

4K PTZ Camera

79068-4K-12B User Manual

UHD PTZ Camera



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www.tekvox.com

4K PTZ Camera

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Preface

Read this user manual carefully before using the product. 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 October, 2018. 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 manufacture would void the user's authority to operate the equipment.



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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.

- During transportation, storage, installation and use, heavy pressure, severe vibration and soaking shall be prevented so as not to damage the product.
- The shell of the product is made of organic material. It is forbidden to contact with corrosive liquid, gas or solid substances.
- Do not expose the product to rain or moisture, and do not use it beyond the limited temperature and humidity.
- When cleaning the lens of the product, please use a dry soft cloth to wipe it. When there is substantial dirt, please use a neutral detergent to wipe it gently.
- Do not use strong or corrosive cleaning agents and avoid scratching the lens.
- The parts of this product do not support self-repair by users, and the damage caused by users' self-disassembly is not included in the warranty.

Electrical Safety

All national and local electrical safety standards must be strictly observed when installing and using this product.

- Do not use a power adapter that exceeds the power supply specification. Otherwise, the components of the equipment may be burned out and the product will not work normally.
- The product shall be kept at a sufficient distance from strong electrical equipment during use. Lightning protection, surge prevention, and other protective measures shall be taken when necessary.
- Please disconnect the power switch when the product is not in use and disconnect the power adapter from the power socket at the same time.
- The product uses a DC 12V power supply.

Installing Safely

- Do not rotate the lens cone of the product by hand, otherwise the structural rotating shaft will be damaged, and the signal line will cause poor operation.
- The installation and placement of the product should be horizontal and stable, and the product should not be installed obliquely, otherwise the picture may be skewed.
- During installation, ensure that there are no obstacles within the rotating range of the pan-tilt head to prevent damage to the structural rotating shaft.
- Do not power on until all installation work has been completed.

Magnetic Field Interference

- Electromagnetic field at specific frequency may affect the image of the machine; this product is a Class A product. Radio interference may be caused in a domestic environment, and users need to take appropriate measures.

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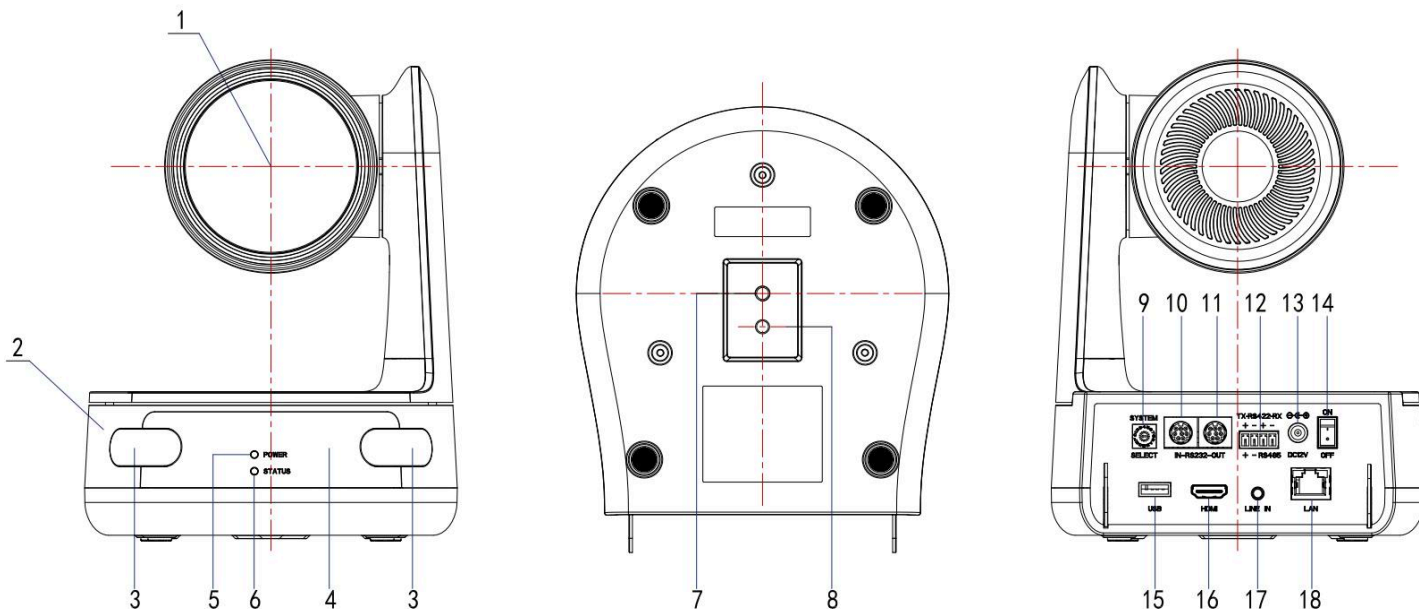
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1. Instructions for Quick Installation

1.1 Product Introduction



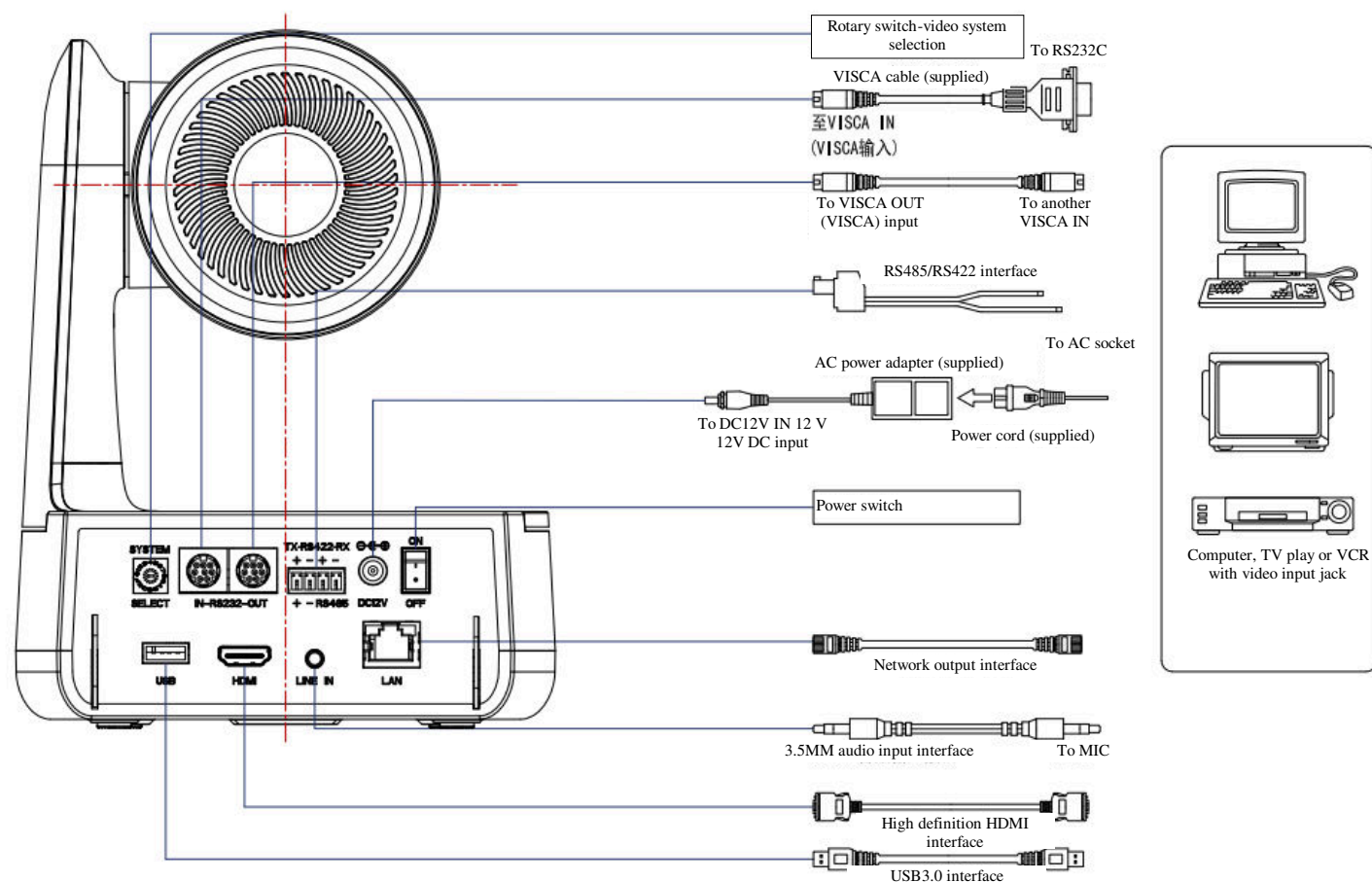
1. Lens
2. Camera Base
3. TALY light (reserved)
4. Infrared Receiver
5. Power Indicator
6. Status Indicator
7. Tripod Mounting Screw Hole
8. Tripod Mounting and Positioning hole
9. Rotating Dial Switch
10. RS232 Input Interface
11. RS232 Output Interface
12. RS422 Interface (compatible with RS485)
13. Power Input Socket (DC 12V)
14. Power On/Off Key
15. USB Output Interface
16. HDMI Output Interface
17. Audio Input Interface (Line In)
18. Network LAN Interface

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1.2 Interface Wiring

If the No.0 preset point is set, the camera will turn to the No.0 preset point after the power-on self-inspection is completed.



