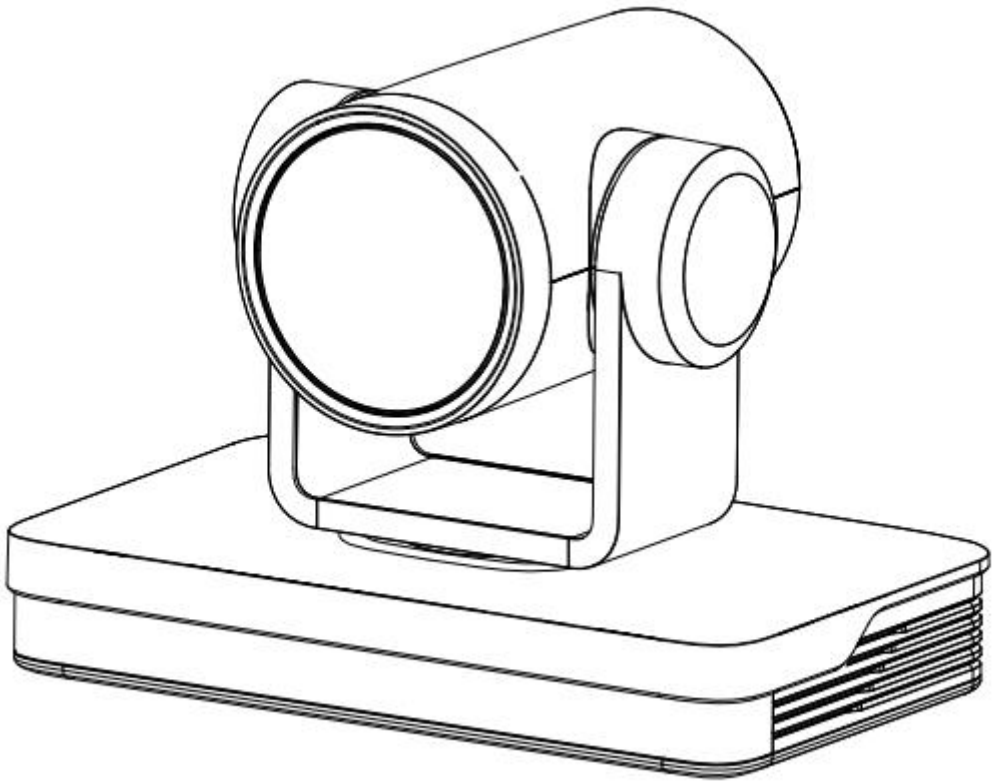
Prestel 4K-PTZ8xxDV(-W)

4K PTZ Camera



USER MANUAL

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

Data acquisition:

You can also visit http://www.avconfcam.com/down/320.html for product manuals and related information.

Access password: product570

Overview

This manual is about PTZ camera operation

Graphic Symbols

Description of graphic symbols used in this manual

Symbols	Description
illustration	This symbol indicates that the words are clarification or supplement to this article.
Caution	This symbol indicates that negligence of the instructions may lead to mishandling that may cause injury or property damage.
Danger	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) Ensure there are no obstacles within rotation range of the holder.
4) 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 Interface

