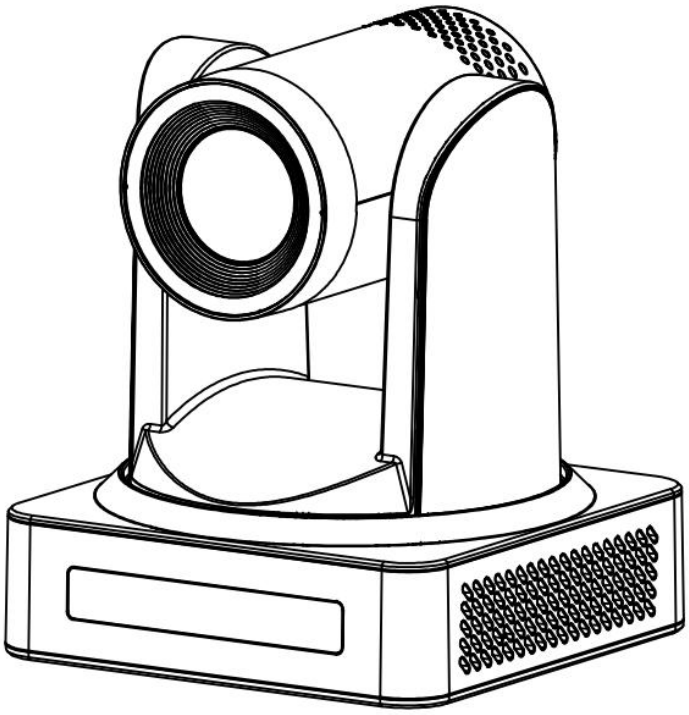
zowieTek

Universal Camera

HD PTZ Camera

User Manual

（V1.2）



Preface

This manual is to ensure that the user can use the product properly and avoid danger while operating. Before using this product, please read the user manual carefully and keep it properly for future reference.

Overview

This manual is about PTZ camera operation

Graphic Symbols

Description of graphic symbols used in this manual

Symbols	Description
	This symbol indicates that the words are clarification or supplement to this article.
	This symbol indicates that negligence of the instructions may lead to mishandling that may cause injury or property damage.
	This symbol indicates a risk that may result in damage to this machine or documents. Follow the instructions to avoid property damage.

Attention

This manual introduces functions, installations and operations for this product in details. Please read this manual carefully before installation and use.

Precautions:

This product can only be used in the specified conditions in order to avoid any damage to the camera:

1) Do not expose the product to rain or moisture.
2) To prevent the risk of electric shock, do not open the case. Installation and maintenance should only be carried out by qualified technicians.
3) Do not use the product beyond the specified temperature, humidity or power supply specifications.
4) Please use a soft dry cloth to clean the camera. If the camera is very dirty, clean it with diluted neutral detergent; do not use any type of solvents, which may damage the surface.

Electrical Safety:

Installation and use of this product must strictly comply with local electrical safety standards.

Transportation:

Avoid any stress, vibration, or moisture during transportation, storage, installation and operation

Installation:

1) Do not rotate the camera head violently, otherwise it may cause mechanical failure;
2) This product should be placed on a stable desktop or other horizontal surface. Do not install the product obliquely, otherwise it may display inclined image;
3) If the device is mounted on a TV or personal computer, it can befixed securely on the base using four double-sided adhesive pads.
4) The product casing is made of organic materials. It is strictly prohibited to allow contact with any liquids, gases, or solid substances that may cause corrosion to the casing.
5) Ensure there are no obstacles within rotation range of the holder.

6) Do not power on before completely installation.

Do Not Dismantle Camera：

We are not responsible for any unauthorized modification or dismantling.

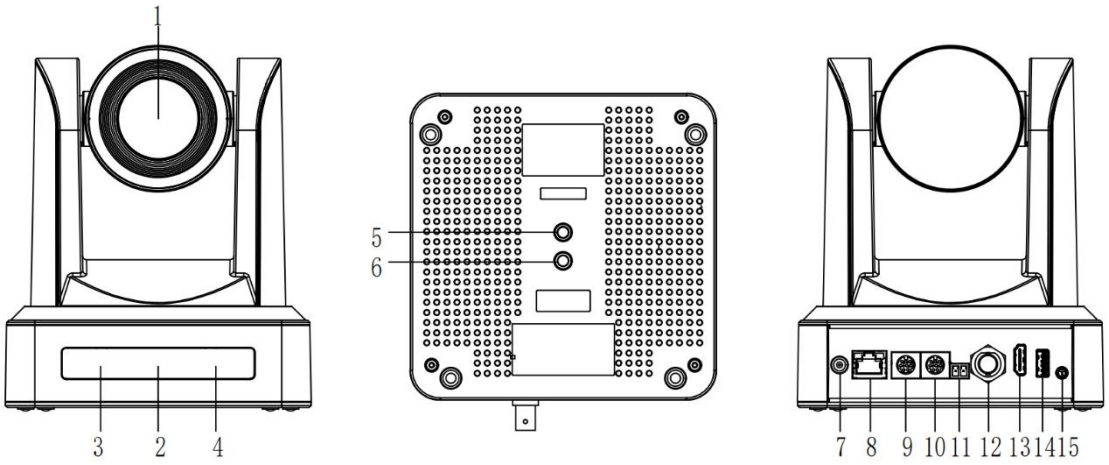
Magnetic Interference

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

Content

1. Quick Start

1.1. Product Overview



Product Overview:

1. Lens	6. 1/4-20UNC Threaded Mounting Hole	11. RS485 Interface
2. LED Display	7. DC12V Power Input Socket	12. 3G-SDI Interface
3. Infrared Receiver	8. Network Interface	13. HDMI Output Interface
4. POWER LED	9. RS232 IN Interface	14. USB3.0 Output Interface
5. Positioning Hole	10. RS232 OUT Interface	15. LINE IN Interface

1.2. Power-on Self-test

1.2.1. Power on

Connect to power socket via DV12V power adapter.

1.2.2. Self-test

After power on, the receiver light will start flashing and camera will do a brief pan-tilt tour and return to the home position. When light stop flashing, the self-test is finished.

⚠ Caution

- Default address of the remote control is 1#. When menu restore default setting, the address of IP remote control will restore 1#.
- If preset 0 is set, the camera will return to the preset 0 position after self-test

1.3. Video Outputs

This series of products offers multiple video output options, including network, HDMI, SDI, and USB 3.0.

1.3.1. IP Network Output

a. Network connection: Shown as diagram 1.1 #10

b. Log in: You can reach the Web Interface by typing in the camera's IP address(default 192.168.5.163) into a web browser. To log in, type in "admin" into the username and password fields. From the Web Interface, you can adjust many of your camera's settings via this IP interface.

1.3.2. HDMI Output

a. HDMI connection: Shown as diagram 1.1 #15

b. Connect camera to the display device via HDMI cable.

1.3.3. SDI Output

a. SDI Connection： Shown as diagram 1.1 #16

b. Connect camera to the display device via HDMI cable

1.3.4. USB3.0 Output

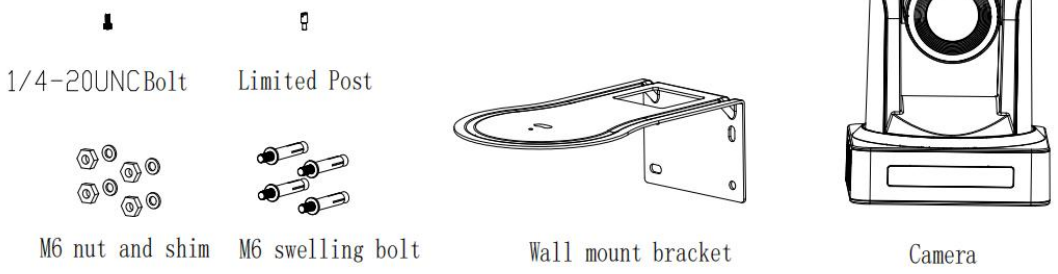
a. USB3.0 connection: Shown as diagram 1.1 #14. Open video software and select image device.

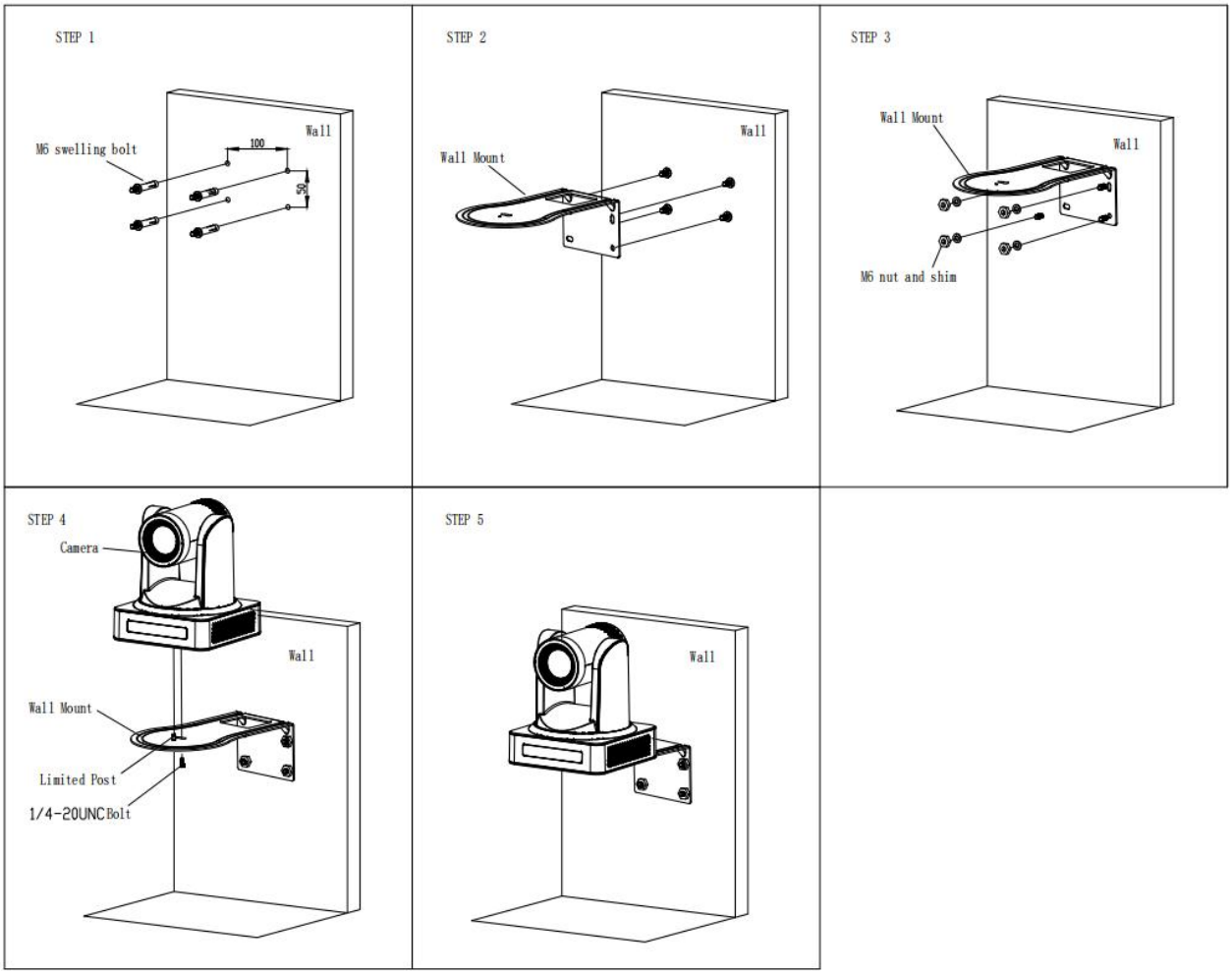
1.4. Installation

⚠ Caution

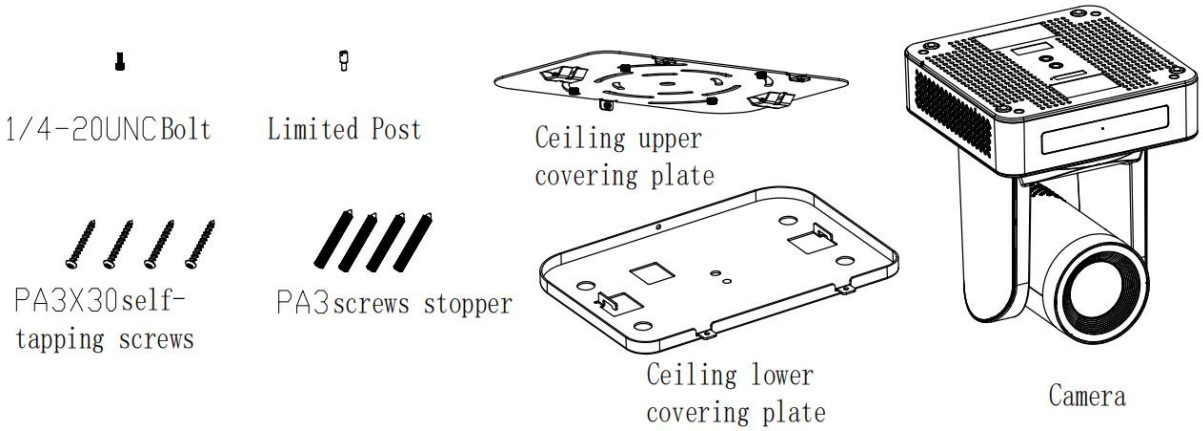
- Bracket can only be wall mounted or upside down mounted on template and concrete wall, but can not be installed on plasterboard.