The default address of the remote controller is 1. The menu returns to the factory default and the remote controller address will return to 1.

1.3 Brackets Installation

Note: When using the product, please install the included rubber pad at the bottom middle bracket.

The wall material for ceiling installation and vertical installation of support installation is limited to form board or concrete rather than gypsum board.

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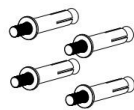
1.3.1 Wall Bracket Installation

Support limiting column (1)

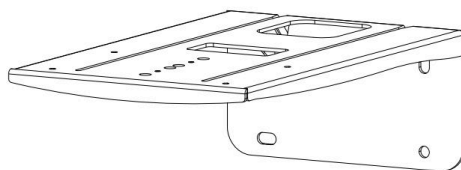
1/4-20 UNC Screw (1)



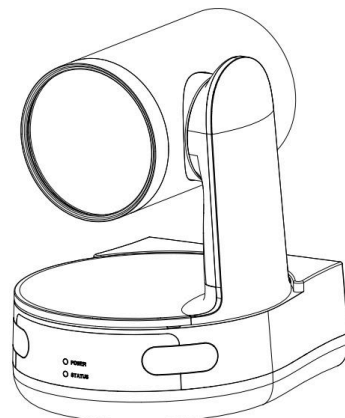
M6 nut and washer (4)



M6 expansion screw (4)

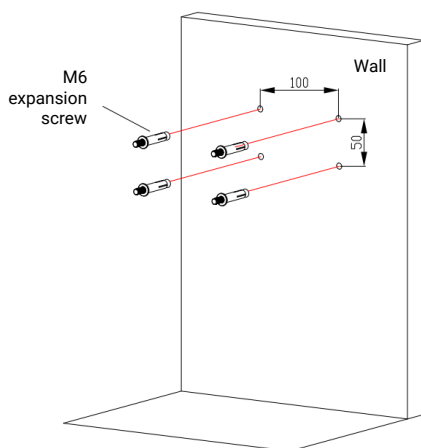


Wall-Mounting Support Bracket

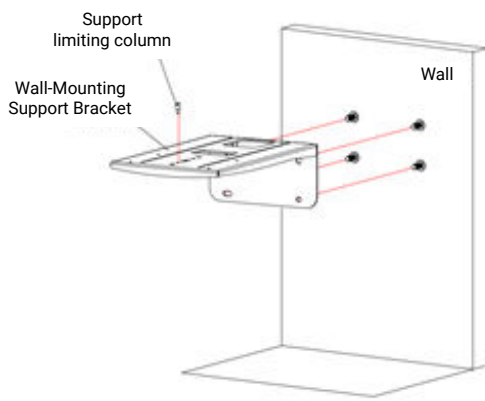


Main Camera Unit

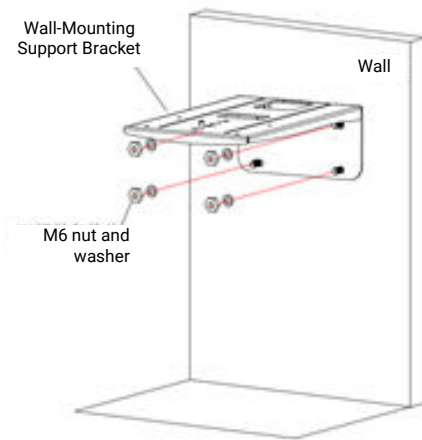
STEP 1



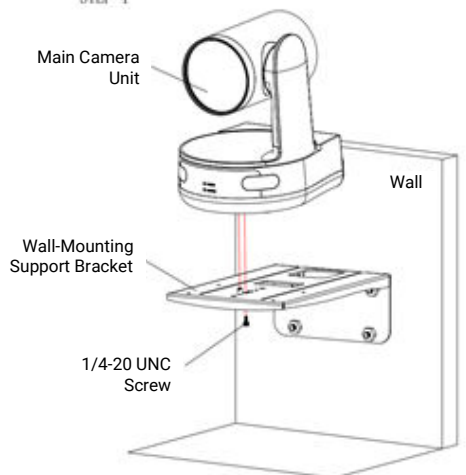
STEP 2



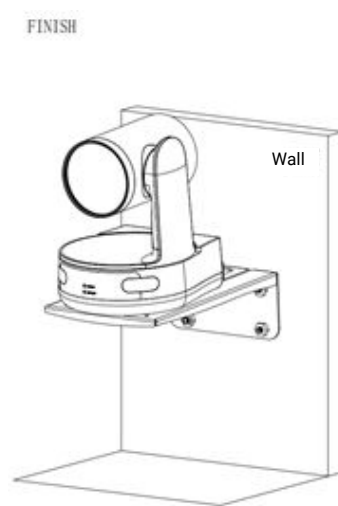
STEP 3



STEP 4



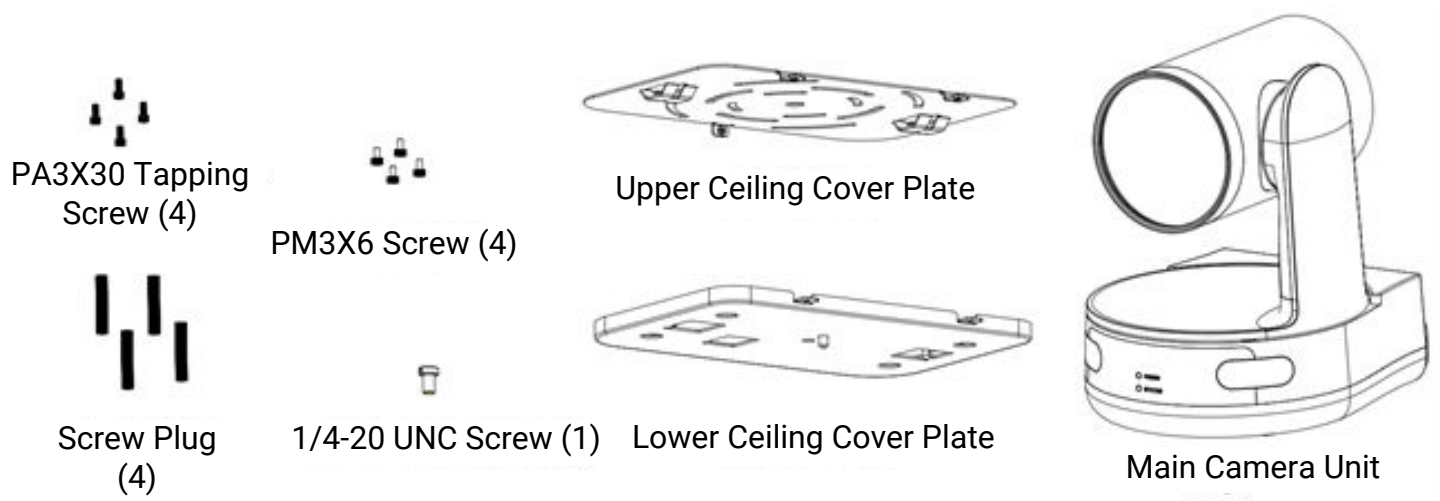
FINISH



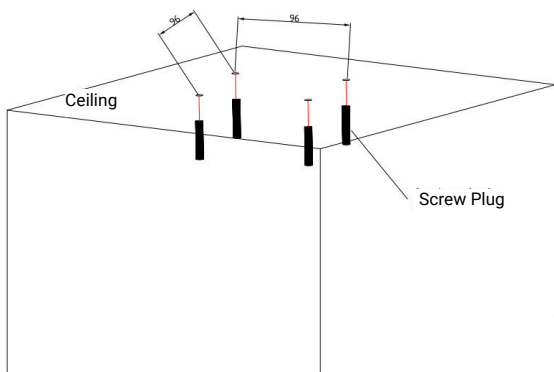
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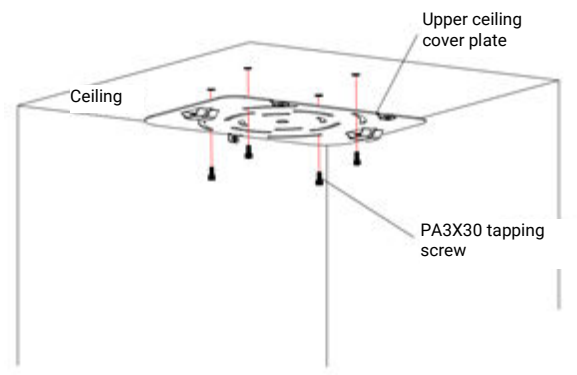
1.3.2 Ceiling Installation