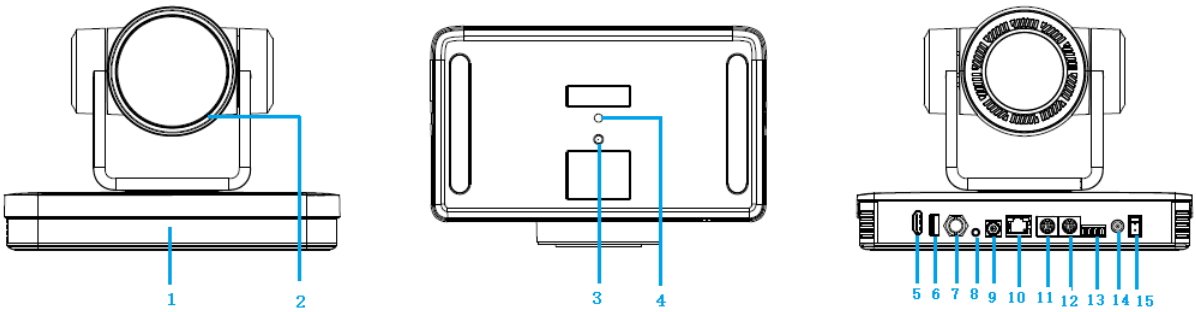


Figure1-1 Interface

Interface：

1、Receiving Light	6、USB 2.0 Port	11、RS232 Input
2、Lens	7、SDI Port	12、RS232 Output
3、Fixation Hole	8、Audio In	13、RS422/RS485 Jack
4、Tripod Screw Hole	9、Rotary Dip Switch	14、DC12V Power Socket
5、HDMI Port	10、Network Jack	15、Power Switch

When using the camera, please put the plastic pad on the center bottom of device

1.2 Power-on Self-Test

1.2.1 **Power on**

Connect device to power socket with DC12V 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 Output

This series camera can output video through network,HDMI、SDI and USB2.0.

1.3.1 **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, like PTZ control, video recording, playback, and configuration setting.

1.3.2 **HDMI Output**

a、HDMI connection: Shown as diagram 1.1 #5；

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

1.3.3 **USB2.0 Output**

USB2.0 connection: Shown as diagram 1.1 #6.

Open video software and select image device to output video.

1.3.4 **SDI Output**

SDI Connection：Shown as diagram 1.1 #7

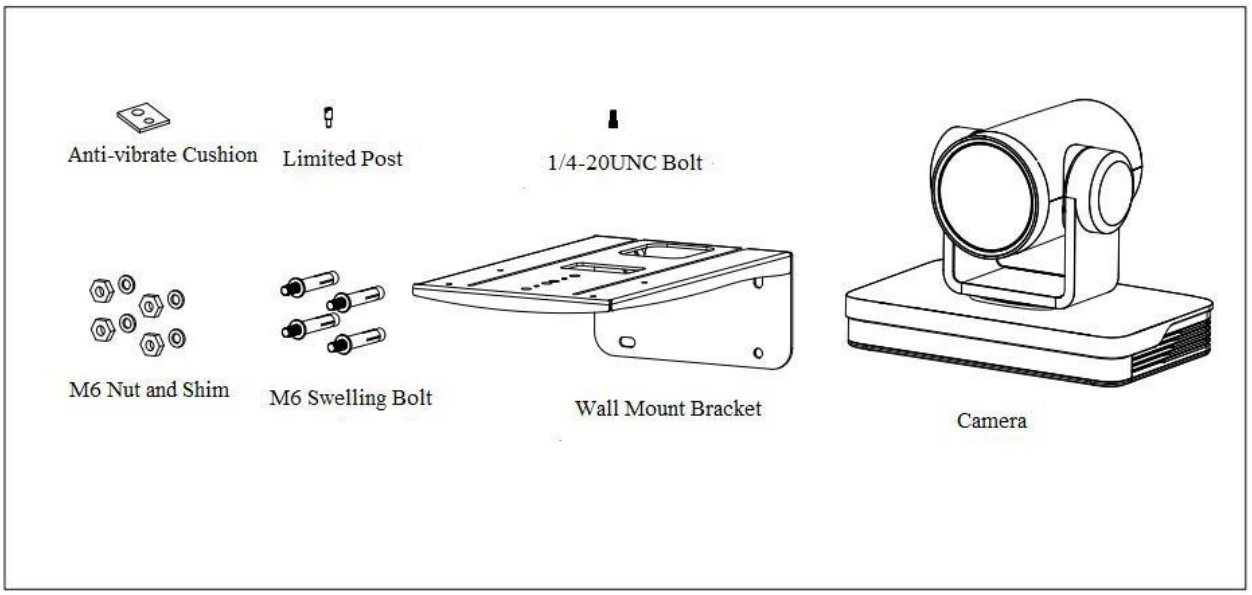
Connect camera to the display device via SDI cable.

