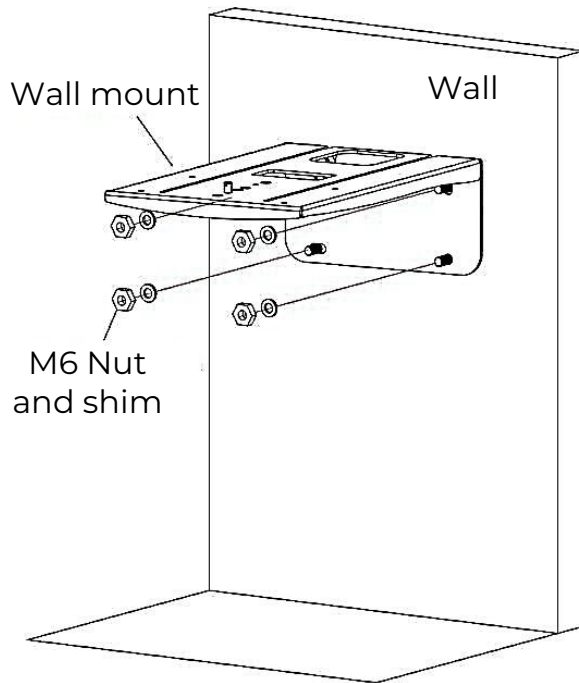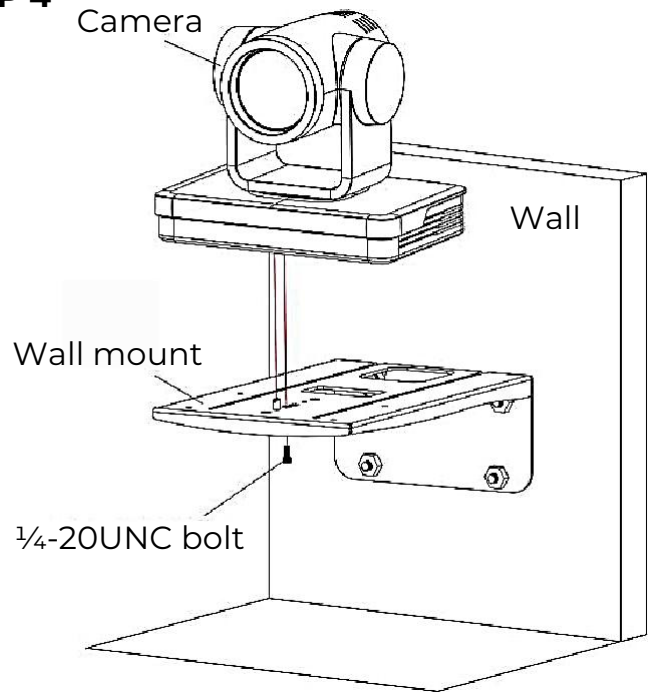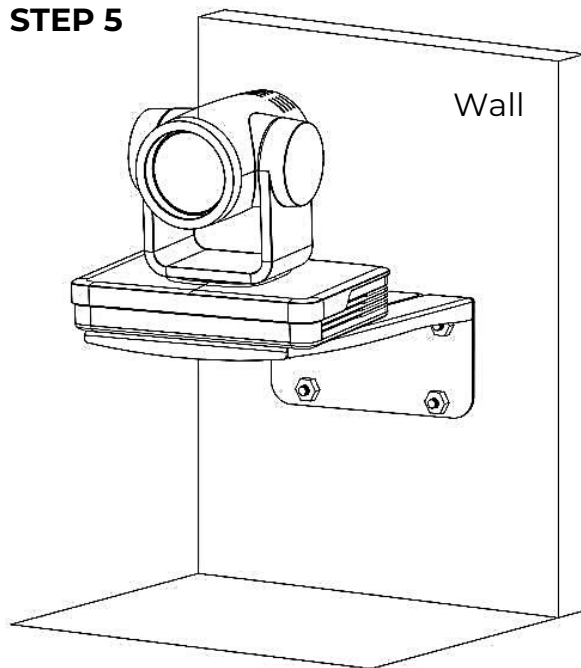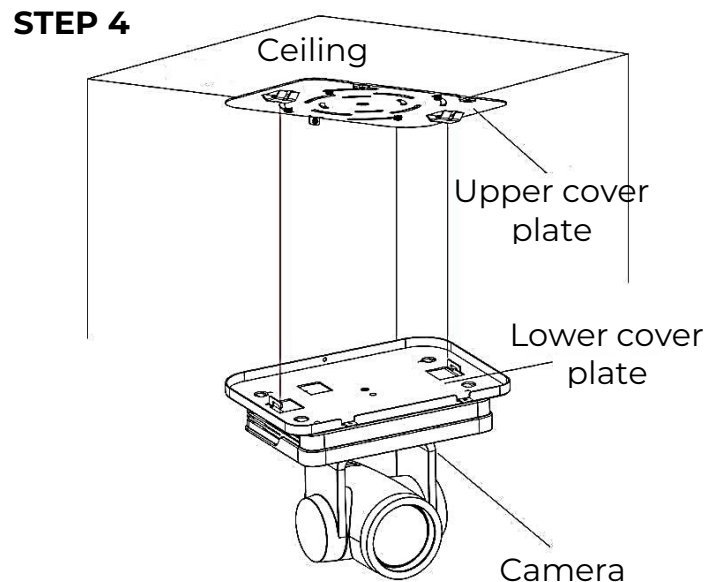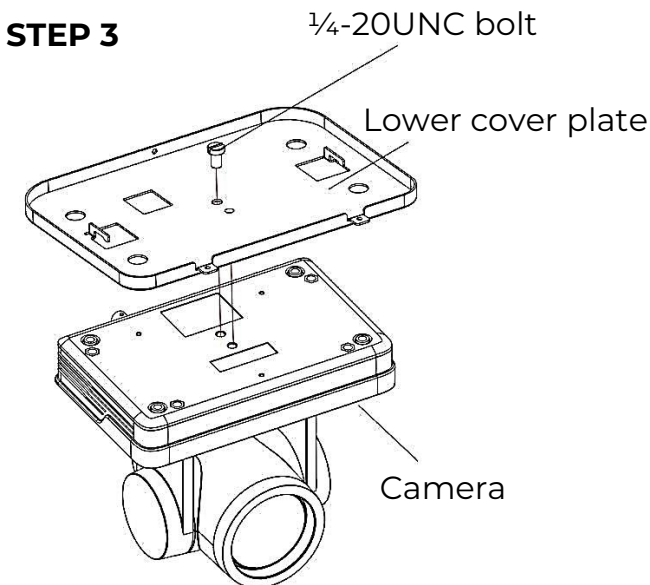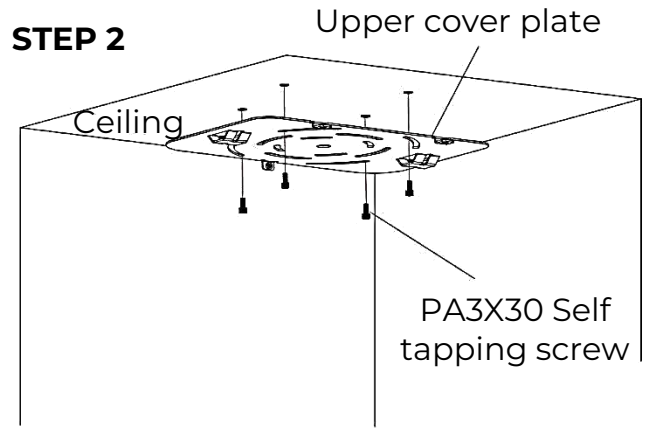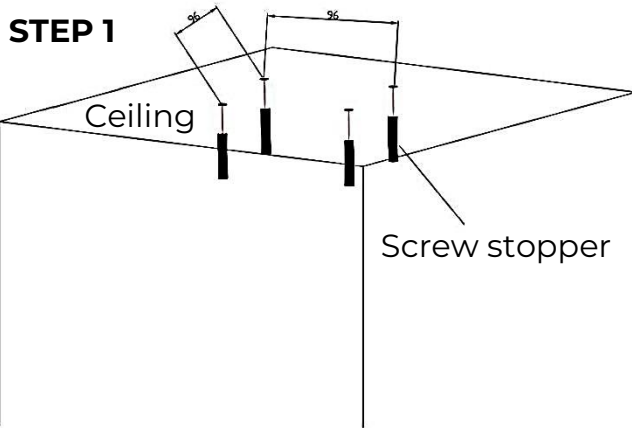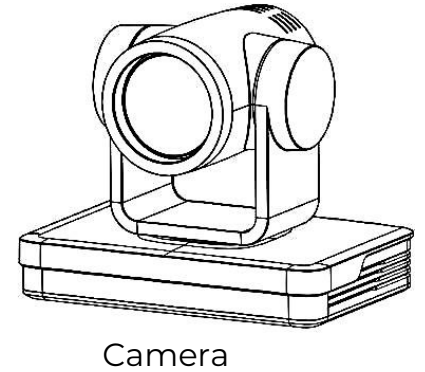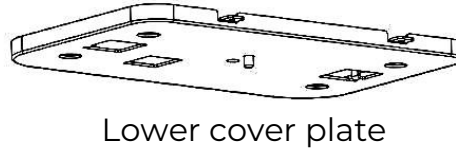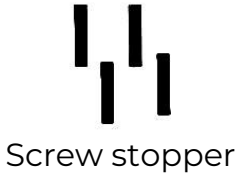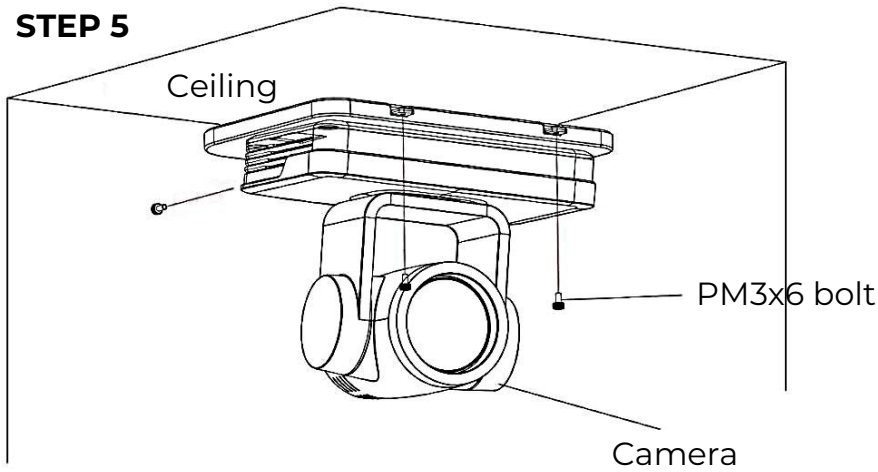
4.   Product Overview