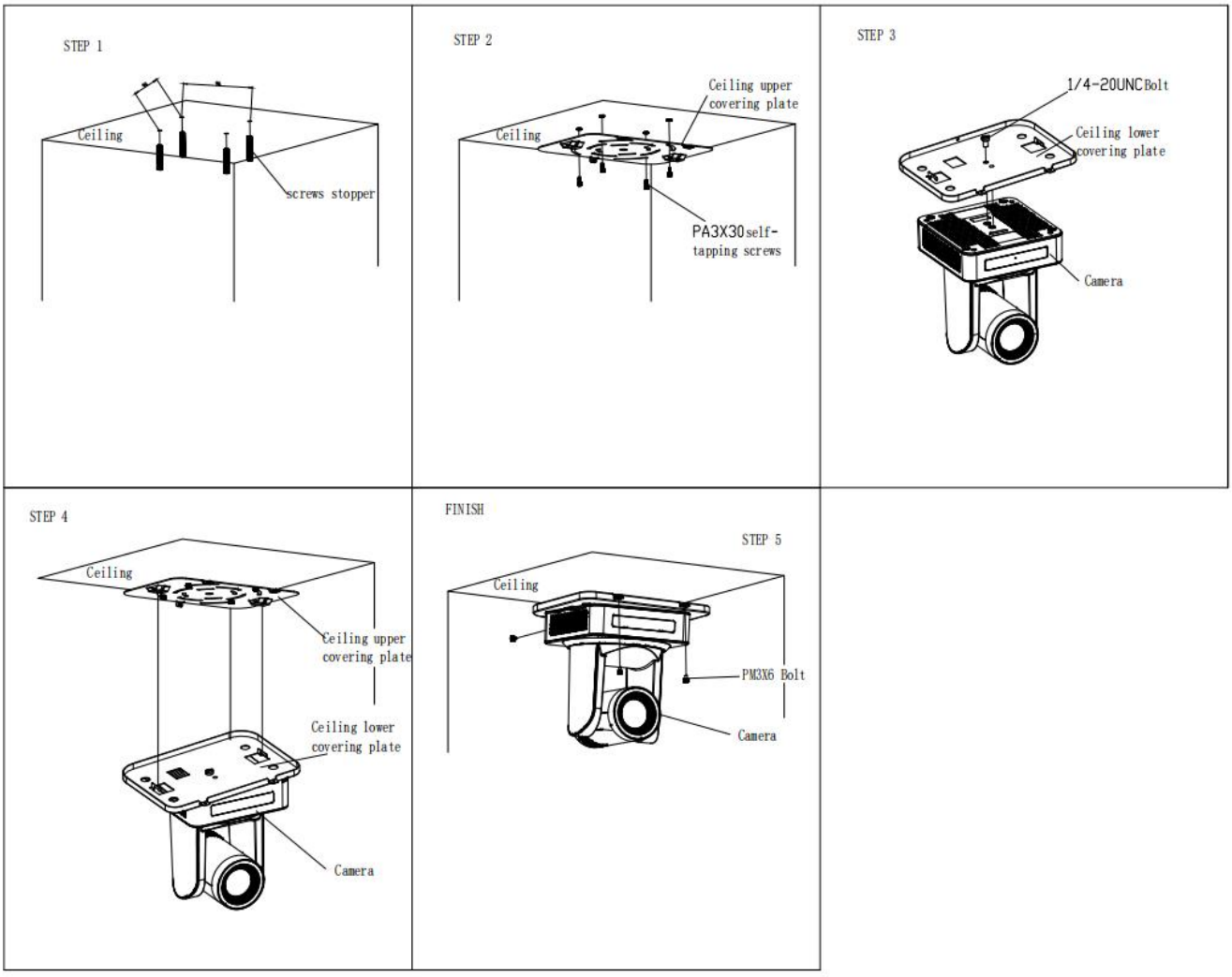
1) Steps of wall moun





2)Steps of ceiling mount





2. Product Overview

2.1. Product Introduction

2.1.1. Dimension

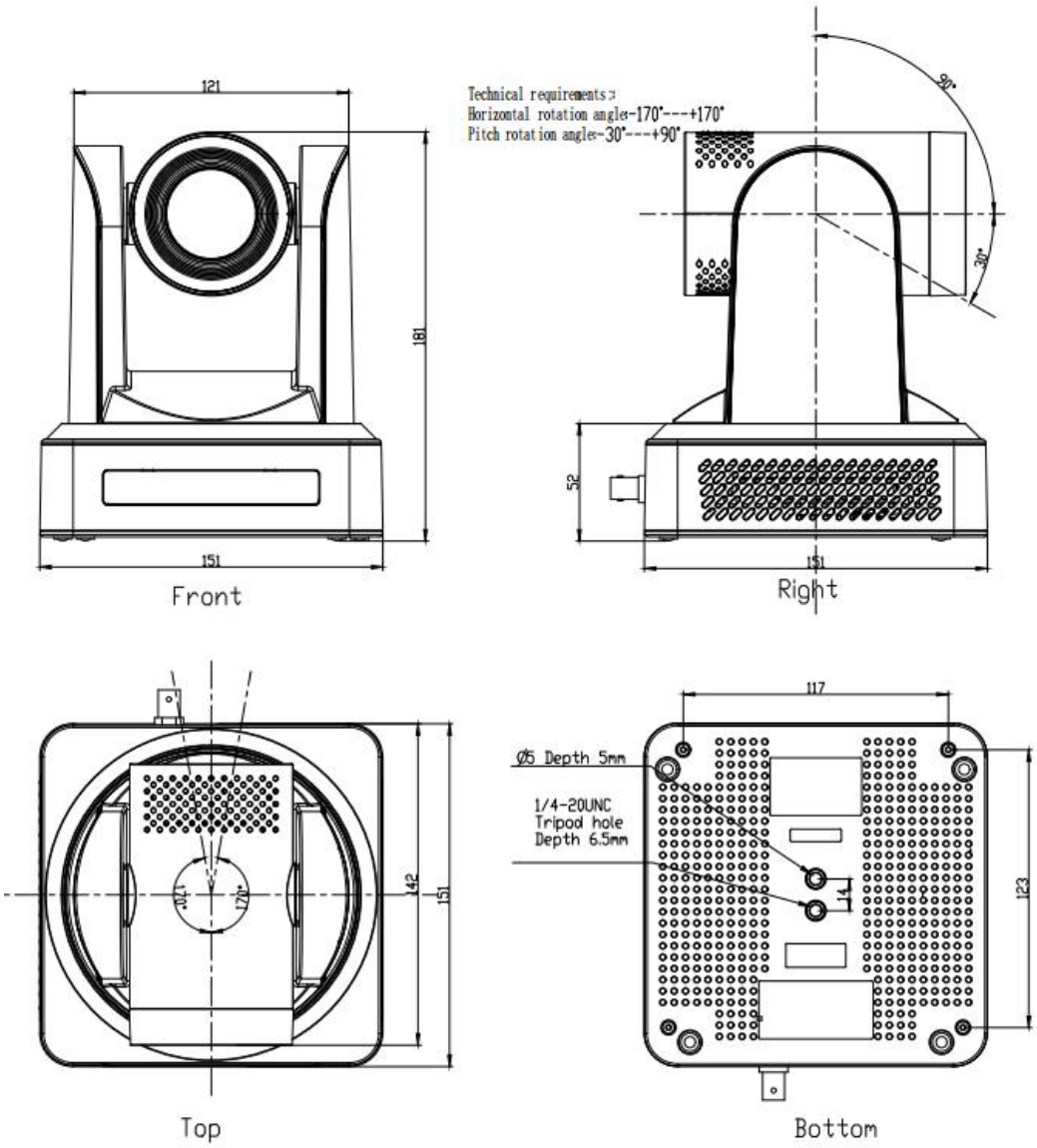


Figure2-1 Dimension

2.1.2. Accessory

When you unpack your package, check that all the supplied accessories are included:

Table 2-1

Supplied	Power adapter
	User manual
	Plastic pad
	IR remote control
	USB 3.0 Video Cable
	1 x RS232 Serial Cable
Optional	Wireless remote control
	Brackets for wall mounting
	Brackets for ceiling mount

2.2. Product Features

This series camera offers perfect functions, superior performance and rich interfaces. The features include advanced ISP processing algorithms to provide vivid images with a strong sense of depth, high resolution and fantastic color rendition. It supports H.265/H.264 encoding which makes motion video smooth even with less than ideal bandwidth conditions.

- **Superb High-definition Image:** Equipped with a 1/2.8-inch 2.07-megapixel high-quality image sensor, the maximum resolution can reach 1920x1080, with an output frame rate of up to 60 frames per second.
- **Optical Zoom Lens:** It has 12X/20X /30Xoptical zoom lens for options.
- **Leading Auto-focus Technology:** Boasting leading auto-focus algorithm, this camera can achieve auto focus with speed, accuracy, and stability.
- **Low Noise and High SNR:** Low Noise CMOS effectively ensure high SNR of video. Advanced 2D/3D noise reduction technology is used to further reduce the noise while ensuring image resolution.
- **Multi-Format Video Outputs**: Supports HDMI, SDI, USB, and wired LAN (POE+ functionality optional); SDI supports transmission up to 100 meters at 1080P60 format.
- **Multiple Audio Compression Format: It supports** H.265/H.264 in video compression and AAC, MP3, G.711A in audio compression. The resolution can reach up to 1920*1080 at 60 fps.

- **Audio Input:** Supports AAC and G.711A audio encoding. AAC encoding supports sample rates of 16000, 32000, 44100, and 48000 Hz, while G.711A encoding supports only 8000 Hz sample rate.
- **Multiple Network Protocols:** It supports for ONVIF, GB/T28181, RTSP, RTMP,SRT protocols,NDI(Optional), RTMP push mode, easy to link with streaming media server(Wowza, FMS) Supports RTP multicast mode and full network command VISCA control protocol.
- **AI Dynamic Tracking**: Equipped with advanced automatic tracking and framing technology, integrating facial and human shape recognition algorithms, providing tracking features for environments such as conference rooms, classrooms, and churches.
- **Multiple Control Jacket:** RS485, RS232；RS232, supporting for cascading, convenient to set up.
- **Support Multiple Control Protocol:** Support VISCA, PELCO-D, PELCO-P protocols, which can also be automatically recognized.
- **Super Silent PTZ:** Utilizes high-precision stepper motors and a precise motor driver controller to ensure smooth and noiseless low-speed operation of the PTZ.
- **Built-in OLED Display：** Displays output resolution, IP address.
- **Low-power Sleep Mode:** Supports low-power sleep/wake mode, with power consumption below 400mW in sleep mode.
- **Multiple presets:** User can set 255 presets (remote control can call out 10)
- **Multiple Remote Controls:** There are IR remoter and 2.4G wireless remote for options. The 2.4G wireless remote controller will not be affected by angle, distance or IR interference.
- **Wide Application:** Tele-education, Lecture capture, Webcasting, Videoconferencing, Tele-training, Tele-medicine, Interrogation and Emergency command systems.