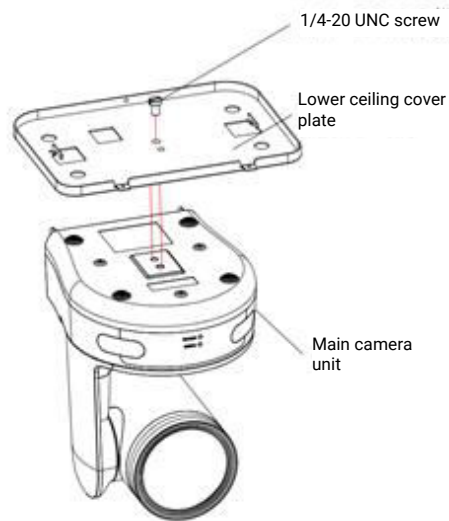
STEP 1



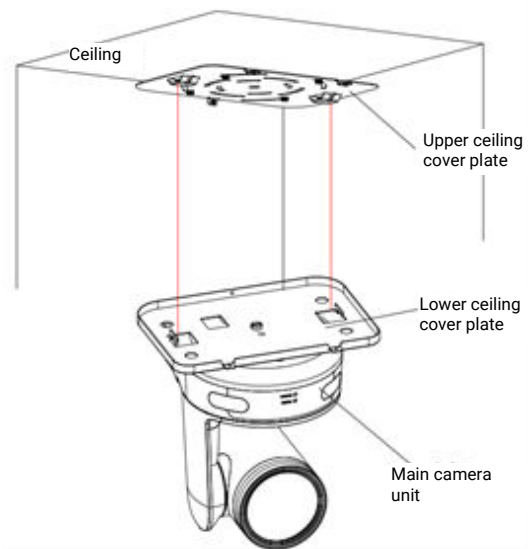
STEP 2



STEP 3



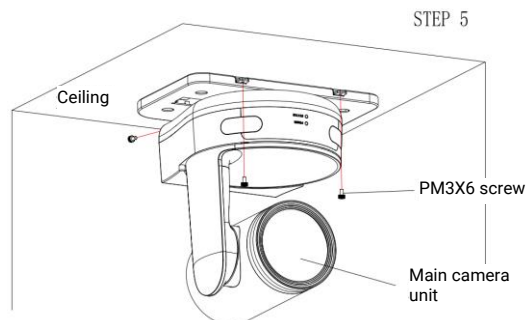
STEP 4



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FINISH

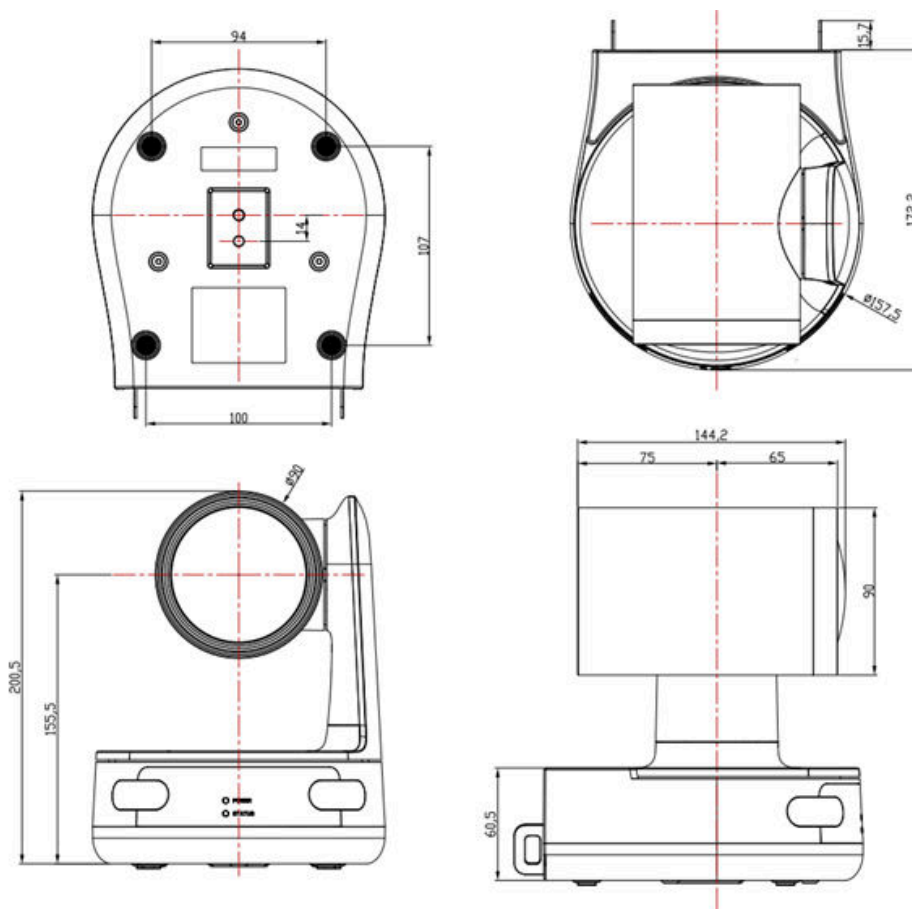


2. Product Overview

2.1 Product Overview

The product uses a 12x 4K optical lens and 1/1.7" SONY IMX226 image sensor with 12.4 million effective pixels. It supports HDMI, USB3.0 and LAN output interfaces, 3.5mm audio input, RS232 input, RS232 output, RS485, and RS422 control interfaces.

2.2 Product Dimensions



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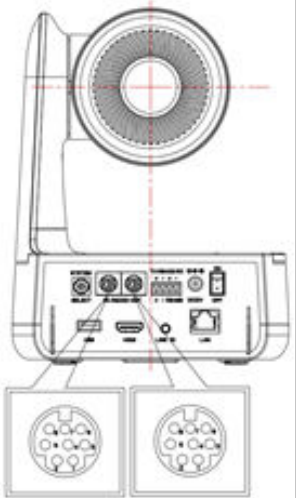
2.3 Accessories Included

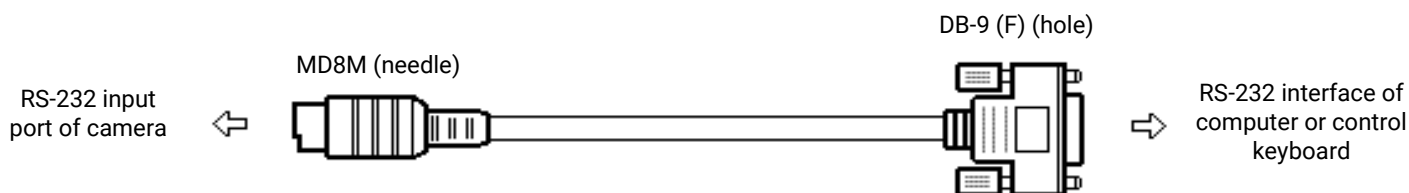
When opening the package, please check and confirm that all the accessories are provided, and the accessories included for different types of products are shown in Table 2.1.

Configuration	Shipping Standard	Customer Option
Accessories Included	Power Adapter (1)	Infrared Remote controller (1)
	USB3.0 Video Cable (1)	Wireless Remote Controller (1)
	RS232 Serial Port Line	Wall Mount Bracket
	User Manual (1)	Ceiling Mount Bracket
	Rubber Pad	
	Warranty Card (1)	

2.4 RS-232 Interface

2.4.1 RS-232 Interface Definition

	Method for connecting product with computer/control keyboard	
	Product	Windows DB-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

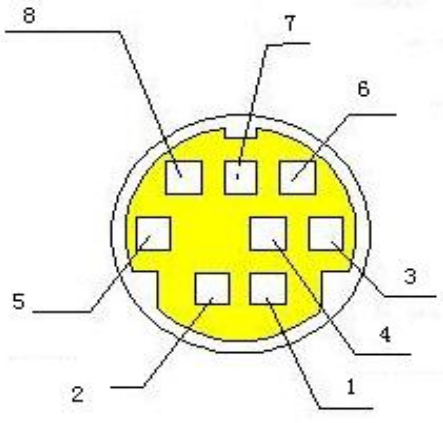


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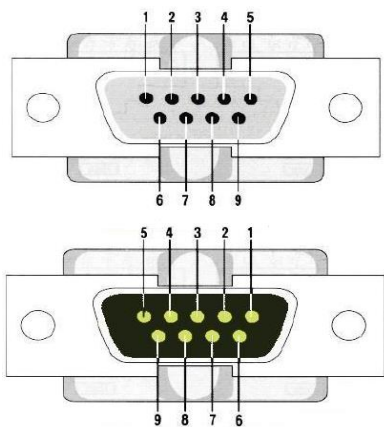
2.4.2 Mini-DIN 8-pin Port Definition