1.4 Bracket

⚠ Caution

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

1.4.1 **Steps of Wall Mount**



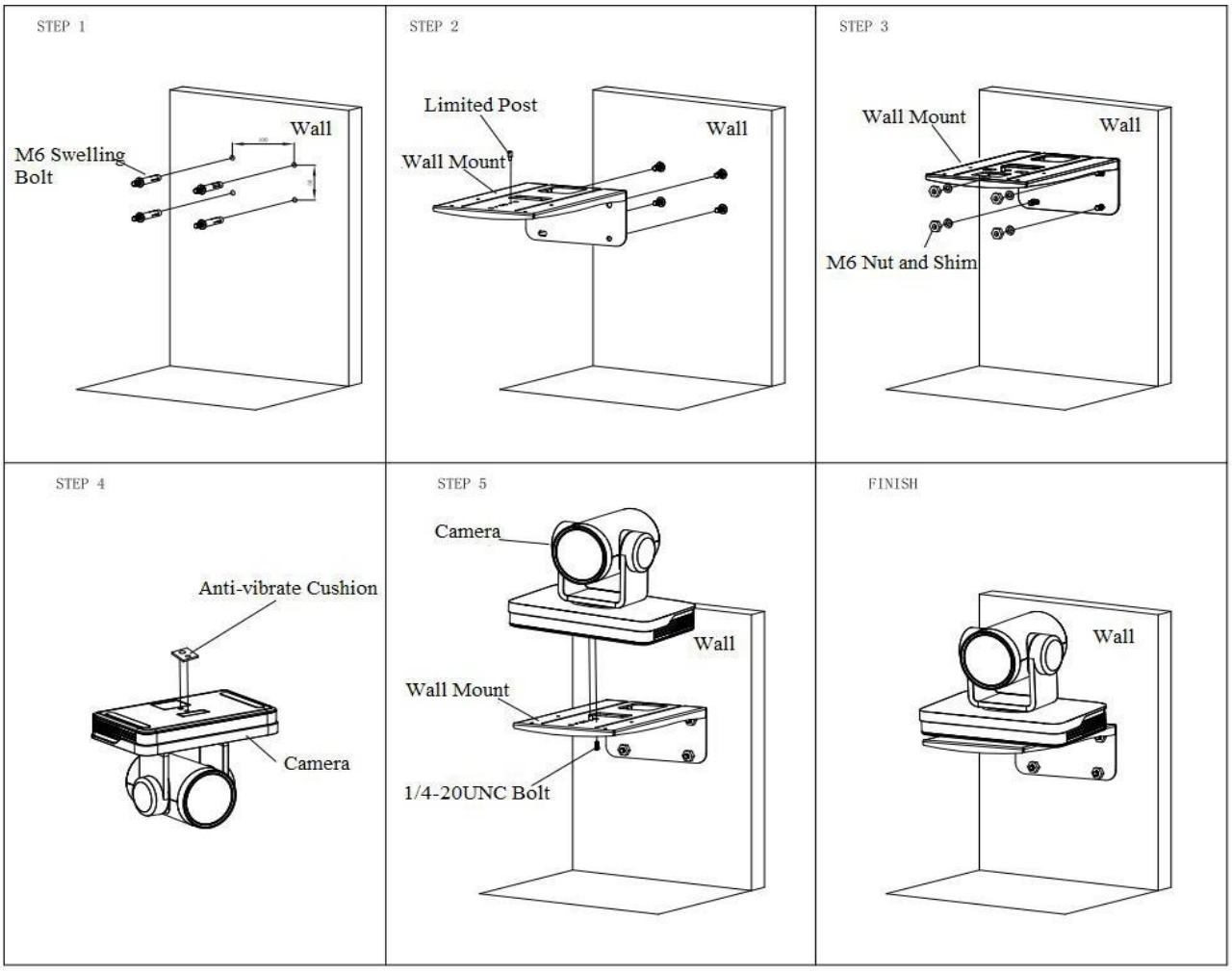


Figure1-2 Steps of Wall Mount

1.4.2 **Steps of Ceiling Mount**

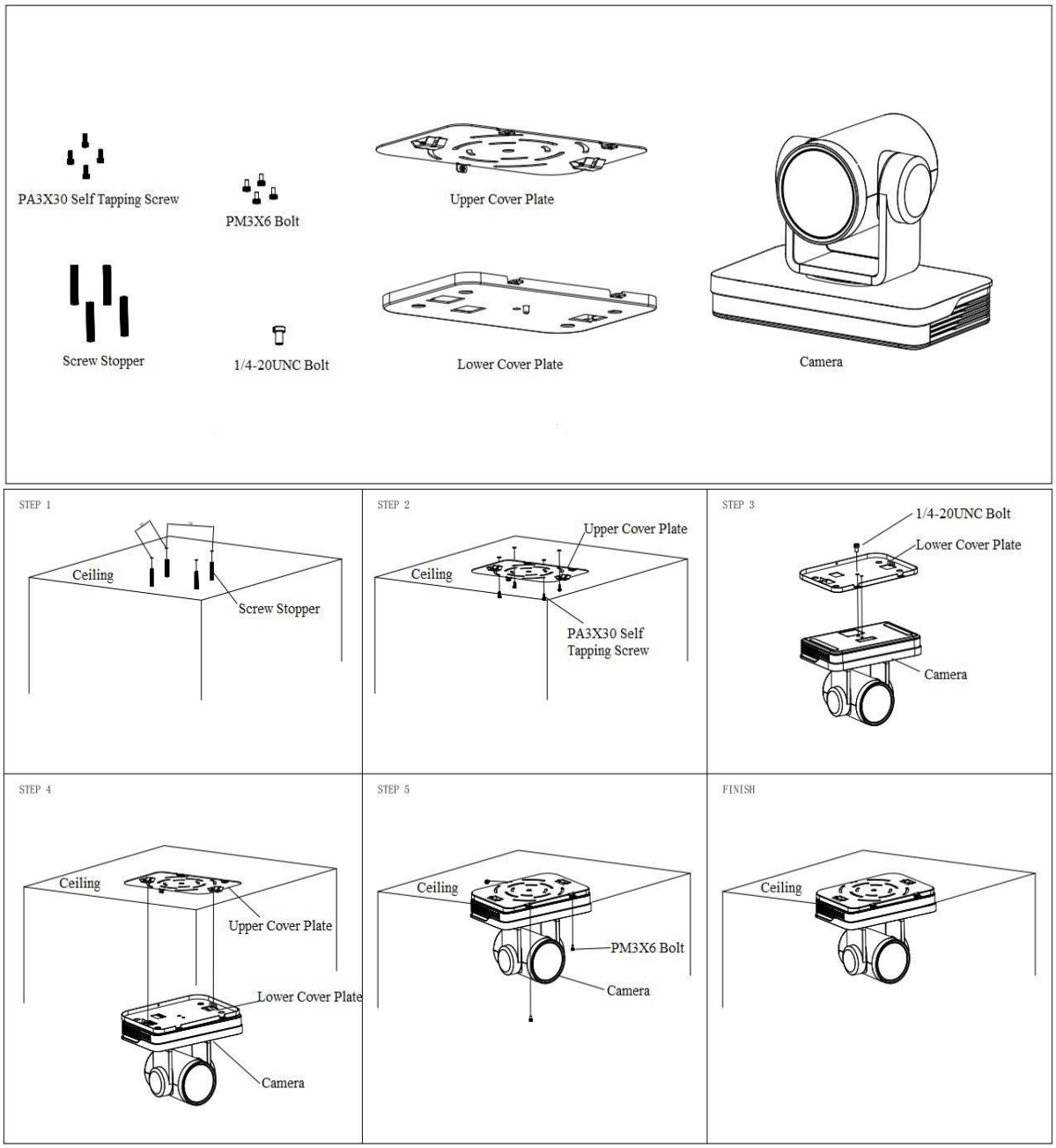


Figure1-3 Steps of Ceiling Mount

2.Product Overview

2.1 Product Overview

2.1.1 **Product Dimension**