4.1.   Product Model

Model No. —XX—XX

IR---Infrared Remote Control
WR---Wireless Remote Control

12---12X Optical Zoom Lens
20---20X Optical Zoom Lens
30---30X Optical Zoom Lens
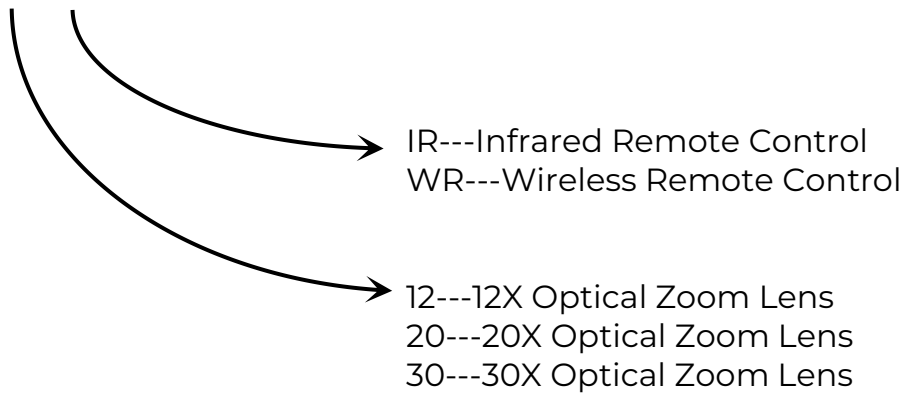
Users are requested to confirm the model number before referring to product functions accordingly.

4.2. Product Dimensions
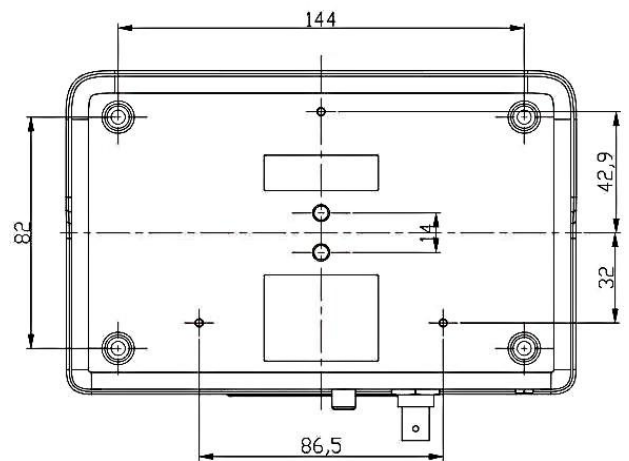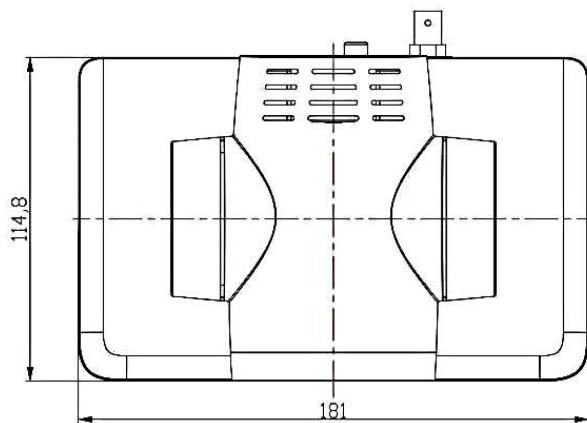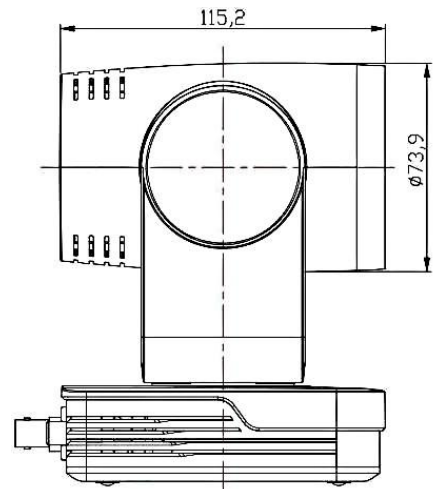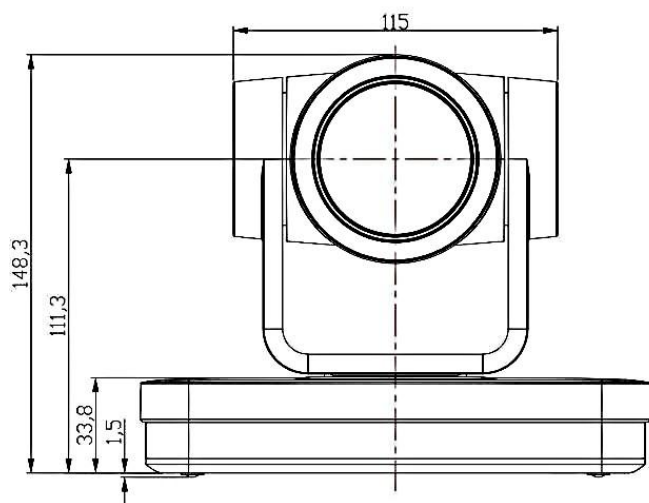
4.3. RS-232 Interface

4.3.1. RS-232 Interface Definition
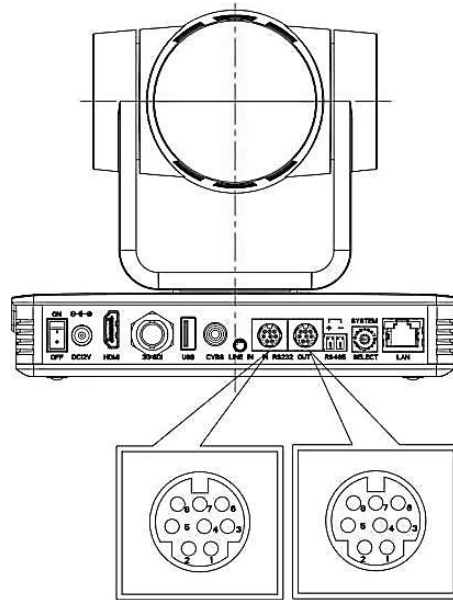
Connection to PC or Camera Controller

Camera		Windows DB-9	
1	DTR	6	DSR
2	DSR	4	DTR
3	TXD	2	RXD
4	GND	5	GND
5	RXD	3	TXD
6	GND	1	DCD
7	IR OUT	7	RTS
8	NC	8	CTS
		9	RI

MD8M

DB9F

Camera RS232 in

PC/Camera Controller RS232 interface
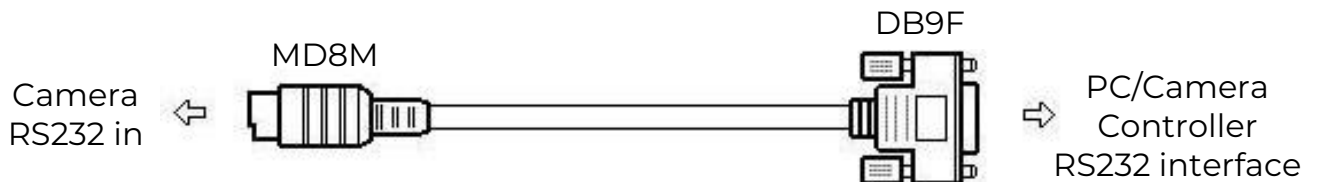
4.3.2. RS232 Mini-DIN 8-pin: Port Definition

Pin No.	Port	Definition
1	DTR	Data Terminal Ready
2	DSR	Data Set Ready
3	TXD	Transmit Data
4	GND	Signal Ground
5	RXD	Receive Data
6	GND	Signal Ground
7	IR OUT	IR Commander Signal
8	NC	No Connection
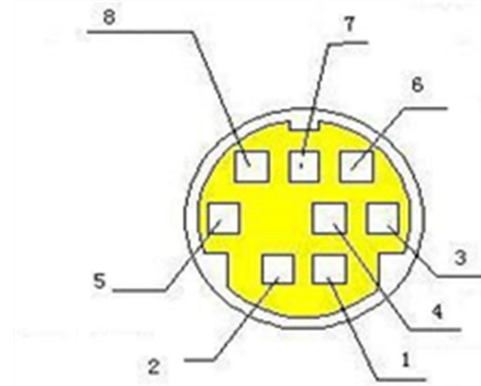
4.3.3. RS232 (DB9) Port Definition