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



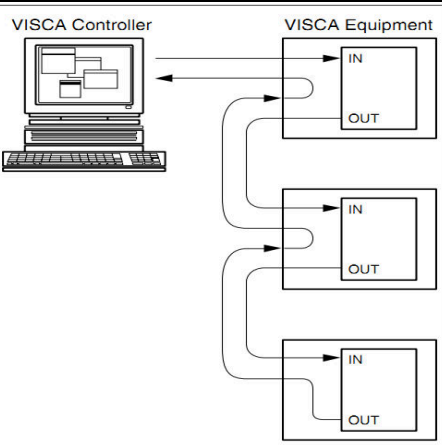
2.4.3 RS-232 (DB9) Port Definition

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



2.4.4 VISCA Networking Mode

Product Cascade Connection Method	
Product 1	Product 2
1. DTR	1. DTR
2. DSR	2. DSR
3. TXD	3. TXD
4. GND	4. GND
5. RXD	5. RXD
6. GND	6. GND
7. IR OUT	7. OPEN
8. NC	8. OPEN



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2.5 Product Features

The ultra-high definition 4K camera for information communication has perfect functions, excellent performance, and rich interfaces. Advanced ISP processing technology and algorithms make the image vivid and lifelike, uniform in brightness, strong in light color layering, high in definition, and good in color restoration.

- **Pan-tilt head:** stepless speed change of DC brushless servo motor is adopted, which makes pan-tilt head featured by ultra-silence, ultra-high speed, high precision of preset point, closed-loop control, etc.
- **Ultra-silence:** there is no noise even when the pan-tilt head is running at high speed.
- **Ultra-high speed:** pan-tilt control speed can be as high as 300/sec.
- High precision of preset point: preset point \pm 0.001°;
- **Closed-loop control:** when external forces change the pan-tilt head, it can quickly return to its original position.
- **4K ultra-high definition (UHD):** with the adoption of the new generation of high-quality CMOS sensor with a dimension of 1/2.5" and 8.51 million pixels, 4K (3840×2160) UHD high-quality images can be achieved. In addition, 1080P, 720P and other resolutions are also backwards compatible. Clear and lifelike UHD video can vividly show the expressions and actions of the characters.
- **Optical zoom lens:** 12x optical zoom lens is adopted, with 80.4° wide viewing angle without distortion.
- **Auto-focusing technology:** advanced auto-focusing algorithm enables the lens to finish auto-focusing quickly, accurately, and stably.
- **Low noise and high signal-to-noise ratio:** low-noise CMOS effectively guarantees the ultra-high signal-to-noise ratio of the picture. Advanced 2D and 3D noise reduction technologies are adopted to further reduce noise while ensuring image clarity.
- **Various video output interfaces:** HDMI, USB3.0 and LAN are supported. The output video standard is up to 4K@60ps
- **A variety of audio and video compression standards:** H.265/H.264 video compression and AAC, MP3, G.711A audio compression are supported; 30 frames/sec compression with up to 3840×2160 resolution is supported.
- **Audio input interface:** 8000, 16000, 32000, 44100, 48000 sampling frequencies are supported, and AAC, MP3, G.711A audio coding is supported.
- **Built-in gravity sensor:** there is a built-in gravity sensor supporting automatic tilting of pan-tilt head, which is convenient for engineering installation.
- **Various network protocols:** ONVIF, GB/T28181, RTSP, RTMP protocols are supported; RTMP push mode and easy link to streaming media servers (Wowza, FMS) are supported; RTP multicast mode and network full command VISCA control protocol are supported.
- **Control interface:** RS422 (compatible with RS485) output and RS232 input/output are supported; RS232 cascade connection is supported, which is convenient for engineering installation and use.

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- **Various control protocols:** VISCA, PELCO-D, PELCO-P protocols are supported, and automatic protocol identification is supported.
- **Multi-preset points:** up to 255 preset points (10points called via remote controller) are supported.
- **Various remote controllers:** users can select infrared remote controllers or wireless remote controllers according to the environmental conditions used. The 2.4G wireless remote controller is not affected by angle, distance, or infrared interference. Unvarnished transmission of remote controller signal is supported, which is convenient for back-end equipment.
- **Numerous application sites:** conference, education, medical treatment, government affairs, cloud video, collaborative office, multimedia integration, emergency command, broadcasting, public security, military and other system applications.

2.6 Technical Parameters

Camera & Lens Parameters	
Image Sensor	Image sensor with a dimension of 1/2.5" and 8.51 million pixels
Effective Pixels	3840×2160
Video Signals	HDMI Video Output Format: 4KP60, 4KP50, 4KP30, 4KP25, 1080P60, 1080P50, 1080i 60, 1080i 50, 1080P30, 1080P25, 720P60, 720P50 USB 3.0 Video Output Format: YUY2/NV12: 1920×1080P30, 1280×720P30,1024×576P30, 960×540P30, 800×448P30, 640×360P30, 640×480P30, 320×176P30 MJPEG/H.264: 3840×2160P30,1920×1080P30,1280×720P30,1024×576P30, 960×540P30, 800×448P30, 640×360P30, 640×480P30, 320×176P30 USB 3.0 downward compatible USB2.0: YUY2/NV12: 640×360P30, 640×480P30, 320×176P30 MJPEG/H.264: 3840×2160P30, 1920×1080P30, 1280×720P30, 1024×576P30, 960×540P30, 800×448P30, 640×360P30, 640×480P30, 320×176P30
Lens Optical Zoom	12x optical zoom
View Angle	Pan: 7.59° (narrow angle) to 80.4° (wide angle) Vertical: 4.6° (narrow angle) to 50° (wide angle)
Focal Length	f=3.85 mm ~ 43.06 mm ±5%

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Iris	F1.8 ~F3.56±5%
Digital Zoom	10x
Minimum Illumination	0.05Lux (F1.8, AGC ON)
Digital Noise Reduction (DNR)	2D & 3D digital noise reduction
White Balance	Automatic/manual/one-touch white balance/specified color temperature
Focus	Automatic/manual/one-touch focus
Iris	Automatic/manual
Electronic Shutter	Automatic/manual
Back-Light Compensation (BLC)	On/off
Wide Dynamic Range (WDR)	Off/Dynamic level adjustment
Video Adjustment	Brightness, Color, saturation, contrast, sharpness, black and white mode, gamma curve
USB Features	
Supported Operating Systems	Windows 7/8/10, Mac OSX, Linux, and other operating systems
Video Compression Format	MJPEG/H264/YUY2
USB Communication Protocol	UVC
Internet Protocol Camera (IPC) Characteristics	
Video Coding Format	Supporting H.265, H.264
Image Stream	Supporting dual-stream output, primary code stream and secondary code stream
Video Format	Main code stream: 3840×2160, 2592×1944, 2304×1296, 1920×1080、1280×720 Secondary stream: 1280×720, 640×480, 640×360, 320×240, 320×180
Video Code Rate	Main code stream: 64 kbps to 4096 kbps Secondary stream: 64Kbps to 20480Kbps
Audio Compression Format	AAC, MP3, G.711A
Audio Code Rate	32Kbps, 48Kbps, 64Kbps, 96Kbps, 128Kbps
Networking Protocol	TCP/IP, RTSP, RTMP, ONVIF, GB/T28181 Support network VISCA control protocol Support remote upgrade, remote restart and remote reset
Interface Function Performance	
Audio and Video Interface	HDMI, LAN (POE), USB 3.0 (compatible with USB2.0), RS232 input, RS232 output, RS422 (compatible with RS485), Line-In
Image Stream	Dual-stream output
Video Compression Format	LAN interface support: H.264, H.265 USB 3.0 interface support: MJPG, H264, YUY2
Audio Input Interface	Dual track 3.5mm linear input
Audio Output Interface	HDMI, LAN(PoE)

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Audio Compression Format	AAC, MP3, G.711A
Network Interface	10M/100M/1000M adaptive Ethernet port supporting POE power supply, audio and video output
Networking Protocol	RTSP, RTMP, ONVIF, GB/T28181; supporting network VISCA control protocol Supporting remote upgrade, remote restart and remote reset
Control Interface	RS232 (UCC), RS422 (compatible with RS485)
Control Protocol	Protocol: visca/pelco-d/pelco-p Baud rate: 115200/9600/4800/2400
Power Interface	HEC3800 power socket (DC12V)
Power Adapter	Input: 110v ~ 220 VAC Output: DC 12V/2.5A
Input Voltage	DC 12V \pm 10%
Input Current	1.5A
Power Consumption	18W (max)
PTZ Parameters	
Pan Rotation	-170 ~ 170°
Tilt Rotation	-30 ~ 90°
Pan Control Speed	0.1° to 300°/second
Tilt Control Speed	0.1° to 300°/second
Preset Speed	Pan: 300°/second, tilt: 80/second
Preset Point Precision	0.001°
Number of Preset Points	Up to 255 preset points (10 points via remote controller)
Other Parameters	
Storage Temperature	14 ~ 140°F (-10 ~ 60°C)
Storage Humidity	20 ~ 95%
Working Temperature	14 ~ 122°F (-10 ~ 50°C)
Operating Humidity	20 ~ 80%
Product Dimensions	6.8" (173mm) x 6.2" (158mm) x 7.9" (201mm)
Product Weight	5.5 lbs. (2.49kg)
Use Environment	Indoor
Annex	
Accessories Included	Power adapter, RS232 control line, USB 3.0 connection line, remote controller, user manual, warranty card
Optional Accessories	Mounting Support

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3. Use of Remote Controller

Instructions for use of remote controller: remote controllers are divided into two types: infrared remote controller and wireless remote controller. Please read the following contents according to the actual remote controller type.