2.3. Technical Specification

Model	**12X(G0))**	**20X(G1)**	**30X(G2))**
Parameters			
Image Sensor	1/2.8 inch high quality HD CMOS sensor		
Effective Pixel	2.07M, 16：9		

Video Format	**HDMI/SDI/LAN interface video format：** 1080P60/59.94/50/30/29.97/25； 720P60/59.94/ 50 **USB interface video format:** YUY2/NV12:1920 x 1080/1280 x 720/1024 x 576/800 x 600/800 x 448/640 x 480/640 x 360/480 x 270/320 x 180P30/25/20/15/10/5 **H264/H265/MJPG:**1920 x 1080/1600 x 896/1280 x 720/1024 x 576/960 x540/800 x600/800 x 448/720 x576/720 x480/640 x480/640 x360/352 x288/320 x240P60/50/30/25/20/15/10/5fps		
Optical Lens	12X f=4.1~49.2mm	20X f=5.05~91.49mm	30X F=5.2~148.4mm
Viewing Angle	6.72° （N） 70.4° （W）	3.81° （N）60.04° （W）	3.29° （N） 58.1° （W）
Digital Zoom	16 X		
Minimum Illumination	0.5Lux(F1.8, AGC ON)		
DNR	2D & 3D		
White Balance	Auto/Manual/One push/ 3000K/3500K/4000K/4500K/5000K/5500K/6000K/6500K/7000K		
Focus	Auto/Manual/One-push		
Iris	Auto/Manual		
Electronic Shutter	Auto/Manual		
BLC(Backlight Compensation)	On/Off		
Dynamic Range	Off/ Dynamic level adjustment		
Video Adjustment	Brightness, Contrast, Sharpness, Horizontal Flip, Vertical Flip, Black and White Mode, Gamma Curve, Electronic Zoom, DCI, Ultra Low Light Mode		
SNR	>50dB		

Interface	
Interface	HDMI, SDI, LAN(POE+ support), USB3.0, A-IN, RS232-IN, RS232-OUT, RS485, DC12V power supply
Video output	HDMI, SDI, LAN, USB3.0
Video compression formats	LAN:H.265, H.264 USB 3.0:MJPG、H264、H.265、YUY2、NV12
Video Bitrate	64-40960
Bitrate Control	Fixed Bitrate, Variable Bitrate
Frequency	50Hz: 1fps ~ 50fps 60Hz: 1fps ~ 60fps
Audio In Jacket	Dual audio channel 3.5mm linear input
Audio Output Interface	HDMI, LAN, USB 3.0, SDI
Audio Bitrate	96Kbps, 128Kbps
Audio Compression Format	AAC, G.711A
Network Jacket	100M Ethernet port, optional POE+ power supply, supports audio and video output
Network Protocol	RTSP, RTMP, ONVIF, GB/T28181,SRT; NDI(Optional)supports network VISCA control protocol; supports remote upgrade, remote reboot, and remote reset
Control Jackets	RS232-IN, RS232-OUT, RS485
Serial Communication Protocol	VISCA/Pelco-D/Pelco-P; supports baud rates of 115200/38400/9600/4800/2400
USB Communication Protocol	UVC (Video Communication Protocol), UAC (Audio Communication Protocol)
Power Jacket	HEC3800 power socket (DC12V)

Power Adapter	Input: AC110V-AC220V Output: DC12V/1.5A
Input Voltage	DC12V±10%
Input Currency	⩽1.2A
Power Consumption	⩽13.8W

PTZ	
Pan	-170°～+170°
Tilt	-30°～+90°
Pan Speed	0.1 ～60°/s
Tilt Speed	0.1～30°/s
Preset Speed	Pan： 60°/s, Tilt： 30°/s
Preset Quantity	User can set 255 presets (10 via IR remote control)

Monocular Tracking	
Tracking Modes	Off, Real-time Tracking, Stage Tracking, Area Tracking, and Intelligent Framing
Tracking Distance	Maximum tracking distance up to 18 meters

Others	
Storage Temperature	-10℃ ～ +70℃
Storage Humidity	20%～95%
Working Temperature	-10℃～+50℃
Working Humidity	20%～80%

Dimension	150mmX150mmX167.5mm
Weight	1.4kg
Environment	Indoors

2.4. Interface Description

2.4.1. External Interfaces

This product's external interfaces include: HDMI interface, USB 3.0 interface, SDI interface, audio input interface, network interface, RS232 input/output, RS485 interface, and DC12V power input. The diagram of the external interfaces is shown in Figure 2-2.

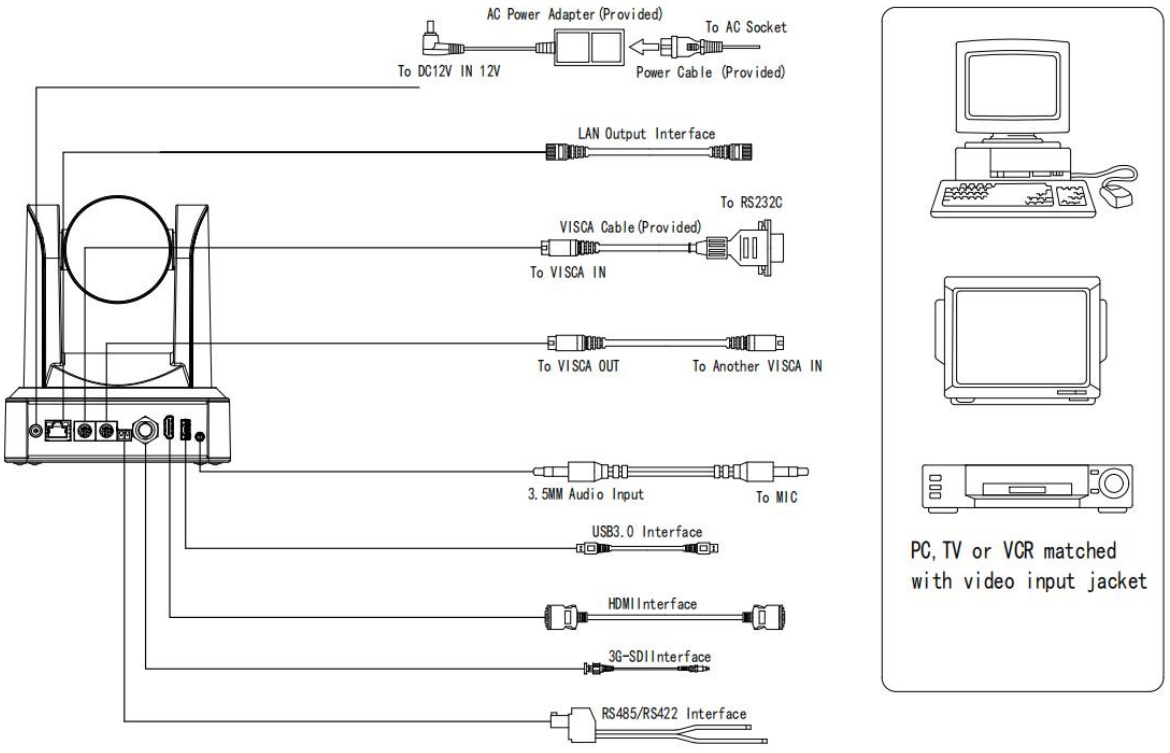
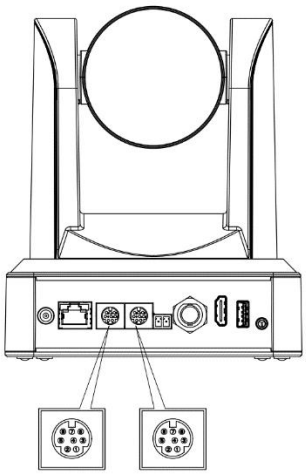


Figure 2-2 Back Panel Image

2.4.2. RS-232

1）RS-232

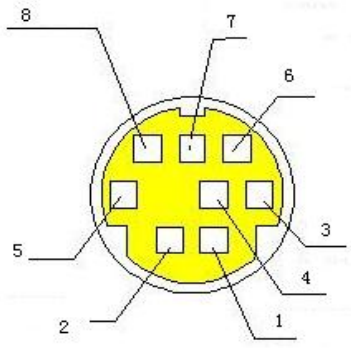


Connection method for PC and controller

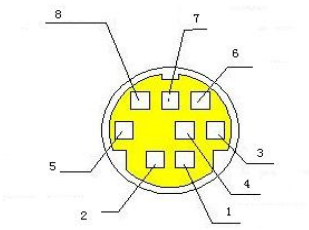
Device	WindowsDB-9
1.DTR	1.DCD
2.DSR	2.RXD
3.TXD	3.TXD
4.GND	4.DTR
5.RXD	5.GND
6.GND	6.DSR
7.IR OUT	7.RTS
8.NC	8.CTS
	9.RI

Figure 2-3

2）RS-232 Mini-DIN 8-pin Definition

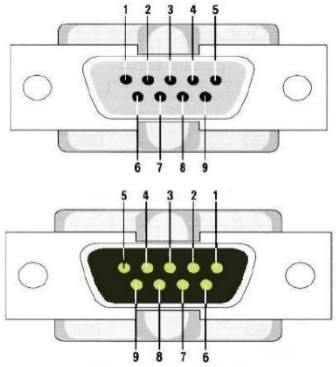


NO.	Port	Definition
1	DTR	Data Terminal Ready
2	DSR	Data Set Ready
3	TXD	Transmit Data
4	GND	System Ground
5	RXD	Receive Data



6	GND	System Ground
7	IR OUT	IR Commander Signal
8	NC	No Connection

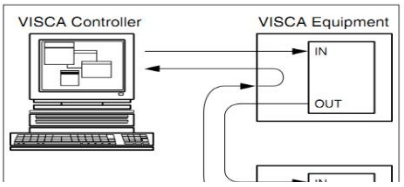
3)RS232 (DB9) Port Definition



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

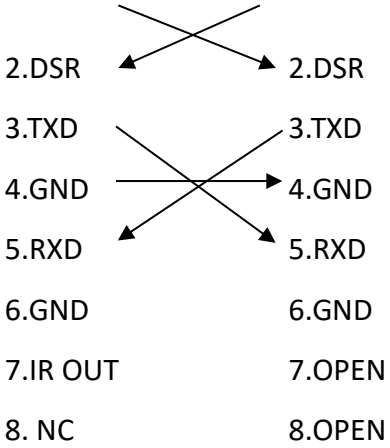
4)

VISCA networking shown as below:



Camera cascade connection method

Device 1	Device 2
1.DTR	1.DTR


2.DSR
3.TXD
4.GND
5.RXD
6.GND
7.IR OUT
8. NC
2.DSR
3.TXD
4.GND
5.RXD
6.GND
7.OPEN
8.OPEN

3. How to Use

3.1. Video Output

3.1.1. Power-On Self-Test

Connect the DC12V power cable. After powering on, the device will perform a self-test. During the self-test, the remote control indicator light will blink. The PTZ will rotate left to the farthest position, then down to the lowest point, and then move to the HOME position (both horizontal and vertical at the center). Meanwhile, the lens will retract and zoom in/out. Once the self-test is completed, the remote control indicator light will stop blinking. If preset position 0 is set, the device will automatically move to preset 0 after the self-test is completed.

3.1.2. Video Output

Connect the video output cables: Users can refer to section 1.1 for the description of each product's output interface.

1） Network output: connect this product and your computer through network cable, then open the browser, enter the camera IP address (factory default 192.168.5.163) in the address bar, then to the login page and input a user name and password (factory default are “admin”) , Finally enter the preview page, and the image comes out.

⚠ Caution

- If you forget your user name, password, IP address, you can manually restore the default by the remote controller key combination * #

2) SDI, HDMI output: Connect the monitor with the corresponding video output interface.

3) USB3.0 output: Connect this product with computer USB3.0 interface, open the Device Manager to see whether there is an image device and whether the Universal Serial Bus controllers recognize USB3.0 device. After properly identified, open the software, choose the image device and then it will output image.

3.2. Remote Control

Remote control using instruction: There are wireless remote control and IR remote control for options.

Steps for wireless remote control usage are as below:

1）Code Pairing

Press the "Settings" + "*" button for 3 seconds, the LED will turn off to flashing, after releasing the button, the LED light will keep flashing to start the code pairing, the receiver is powered on, and the LED will be off when the code pairing is successful; If you use other remote control, you need to clear the code of this remote control, or re-pair the code of the new remote control. If the code pairing has been unsuccessful, the red LED light flashes for 20 seconds and then goes out, stop the code pairing and go to sleep; at this time, press any key to wake up and re-pair the code.

⚠ Caution

- After the code is successfully matched, you need to select the camera address to control it

2）Clear Code Data

Press the "Settings" key + "#" key from light off to flashing, the receiving end is powered off and then powered on. The LED is off, indicating that the paired data is cleared successfully

3）Enter Sleep Mode and Wake Up

If there is no operation in the working state, it will immediately enter the sleep mode, and press any key to wake up

3.2.1. IR Remote Control

1. Standby Key

After 3S long press, the camera will step into standby mode. Long press 3S again, the camera will self-test again and back to HOME position. (Note: If power-on mode is turned on and Preset 0 is set, and there is no operation within 12s, it will automatically point to the specified preset position.

2. Camera Address Selection

Select the camera address which wants to be controlled

3. Number Key

Set or run 0-9 presets

4, *, # Key

Key combination use

5. Focus Control Key

Auto Focus: Enter into auto focus mode.

Manual Focus: The camera focus mode is manual

Switch the camera focus mode to manual focus by pressing [focus +] or [focus -] to adjust.

6. Zoom Control Key

Zoom + :Lens near

Zoom – :Lens far

7. Set or Clear Preset key:

Set Preset: Set preset key + 0-9 number key:

Clear Preset key: Clear preset key + 0-9 number key

8. Pan/Tilt Control Key

Press ▲Key :Up

Press ▼Key :Down

Press ◄ Key :Left

Press ► Key: Right

“HOME” Key: Return to the middle position or enter into the next level menu

9. BLC Control Key

Back Light ON / OFF: Turn on or off the back light

10. Menu Setting

Open or close the OSD menu

Enter / exit the OSD menu or return to the previous menu.