Pin No.	Port	Definition
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	System Ground
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator
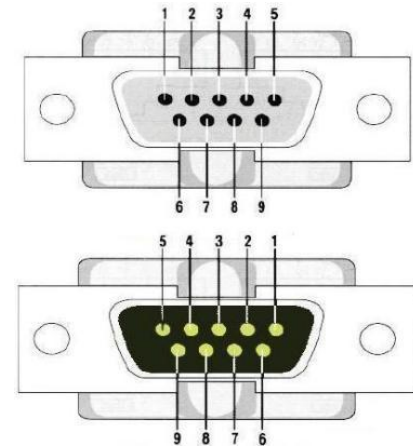
4.3.4. VISCA networking
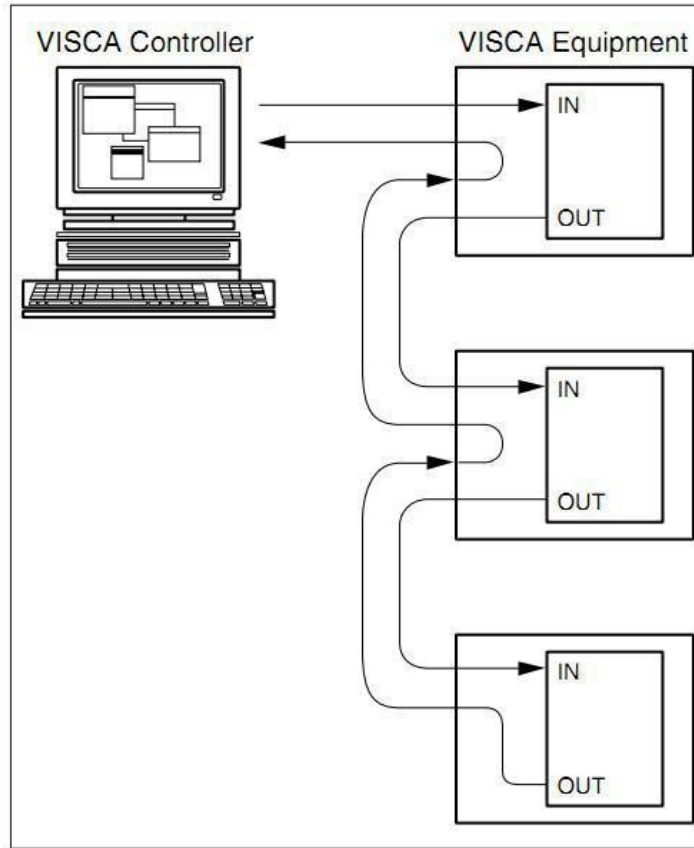
Camera cascade connection

Camera 1			Camera 2	
1	DTR	⟶	2	DSR
2	DSR	⟵	1	DTR
3	TXD	⟶	5	RXD
4	GND	⟶	4	GND
5	RXD	⟵	3	TXD
6	GND		6	GND
7	IR OUT		7	OPEN
8	NC		8	OPEN

4.4. Rotary Dial Switch
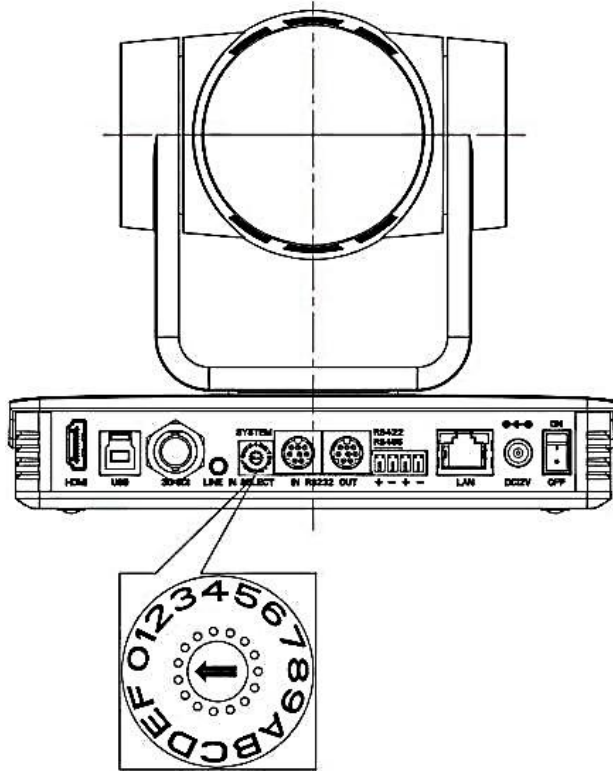
Position	Definition
0	Format 1080P60
1	Format 1080P50
2	Format 1080P30
3	Format 1080P25
4	Format 720P60
5	Format 720P50
6	Format 1080P59.94
7	Format 1080P29.97
8	Format 720P59.94
9	----
A	----
B	----
C	----
D	----
E	----
F	----

Note:
After turning the dial to modify the video format, power off and restart to take effect.
After turning the dial to F, powering off, and restarting, the menu can display the video format.

4.5. Main Features

This series camera has perfect functions, superior performance, and rich video output interfaces. It features advanced ISP processing algorithms, offering vivid and high-resolution video with a strong sense of depth and fantastic color rendition. It supports H.264/H.265 encoding which makes motion video more fluent and clear under low bandwidth conditions.

- **Full HD Resolution:** 1/2.8 inch high-quality CMOS sensor. Resolution is up to 1920x1080 with a frame rate of up to 60 fps.
- **Multiple Optical Zoom Lens:** 12X/20X/30X optical zoom lens.
- **Leading Auto Focus Technology:** Fast, accurate, and stable auto-focusing technology.

- **Low Noise and High SNR:** A super high SNR image is achieved with low noise CMOS. Advanced 2D/3D noise reduction technology further reduces the noise while ensuring high image clarity.
- **Multiple video output interfaces:** HDMI, SDI, CVBS, LAN.
  Simultaneously output audio and video signal via HDMI, SDI, and LAN. LAN interface supports POE, USB 3.0 supports dual code stream, and SDI supports transmission up to 100m under 1080P60 format
- **Multiple Audio/Video Compression Standards:** Support H.264/H.265 video compression, up to 1920×1080 resolution 60 fps; support AAC, MP3 and G.711A audio compression, 8000,16000,32000,44100,48000 sampling frequency
- **USB3.0 Support Dual Coding Stream:** Support main stream and sub-stream, and simultaneous output. Support YUY2, MJPEG, H.264, NV12, H.265 video coding format.
- **Built-in Gravity Sensor:** Supports PTZ auto-flip function and easy installation.
- **Multiple Network Protocol:** Support ONVIF, GB/T28181, RTSP, RTMP, VISCA OVER IP, IP VISCA, RTMPS, SRT protocols; Support RTMP push mode, easy to be connected to streaming server (Wowza, FMS); Support RTP multicast mode.
- **Control Interface:** RS422 is compatible with RS485, RS232-IN, RS232-OUT, and the RS232 interface supports cascading.
- **Multiple Control Protocol:** Support VISCA, PELCO-D, and PELCO-P protocols; Supports automatic identification protocols.
- **Quiet Pan / Tilt Movement:** With high accurate step-driving motor, the camera can pan/tilt extremely quietly and smoothly.
- **Various remote controls:** Users can choose infrared remote control or wireless remote control according to the environmental conditions used. The 2.4G wireless remote control is not affected by angle, distance, and infrared interference. Support the remote control signal transparent transmission function, which is convenient for back-end equipment to use.
- **AI Human Detection:** Built-in high-speed processor and advanced image processing and analysis algorithms, users can choose real-time tracking and regional tracking according to the environment.
- **Multiple Applications:** Online education, Lecture Capture, Webcasting, Video conferencing, Telemedicine, Unified Communication, Emergency command and control systems, etc.

5.   Remote Control

5.1.   Match Code for Wireless Remote Control

One-to-One Code Matching:
Press the "SET" and "*" keys combined for 3 seconds, and the LED indicator starts flashing. The camera receives the signal and turns on. The LED indicator will go off if the code matches successfully. The camera can be controlled by this wireless remote control only after one-to-one code pairing. Otherwise please clear the code matching of this remote control, or use another remote control to pair with the camera again.
If one-to-one code matching fails, the red LED light flashes for 20 seconds and then goes off. The camera will stop code matching and turn on sleep mode. Press any key to wake up the camera and re-match the code.

Note:
After the code matches successfully, please select the camera address to control it.

Clear Code:
Press the "SET" and "*" keys combined for 3 seconds, and the LED indicator starts flashing. The camera will power off and on, and the LED indicator will go off if clear code successfully.

Sleep Mode and Wake Up:
Press any key to wake up the camera from sleep mode.

5.2.   Keys Introduction for IR Remote Control

1)   In this manual, "press the key" means a click rather than a long press, and a special note will be given if a long- press for more than one second is required.

2)   When a key combination is required, do it in sequence.
For example, "[*] + [#] + [F1]" means press "[*]" first and then press "[#]" and last press "[F1]".

5.2.1.   Standby Key

The camera enters standby mode if the standby key is long-pressed for 3 seconds. Long-press the standby key for 3 seconds again, and the camera will perform a self-check and return to the HOME position (If the preset 0 position is set, the camera will return to the preset 0 position).

5.2.2.   Camera Selection

Select the camera address to control.

5.2.3.   Focus Control
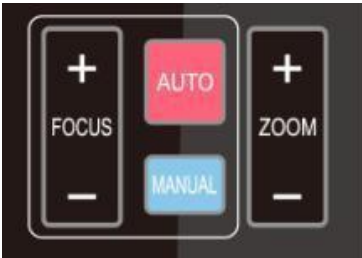
AUTO: Autofocus mode
MANUAL: Manual focus mode
FOCUS + (near): Press [FOCUS +] key (Valid only in manual focus mode)
FOCUS - (far): Press [FOCUS -] key (Valid only in manual focus mode)

Press and hold the keys to continue the focus action, which will stop as soon as the keys are released.