3.1 Wireless Remote Controller Code Matching

Wireless remote controller: steps of use, code matching and code matching clear are as follows.



1) Single One-to-One Code Matching

Press the "Setting" + "*" key for 3 seconds and the LED light will begin to flash. After releasing the keys, the LED light will flash continuously to start the code matching. The receiving end will be powered on and the LED light will go off if the code matching is successful; this product can only be controlled by this remote controller after code matching alone. If other remote controllers are required, this remote controller shall clear code matching, or the new remote controllers shall implement code matching. If the code matching cannot be completed, the red LED light will flash for 20 seconds and then go off. The product will stop code matching and go to sleep; at this time, press any key to wake up the product and implement code matching again.

Note: After code matching is successfully completed, the camera address must be selected to realize control of the camera.

2) Clear the code matching data

Press the "Set" + "#" key and the LED light will begin to flash. The receiving end will be powered off and then on. When the LED light goes off, it indicates that the code matching data has been cleared successfully.

3) Sleep and wake-up

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

Note: The keys of infrared remote controller and wireless remote controller and their use methods are the same.

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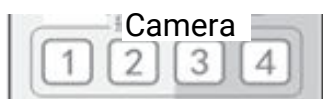
3.2 Keys of Remote Controller

After the product starts normally, it receives the infrared command and executes it. Press the keys of the remote controller, and the remote control receiving indicator will flash green. Release the key, and the indicator will stop flashing. The infrared remote controller can be used to implement operations such as preset point setting, point selection, horizontal and tilt rotation, etc.

The key press mode mentioned in this manual refers to the pressing and relaxing of the keys on the remote controller. For example, "press the [HOME] key" refers to the action of pressing the [HOME] key first and then relaxing. If long press is required, this manual will make specific instruction.

The operation of key combination mentioned in this manual refers to the operation in the order specified in this manual. For example, "Press the [*]+[#]+[F1] Key" means press the [*] key first, then press the [#] key, and finally press the [F1] key.

3.2.1 Address Selection

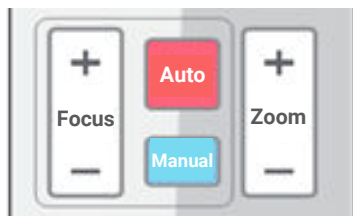


Select the address number of the camera to be controlled

3.2.2 Standby

After pressing for 3 seconds, the product enters standby mode. After pressing for 3 seconds again, the product performs self-inspection again and returns to the HOME position. If the No.0 preset is set, the pan-tilt head will turn to the No.0 preset point after no operation for 12 seconds.

3.2.3 Focus Control



[Auto Focus]: Enter auto focus mode

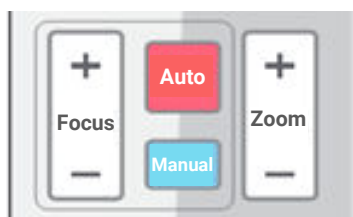
[Manual Focus]: Enter manual focus mode

[Focus+]: Adjust focus farther (only valid in manual focus mode)

[Focus-]: Adjust focus nearer (only valid in manual focus mode)

If these two keys are pressed for a long time, the camera will continue to zoom in/out and stop zoom when the keys are released halfway.

3.2.4 Zoom Control



[Zoom+]: Picture zooms in and the lens magnification is increased

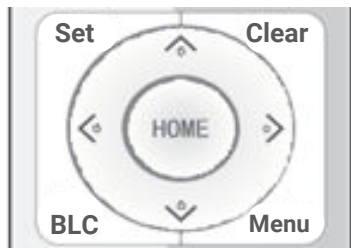
[Zoom-]: Picture zooms out and the lens magnification is reduced.

If these two keys are pressed for a long time, the camera will continue to zoom in/out and stop zoom when the keys are released halfway.

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3.2.5 Setting & Clearing Presets



Setting preset point: Press [Set] first, then press one of the number keys from 0 to 9 to preset a preset point corresponding to the number key.

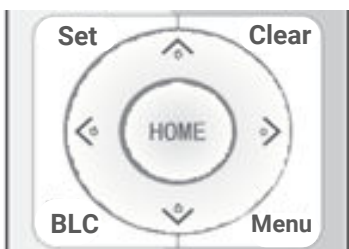
Note: Up to 10 preset points can be set via the remote controller.

Calling preset points: press the number keys from 0 to 9 directly to call the saved preset points. **Note:** if the number key is not preset, it is invalid.

Clearing preset point: Press [Clear] first, then press one of the number keys from 0 to 9 to cancel the corresponding preset point.

Note: Press the [#] key three times in succession to cancel all preset points.

3.2.6 PTZ Control



Tilt up: Press the [▲] key

Tilt down: Press the [▼] key

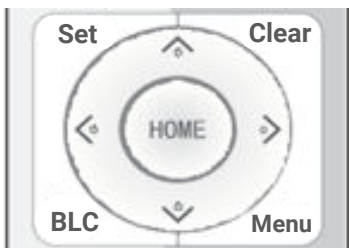
Pan left: Press the [◀] key

Pan right: Press the [▶] key

Middle position: Press [HOME] key

Press the up, down, left, and right keys for a long time, and the pan-tilt head will rotate continuously from slow to fast until the end of the stroke; it will stop rotating after releasing the key.

3.2.7 Menu Control



[Menu]: Enter/exit OSD menu or return to the previous menu

[HOME]: Enters the next menu.

[▲], [▼]: Select control item

[◀], [▶]: Modify parameter value

[BLC]: Backlight compensation on/off

3.2.8 Setting Remote Control Address



[*] + [#] + [F1]: Set No. 1 address

[*] + [#] + [F2]: Set No. 2 address

[*] + [#] + [F3]: Set No. 3 address

[*] + [#] + [F4]: Set No. 4 address

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3.2.9 Key Combinations

[#] + [#] + [#]: Cancel all preset positions
[*] + [#] + [6]: Restore factory defaults
[*] + [#] + [3]: Set menu language to Chinese
[*] + [#] + [4]: Set menu language to English
[*] + [#] + [9]: Switch between upright & inverted
[*] + [#] + [Auto]: Enter Aging mode
[#] + [*] + [Auto]: Exit Aging mode
[*] + [#] + [Manual]: Set IP, Username, and Password to factory defaults

[#] + [#] + [0]: Switch to video format 4K@30Hz
[#] + [#] + [1]: Switch to video format 4K@25Hz
[#] + [#] + [2]: Switch to video format 1080I@60Hz
[#] + [#] + [3]: Switch to video format 1080I@50Hz
[#] + [#] + [4]: Switch to video format 720P@60Hz
[#] + [#] + [5]: Switch to video format 720P@50Hz
[#] + [#] + [6]: Switch to video format 1080P@30Hz
[#] + [#] + [7]: Switch to video format 1080P@25Hz

Note: If the address of the remote controller used before is not 1, but one of 2, 3 and 4, the product address corresponding to the remote controller will be restored to 1 after the factory default is restored. At this time, the address of the remote controller needs to be changed back to 1. Namely, the control will be normal after pressing the [1] key selected by the remote controller.

3.3 Menu Introduction

Note: For the modification of the parameters in the menu, it is necessary to exit the menu before powering off and saving the modified parameters.

3.3.1 Menu Control

[Menu]: Enter/exit OSD menu or return to the previous menu

[HOME]: Enters the next menu.