11. Camera IR Remote Control Address Setting

【*】+【 # 】+【F1】:Camera Address No.1

【*】+【 # 】+【F2】:Camera Address No. 2

【*】+【 # 】+【F3】:Camera Address No. 3

【*】+【 # 】+【F4】:Camera Address No. 4

12. Key Combination Functions

1) 【#】+【#】+【#】:Clear all presets

2) 【*】+【#】+【6】:Restore factory defaults

3) 【*】+【#】+【9】:Flip switch

4) 【*】+【#】+Auto: Enter into the aging mode

5) 【*】+【#】+【3】:Menu set to Chinese

6) 【*】+【#】+【4】:Menu set to English

7) 【*】+【#】+Manual: Restore the default user name, password, and IP address

8) 【#】+【#】+【0】:Switch the video format to 1080P60

9) 【#】+【#】+【1】: Switch the video format to 1080P50.94

10) 【#】+【#】+【2】:Switch the video format to 1080I50

11) 【#】+【#】+【3】:Switch the video format to 1080I30

13) 【#】+【#】+【4】:Switch the video format to 1080P29.97

14) 【#】+【#】+【5】:Switch the video format to 1080P25

15) 【#】+【#】+【6】:Switch the video format to 720P60

16) 【#】+【#】+【7】:Switch the video format to 720P59.94

17) 【#】+【#】+【8】:Switch the video format to 720P50

3.2.2. Remote Control Usage

Finishing initialization, it can receive and execute the IR commands. Press the remote controller button, the indicator light is flashing; release the button, the indicator light stops flashing. Users can control the pan/tilt/zoom, setting and running preset positions via the IR remote controller.

Key Instruction:

1. In this instruction, “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】”

1） Camera Selection

Select the camera address to control.

2) Pan/Tilt Control

Up: press ▲ Down: press ▼

Left: press ◄ Right: press ►

Back to middle position: press“【HOME】”

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

3） Preset Position Setting, Cancellation, and Recall

1. Save a Preset Position： Press the [Set Preset] button, then press a number key from 0 to 9 to assign a preset position corresponding to the selected number key.

Note: A maximum of 10 preset positions can be saved using the remote control.

2. Recall a Preset Position: Simply press the number key (0 to 9) to recall a previously saved preset position.

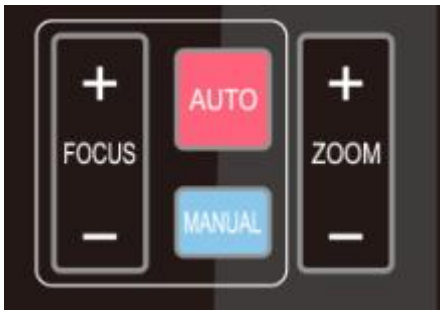
Note: If no preset has been saved for the selected

number key, the action will have no effect.

3. Clear a Preset Position: Press the [Clear Preset] button, then press a number key from 0 to 9 to cancel the corresponding preset position.

Note: Pressing the [#] key three times consecutively will clear all preset positions.

4）Zoom Control

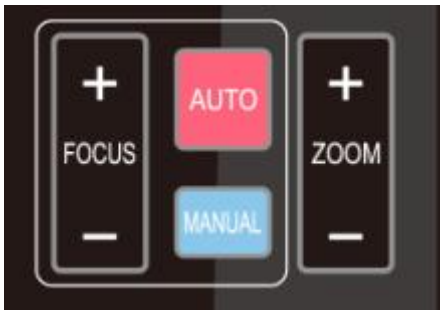


ZOOM IN: press 【Zoom + 】 key

ZOOM OUT: press 【Zoom -】key

Press and hold the key, the camera will keep zooming in or zooming out and stops as soon as the key is released.

5) Focus Control



Focus (near):Press “【focus+】” key (Valid only in manual focus mode)

Focus (far): Press “【focus-】”key (Valid only in manual focus mode)

Auto Focus: Support

Manual Focus: Support

Press and hold the key, the action of focus will keep continue and stops as soon as the key is released.

6）Camera Remote Controller Address Setting

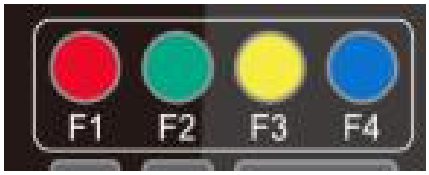
【*】+【#】+【F1】:Camera Address No.1

【*】+【#】+【F2】:Camera Address No. 2

【*】+【#】+【F3】:Camera Address No. 3

【*】+【#】+【F4】:Camera Address No. 4

7）Tracking Setting



F1: Turn off tracking

F2: Real-time tracking

F3: AI tracking mode switch

F4: No Function

3.3. Menu Setting

3.3.1. Main Menu

In normal working mode, press 【MENU】key to display the menu, using scroll arrow to point at or highlight the selected items.

MENU
= = = = = = = = = = = = = = = =
Language English
(Monocular Tracking)
(Setup)
(Camera)
(P/T/Z)
(Video Format)
(Version)
(Restore Default)

[↑ ↓]Select [← →]Change Value
[Menu]Back [Home]OK

Language Settings / Language: Select the menu language (Chinese/English).

Monocular Tracking: Enter the monocular tracking settings menu.

Settings: Enter the system parameter settings submenu.

Camera Parameters: Enter the camera parameter settings submenu.

P/T/Z: Enter the pan/tilt/zoom parameter settings submenu.

Version: Enter the version submenu.

Restore Factory Defaults: Enter the restore factory defaults menu, then select "Yes" or "No" to restore factory settings.

[↑ ↓] Select: Use the up and down arrow keys to choose a menu item.

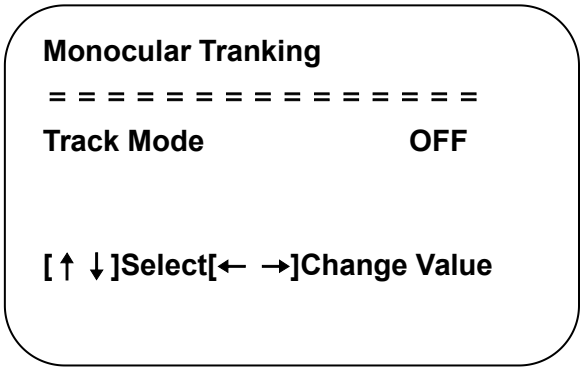
[← →] Modify: Use the left and right arrow keys to modify parameters.

[Menu] Return: Press the [Menu] button to return.

[Home] Confirm: Press the [Home] button to confirm.

3.3.2. Monocular Tracking

In the main menu, move the cursor to "Monocular Tracking" and press the [HOME] button to enter the settings page, as shown in the image below.



Tracking Switch: Available options: Off / Real-Time Tracking / Stage Tracking / Area Tracking / Smart Framing

Person Size: Available options: Close-Up, Half Body, Full Body, Custom

Custom Level: Available options: 0-5 (Only effective in Custom mode)

Person Position: Available options: Left, Right, Center

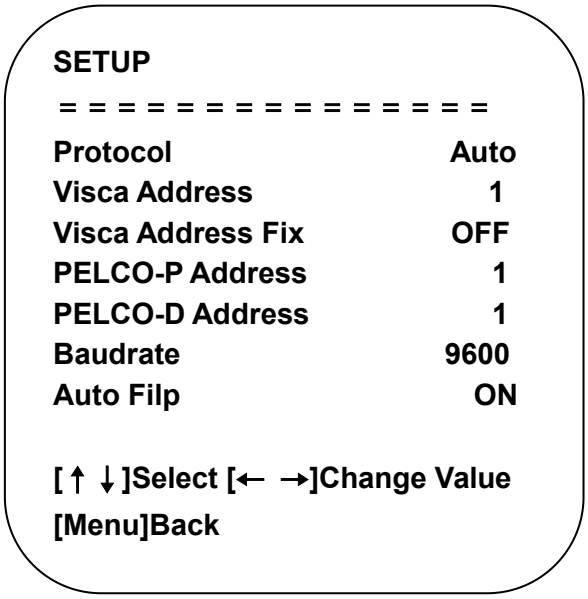
Sensitivity: Available options: High, Medium, Low

Target Loss Action: Available options: Home, Preset 0, Last Lost Position

Target Loss Time: Available options: 0-60 seconds

3.3.3. System Setting

Move the pointer to the (Setup) in the Main Menu, click the【HOME】key and enter into the (System Setting) as shown below,



PROTOCOL: VISCA/Pelco-P/Pelco-D/Auto

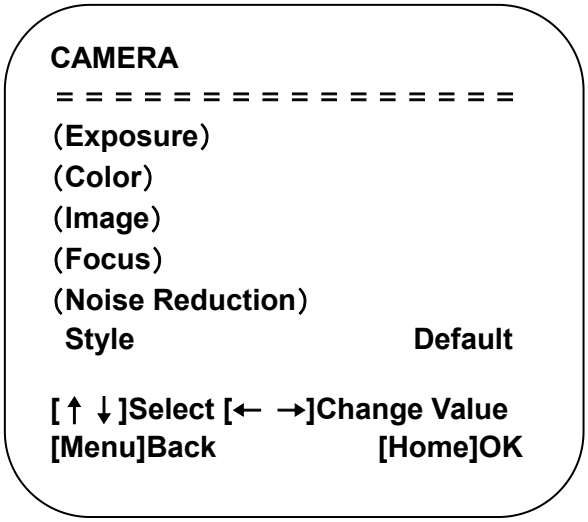
Visca ADDR: VISCA=1~7 Pelco-P=1~255 Pelco-D = 1~255

Baud rate: 2400/4800/9600/115200

Visca Address Fix: On/Off

3.3.4. Camera Parameter Setting

Move the pointer to the (CAMERA) in the Main Menu, click the【HOME】key and enter the (CAMERA) as follow



Exposure: Enter into Exposure setting

Image: Enter the Image submenu

Color: Enter into color setting

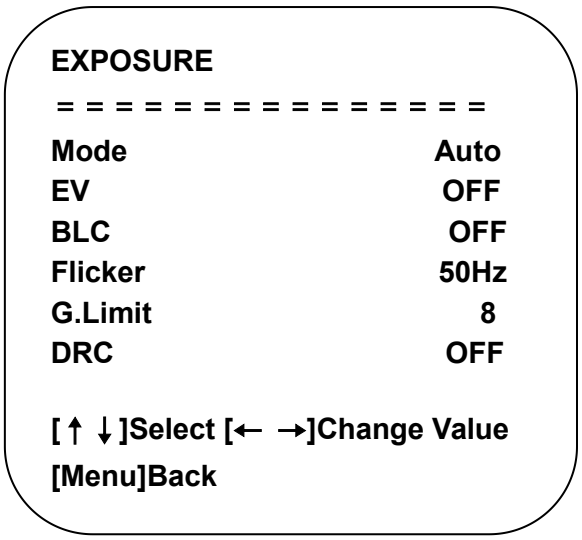
Focus: Enter into focus setting

Noise Reduction: Enter the Noise Reduction submenu

Style: Default, Standard, Clear, Vivid, Soft

1）Exposure

Move the pointer to the (EXPOSURE) in the Main Menu, click the【HOME】and enter the (EXPOSURE SET) as follow



Mode : Auto, Manual, Shutter priority, Iris priority and Brightness priority.

EV : On/Off (only available in auto mode)

Compensation Level: -7~7 (only available in auto mode when EV is ON)

BLC: ON/OFF for options (only available in auto mode)

Anti-Flicker: OFF/50Hz/60Hz for options (only available in Auto/Iris **priority**/Brightness **priority** modes)

Gain Limit: 0~15 (only available in Auto/ Iris **priority** /Brightness **priority** mode)

WDR: Off, 1~8

Shutter :1/25, 1/30, 1/50, 1/60, 1/90, 1/100, 1/120, 1/200, 1/250, 1/350, 1/500, 1/1000, 1/2000, 1/3000, 1/4000, 1/6000, 1/10000(only available in Manual and Shutter priority mode)

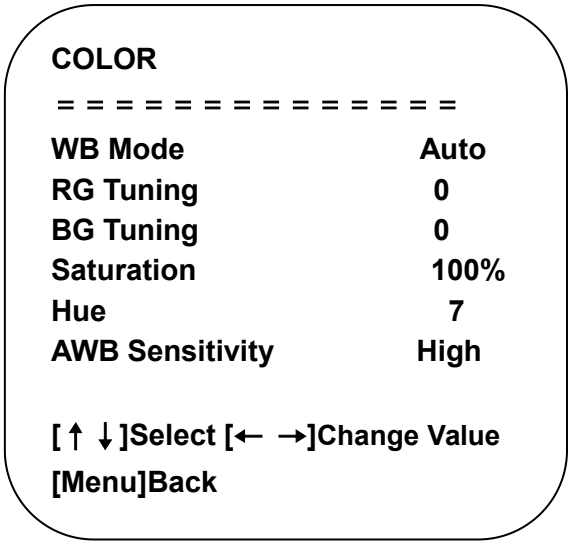
IRIS :OFF, F11.0, F9.6, F8.0, F6.8, F5.6, F4.8, F4.0, F3.4, F2.8, F2.4, F2.0, F1.8(only available in Manual and Iris priority mode)

Brightness: 0~23 (only available in Brightness **priority** mode)

Gain: Set the gain level. Available options: 0-20 (Effective only in Manual mode, when Shutter Priority mode is not enabled).