5.2.4.   Zoom Control

ZOOM +: press [ZOOM +] key to zoom in
ZOOM - : press [ZOOM -] key to zoom out

Press and hold the keys to continue the zoom action, which will stop as soon as the keys are released.

5.2.5. Set and Clear Presets

SET PRESET: press the [SET PRESET] button, and then press the number key 0-9 to set preset positions.
Note: 10 presets via remote control.

Call a preset: Press a number key 0-9 directly to call a preset position.

CLEAR PRESET: press the [CLEAR PRESET] button, and then press the number key 0-9 to clear preset positions.

Note: press the [#] key three times continually to clear all presets.

5.2.6. Pan/Tilt Control

Up: press [▲]
Down: press [▼]
Left: press [◄]
Right: press [►]
Back to the middle position: press [HOME]

Press and hold the up/down/left/right key, and the pan/tilt movements will keep running, from slow to fast, until it runs to the endpoint. Stop as soon as the key is released.

5.2.7. Menu Setting

[MENU]: Open/Close the OSD menu
[HOME]: Camera lens back to the middle position; Confirm button; Enter next menu
[▲] [▼]: Choose item
[◄] [►]: Modify values
[BLC ON/OFF]: Turn on or off the backlight compensation

5.2.8. Camera Remote Control Address Setting

[*] + [#] + [F1]: Camera Address No. 1
[*] + [#] + [F2]: Camera Address No. 2
[*] + [#] + [F3]: Camera Address No. 3
[*] + [#] + [F4]: Camera Address No. 4

5.2.9. Key Combinations

1. **[#] + [#] + [#]:** Clear all presets
2. **[*] + [#] + [6]:** Restore factory defaults
3. **[*] + [#] + [3]:** Menu set to Chinese
4. **[*] + [#] + [4]:** Menu set to English
5. **[*] + [#] + [9]:** Flip switch
6. **[*] + [#] + [AUTO]:** Enter aging mode
7. **[#] + [*] + [AUTO]:** Exit aging mode
8. **[*] + [#] + [MANUAL]:** Restore the default user name, password, and IP address
9. **[#] + [#] + [0]:** Switch the video format to 1080P60
10. **[#] + [#] + [1]:** Switch the video format to 1080P50
11. **[#] + [#] + [2]:** Switch the video format to 1080I60
12. **[#] + [#] + [3]:** Switch the video format to 1080I50
13. **[#] + [#] + [4]:** Switch the video format to 720P60
14. **[#] + [#] + [5]:** Switch the video format to 720P50
15. **[#] + [#] + [6]:** Switch the video format to 1080P30
16. **[#] + [#] + [7]:** Switch the video format to 1080P25
17. **[#] + [#] + [8]:** Switch the video format to 720P30
18. **[#] + [#] + [9]:** Switch the video format to 720P25

Note:
If the address of the former remote control is not address 1 but another one from 2, 3, or 4, the corresponding camera address will be restored to address 1 when all parameters are restored to factory default. The user should change the remote control address to address 1.

5.2.10. Shortcut Keys of AI Functions
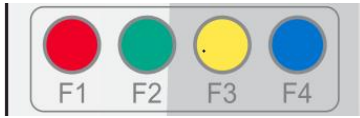
[F1]: Turn off AI Human Detection
[F2]: Turn on AI Human Detection
[F3]: Switch Human Detection Mode
[F4]: Switch Real-time Tracking into Human Detection

5.3. Menu Introduction

Note: The modification is valid only if exit the menu before saving and powering off.

5.3.1. Menu Control

[MENU]: Enter/Exit the OSD menu or return to the previous menu
[HOME]: Enter the next menu
[▲] [▼]: Choose item
[◄] [►]: Modify values

5.3.2. English Menu
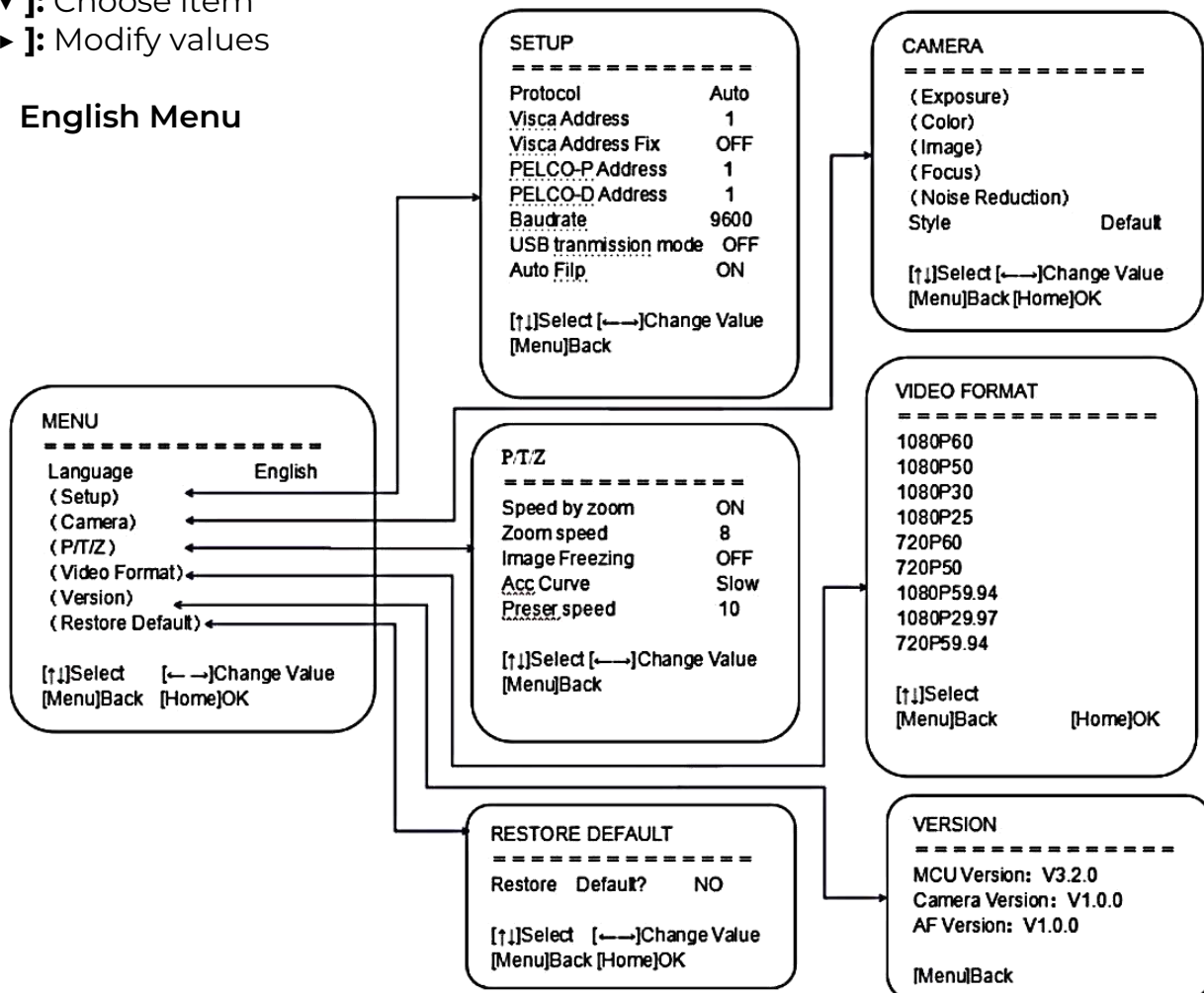
6. Network Configuration

6.1. Network Connection

Direct connection: Connect the camera and computer by network connecting cable.
Internet connection mode: Connect the camera to the Internet by Router or Switcher and the user can log in to the device by a browser web page.

Note: Please do not put the power cable and network cable in places where can be easily touched, to prevent video unstable signal transmission due to poor contact of cables.

The computer must have the network segment to where the camera IP address belongs to. The device will not be accessible without the segment.
The camera's default IP address is 192.168.5.163, segment 5 must be added to the computer.

Firstly open the window of Local Area Connection Properties on the computer, select the "Internet protocol version 4 (TCP/IPv4)". Double click or click the property "Internet" protocol version 4 (TCP/IPv4) to enter into the Internet Protocol Version 4 (TCP/IPv4) Properties window; select "Advanced" to enter into the Advanced TCP/IP Setting and add IP and subnet mask. Click the "Confirm" to finish the adding of the IP segment. Users can add the corresponding network segment according to the revised IP address of the camera.
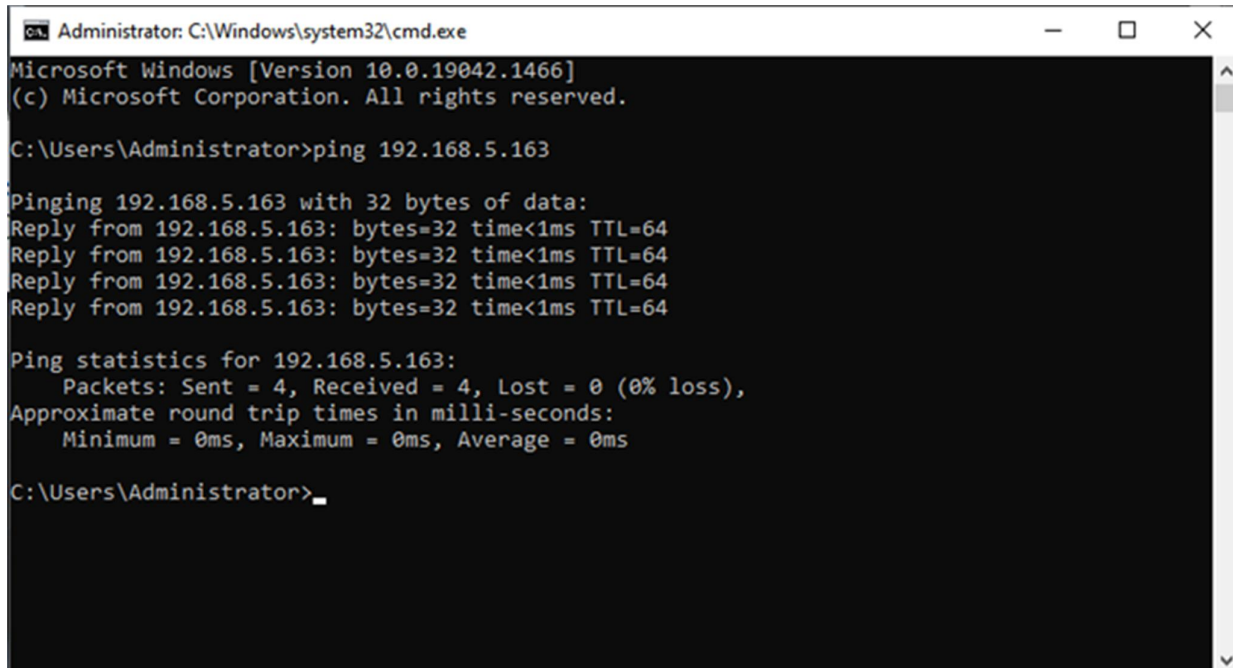
Note: The IP address to be added cannot be the same as that of other computers or devices. The existence of this IP address needs to be verified before adding it.