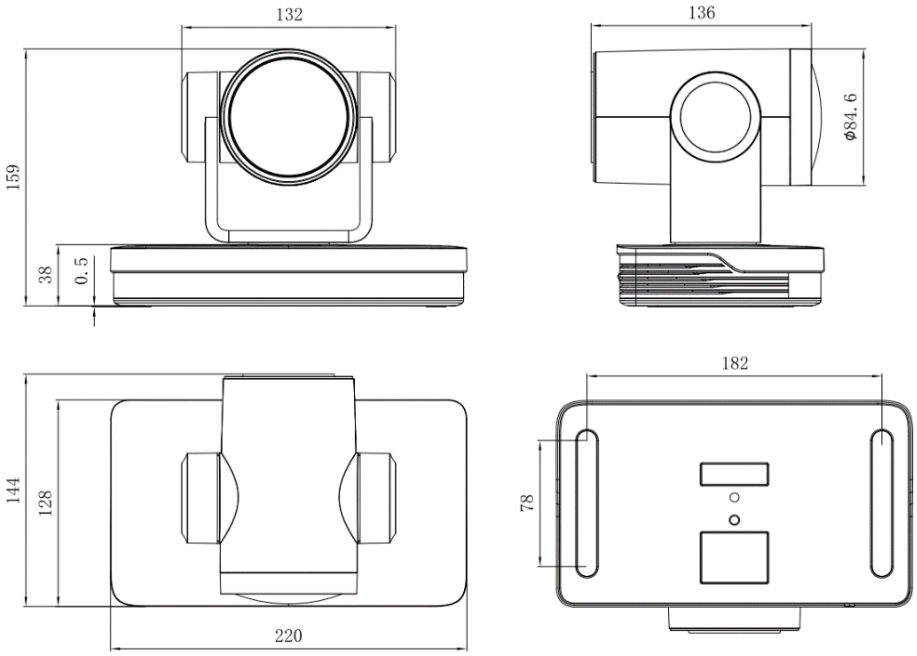


Figure1-4 Product Dimension

2.1.2 **Accessory**

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

Table2-1 Supplied Accessory

Configuration	**U3**
Supplied	Power adapter
	USB 2.0 Cable
	User manual
	Plastic pad
Optional	IR Remote Control
	Wireless remote control
	Brackets for wall mounting
	Brackets for ceiling mount

2.2 Product Feature

This is a brand new UHD 4K camera, including 3 lenses, 12X optical zoom 80.4°wide-angle lens, 25X optical zoom 59.2°wide-angle lens, and 31X optical zoom 59° wide-angle lens. It has complete functions, excellent performance and rich interfaces. Boasting advanced ISP processing technology and algorithm, cameras deliver the vivid image and uniform picture brightness.