2）Color

Move the pointer to the (COLOR) in the Main Menu, click the【HOME】and enter the (COLOR SET) as follow



WBMode: Available options: Auto, Manual, One-Touch White Balance, Custom Color Temperature

Red Tuning: -10~10(only available in Manual mode)

Blue Tuning: -10~10(only available in Manual mode)

Red Gain: 0~255(only available in Manual mode)

Blue Gain: 0~255(only available in Manual mode)

Saturation: 60%, 70%, 80%, 90%, 100%, 110%, 120%, 130%, 140%, 150%, 160%, 170%, 180%, 190%, 200%

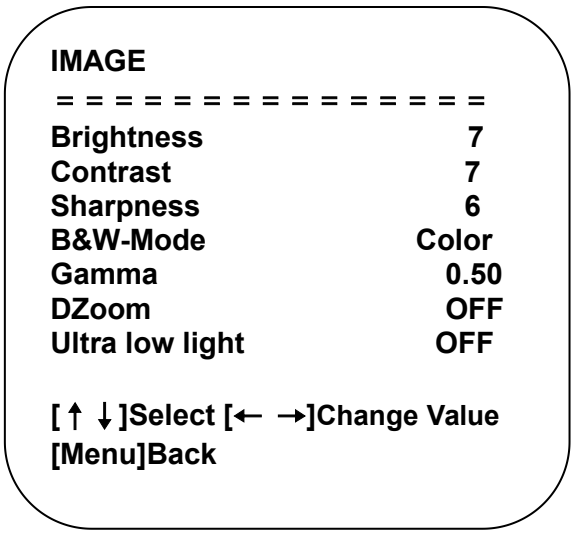
Hue: 0~14

AWB Sensitivity: high/middle/low(only available in Auto mode)

Hue: 0-14

3）Image

Move the pointer to the (IMAGE) in the Menu, click the【HOME】and enter the (IMAGE) as follow



Brightness: 0~14

Contrast: 0~14

Sharpness: 0~15

B&W Mode: color, black/white

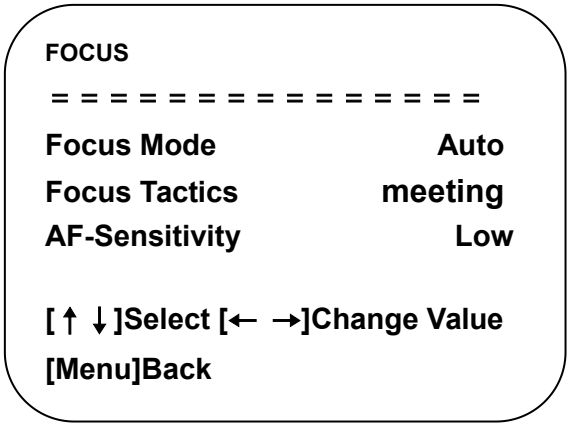
Gamma: default, 0.45、0.48、0.50、0.55、0.63

DZoom: digital zoom options: On/Off

Low Light Mode: On/Off

4）Focus

Move the pointer to the (FOCUS) in the Menu, click the【HOME】and enter the (FOCUS) as follow

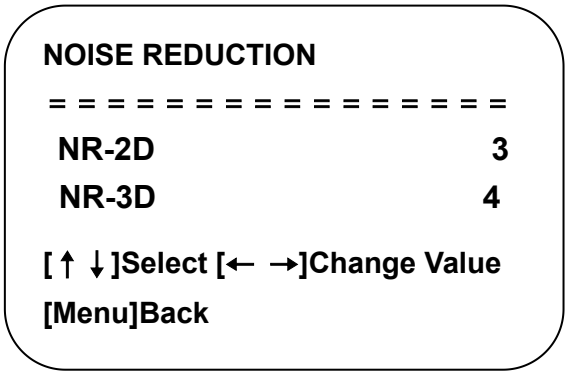


Focus Mode: Available options: Auto, Manual, One-Touch Focus

Focus Strategy: Pre-Focus, Post-Focus, Normal Conference, Education Tracking, Moving Object Focus, Center FocusAF-**Sensitivity:** High, middle, low

5）Noise Reduction

Move the pointer to the (NOISE REDUCTION) in the Menu, click the 【HOME】 and enter the (NOISE REDUCTION) as follow



2D Noise Reduction: Auto, close,1~7

3D Noise Reduction: Close, 1~7

3.3.5. P/T/Z

Move the pointer to the (P/T/Z) in the Main Menu, click the【HOME】and enter the (P/T/Z) as follow

```
P/T/Z
= = = = = = = = = = = = = = = = =
Speed by zoom                ON
Zoom speed                    8
Image Freezing               OFF
Acc Curve                   Slow
Preset speed                  10

[↑ ↓]Select [← →]Change Value
[Menu]Back
```

Depth of Field: Only effective for remote controller, On/ Off;

When zoom in, the Pan/Tilt control speed by remoter will become slow

Zoom Speed: Set the zoom speed for remote controller, 1~8

Image Freezing: On/Off

Accelerating Curve: Fast/slow

Preset Speed: 1-10

3.3.6. Video Format

Move the pointer to the (Video Format) in the Menu, click the【HOME】and enter the (Video Format) as follow

```
VIDEO FORMAT
= = = = = = = = = = = = = = = = =
1080P60
1080P59.94
1080P50                  1080P30
1080P29.97               1080P25
720P60
720P59.94
720P50

[↑ ↓]Select
[Menu]Back               [Home]OK
```

⚠ Caution

- Exit menu after modifying parameter to save it

3.3.7. Version

Move the pointer to the (VERSION) in the Main Menu, click the 【HOME】 and enter the (VERSION) as follow

```
VERSION
= = = = = = = = = = = = = = = =
MCU Version                3.2.0
Camera Version             1.0.0
AF Version                 1.0.0
[Menu]Back
```

MCU Version: Display MCU version information

Camera Version: Display camera version information

AF Version: Display the focus version information

3.3.8. Restore Default

Move the pointer to the (VERSION) in the Main Menu, click the 【HOME】 and enter the (VERSION) as follow

```
RESTORE DEFAULT
= = = = = = = = = = = = = = = =
Restore  Default?              NO


[↑ ↓]Select    [← →]Change Value
[Menu]Back              [Home]OK
```

Restore default: Yes/no ;(after restoring default, the language, color, and video format won't be restored.

⚠ Caution

- If the address of former remoter is not 1 but another one from 2, 3, 4, the corresponding camera address will restore to 1 when all parameters or system parameters are restored. User should change the remoter address to be 1 (press No.1 according to the camera so to get normal operation)

4. Network Connection

4.1. Connection Method

Direct Connection:Directly connect the device to the computer using a network cable.

Connection to LAN:Connect the device to the Internet network, which can be done via a router or switch. The user can log in to the device through a browser.

⚠ Caution

- Do not place power cables and network cables in areas that are easily accessible to people, as poor contact could cause unstable signal transmission and affect video quality.

The computer must have the IP subnet of the device. If the subnet is not added, login issues and other errors may occur. For example, if the device's default IP address is 192.168.5.163, the computer needs to add the subnet 5.

The process is as follows: First, open the computer's Local Area Connection properties window, select "Internet Protocol Version 4 (TCP/IPv4)", double-click or click "Properties" to enter the properties window for Internet Protocol Version 4 (TCP/IPv4). Select "Advanced", click "Advanced" to open the advanced TCP/IP settings. In the IP address section, add the IP and subnet mask. After adding, click "OK" to complete the subnet addition. Users can add the corresponding subnet according to the IP address they modified for the device.

Notes: The added IP address must not conflict with other computers or device IPs. Before adding, verify whether this IP already exists.

To verify if the subnet has been added successfully, open the "Start" menu on the computer, select "Run", type "cmd", and click "OK" to open the DOS command window. Type "ping 192.168.5.26" and press Enter. If information like Figure 4-1 appears, it indicates that the subnet has been added successfully.

Click “OK” and open the DOS command window, input ping 192.168.5.26 and press Enter key, it will show message as below: which means network segment adding is succeed.

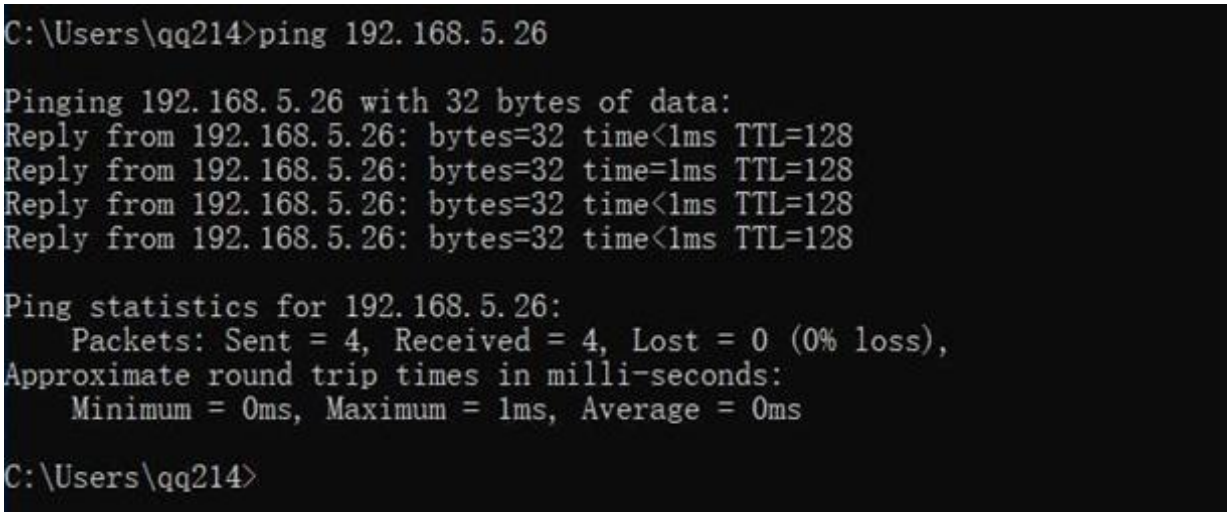


Figure 4-1: Subnet Addition Successful Illustration

User can also to verify network connection as steps above mentioned after the finish of camera self-check. If IP is default, open DOS command window and input 192.168.5.163, then press Enter key. It will show message as below: which means network connection is normal.

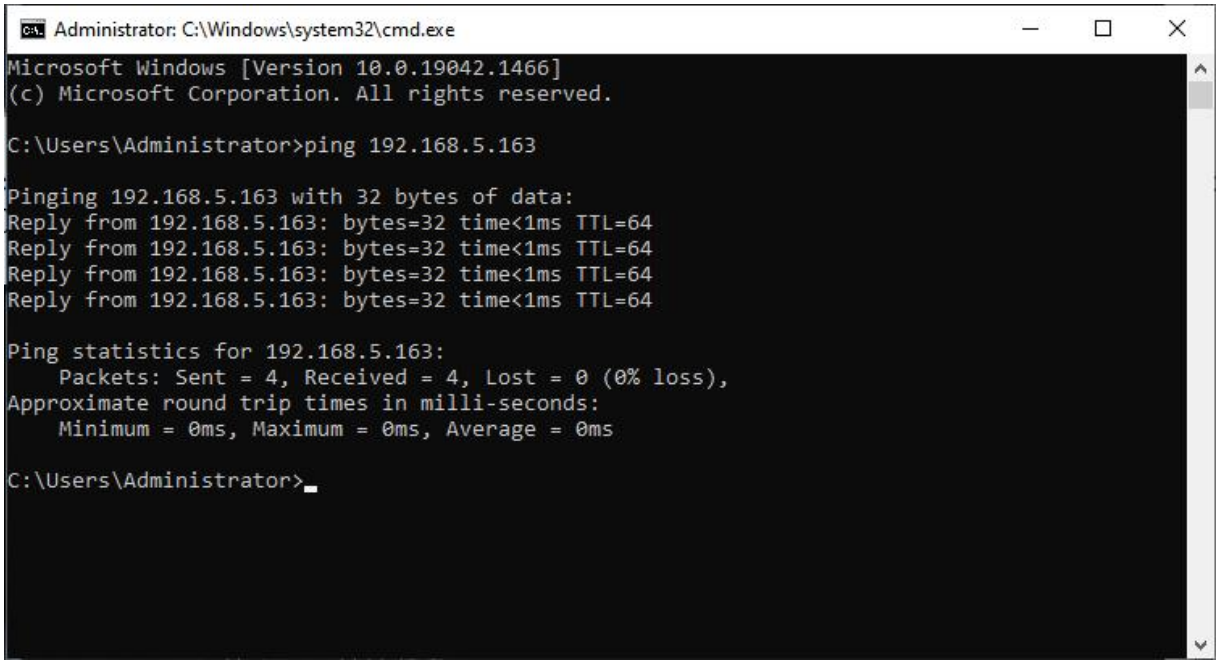


Figure 4-2: Network Connection Normal Illustration

4.2. Camera Web Interface

4.2.1. Web Login

1）Client Login

Enter the device IP address (default is 192.168.5.163) in the browser's address bar and press Enter to access the Web client login page. There are two login methods: administrator and general user. By logging in as an administrator (default username and password: admin), you can perform operations such as preview, configuration, and logout. By logging in as a general user (default username and password: user1 or user2), you can only perform operations like preview and logout, with no configuration options available.