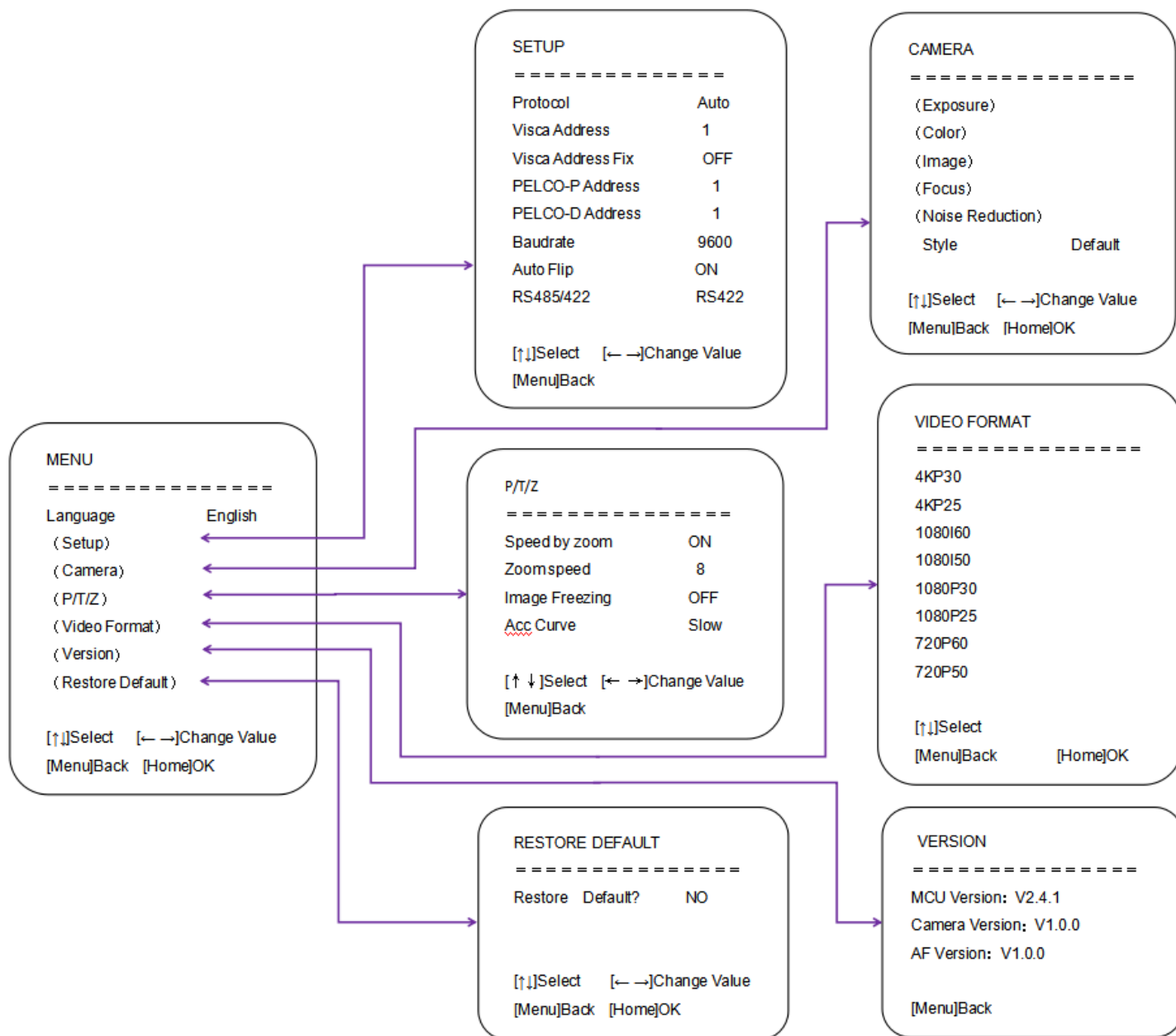
[▲], [▼]: Select control item

[◀], [▶]: Modify parameter value

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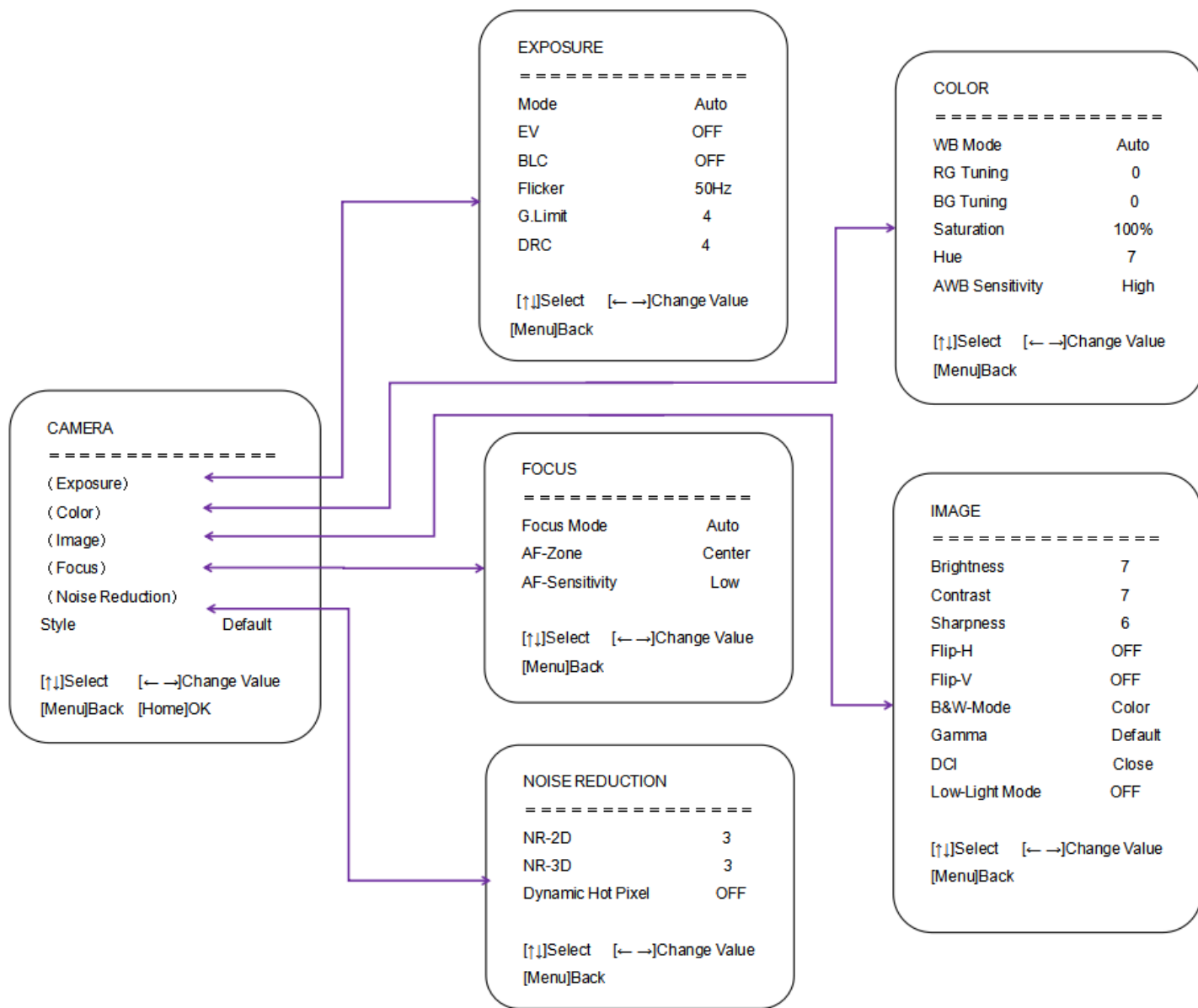
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3.3.2 English Menu



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4. Network Configuration

4.1 Network Connection

Network connection: Connect the camera directly to the external network port of the PC or connect the camera to the Internet network with a network cable. The camera can be connected to the network through a router or switch, and the user can log in to the product IP through a browser.

Note: Do not place wires and network cables in places that are easily touched, so as not to affect the video quality due to unstable signal transmission caused by poor line contact.

1. Method of adding network segment

The network segment where the product IP is located must be added to the computer. If no network segment is added, there may be failure to log in.

The default IP address of the product is 192.168.5.163, and 5 network segments need to be added to the computer.

Note: Added IP address shall not conflict with the IP address of other computers or products. Before addition, whether the IP address has already existed shall be verified.

The specific process is as follows:

First, open the local connection attribute window of the computer network, select "Internet Protocol Version 4(TCP/IPv4)" and double click or click the attribute "Internet Protocol Version 4(TCP/IPv4)" to enter the Internet Protocol Version 4(TCP/IPv4) attribute window. Click "Advanced" to enter the advanced TCP/IP settings, add IP and subnet mask in the IP address bar, and click "OK" to finish adding IP network segments.