To verify whether the network segment has been successfully added, click the "Start" and select "Operation" to input cmd, then click CONFIRM and open the DOS command window, ping 192.168.5.26 and press the Enter key to display information as shown below:

After the camera is powered on and self-check, follow the steps above to verify the network connection. Open the DOS command window, ping 192.168.5.163, and press the Enter key.

6.2. IE Login

6.2.1. Client Login

Input the default IP address 192.168.5.163 in the browser and click the Enter button to enter into the Web Client login page. Users can log in as administrators and normal users. If logged in as administrator (Default User name/Password: admin), users can preview, playback, and set configuration in the Web Client. If logged in as a normal user (Default User name/Password: user1 or user2), users can only preview, playback, and log out, with no option for configuration.

Note: Web access supports IE-based browsers: IE, 360 browsers, etc. Chrome login is available after firmware update, but only supports basic configuration and preview video, with no functions of recording video, voice volume, video capture and playback.

6.2.2. Download and Install Plugin for IE login

If it's the first time login via IE browser, the login page will prompt "Playback plug-in is not installed, please download and install!" Click on this message, and download and install MRWebXinstall.exe according to the information.

6.2.3. Web Page Login

After installing the plug-in, enter the user name and password, click login (the initial default user name and password are: "admin", you can change the username and password after entering), and enter the Web client management interface.

Enter user name and password (default user name and password: "admin"). Users can manage and change user names, passwords, etc.

6.3. Streaming

6.3.1.   Video Stream Capture

Configurations ➔ Video Configure ➔ Video Encode

Configure the parameters according to the network environment.
Note: stream name live/av0 (live/ XXX)

For example:
The default IP address of the camera is 192.168.5.163. The way to obtain the RTSP video stream is as below:

rtsp://192.168.5.163:554/live/av0 (av0 main stream) rtsp://192.168.5.163:554/live/av1 (av1 sub stream)

The default IP address of the camera is 192.168.5.163. The way to obtain an RTMP video stream is as below:

rtmp://192.168.5.163:1935/live/av0 (av0 main stream)
rtmp://192.168.5.163:1935/live/av1 (av1 sub stream)

6.3.2.   Push Video Stream

Configurations ➜ Video Configure ➜ Stream Publish

Push the RTMP stream to the public network server. The stream camera must be on the public network, otherwise, it will fail to connect to the server.

Host address: server address, which can be either a domain name or an IP address
Host port: server default port number
Stream name: live/test (live/ XXX)
Username and password: the username and password set by the server, or leave it empty
Access URL: rtmp://host domain name: host port/live/xxx
Or (rtmp://host IP address: host port/live/xxx)

6.4. Software Upgrading

1) Log in to the web page and manage camera settings. The default page is the preview interface, where users can PTZ control, record video, preset camera positions, etc.

2) Configurations ➜ System Configure ➜ Update
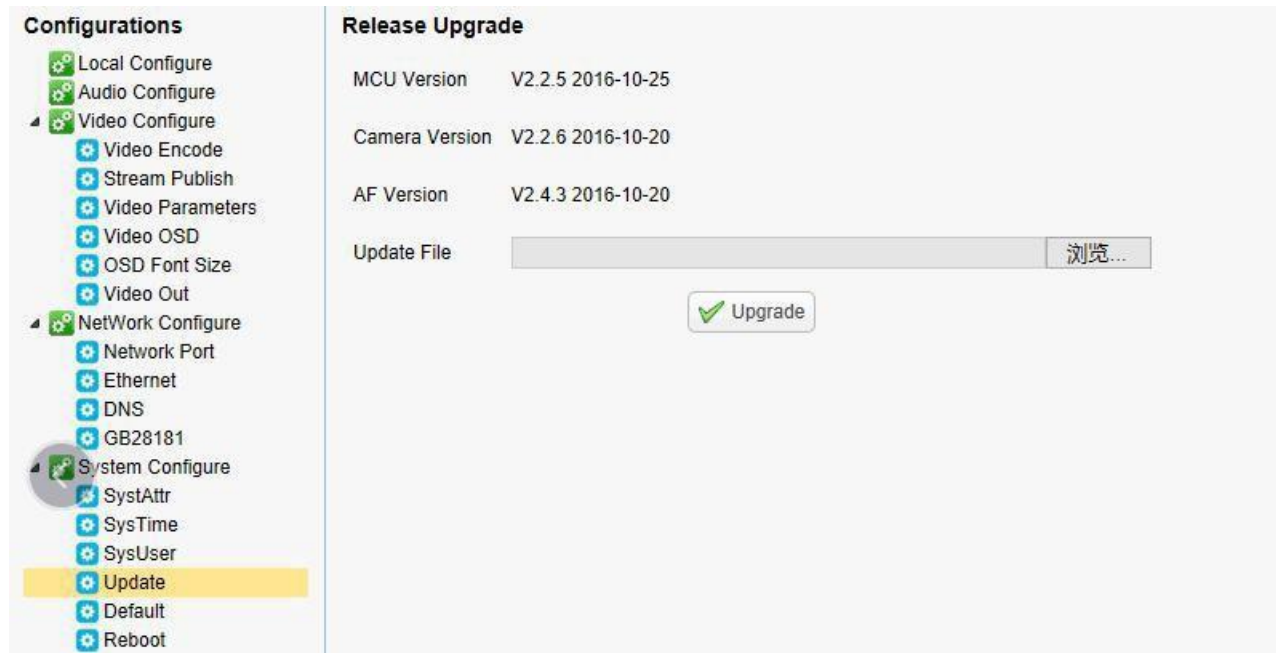
3) Click "browse" to select the .mrg update file, then click the upgrade button to finish software upgrading.

4) Camera reboot after completion of firmware update. It prompts with "successful upgrade".

Log in to check the firmware version to make sure the software upgrade is successful. Then click "restore factory default", reboot, and restore parameters to factory default (default IP 192.168.5.163, username: admin; password admin).

6.5. Webpage Configuration for Human Detection

1) After login, enter into the management interface and turn on Tracking below "Monocular Tracking"

2) On the right top is the PTZ control area, in which you can set the preset region of Regional Tracking. The interface is as below:
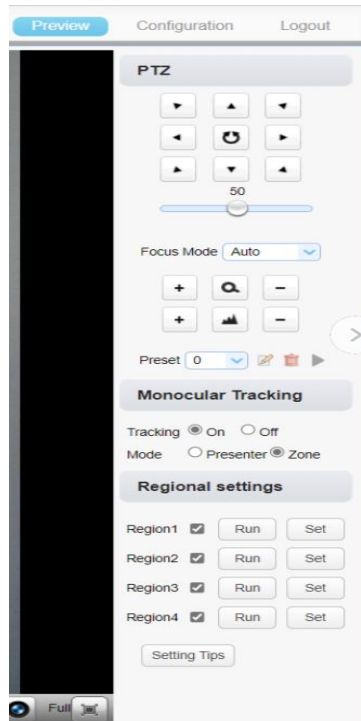
Regional Settings Steps (We take Region1 as an example):

1) On the PTZ Area, adjust the image by clicking the direction buttons to select one region.

2) After finishing region1 setting, click "Set" to complete the Region1 Tracking. Other region settings are the same as the region1 setting steps.

You can set up 4 different regions and a minimum of 2 regions, and the Regional Tracking settings can only be configured through the webpage.

Call out the regional tracking: Click "Run" of the corresponding region on the "Regional settings" area.