Note: The Web access feature is supported by browsers such as Google Chrome (supports preview), Internet Explorer (IE), 360 browser, and other common browsers.

Language Selection: In the top right corner of the login page, you will see "中文|English". Click to select the desired language for the webpage interface.

4.2.2. Preview

After successful login into the management interface, it enters the video preview interface. In the preview screen, users can control PTZ, zoom, focus, video capture, sound, focus, full screen and set the preset position, run, delete and other operations.

1) Administrator Login

Username and password default to admin.

The administrator can perform operations such as pan-tilt control, zooming, focusing, sound control, magnification, full screen, and setting, running, or deleting preset positions. The administrator also has the ability to preview, configure, and log out.

2) General User Login

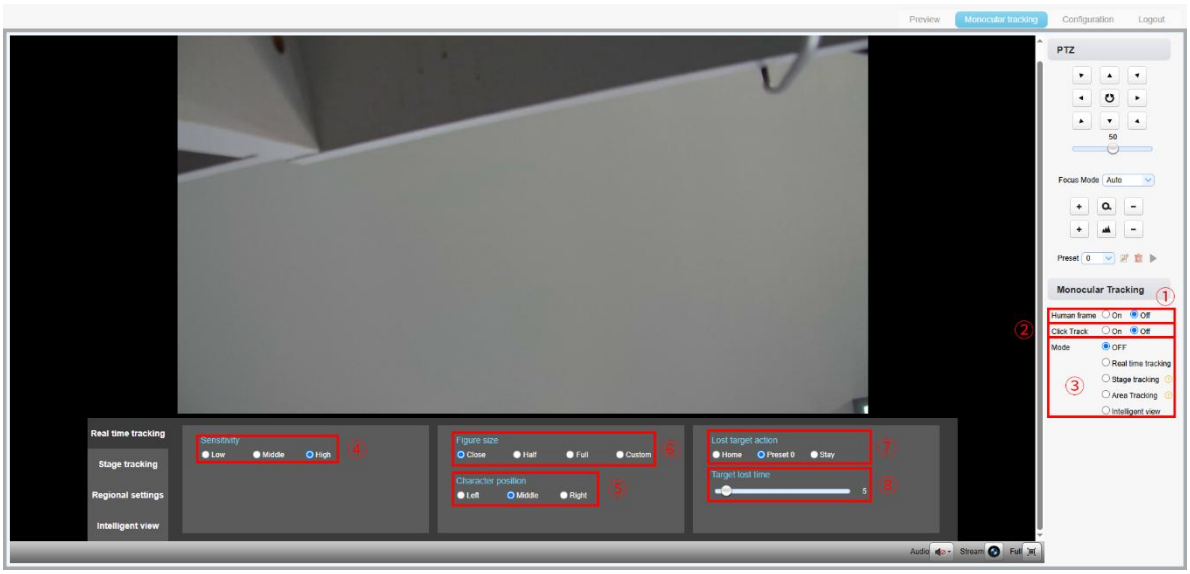
Username and password default to user1 or user2.

General users can perform operations such as pan-tilt control, zooming, focusing, sound control, magnification, full screen, and setting, running, or deleting preset positions. General users can preview and log out, but cannot access configuration settings.

⚠ Caution

- There is no configuration right if you login as user

4.2.3. Monocular Tracking



① Enable/Disable Human Detection Box – Default is disabled. When enabled, the tracked target will be surrounded by a yellow box, while other objects will be in green boxes.

② Enable/Disable Object Selection – Default is disabled. When enabled, left-clicking on a person with the mouse will make that person the tracking target.

③ Select Tracking Mode: Disable Tracking, Real-time Tracking, Stage Tracking, Area Tracking, and Intelligent Framing – Default is disabled.

④ Set Sensitivity: High, Medium, or Low – Default is Medium.

⑤ Set Person Size: Close-up, Half-body, Full-body, or Custom (0 – 5) – Default is Half-body.

⑥ Set Position of the Person in the Frame: Left, Center, or Right – Default is Center.

⑦ Set Action When Target is Lost: Return to Origin, Preset Position 0, or Last Known Position – Default is Return to Origin.

⑧ Target Loss Duration: Can be set from 0 to 10 seconds, default is 3 seconds.

	Sensitivity	Person Size	Person	Target Loss	Target Loss

			Position	Action	Duration
Real-time Tracking	◎	◎	◎	◎	◎
Stage Tracking	◎	×	◎	◎	◎
Area Tracking	◎	×	×	◎	◎
Intelligent Framing	◎	×	×	◎	◎

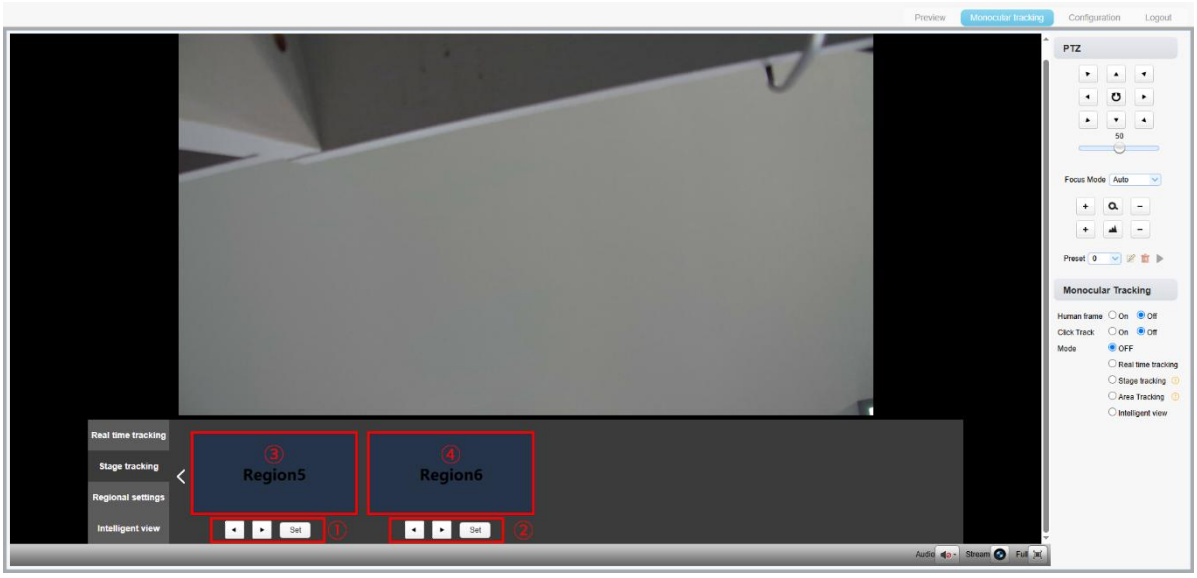
Notes:

1.◎: Configurable in this tracking mode.

2.×: Not configurable in this tracking mode.

3.For optimal performance, the recommended distance from the target to the camera, depending on the person's size, is as follows:

Close-up: ⩾0.8m Half-body: ⩾1.5m Full-body: ⩾3m



①: Click to set the left boundary of the tracking area, then click [Set] to complete.

②: Click to set the right boundary of the tracking area, then click [Set] to complete.

③: Click to adjust the window to the left boundary position.

④: Click to adjust the window to the right boundary position.

Note: Area setting is only possible when tracking is disabled.

①: Taking Area 1 as an example: Adjust the pan-tilt to set the tracking area, then click [Set] to finalize the setup, and the image will be saved and displayed in Window 1.

②: Click [Recall] to adjust the camera to the preset area.

③: Click the window view to adjust the camera to the preset area.

④: Select the areas to track, with a minimum of 2 areas required.

Notes:

1.Area setting is only possible when tracking is disabled.

2.Each preset view must be continuous from left to right and overlap during setup.

4.2.4. Configuration

Click **Configuration** to enter into the device parameters setting page

There are the following options: Audio configuration, video configuration, network configuration, internet access configuration, system configuration, detailed description see the following table.

Menu	Explanation
Audio configure	Including audio compressing format, sampling frequency, sampling precision, compressing code rate settings etc.
Video configure	Including video encoding, video parameters, character-overlapping, character size, video output setting etc.
Network configure	Including basic parameters, Ethernet, DNS, wireless network setting, GB28181 etc.
System configure	Including equipment property, system time, user management, version update, Reset, Reboot device settings etc.

4.2.5. Audio Configuration

Switch: Set whether to enable audio.

Compression Format: Set the audio compression format. After changing, the device requires a manual restart (default: G.711A, AAC optional).

Sampling Frequency: Set the audio sampling frequency. After changing, the device requires a manual restart (default: 16000, 32000, 44100, 48000 optional; G.711A default is 48000).

Sampling Precision: Set the audio sampling precision (default: 16 bits).

Compression Bitrate: Set the audio compression bitrate (default: 64 kbps, 32, 48, 96, 128 optional).

Channel Type: Set the channel type (default: mono, stereo optional).

Input Volume: Set the input volume level (default: 4, range: 1-10 optional).

Click the "Save" button to display the "Save Successful! The settings will take effect after restarting the device" message. Restart the device for the changes to take effect.

4.2.6. Video configuration

1) Video Encoding

Code Stream: Stream: Different video output mode setting, use different streams. (Main stream, secondary stream)

Compression Format: Set the video compression format, save to take it effect (primary / secondary stream default:H.264, H.265 optional)

Profile: Profile Mode Setting (Default HP, BP、MP Optional)

Video Size: Set the image resolution. Changes will take effect after saving. (Main stream default: 19201080, 1280720, 640480 optional; Sub stream default: 320180, 320240, 640360, 640480, 1280720, 1920*1080 optional).

Stream Rate Control: Set rate control mode, save to take it effect (Primary / secondary stream default variable bit rate).

Image Quality: Set the image quality, image quality can be changed only when rate control is variable bit rate, (main stream defaulted is better, secondary stream default is not good, there are best, better, good, bad, worse, worst for options).

Rate (Kb / s): Set the video bit rate (main stream default 4096Kb/s，64-40960Kb/s optional; secondary stream default 512Kb/s，64-40960Kb/s optional).

Frame Rate (F / S): Set the video frame rate (primary / secondary stream default 25F / S, primary stream 5-60F/S optional, secondary stream 5-30F / S optional).

Key Frame Interval: Set the key frame interval (primary / secondary stream default 75F, primary / stream 1-150F optional. secondary stream 1-150F optional).

Minimum QP of Key Frame Interval: Set minimum QP of key frame interval (Default 20, 10-51 for optional)

Stream Name: When streaming via rtsp or rtmp, user can modify stream name. Main Stream(live/av0), sub stream(live/av1)

Click the "Save" button to display the "Parameter saved successfully" message, then settings take effect.

2) Stream Release

Switch: To turn on/off the main / secondary stream.

Protocol: primary / secondary stream applies RTMP protocol. RTSP, SRT

Host Port: server port number (default 1935, 0-65535 optional)

Host Address: server IP addresses (default 192.168.5.11)

Stream Name: choose a different stream name (live / av0, live / av1 optional).

User: Set the user name.

Password: Set the password.

Click on the "Save" button to display the "Save successful" message, then settings take effect.

Method of obtaining RTSP: rtsp: // device IP address: 554 / live / av0 (av0 main stream; av1 secondary stream)

3）RTP Broadcasting

Main/Sub Stream： On/off；

Protocol： （Default RTP，TS，UDP，TCP optional）

Address： Default 224.1.2.3. It can be edited.

Port： The main stream defaults to 4000, the secondary stream defaults to 4002, and the main/secondary stream is optional from 0 to 65535.