Users can add corresponding network segments according to product IP addresses modified by themselves.

To verify whether the network segment is successfully added. Open "Start" in the computer, select "Run" and enter cmd. Click "OK" to open the DOS command window of the computer and enter command: "ping 192.168.5.26" and press Enter. If there is a message shown as follows, the network segment is successfully added.

```
C:\Users\Administrator>ping 192.168.5.26
正在 Ping 192.168.5.26 具有 32 字节的数据:
来自 192.168.5.26 的回复: 字节=32 时间<1ms TTL=128
来自 192.168.5.26 的回复: 字节=32 时间<1ms TTL=128
来自 192.168.5.26 的回复: 字节=32 时间<1ms TTL=128
来自 192.168.5.26 的回复: 字节=32 时间<1ms TTL=128

192.168.5.26 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间<以毫秒为单位>:
        最短 = 0ms, 最长 = 0ms, 平均 = 0ms

C:\Users\Administrator>
```

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After the product power-on self-inspection is completed, you can also verify whether the network is connected normally according to the above steps. If the default IP opens the DOS command window of the computer, enter ping 192.168.5.163 and press "Enter". If there is message shown as the one aside, the network is connected normally.

```
C:\Users\Administrator>ping 192.168.5.163
正在 Ping 192.168.5.163 具有 32 字节的数据:
来自 192.168.5.163 的回复: 字节=32 时间=1ms TTL=64
来自 192.168.5.163 的回复: 字节=32 时间<1ms TTL=64
来自 192.168.5.163 的回复: 字节=32 时间<1ms TTL=64
来自 192.168.5.163 的回复: 字节=32 时间<1ms TTL=64

192.168.5.163 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
往返行程的估计时间<以毫秒为单位>:
    最短 = 0ms, 最长 = 1ms, 平均 = 0ms

C:\Users\Administrator>
```

4.2 IE Login

4.2.1 Client Login

Enter the product IP address in the browser address bar as 192.168.5.163 by default, and press the enter key to enter the Web client login interface.

Login mode is divided into administrator mode and ordinary user mode. Administrator (default admin for username and password) can perform preview, playback, configuration, logout and other operations. Normal user (default user1 or user2 for username and password) can only perform preview, playback, logout and other operations without configuration items.

Language selection: click "Chinese | English" in the upper right corner of the login interface to select the language type of the Web interface.

Note: browsers supported by the Web access function include IE, 360 browser and other IE-based browsers.

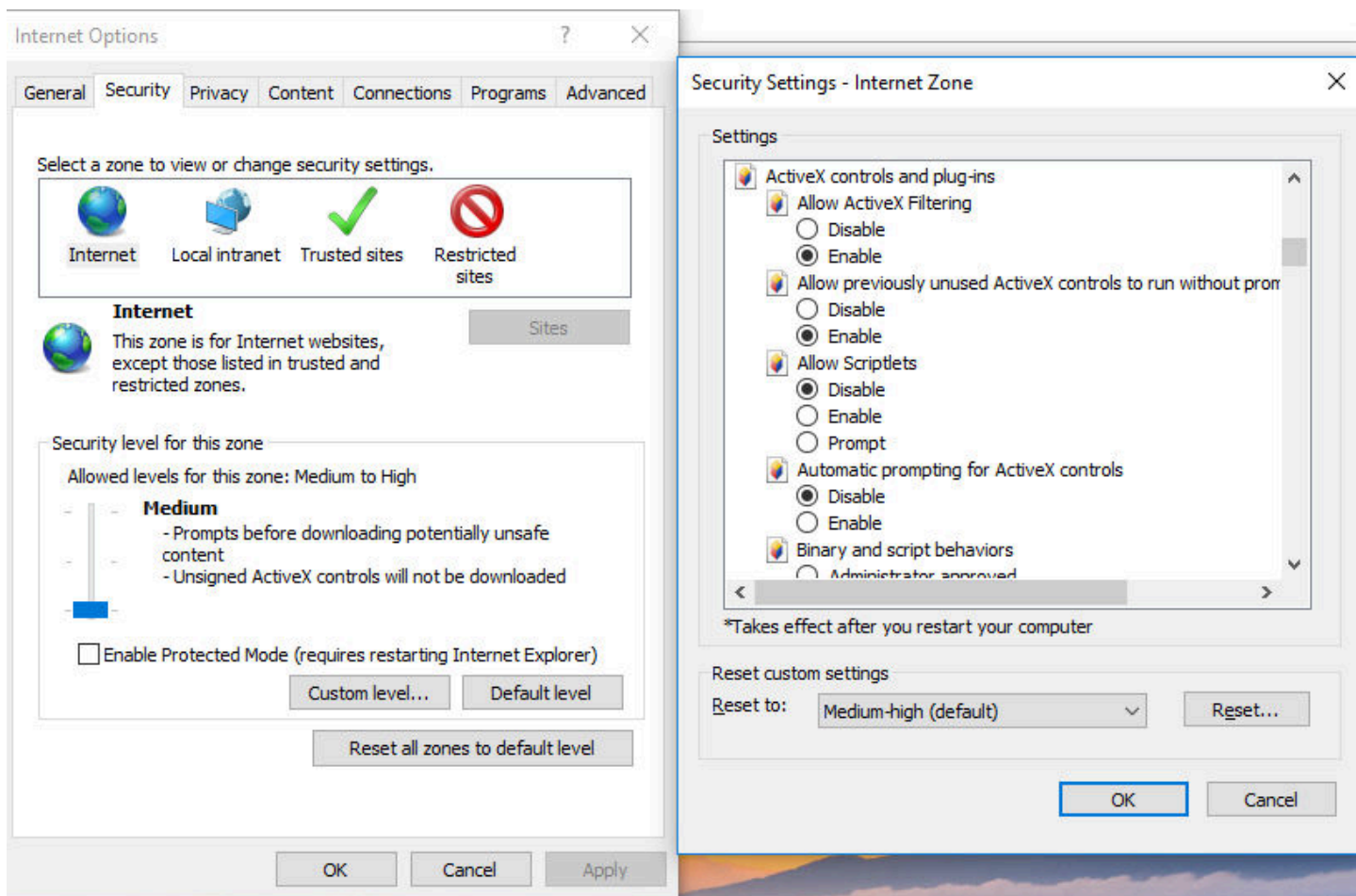
If you need non-IE based browsers such as Google, Opera, Firefox, and Safari to preview images, you need to upgrade the non-Web playback plug-in program, and there will be no functions such as recording, width and height, sound, magnification, full screen, snap shot, playback, etc.

When using IE browser to access network conference products for the first time, the login interface will appear the prompt "No playback plug-in is installed, please download and install!". Click the prompt, download and install the MRWebXinstall.exe, and install the plug-in according to the prompt.

If there is a warning "failing to downloaded": solution: browser-> tools -> Internet options-> security-> custom level-> security settings -Internet zone; check "enable" or "prompt" under ActiveX controls and plug-in directories.

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4.2.2 Website Login

After the plug-in is installed, enter the user name and password, click login (the initial default user name and password is "admin"; after entering, users can change the user name and password by themselves) and enter the Web client management interface.

4.3 Streaming Media

4.3.1 Acquiring Video Stream

Select "configuration"-> "video configuration"-> "video encoding" to enter the following interface

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Video coding		
Code stream	Main code stream	Secondary stream
Compression format	H.264	H.264
Profile	HP	HP
Video size	1920*1080	320*180
Rate control	Constant bit rate	Constant bit rate
图像质量	Best	Good
Code rate	4096	512
Frame rate	25	25
Keyframe interval	75	75
Minimum QP of keyframe	20	20
Stream name	live/av0	live/av1

Configure parameters according to the network environment.

Note: stream name live/av0 (form: live/xxx)

If the default IP address of the camera is 192.168.5.163 by default, the way to obtain rtsp video stream is as follows:

rtsp://192.168.5.163: 554/live/av0 (av0 main code stream)
rtsp://192.168.5.163: 554/Live/AV1 (av1 secondary code stream)

If the default IP address of the camera is 192.168.5.163 by default, the way to obtain rtmp video stream is as follows:

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

4.3.2 Pushing Video Stream

Select "configuration"-> "video configuration"-> "stream release" to enter the following interface

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Stream publishing		
Stream	Main code stream	Secondary stream
Switch	<input type="checkbox"/>	<input type="checkbox"/>
Protocol	<input type="text" value="RTMP"/>	<input type="text" value="RTMP"/>
Host address	<input type="text" value="192.168.5.11"/>	<input type="text" value="192.168.5.11"/>
Host port	<input type="text" value="1935"/>	<input type="text" value="1935"/>
Stream name	<input type="text" value="live/av0"/>	<input type="text" value="live/av1"/>
User name	<input type="text"/>	<input type="text"/>
Password	<input type="text"/>	<input type="text"/>

To push rtmp audio and video stream to server, the camera IP must be mapped to an external network, otherwise connection to server will be unsuccessful.