Real-time tracking: the camera will follow the movement from all angles that the camera supports in real-time.   Here is the video demo shows:

Here is how it works:
If a man walks into zone-2, the lens will be triggered to track the man.
If the man walks into zone-1, the lens will move to zone-1 (just like recall the preset-1).
Similarly, when the man walks back to zone-2/3, the lens will move to zone-2/3.
Then, if the walk exceeds the range of zone-3, the tracking is lost and the lens goes back to the HOME position.
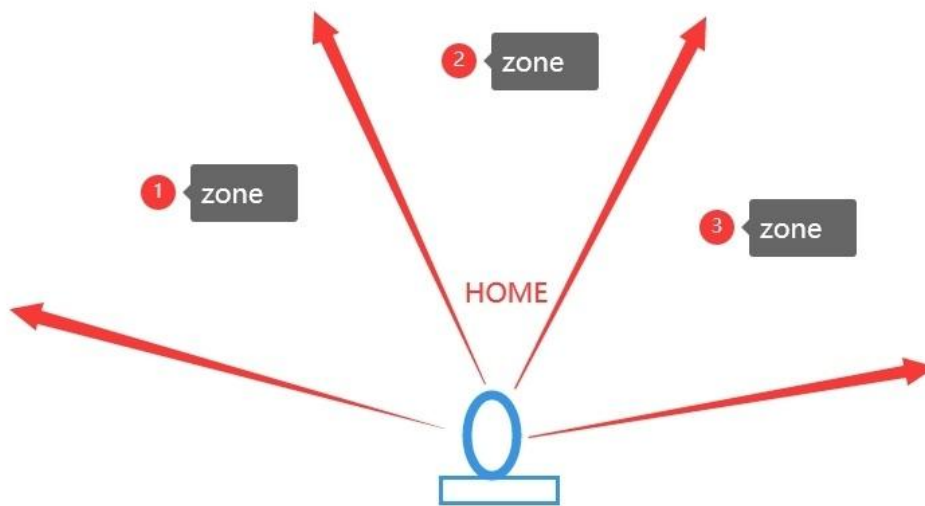
Zone tracking: you can define the zone you want to track.

Imagine that: Each region (zone) is a preset position. When you walk within the lens field of view, the lens will only move three times (each time, in fact, it is to recall the preset position).

Suppose that you set up three tracking areas, zone-1, zone-2, and zone-3.
When nobody is walking into the view of the lens, the lens will go back to the HOME position.
If a man walks into zone-2, the lens will be triggered to track the man.
If the man walks into zone-1, the lens will move to zone-1 (just like recall the preset-1).
Similarly, when the man walks back to zone-2/3, the lens will move to zone-2/3.
Then, if the walk exceeds the range of zone-3, the tracking is lost. The lens goes back to the HOME position.

7. Serial Communication Control

Under normal working conditions, the device can be controlled through the RS232/RS485 interface. The RS232 serial port parameters are as follows:

Baud rate: 2400/4800/9600/38400/115200 bit/sec
Start bit: 1 bit
Data bit: 8 bits
Stop bit: 1 bit
Parity bit: none

After powering on, the device first turns to the lower left and then back to the middle position. The zoom lens is pulled to the farthest position and then pulled back to the most recent self-check to complete. If the device has saved the No. 0 preset after initialization, the device will be set to the No. 0 preset. At this point, the user can use the serial port command to control the device.

7.1. VISCA Protocol Return Command

Ack/Completion Message		
	Command Packet	**Note**
ACK	z0 41 FF	Returned when the command is accepted.
Completion	z0 51 FF	Returned when the command has been executed.

z = Camera Address + 8

Error Messages		
	Command Packet	**Note**
Syntax Error	z0 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is accepted
Command Not Executable	z0 61 41 FF	Returned when a command cannot be executed due to current conditions. For example, when commands controlling the focus manually are received during autofocus.

7.2. VISCA Protocol Control Command

Command	Function	Command Packet	Note
AddressSet	Broadcast	88 30 0**p** FF	**p:** Address setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
CAM_Power	On	8x 01 04 00 02 FF	Power ON/OFF
	Off	8x 01 04 00 03 FF	
CAM_Zoom	Stop	8x 01 04 07 00 FF	
	Tele (Standard)	8x 01 04 07 02 FF	
	Wide (Standard)	8x 01 04 07 03 FF	
	Tele (Variable)	8x 01 04 07 2**p** FF	**p =** 0 (low) – 7 (high)
	Wide (Variable)	8x 01 04 07 3**p** FF	
	Direct	8x 01 04 47 0**p** 0**q** 0**r** 0**s** FF	**pqrs:** Zoom Position
CAM_Focus	Stop	8x 01 04 08 00 FF	
	Far (Standard)	8x 01 04 08 02 FF	
	Near (Standard)	8x 01 04 08 03 FF	
	Far (Variable)	8x 01 04 08 2**p** FF	**p =** 0 (low) – 7 (high)
	Near (Variable)	8x 01 04 08 3**p** FF	
	Direct	8x 01 04 48 0**p** 0**q** 0**r** 0**s** FF	**pqrs:** Focus Position
	Auto Focus	8x 01 04 38 02 FF	
	Manual Focus	8x 01 04 38 03 FF	
	One Push mode	8x 01 04 38 04 FF	
CAM_Zoom Focus	Direct	8x 01 04 47 0**p** 0**q** 0**r** 0**s** 0**t** 0**u** 0**v** 0**w** FF	**pqrs:** Zoom Position **tuvw:** Focus Position
Visca cmd String	Tracking OFF	0x81 .0x0A, 0x01, 0x32, 0x00, 0x00, 0x03, 0x00, 0xFF	
	Tracking ON	0x81, 0x0A, 0x01, 0x32, 0x00, 0x00, 0x02, 0x00, 0xFF	
	Real-time tracking mode	0x81. 0x0A, 0x01, 0x32, 0x00, 0x00, 0x02, 0x00, 0xFF	
	Zone tracking mode	0x81, 0x0A, 0x01. 0x32, 0x00, 0x00, 0x02, 0x01, 0xFF	
CAM_AFSensitivity	High	8x 01 04 58 01 FF	Focus sensitivity Setting
	Normal	8x 01 04 58 02 FF	
	Low	8x 01 04 58 03 FF	
CAM_AFZone	Top	8x 01 04 AA 00 FF	Focus Region Setting
	Center	8x 01 04 AA 01 FF	
	Bottom	8x 01 04 AA 02 FF	
	ALL	8x 01 04 AA 03 FF	

Command	Function	Command Packet	Note
CAM_WB	One Push mode	8x 01 04 35 03 FF	
	One Push Trigger	8x 01 04 10 05 FF	One Push WB Trigger(Enabled during One Push WB mode)
	CAM_WB Mode	8x 01 04 35 **pq** FF	**pq =** 00--33 WBMode
CAM_AWBSensitivity	Low	8x 01 04 A9 00 FF	WB Sensitivity Setting
	Normal	8x 01 04 A9 01 FF	
	High	8x 01 04 A9 02 FF	
CAM _RGain	Reset	8x 01 04 03 00 FF	Manual Control of R Gain
	Up	8x 01 04 03 02 FF	
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0**p** 0**q** FF	**pq:** R Gain
CAM_ Bgain	Reset	8x 01 04 04 00 FF	Manual Control of B Gain
	Up	8x 01 04 04 02 FF	
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0**p** 0**q** FF	**pq:** B Gain
CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
	Iris priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright mode
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0**p** 0**q** FF	**pq:** Shutter Position
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0**p** 0**q** FF	**pq:** Iris Position
CAM_Gain Limit	Reset	8x 01 04 0C 00 FF	Gain Limit Setting
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Gain Limit	8x 01 04 2C 0**p** FF	**p:** Gain Position
CAM_Bright	Reset	8x 01 04 0D 00 FF	Bright Setting
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0**p** 0**q** FF	**pq:** Bright Position

Command	Function	Command Packet	Note
CAM_ExpComp	On	8x 01 04 3E 02 FF	Exposure Compensation ON/OFF
	Off	8x 01 04 3E 03 FF	
	Reset	8x 01 04 0E 00 FF	Exposure Compensation Amount Setting
	Up	8x 01 04 0E 02 FF	
	Down	8x 01 04 0E 03 FF	
	Direct	8x 01 04 4E 00 00 0**p** 0**q** FF	**pq:** ExpComp Position
CAM_Back Light	On	8x 01 04 33 02 FF	Back Light Compensation
	Off	8x 01 04 33 03 FF	
CAM_WDRStrength	Reset	8x 01 04 21 00 FF	WDR Level Setting
	Up	8x 01 04 21 02 FF	
	Down	8x 01 04 21 03 FF	
	Direct	8x 01 04 51 00 00 00 0**p** FF	**p:** WDR Level Position
CAM_NR	2D	8x 01 04 53 0**p** FF	**p =** 0-7 **0:** OFF
	3D	8x 01 04 54 0**p** FF	**P =** 0-8 **0:** OFF
CAM_Gamma		8x 01 04 5B 0**p** FF	**p =** 0 – 4 **0:** Default **1:** 0.45 **2:** .50 **3:** 0.55 **4:** 0.63
CAM_Low-Light Mode	ON	8x 01 04 2D 01 FF	Low-Light Mode Setting
	OFF	8x 01 04 2D 00 FF	
CAM_Gain		8x 01 04 4C 00 00 0**p** 0**q** FF	**pq:** 0-15
CAM PresetSpeed		8x 01 01 0**p** FF	**p:** 1-10
CAM_Flicker	OFF	8x 01 04 23 00 FF	OFF
	50HZ	8x 01 04 23 01 FF	50Hz
	60HZ	8x 01 04 23 02 FF	60Hz
CAM_Aperture	Reset	8x 01 04 02 00 FF	Aperture Control
	Up	8x 01 04 02 02 FF	
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0**p** 0**q** FF	**pq:** Aperture Gain
CAM_Picture effect	B&W-Mode	8x 01 04 63 04 FF	Picture effect Setting
	OFF	8x 01 04 63 00 FF	
CAM_Memory	Reset	8x 01 04 3F 00 **pq** FF	**pq:** Memory Number(=0 to 254) Corresponds to 0 to 9 on the Remote Commander
	Set	8x 01 04 3F 01 **pq** FF	
	Recall	8x 01 04 3F 02 **pq** FF	
CAM_LR_Reverse	On	8x 01 04 61 02 FF	Image Flip Horizontal ON/OFF
	Off	8x 01 04 61 03 FF	