Visit： Address comes up after setting. Eg; rtp://224.1.2.3:4000； udp://@224.1.2.3:4000； tcp://@224.1.2.3:4002；

4) Video Parameters

a, Focus: Focus mode, focus range, focus sensitivity can be set.

Focus Mode: set the focus mode (Default automatic, manual optional, one-key focus)

Focus range: set the focus range (the default middle, the upper, lower and all optional)

Focus Sensitivity: Set the focus sensitivity (default is low, high, medium optional)

b, Exposure: can set exposure mode, exposure compensation, backlight compensation, anti-flicker, gain limit, dynamic range, shutter, aperture, brightness, gain

Exposure Mode: Set the exposure mode (the default automatic, manual, shutter priority, aperture priority, Brightness priority optional)

Exposure compensation: Exposure compensation setting is active when it is auto status (default is off).

Exposure compensation value: Set the exposure compensation value, valid when it is set for auto(default 0, -7 to 7 optional).

BLC: Set back light compensation, valid when it is auto status (default is off).

Anti-flicker: Set up anti-flicker mode, valid when status of automatic, aperture or brightness priority (default 50Hz, closed, 60Hz optional).

Gain limit: set the gain limits, auto, active when it is status of aperture or brightness priority(default 3, 0-15 optional)

Gain: Set the gain. This setting is only effective when the exposure mode is set to manual or the shutter priority mode is active. (Default: 6, range: 0-20 optional).

Dynamic range: set the dynamic range (default off, 1-8 optional).

Shutter speed: active when it is status of manual or shutter-priority (default 1/100，1/25、1/30、1/50、1/60、1/90、1/100、1/120、1/200、1/250、1/350、1/500、1/1000、1/2000、1/3000、1/4000、1/6000、1/10000 optional).

Aperture value: Set the aperture value, active when it is status of manual or aperture-priority(default F1.8, closed, F11, F9.6, F8.0, F6.8, F5.6, F4.8, F4.0, F3.4, F2 .8, F2.4, F2.0, F1.8 optional).

Brightness: Set the brightness value, active when it is a state of brightness priority (default 11，0~23 optional).

c, Color: White balance, saturation, color, white balance, sensitivity, color temperature, gain red and blue gain can be set.

White balance modes: Set the white balance mode (Default automatic, 2400K~7100K manual, one-key white balance, specified color temperature optional).

Note: Click the “Correction” button when selected the One-push white balance mode.

Red Tint Adjustment: Set the red tint adjustment. This setting is only effective when the white balance mode is set to automatic. (Default: 0, range: -10 to 10 optional).

Blue Tint Adjustment: Set the blue tint adjustment. This setting is only effective when the white balance mode is set to automatic. (Default: 0, range: -10 to 10 optional).

Saturation: Set the saturation (default 100%，60%、70%、80%、90%、100%、110%、120%、130%、140%、150%、160%、170%、180%、190%、200%optional).

Chroma: Set the chrome (default 7, 0-14 optional).

Auto white balance sensitivity: Sensitivity Auto white balance settings (default is low, high, medium optional).

Red gain: Set the red gain, effective when it is manual (default 56，0~255 optional).

Blue gain: Sets the Blue gain, effective when it is manual (default 158，0~255optional).

d, Image: You can set Brightness, Contrast, Sharpness, Gamma Curve, Black & White Mode, Horizontal Flip, Vertical Flip, Auto Flip, Electronic Zoom, Ultra-Low Light Mode

Brightness: Set the brightness (default 7, 0-14 optional).

Contrast: set the contrast (default 7, 0-14 optional).

Sharpness: Set the sharpness value (default 6, 0-15 optional).

Gamma Curve: Set the gamma curve value (Default: 0.50, 0.45, 0.48, 0.50, 0.55, 0.63 options).

Dynamic Contrast: Set the dynamic contrast (Default: Off, 1-8 optional).

Black and white mode: Set black and white mode (default color, black/white optional).

Flip Horizontal: Set Flip Horizontal (default Off, On optional).

Flip Vertical: Set vertical flip (default Off, On optional).

Electronic Zoom: Set the electronic zoom (Default: Off, On/Off options).

Auto Flip: Set the image flip (Default: On, On/Off options).

Low-Light Mode: Set Low-light mode (default on, off optional)

e. Noise Reduction: 2D noise reduction, 3D noise reduction and dynamic dead pixel correction available.

2D Noise Reduction: Set 2D noise reduction level (default 3,1-8 and Off optional).

3D Noise Reduction: Set 3D noise reduction level (default 4,1-8 and Off optional).

Dynamic dead pixel correction: Set Dynamic dead pixel correction (default Off, 1-8 optional).

f. Style: Select the picture style (Options: Default, Standard, Clear, Vivid, Soft).

⚠ Caution

- Refresh the page after changing above parameters in a, b, c, d, e, f to take effect.

5) Character Overlay

Display Date and Time: Set whether to display the date and time (can be checked).

Display Title: Set whether to display the title (can be checked).

Time Font Color: Set the font color for the time (Default: White, options: Black, Yellow, Red, Blue).

Title Font Color: Set the font color for the title (Default: White, options: Black, Yellow, Red, Blue).

Move Characters: Set the display position for the time and title. Click the "Up, Down, Left, Right" buttons to move the corresponding character position.

Title Display Content: Set the title content for the device (Default: CAMERA1).

Time Display Content: Set the system time (Default: 1970/01/01 05:36:00).

Click the "Save" button to display the "Parameter Save Successful" message, and the settings will take effect.

6) Character Size

Auto-Scale Size Based on Resolution: Can be checked.

Main Stream Character Size: Set the character size for the main stream display. Changes will take effect after restarting the device (Default: 48, options: 28-200).

Sub Stream Character Size: Set the character size for the sub stream display. Changes will take effect after restarting the device (Default: 48, options: 28-200).

Click the "Save" button to display the "Parameter Save Successful" message, and the settings will take effect.

7) Video Output

Output Format: Set the video output format. Options include:

1080P60, 1080P59.94, 1080P50, 1080P30, 1080P29.97, 1080P25, 720P60, 720P59.94, 720P50.

Click the "Save" button to display the "Parameter Save Successful" message, and the settings will take effect.

4.2.7. Network configuration

1) Network port

Data port: set the data port, the device will restart automatically after changed(default 3000, 0-65535 optional).

Web Port: Set Web port, the device will restart automatically after changed (default is 80, 0-65535 is optional).

Onvif Port: Set Onvif port, the device will restart automatically after changed(default 2000, 0-65535 optional).

Soap Port: Set Soap port (default 1936, 0-65535 optional).

RTMP Port: Set RTMP port (default 1935, 0-65535 optional).

RTSP Port: Set RTSP port, the device will restart automatically after changed (default 554, 0-65535 optional).

Visca Port: Set Visca port, the device will restart automatically after changed (default 1259 , 0-65535 optional).

HTTPS Port: Set the HTTPS port. After changing and saving, restart the device for the changes to take effect (default is 443, range 0-65535 available).

WebSocket Port: Set the Visca port. After changing and saving, restart the device for the changes to take effect (default is 8088, range 0-65535 available).

Click on the "Save" button, it will be valid when display "Save successful".

RTSP Access: rtsp://Device IP Address:554/live/av0 (av0 main stream; av1 sub stream)

RTMP Access: rtmp://Device IP Address:1935/live/av0 (av0 main stream; av1 sub stream)

2) Ethernet parameters

DHCP: Enable or disable obtain IP automatically can be set. Save changes and reboot the device to takes effect (Default:OFF)

IP Address: Set the IP address, save changes and reboot the device to takes effect (default 192.168.5.163).Note: This IP address is the same with the one used to login Web page.

Subnet Mask: Set the subnet mask (default 255.255.255.0).

Default Gateway: Set the default gateway (default 0.0.0.0).

Physical Address: Set the physical address (the parameter is read-only but can not be modified).

Click on the "Save" button, it will be valid when display "Save successful". (Note: To prevent IP conflicts When modify).

3) DNS parameters

Preferred DNS server: set the preferred DNS server. (Default 0.0.0.0).

Alternate DNS server: Alternate DNS server settings. (Default 0.0.0.0).

Click on the "Save" button, it will be valid when display "Save successful".

4) GB28181

Switch: set whether open GB28181, can check

Time Synchronization: whether synchronization time is set, you can check

Stream Type: stream type setting (the default main stream, secondary stream optional)

Sign effective time (in seconds): 3600 Range 5-65535

Heartbeat time (seconds): 60 Range 1-65535

Register ID: 34020000001320000001

Register User name: IPC

Register Password: 12345678

Equipment ownership: Users can add their own

Administrative regions: Users can add their own

Alarm Zone: Users can add their own

Equipment installation address: Users can add their own

Local SIP Port: 5060 Range 0-65535

GB28181 Server Address: IP address of the computer

Server SIP Port: 5060 Range 0-65535

Server ID: 34020000002000000001

Click on the "Save" button, it will be valid when display "Save successful".

5) SRT

SRT port: Set the SRT port (default 9000, 0-65535 optional)

SRT password: Set SRT password

SRT password length: Set the SRT password length (default 0, 16, 24, 32 optional)

Click the "Save" button, and the prompt message "Parameters saved successfully! It will take effect after restarting!" will be displayed. After setting, restart the camera to take effect.

6) RTMP

RTMP Enable: Set whether to enable RTMP, can be checked.

Click the "Save" button, and a message "Save successful! To apply the RTMP enable settings, the device needs to be restarted!" will appear. After setting, restart the camera for the changes to take effect..

7) RTSP

RTSP Enable: Set whether to enable RTSP, can be checked.

RTSP Authentication: Set RTSP authentication, default is off, can be toggled on or off.

Click the "Save" button, and a message "Save successful! To apply the RTSP authentication settings, the device needs to be restarted!" will appear. After setting, restart the camera for the changes to take effect.

4.2.8. System Configuration

1) Device Properties

Device Name: Set the device name (the default Camera-1, user can add their own).

Device ID: Set the device ID (default 1, Read-Only).

System Language: Set the system language (default Simplified Chinese, English optional).Need to re-login after modify and save the setting.

Click on the "Save" button, it will be valid when display "Save successful".

2) System Time

Date Format: Set the date format (YYYY-MM-DD default that year - month - day, MM-DD-YYYY namely Month - Day - Year, DD-MM-YYYY date - month - year Optional).

Date separator: set the date separator (default '/', '.', '-' Optional).

Time Zone: Set the time zone (default is GMT+8, other time zones are available).

Time Type: Set the time types (default 24 hours, optional 12 hours).

NTP Enable: You can check this option to enable NTP time synchronization.

Update Interval: Set the interval for the NTP server to update automatically (effective only when NTP is enabled; default is 1 day, other options include 2-10 days)**.**

NTP Server Address or Domain: Set the NTP server address or domain (effective only when NTP is enabled; default is time.nits.gov, users can modify it).

NTP Server Port: Set the NTP server port (effective only when NTP is enabled; default is port 123, users can modify it).

Click the "Save" button to display the message "Parameters saved successfully," and the settings will take effect.

Time setting: Set time mode (to choose the computer time synchronization, NTP server time synchronization, or set manually).

Computer Time: Display the computer time (only valid if syncing with computer time). Click the "Sync" button to sync.

Manual Time Setting: Click the calendar icon on the right to manually set the time (only valid if manually setting the time).

3) User Management

Select users: Set the user type (the default administrator, Common User 1, Common User 2 optional)

User name: set the user name (Select User Administrator default admin; select a common user1 default user1; to select a common user 2 default user2; user can modify their own)

Password: Set a password (Select User Administrator default admin; select a common user1 default user1; to select a common user 2 default user2; user can modify their own).

Password confirmation: Confirm the input passwords are the same or not.

Click the "Save" button to display the message "Parameters saved successfully," and the settings will take effect.

⚠ Caution

- Please note that usernames and passwords are case-sensitive.
- Important Notes: If logged in as a regular user, you will not have configuration permissions and will only be able to preview or log out..

4) Version Upgrade

The page displays version information, which is read-only and cannot be modified. The version information shown will match the one in the menu, and it may differ depending on the device model.

Upgrade File: Click "Browse..." to select the upgrade file from the window that appears. Click the "Upgrade" button, and a dialog box will appear. After a successful upgrade, the device will automatically restart (Note: Ensure that the device's power and network connections are stable during the upgrade process to avoid failure).

You can use any of the three methods, where method (a) will also restore the IP address and password to their defaults.

⚠ Caution

- Make sure the power and network is keeping connected during the process. or the upgrade will fail.
- After the version upgrade is complete, you need to restore factory defaults; a, through web to restore the factory default configuration; b, through the recovery menu; c, remote control shortcut * # 6.
- Choose one of the above three ways. If chose a, the IP accounts, passwords also need to be restored to the default.