Host address: Server address, which can be domain name or IP address

Host Port: Default port number of the server

Stream name: Live/test (form: live/xxx)

Username and password: The username and password set by the server can be left blank if not set.

Access URL: rtmp://server domain name address: server port number /live/xxx
Or (rtmp:// server IP address: server port number /live/xxx)

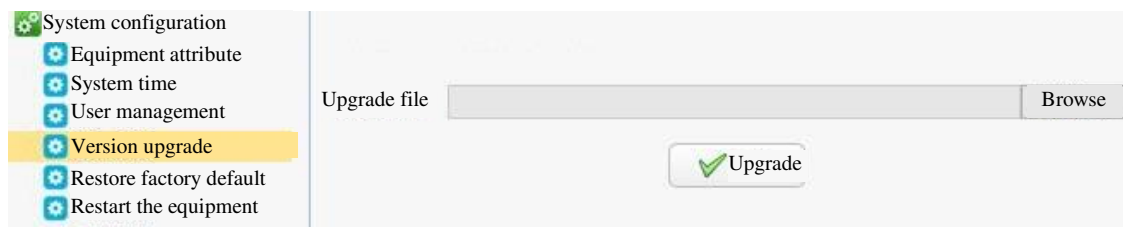
4.4 Software Upgrade

1. After successful login, enter the management interface. By default, enter the video preview interface. In the preview interface, user can perform pan-tilt control, zoom, focus, video recording, snapshot, sound, magnification, full screen and settings, operation, deletion, and other operations of preset points.

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2. Select "configuration"-> "system configuration"-> "software upgrade" to enter the following interface



3. Click "Browse" to select the upgrade file ".mrg" and double click it. Click the "Upgrade" button to upgrade automatically.

4. After the upgrade is completed, the product will restart and prompt "Upgrade Successfully". At this time, log on to the network to check whether the software version is consistent with the upgrade file to ensure the upgrade is successful. Then click "Restore Factory Default" to restart the product and restore the parameters to the factory defaults (IP address is 192.168.5.163 by default; both account admin and password are admin by default).

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5. Serial Communication

Under normal working conditions, the equipment can be controlled through RS232/RS485/RS422 interface. The parameters of RS232 serial port are as follows:

Baud rate: 2400/4800/9600/115200 bits/second

Start bit: 1 bit

Data bit: 8 bits

Stop bit: 1 bit

Check bit: none

After power-on, the equipment will first turn to the lower left and then return to the middle position. The lens is zoomed to the farthest position, and then zoomed to the position of the latest completed self-inspection. If the product has saved No.0 preset point, it will be set to No. 0 preset point after initialization. At this point, the user can use the serial port command to control the equipment.

5.1 VISCA Protocol Return Commands

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

Z = equipment address + 8

Error Messages		
	Command Packet	Notes
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 auto focus.

5.2 VISCA Protocol Equipment Control Commands

Command	Function	Command Packet	Notes
AddressSet	Broadcast	88 30 0p FF	p: address setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
CommandCancel		8x 21 FF	
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	

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Command	Function	Command Packet	Notes
	Tele(Variable)	8x 01 04 07 2p FF	p = 0(low) - F(high)
	Wide(Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s 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 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 mode	8x 01 04 38 04 FF	
CAM_Zoom Focus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs : Zoom Position tuvw : Focus Position
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	8x1 01 04 AA 03 FF	
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 : WB Mode
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 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	

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Command	Function	Command Packet	Notes
	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
	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
	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_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 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

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Command	Function	Command Packet	Notes
CAM_Gamma	3D	8x 01 04 54 0p FF	p =0-8 0:OFF
		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_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 0p 0q FF	pq : Aperture Gain
CAM_PictureEffect	B&W-Mode	8x 01 04 63 04 FF	PictureEffect 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)
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	
IR_ReceiveReturn	On	8x 01 7D 01 03 00 00 FF	

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Command	Function	Command Packet	Notes
	Off	8x 01 7D 01 13 00 00 FF	IR (remote commander) receives message via the VISCA communication ON/OFF
CAM_SettingReset	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_VideoSystem	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	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	AbsolutePosition	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	RelativePosition	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
Home	8x 01 06 04 FF		

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Command	Function	Command Packet	Notes
	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	

5.3 VISCA Protocol Query Command

Command	Command packet	Return packet	Notes
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_FocusAFModelInq	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_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 01 04 AA 00 FF	Top
		y0 01 04 AA 01 FF	Center
		y0 01 04 AA 02 FF	Bottom
		y0 01 04 AA 03 FF	All
CAM_WBModelInq	8x 09 04 35 FF	y0 50 pq FF	Auto
			pq = WBMode
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 0B FF	7000K
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq : B Gain
CAM_AEModelInq	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

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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_BrightPosilnq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq : Bright Position
CAM_ExpCompModelnq	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_BacklightModelnq	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 : 2DNRLlevel
CAM_NRLevel(3D) Inq	8x 09 04 54 FF	y0 50 0p FF	p :3D NRLevel
CAM_FlickerModelnq	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_PictureEffectModelnq	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 0p FF	p : Memory number last operated.
SYS_MenuModelnq	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	p : Gamma ID
IR_ReceiveInq	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
IR_ReceiveReturn		y0 07 7D 01 04 00 FF	Power ON/OFF
		y0 07 7D 01 04 07 FF	Zoom tele/wide
		y0 07 7D 01 04 38 FF	AF ON/OFF

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		y0 07 7D 01 04 33 FF	Camera _Backlight
		y0 07 7D 01 04 3F FF	Camera _Memery
		y0 07 7D 01 06 01 FF	Pan_titleDriver
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_Low-LightModelInq	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 0p FF	p : 0~E Video format 0:4KP30 1:4KP25 2:1080i60 3:1080i50 4:720P60 5:720P50 6:1080P30 7:1080P25
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	www : Pan Position zzzz : Tilt Position

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5.4 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

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5.5 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

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6. Maintenance and Troubleshooting

6.1 Product Maintenance

- If the equipment is not used for a long time, please disconnect the power switch when it is not in use, and disconnect the AC power adapter from the AC socket at the same time.
- Please use a soft cloth or cotton paper to avoid scratches when removing dust from the equipment shell.
- When cleaning the lens, please use a dry soft cloth to wipe it. If there is substantial dirt, please use neutral detergent to wipe gently. Do not use strong or corrosive cleaning agents in order to avoid scratching the lens.

6.2 Troubleshooting

Video output has no graph

- Check whether the power supply of the equipment is connected properly and whether the power indicator is on.
- Check whether the equipment can perform self-inspection normally after it is powered off and restarted.
- Check whether the video output and video display connection line is normal.

Images are sometimes absent

- Check whether the video output and video display connection line is normal.

Jitter of lens zooming image

- Check whether the installation position of the equipment is firmly in place.
- Check whether there is any vibrating machinery or objects around the equipment.

Remote controller does not work

- Check whether the remote controller address setting to 1 is controllable (if the equipment restores factory settings, the remote controller address will also return to 1).
- Check whether the battery of the remote controller is installed or has insufficient power.
- Check whether the equipment working mode is the normal working mode
- Check whether the menu has not exited. Normal control can only be realized after exiting the menu; if the webpage outputs an image, the menu will not be displayed and no operation will be performed. After 30s, the menu will exit automatically and normal control can be realized.

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Serial port cannot be controlled

- Is a standard control line provided by the company?
- Check whether the serial port equipment protocol, baud rate, and address are consistent with the equipment.
- Check whether the control line is connected normally.
- Check whether the working mode of the equipment is normal (refer to tables 2.2 and 2.3).

The webpage cannot be logged in

- Use the display to check whether the equipment can generate picture normally.
- Check whether the network cable is connected normally (the yellow indicator at the network port flashes, indicating that the network cable is connected normally).
- Check whether the computer adds a network segment and whether the network segment is consistent with the IP address of the equipment.
- Open "start" in the computer, select "run" and enter cm; click "ok" to open the computer DOS command window and enter "ping 192.168.5.163". After pressing the enter key, if there is message as shown below, the network is connected.

```
C:\Users\Administrator>ping 192.168.5.163

正在 Ping 192.168.5.163 具有 32 字节的数据:
来自 192.168.5.163 的回复: 字节=32 时间=1ms TTL=64
来自 192.168.5.163 的回复: 字节=32 时间<1ms TTL=64
来自 192.168.5.163 的回复: 字节=32 时间<1ms TTL=64
来自 192.168.5.163 的回复: 字节=32 时间<1ms TTL=64

192.168.5.163 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间<以毫秒为单位>:
        最短 = 0ms, 最长 = 1ms, 平均 = 0ms

C:\Users\Administrator>
```

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