Command	Function	Command Packet	Note
CAM_PictureFlip	On	8x 01 04 66 02 FF	Image Flip Vertical ON/OFF
	Off	8x 01 04 66 03 FF	
CAM_ColorSaturation	Direct	8x 01 04 49 00 00 0**p** 0**q** FF	**p** = 0~7 **q** = 0~f or **pq:** Color Saturation Positon
CAM_IDWrite		8x 01 04 22 0**p** 0**q** 0**r** 0**s** FF	**pqrs:** Camera ID (=0000 to FFFF)
SYS_Menu	ON	8x 01 04 06 06 02 FF	Turn on the menu screen
	OFF	8x 01 04 06 06 03 FF	Turn off the menu screen
IR_Receive	ON	8x 01 06 08 02 FF	IR (remote commander) receive On/Off
	OFF	8x 01 06 08 03 FF	
CAM_SettingReset	Reset	8x 01 04 A0 10 FF	Reset Factory Setting
CAM_Brightness	Direct	8x 01 04 A1 00 00 0**p** 0**q** FF	**pq:** Brightness Position
CAM_Contrast	Direct	8x 01 04 A2 00 00 0**p** 0**q** FF	**pq:** Contrast Position
CAM_Flip	OFF	8x 01 04 A4 00 FF	Single Command For Video Flip
	Flip-H	8x 01 04 A4 01 FF	
	Flip-V	8x 01 04 A4 02 FF	
	Flip-HV	8x 01 04 A4 03 FF	
CAM_VideoSystem	Set camera video system	8x 01 06 35 00 0**p** FF	**p:** 0~E Video format **0:** 1080P60 **1:** 1080P50 **2:** Invalid Command **3:** Invalid Command **4:** 720P60 **5:** 720P50 **6:** 1080P30 **7:** 1080P25 **A:** 1080P59.94 **B:** Invalid Command **C:** 720P59.94 **D:** 1080P29.97 **E:** Invalid Command

Command	Function	Command Packet	Note
Pan_tiltDrive	Up	8x 01 06 01 **VV WW** 03 01 FF	**VV:** Pan speed 0x01 (low speed) to 0x18 (high speed) **WW:** Tilt speed 0x01 (low speed) to 0x14 (high speed) **YYYY:** Pan Position **ZZZZ:** Tilt Position
	Down	8x 01 06 01 **VV WW** 03 02 FF	
	Left	8x 01 06 01 **VV WW** 01 03 FF	
	Right	8x 01 06 01 **VV WW** 02 03 FF	
	Upleft	8x 01 06 01 **VV WW** 01 01 FF	
	Upright	8x 01 06 01 **VV WW** 02 01 FF	
	DownLeft	8x 01 06 01 **VV WW** 01 02 FF	
	DownRight	8x 01 06 01 **VV WW** 02 02 FF	
	Stop	8x 01 06 01 **VV WW** 03 03 FF	
	AbsolutePosition	8x 01 06 02 **VV WW** 0**Y** 0**Y** 0**Y** 0**Y** 0**Z** 0**Z** 0**Z** 0**Z** FF	
	RelativePosition	8x 01 06 03 **VV WW** 0**Y** 0**Y** 0**Y** 0**Y** 0**Z** 0**Z** 0**Z** 0**Z** FF	
	Home	8x 01 06 04 FF	
	Reset	8x 01 06 05 FF	
Pan-tilt LimitSet	Set	8x 01 06 07 00 0**W** 0**Y** 0**Y** 0**Y** 0**Y** 0**Z** 0**Z** 0**Z** 0**Z** FF	**W**= 1: Up Right 0: Down Left **YYYY:** Pan Limit Position (TBD) **ZZZZ:** Tilt Limit Position (TBD)
	Clear	8x 01 06 07 01 0**W** 07 0F 0F 0F 07 0F 0F 0F FF	

7.3. VISCA Protocol Inquiry Command

Command	Command Packet	Return Packet	Note
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off (Standby)
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_FocusAFModeInq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
		y0 50 04 FF	One Push mode
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0**p** 0**q** 0**r** 0**s** FF	**pqrs:** Focus Position
CAM_AFSensitivityInq	8x 09 04 58 FF	y0 50 01 FF	High
		y0 50 02 FF	Normal
		y0 50 03 FF	Low
CAM_AFZoneInq	8x 09 04 AA FF	y0 50 00 FF	Top
		y0 50 01 FF	Center
		y0 50 02 FF	Bottom
		y0 50 03 FF	All
CAM_WBModeInq	8x 09 04 35 FF	y0 50 **pq** FF	**pq =** WBMode

Command	Command Packet	Return Packet	Note
CAM_AWBSensitivityInq	8x 09 04 A9 FF	y0 50 00 FF	Low
		y0 50 01 FF	Normal
		y0 50 02 FF	High
CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0**p** 0**q** FF	**pq:** R Gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0**p** 0**q** FF	**pq:** B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter priority
		y0 50 0B FF	Iris priority
		y0 50 0D FF	Bright
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0**p** 0**q** FF	**pq:** Shutter Position
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0**p** 0**q** FF	**pq:** Iris Position
CAM_Gain LimitInq	8x 09 04 2C FF	y0 50 0p FF	**p:** Gain Position
CAM_ BrightPosiInq	8x 09 04 4D FF	y0 50 00 00 0**p** 0**q** FF	**pq:** Bright Position
CAM_ExpCompModeInq	8x 09 04 3E FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0**p** 0**q** FF	**pq:** ExpComp Position
CAM_BacklightModeInq	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_WDRStrengthInq	8x 09 04 51 FF	y0 50 0**p** FF	**p:** WDR Strength
CAM_NRLevel(2D) Inq	8x 09 04 53 FF	y0 50 0**p** FF	**p:** 2DNRLevel
CAM_NRLevel(3D) Inq	8x 09 04 54 FF	y0 50 0**p** FF	**p:** 3D NRLevel
CAM_FlickerModeInq	8x 09 04 55 FF	y0 50 0**p** FF	**p:** Flicker Settings 0: OFF 1: 50Hz 2: 60Hz
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0**p** 0**q** FF	**pq:** Aperture Gain
CAM_PictureEffectModeInq	8x 09 04 63 FF	y0 50 00 FF	Off
		y0 50 04 FF	B&W
CAM_MemoryInq	8x 09 04 3F FF	y0 50 0**p** FF	**p:** Memory number last operated.
SYS_MenuModeInq	8x 09 06 06 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_LR_ReverseInq	8x 09 04 61 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_PictureFlipInq	8x 09 04 66 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ColorSaturationInq	8x 09 04 49 FF	y0 50 00 00 0**p** 0**q** FF	**pq:** Color Gain setting 0h (0) to Eh (127)

Command	Command Packet	Return Packet	Note
CAM_IDInq	8x 09 04 22 FF	y0 50 0**p** FF	**p:** Gamma ID
IR_ReceiveInq	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_BrightnessInq	8x 09 04 A1 FF	y0 50 00 00 0**p** 0**q** FF	**pq:** Brightness Position
CAM_ContrastInq	8x 09 04 A2 FF	y0 50 00 00 0**p** 0**q** FF	**pq:** Contrast Position
CAM_FlipInq	8x 09 04 A4 FF	y0 50 00 FF	Off
		y0 50 01 FF	Flip-H
		y0 50 02 FF	Flip-V
		y0 50 03 FF	Flip-HV
CAM_GammaInq	8x 09 04 5B FF	y0 50 0**p** FF	**p:** Gamma setting
CAM_Low-LightModeInq	8x 09 04 2D FF	y0 50 00 FF	OFF
		y0 50 01 FF	ON
CAM_VersionInq	8x 09 00 02 FF	y0 50 **ab cd mn pq rs tu vw** FF	**ab cd:** vender ID (0220) **mn pq:** model ID **rs tu:** ARM Version **vw:** reserve
VideoSystemInq	8x 09 06 23 FF	y0 50 0**p** FF	**p:** 0~E Video format **0:** 1080P60 **1:** 1080P50 **2:** Invalid Command **3:** Invalid Command **4:** 720P60 **5:** 720P50 **6:** 1080P30 **7:** 1080P25 **A:** 1080P59.94 **B:** Invalid Command **C:** 720P59.94 **D:** 1080P29.97 **E:** Invalid Command
Pan-tiltMaxSpeedInq	8x 09 06 11 FF	y0 50 **ww zz** FF	**ww:** Pan Max Speed **zz:** Tilt Max Speed
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0**w** 0**w** 0**w** 0**w** 0**z** 0**z** 0**z** 0**z** FF	**wwww:** Pan Position **zzzz:** Tilt Position

Note: [x] in the above table represents the address of the device to be operated, [y] = [x + 8].