5) Restore Factory Setting

Click on pop-up "Restore Factory Defaults" button and choose “yes” or “no”, then the device will restart automatically and restore factory setting.

6) Reboot

Click on the pop-up "Reboot" button and choose “yes” or “no”, then the device will restart automatically

4.2.9. Logout

Point "Logout" pop-up "Confirmation" dialog; select "Yes" or "No", choose “Yes” to exit the current page and return to the user login interface.

5. Serial Communication Control

Under normal working condition, the camera could be controlled through RS232/RS485 interface (VISCA), RS232C serial parameter are as follows:

Baud rate: 2400/4800/9600/115200 bits / sec; Start bit: 1; data bits: 8; Stop bit: 1; Parity: None.

After power on, the camera first go left, then back to the middle position. Self-test is finished after the zoom moved to the farthest and then back to the nearest position. If the camera saved 0 preset before, it will be back to that position after initialization. At this point, the user can control the camera by the serial commands.

5.1. VISCA protocol list

5.1.1. Tracking VISCA Serial Commands

Main Function	**Function Description (Input and Query)**	**VISCA Protocol Command**	**Command Description**
Ttacking Mode	Direct	8x 0A 01 32 00 00 02 0p FF	0p: 0: Off 1: Real-time Tracking 2: Stage Tracking 3: Area Tracking 4: Intelligent Framing
	Ttacking Mode Inq	8x 09 01 32 FF	y0 50 0p FF 0p:0-4
Ttacking Sensitivity	Direct	8x 01 0B 00 02 0p FF	0p: 0: High 1: Medium 2:Low
	Ttacking Sensitivity Inq	8x 09 0B 00 02 FF	y0 50 0p FF 0p:0-2
Ttacking Figure size	Direct	8x 01 0B 02 01 0p FF	0p: 0: Half-body 1: Close-up 2: Full-body 3: Custom

	Ttacking Figure size	8x 09 0B 02 01 FF	y0 50 0p FF 0p:0-3
Ttacking_Figure size Custom level	Direct	8x 01 0B 02 02 0p FF	0p: 0: Left 1: Center 2: Right
	Ttacking Figure size Custom level Inq	8x 09 0B 02 02 FF	y0 50 0p FF 0p:0-2
Ttacking Lost target action	Direct	8x 01 0B 00 04 0p FF	0p: 0: home 1: Preset Position0 2: Current Position
	Ttacking Lost target action Inq	8x 09 0B 00 04 FF	y0 50 0p FF 0p:0-2
Ttacking Target lost time	Direct	8x 01 0B 00 03 0p FF	0p: 0-60
	Ttacking Target lost time Inq	8x 09 0B 00 03 FF	y0 50 0p FF 0p:0-60

5.1.2 Device Return Commands

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 = device 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 Buffer Full	z0 60 03 FF	Indicates that two sockets are already being used(executing two commands) and the command could not be accepted when

		received.
Command Canceled	z0 6y 04 FF (y: Socket No.)	Returned when a command which is being executed in a socket specified by the cancel command is canceled. The completion message for the command is not returned.
No Socket	z0 6y 05 FF (y: Socket No.)	Returned when no command is executed in a socket specifild by the cancel command, or when an invalid socket number is specified.
Command Not Executable	z0 6y 41 FF (y: Execution command Socket No. Inquiry command: 0)	Returned when a command canot be executed due to current conditions.For example, when commands controlling the focus manually are received during auto focus.

5.1.2. Camera control command

Command	Function	Command packet	Note
AddressSet	Broadcast	88 30 0p FF	P:Address setting
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 2p FF	p = 0(low) - 15(high) p = 0(low) - 7(high)
	Wide(Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position
	Stop	8x 01 04 08 00 FF	

Command	Function	Command packet	Note
CAM _Focus	Far(Standard)	8x 01 04 08 02 FF	
	Near(Standard)	8x 01 04 08 03 FF	
	Far(Variable)	8x 01 04 08 2p FF	p = 0(low) - F(high)
	Near (Variable)	8x 01 04 08 3p FF	
	Direct	8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position
	Auto Focus	8x 01 04 38 02 FF	
	Manual Focus	8x 01 04 38 03 FF	
	One Push	8x 01 04 38 04 FF	
	One Push Triger	8x 01 04 18 01 FF	One Push Triger
CAM _Zoom Focus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position tuvw: Focus Position
CAM_AF Sensitivity	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_AF Zone	Front	8x 01 04 AA 00 FF	Focus Region Setting
	Beting	8x 01 04 AA 01 FF	
	Meeting	8x 01 04 AA 02 FF	
	Education	8x 01 04 AA 03 FF	
	Moving	8x 01 04 AA 04 FF	
	Middle	8x 01 04 AA 05 FF	
CAM_WB	Auto	8x 01 04 35 00 FF	
	3000K	8x 01 04 35 01 FF	
	4000k	8x 01 04 35 02 FF	

Command	Function	Command packet	Note
	One Push mode	8x 01 04 35 03 FF	
	5000k	8x 01 04 35 04 FF	
	Manual	8x 01 04 35 05 FF	
	6500k	8x 01 04 35 06 FF	
	3500K	8x 01 04 35 07 FF	
	4500K	8x 01 04 35 08 FF	
	5500K	8x 01 04 35 09 FF	
	6000K	8x 01 04 35 0A FF	
	7000K	8x 01 04 35 0B FF	
	One Push Trigger	8x 01 04 10 05 FF	One Push WB Trigger(Enabled during One Push WB mode)
CAM_AWB Sensitivity	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 0p 0q 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 0p 0q FF	pq: B Gain
CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode

Command	Function	Command packet	Note
	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 0p 0q 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 0p 0q 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 0p FF	p: Gain Positon
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 0p 0q FF	pq: Bright Positon
CAM_ExpCom	On	8x 01 04 3E 02 FF	Exposure Compensation

Command	Function	Command packet	Note
p	Off	8x 01 04 3E 03 FF	ON/OFF
	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 0p 0q 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 0p FF	p: WDR Level Positon
CAM_NR	2D	8x 01 04 53 0p FF	P=0-7 0:OFF
	3D	8x 01 04 54 0p FF	P=0-8 0:OFF
CAM_Gamma		8x 01 04 5B 0p FF	p = 0 – 4 0: Default 1: 0.45 2: 0.50 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 0p 0q FF	Pq:0-20
CAM PresetSpeed		8x 01 01 0p FF	P:1-10
CAM_Flicker	OFF	8x 01 04 23 00 FF	OFF
	50HZ	8x 01 04 23 01 FF	50HZ

Command	Function	Command packet	Note
	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 0p 0q 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	
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 00 0p FF	P=0-E 0:60% 1:70% 2:80% 3:90% 4:100% 5:110% 6:120% 7:130% 8:140% 9:150% 10:160% 11:160% 12:180% 13:190% 14:200%
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	pqrs: Camera ID (=0000 to FFFF)
IR_Receive	ON	8x 01 06 08 02 FF	IR(remote commander)receive On/Off
	OFF	8x 01 06 08 03 FF	

Command	Function	Command packet	Note
CAM_Setting Reset	Reset	8x 01 04 A0 10 FF	Reset Factory Setting
CAM_Brightness	Direct	8x 01 04 A1 00 00 0p 0q FF	pq: Brightness Position
CAM_Contrast	Direct	8x 01 04 A2 00 00 0p 0q 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_Video System	Set camera video system	8x 01 06 35 00 0p FF	P: 0~E Video format
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	

Command	Function	Command packet	Note
	Stop	8x 01 06 01 VV WW 03 03 FF	
	Absolute Position	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Relative Position	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Home	8x 01 06 04 FF	
	Reset	8x 01 06 05 FF	
Pan-tiltLimitSet	Set	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W:1 UpRight 0:DownLeft YYYY: Pan Limit Position(TBD) ZZZZ: Tilt Limit Position(TBD)
	Clear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	

5.1.3. Inquiry Command

Command	Function	Command 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 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_AFSensitivityIn	8x 09 04 58 FF	y0 50 01 FF	High

Command	Function	Command packet	Note
q		y0 50 02 FF	Normal
		y0 50 03 FF	Low
CAM_AFZoneInq	8x 09 04 AA FF	y0 50 00 FF	Front
		y0 50 01 FF	Beting
		y0 50 02 FF	Meeting
		y0 50 03 FF	Education
		y0 50 04 FF	Moving
		y0 50 05 FF	Middle
CAM_WBModeInq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	3000K
		y0 50 02 FF	4000K
		y0 50 03 FF	One Push Mode
		y0 50 04 FF	5000K
		y0 50 05 FF	Manual
		y0 50 00 FF	6500K
		y0 50 06 FF	6500K
		y0 50 07 FF	3500K
		y0 50 08 FF	4500K
		y0 50 09 FF	5500K
		y0 50 0A FF	6000K
		y0 50 0B FF	7000K
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 0p 0q FF	pq: R Gain

Command	Function	Command packet	Note
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter priority
		y0 50 0B FF	Iris priority
		y0 50 0D FF	Bright
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_Gain LimitInq	8x 09 04 2C FF	y0 50 0p FF	p: Gain Positon
CAM_ BrightPosiInq	8x 09 04 4D FF	y0 50 00 00 0p 0q 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 0p 0q 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 00 00 00 0p FF	p: WDR Strength
CAM_NRLevel(2D) Inq	8x 09 04 53 FF	y0 50 0p FF	P: 2DNRLevel
CAM_NRLevel(3D) Inq	8x 09 04 54 FF	y0 50 0p FF	P:3D NRLevel
CAM_FlickerModeInq	8x 09 04 55 FF	y0 50 0p FF	p: Flicker Settings(0: OFF, 1: 50Hz, 2:60Hz)
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_PictureEffectM	8x 09 04 63 FF	y0 50 00 FF	Off

Command	Function	Command packet	Note
odeInq		y0 50 04 FF	B&W
CAM_MemoryInq	8x 09 04 3F FF	y0 50 0p 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 00 0p FF	p: Color Gain setting 0h (60%) to Eh (130%)
CAM_IDInq	8x 09 04 22 FF	y0 50 0p FF	Camera 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 0p 0q FF	pq: Brightness Position
CAM_ContrastInq	8x 09 04 A2 FF	y0 50 00 00 0p 0q 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 0p FF	p: Gamma setting
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

Command	Function	Command packet	Note
VideoSystemInq	8x 09 06 23 FF	y0 50 0p FF	P: 0~E Video format 0:1080P60 1:1080P50 2:1080i60 3:1080i50 4:1080P30 5:1080P25 6:720P60 7:720P50 8：1080P59.94 9：1080i59.94 A：1080P29.97 B：720P59.9
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 0w 0w 0w 0w 0z 0z 0z 0z FF	wwww: Pan Position zzzz: Tilt Position

Note： 【x】in this chart means the device address to be operated, 【y】=【x + 8】

5.2. 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	0xFF	Addres	0x00	0x5B	Value	Value	SUM

Position Response		s			High Byte	Low Byte	
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

5.3. Pelco-P Protocol Command List

Function	Byte1	Byte2	Byte 3	Byte 4	Byte5	Byte6	Byte7	Byte 8
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

6. Maintenance and Troubleshooting

6.1. Camera Maintenance

1）Please disconnect power of camera if it is not in long-term use. Meanwhile, disconnect AC power adapter from AC socket.

2）To avoid scratch, use soft cloth or cotton to wipe off dust on camera case.

3) Please clean camera lens with dry soft cloth. If stain persists, use mild detergent to wipe gently.Do not use strong or corrosive detergent which may scratch the lens and affect image result.

6.2. Troubleshooting

1）No image displayed by video output

Solution：a、Check camera power for connection, and check if power indicator is lit.

b、Power off, restart the device and check if it performs self inspection normally.

c、Check if connection line of video output and video display functions.

2）Image is unstable

Solution：a、Check if connection line of video output and video display functions.

3）Lens zoom image dithering

Solution：a、Check if camera is installed securely.

b、Check if there is vibrating machine or object nearby the camera.

4）Remote control is out of service

Solution：a、Set remote control address to be 1, and check if it works (if the device restores to default, remote control address will be restored to 1）

b、Check if remote control battery is installed or battery is low

c、Check if menu exits. It only works when menu exits;if webpage outputs image, it will not display menu or perform any operation.

Menu exits in 30s automatically. Remote control works.

5）Serial port is out of control

Solution： a、Check if it is standard control line provided by our company.

b、Check if serial port protocol, baud rate and address are consistent with camera.

c、Check if control line connects correctly.

6）Failure to log in webpage

Solution: a、Use display to check if camera outputs image normally

b、Check if network cable connects correctly (flicker of yellow indicator at internet access means network cable connection is correct）

c、Check if computer adds network segment and if network segment is consistent with camera IP address.

d、Click “start” in computer, select “operate”, and enter cmd; click “confirm”, DOS command window appears; input ping 192.168.5.163, press Enter, information below means network connection functions well.