7.4. PELCO-D Protocol Command List

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Up	0xFF	Address	0x00	0x08	Pan Speed	Tilt Speed	SUM
Down	0xFF	Address	0x00	0x10	Pan Speed	Tilt Speed	SUM
Left	0xFF	Address	0x00	0x04	Pan Speed	Tilt Speed	SUM
Right	0xFF	Address	0x00	0x02	Pan Speed	Tilt Speed	SUM
Upleft	0xFF	Address	0x00	0x0C	Pan Speed	Tilt Speed	SUM
Upright	0xFF	Address	0x00	0x0A	Pan Speed	Tilt Speed	SUM
DownLeft	0xFF	Address	0x00	0x14	Pan Speed	Tilt Speed	SUM
DownRight	0xFF	Address	0x00	0x12	Pan Speed	Tilt Speed	SUM
Zoom In	0xFF	Address	0x00	0x20	0x00	0x00	SUM
Zoom Out	0xFF	Address	0x00	0x40	0x00	0x00	SUM
Focus Far	0xFF	Address	0x00	0x80	0x00	0x00	SUM
Focus Near	0xFF	Address	0x01	0x00	0x00	0x00	SUM
Stop	0xFF	Address	0x00	0x00	0x00	0x00	SUM
Set Preset	0xFF	Address	0x00	0x03	0x00	Preset ID	SUM
Clear Preset	0xFF	Address	0x00	0x05	0x00	Preset ID	SUM
Call Preset	0xFF	Address	0x00	0x07	0x00	Preset ID	SUM
Query Pan Position	0xFF	Address	0x00	0x51	0x00	0x00	SUM
Query Pan Position Response	0xFF	Address	0x00	0x59	Value High Byte	Value Low Byte	SUM
Query Tilt Position	0xFF	Address	0x00	0x53	0x00	0x00	SUM
Query Tilt Position Response	0xFF	Address	0x00	0x5B	Value High Byte	Value Low Byte	SUM
Query Zoom Position	0xFF	Address	0x00	0x55	0x00	0x00	SUM
Query Zoom Position Response	0xFF	Address	0x00	0x5D	Value High Byte	Value Low Byte	SUM

7.5. PELCO-P Protocol Command List

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Up	0xA0	Address	0x00	0x08	Pan Speed	Tilt Speed	0xAF	XOR
Down	0xA0	Address	0x00	0x10	Pan Speed	Tilt Speed	0xAF	XOR
Left	0xA0	Address	0x00	0x04	Pan Speed	Tilt Speed	0xAF	XOR
Right	0xA0	Address	0x00	0x02	Pan Speed	Tilt Speed	0xAF	XOR
Upleft	0xA0	Address	0x00	0x0C	Pan Speed	Tilt Speed	0xAF	XOR
Upright	0xA0	Address	0x00	0x0A	Pan Speed	Tilt Speed	0xAF	XOR
DownLeft	0xA0	Address	0x00	0x14	Pan Speed	Tilt Speed	0xAF	XOR
DownRight	0xA0	Address	0x00	0x12	Pan Speed	Tilt Speed	0xAF	XOR
Zoom In	0xA0	Address	0x00	0x20	0x00	0x00	0xAF	XOR
Zoom Out	0xA0	Address	0x00	0x40	0x00	0x00	0xAF	XOR
Stop	0xA0	Address	0x00	0x00	0x00	0x00	0xAF	XOR
Focus Far	0xA0	Address	0x01	0x00	0x00	0x00	0xAF	XOR
Focus Near	0xA0	Address	0x02	0x00	0x00	0x00	0xAF	XOR
Set Preset	0xA0	Address	0x00	0x03	0x00	Preset ID	0xAF	XOR
Clear Preset	0xA0	Address	0x00	0x05	0x00	Preset ID	0xAF	XOR
Call Preset	0xA0	Address	0x00	0x07	0x00	Preset ID	0xAF	XOR
Query Pan Position	0xA0	Address	0x00	0x51	0x00	0x00	0xAF	XOR
Query Pan Position Response	0xA0	Address	0x00	0x59	Value High Byte	Value Low Byte	0xAF	XOR
Query Tilt Position	0xA0	Address	0x00	0x53	0x00	0x00	0xAF	XOR
Query Tilt Position Response	0xA0	Address	0x00	0x5B	Value High Byte	Value Low Byte	0xAF	XOR
Query Zoom Position	0xA0	Address	0x00	0x55	0x00	0x00	0xAF	XOR
Query Zoom Position Response	0xA0	Address	0x00	0x5D	Value High Byte	Value Low Byte	0xAF	XOR

8. Maintenance and Troubleshooting

8.1. Maintenance

1) Please power off the camera and disconnect the power adapter and socket, if it's not used for a long time.
2) Use a soft cloth or tissue to clean the camera cover.
3) Wipe it with a soft, dry cloth when cleaning the camera lens. Wipe it gently with a mild detergent if needed. Do not use strong or corrosive detergents to avoid scratching the lens and affecting the video quality.

8.2. Troubleshooting

1) **No video output**
   a. Check whether the camera power supply is connected, the voltage is normal, the power indicator is lit.
   b. Check whether the machine could do a self-check after restarting.
   c. Check the selected video format on the rotary dial switch (see section 4.4.).
   d. Check whether the video output cable or video display is normal.

2) **Image flickering issues**
   a. Check whether the video output cable or video display is normal.

3) **Video dithering when zoom-in or zoom-out**
   a. Check whether the camera installation position is solid.
   b. Whether there is a shaking machine or objects around the camera.
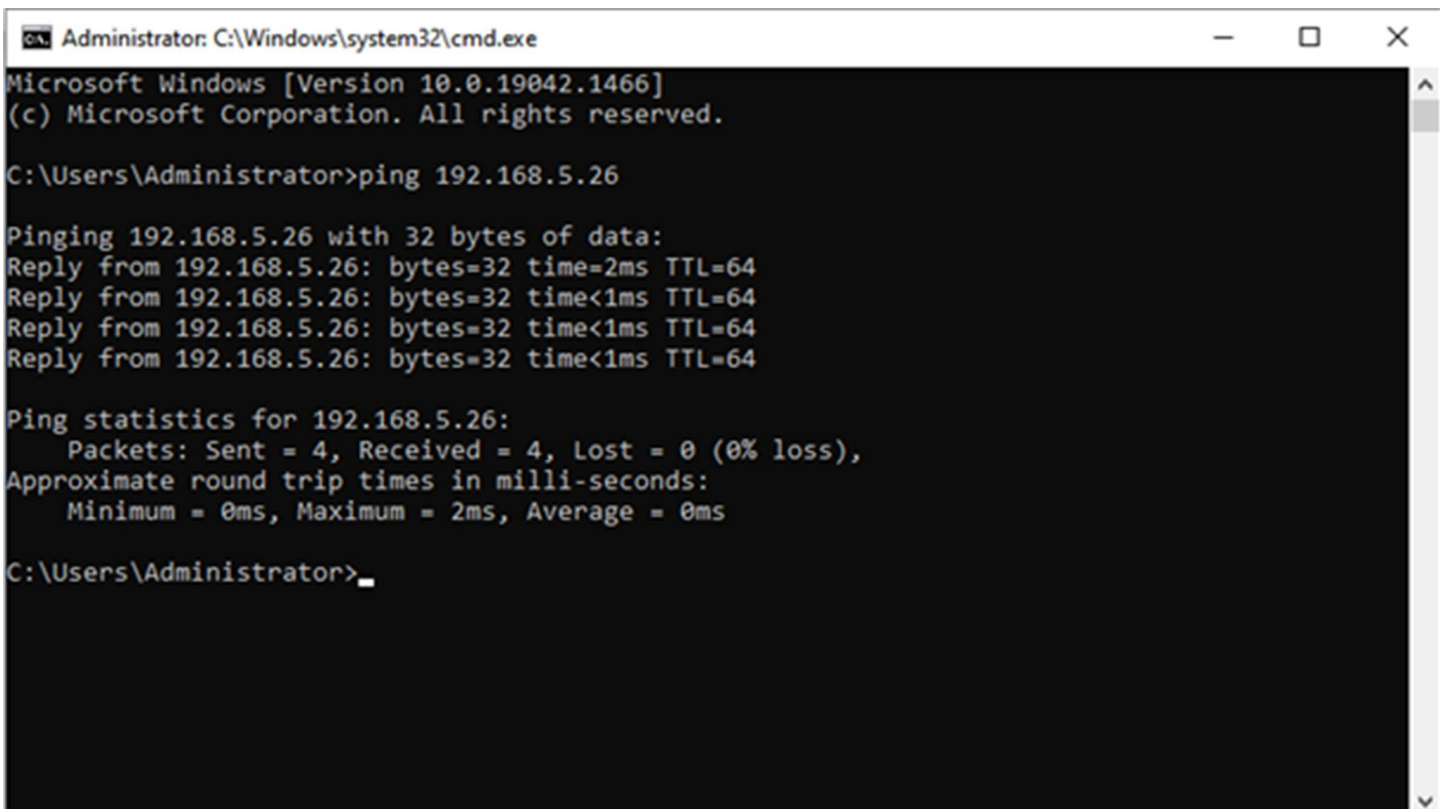
4) **The remote control does not work**
   a. The remote control address is set to 1 (if the machine is set back to the factory defaults, remote control addresses need to be back to 1 too).
   b. Check whether the battery is installed on the remote control or low.
   c. Check the camera working mode is the normal operating mode. Check the selected video format on the rotary dial switch (see section 4.4.).
   d. Check the menu whether is closed. The camera control through the remote control is only available after exiting the menu. If the menu is opened, it will not be displayed on the LAN video output. The menu will automatically close after 30 seconds, after which the remote control can be used again to operate the camera.

5) **The serial port does not work**
   a. Check whether the camera serial device protocol, baud rate, and address are consistent.
   b. Check whether the control cable is connected properly.
   c. Check whether the camera's working mode is the normal operating mode.

6) **Web pages cannot log in**
   a. Check if the camera outputs video normally by connecting directly to the screen.
   b. Check whether the network cable is connected properly (the Ethernet port yellow light flashes to indicate normal network cable connection).
   c. Check whether your computer has added the segment and whether the segment is consistent with the IP address of the camera.
   d. Click "Start" and select "Run" and then type "cmd" in the computer. Click "OK" then turn on a DOS command window to enter ping 192.168.5.163. Press the Enter key to see the message as follows: Description network connection is normal.

```
Administrator: C:\Windows\system32\cmd.exe                    —   □   ×

Microsoft Windows [Version 10.0.19042.1466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping 192.168.5.26

Pinging 192.168.5.26 with 32 bytes of data:
Reply from 192.168.5.26: bytes=32 time=2ms TTL=64
Reply from 192.168.5.26: bytes=32 time<1ms TTL=64
Reply from 192.168.5.26: bytes=32 time<1ms TTL=64
Reply from 192.168.5.26: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.5.26:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\Users\Administrator>_
```

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