- **4K UHD Resolution:** SONY CMOS sensor. Resolution is up to 4K with frame rate up to 60fp.。
- **Dual Stream Output：** USB support the main stream and sub stream output at the same time, and can meet the needs of near-end and far-end；
- **Optical Zoom Lens:** 12X optical zoom 80.4°wide-angle lens, 25X optical zoom 59.2°wide-angle lens, and 31X optical zoom 59° wide-angle lens.
- **Interfaces：** Support HDMI, SDI, USB 2.0, LAN（POE、NDI optional）, and HDMI, USB, LAN output 4K audio and video at the same time.
- **Leading Auto Focus Technology:** Fast, accurate and stable auto focusing technology.
- **Low Noise and High SNR:** Super high SNR image is achieved with low noise CMOS. Advanced 3D noise reduction technology further reduces the noise while ensuring high image clarity.
- **Multiple Audio/Video Compression Standards:** LAN interface supports H.264/H.265 video compression, USB2.0 interface supports MJPG, H264, YUY2, NV12, H265; A-IN interface supports AAC audio compression coding.
- **Audio Input Interface:** 8000 sampling frequency. support AAC audio compression.
- **Multiple Network Protocol:** Support ONVIF, GB/T28181, RTSP, RTMP 、SRT,NDI（optional）, Dante AV-H（optional） protocols; Support RTMP push mode, easy to be connected to streaming server (Wowza, FMS); Support RTP multicast mode; Support network full command VISCA control protocol.
- **Control Interface:** RS422 input(compatible with RS485), RS232 input/output, RS232 (cascade connection).
- **Multiple Control Protocol:** Support VISCA, PELCO-D, PELCO-P protocols; Support automatic identification protocols.
- **Multiple Presets:** Up to 255 presets (10 presets via remote control)
- **AI Human Detection:** Built in high speed processor and advanced image processing and analysis algorithm, and real-time tracking and zone tracking modes are available.
- **Multiple Application:** Online-education, Lecture Capture, Webcasting, Video conferencing, Tele-medicine, Unified Communication, Emergency command and control systems, etc.

2.3 Technical Specification

Table2-2 Camera Lens Parameter

Camera Parameter			
Optical Zoom	12X	25X	31X
Focal Length	f=3.85 mm～46.2 mm ±5%	f=7.1mm~171.95mm ±5%	f=6.91 mm～214.21 mm ±5%
Viewing Angle	Horizontal：7.59˚（N）～ 80.4˚（W） Vertical：4.6˚（N）～ 50.0˚（W）	Horizontal：2.5˚（N）～ 59.2˚（W） Vertical：1.4˚（N）～ 34.6˚（W）	Horizontal：1.98˚（N）～ 59˚（W） Vertical：1.12˚（N）～ 34.14˚（W）
Iris Value	F1.8 ～ F3.56±5%	F1.61 ～ F5.19±5%	F1.35 ～ F4.6±5%
Image Sensor	1/2.5 inch SONY CMOS sensor	1/1.8 inch SONY CMOS senso	
Effective Pixels	8.29M megapixel 16：9		
Video Formate	**HDMI：** 3840*2160P60/50/25/59.94/29.97;1080P60/50/30/25/59.94/29.97;1080I60/50/59.94; 720P60/50/59.94； **SDI：** 1080P60/50/30/25/59.94/29.97;1080I60/50/59.94; 720P60/50/59.94 **USB2.0:** MJPG：3840*2160/1920*1080/1280*720 /1024*768 /1024*576/800*600/720*576/720*480/704*576/640*480 /640*360 /352*288/320*240P30; H.264：3840*2160/1920*1080/1280*720 /1024*768 /1024*576/800*600/720*576/720*480/704*576/640*480 /640*360 /352*288/320*240P30; H.265：1920*1080/1280*720 /1024*768 /1024*576/800*600/720*576/720*480/704*576/640*480 /640*360 /352*288/320*240P30; YUY2：800*448 /720*480P25; 640*360 /432*240P30 NV12：800*448P25; 640*480 /640*360 /432*240P30		
Minimum Illumination	0.05Lux(F1.8, AGC ON)		
DNR	3D DNR		
White Balance	Auto / Manual/ One Push/ Specified Temperature		
Focus	Auto/Manual/One Push Focus		
Exposure Mode	Auto/Manual/Shutter priority/Aperture priority/brightness priority		
Aperture	F1.8 ～ F11、CLOSE		
Shutter Speed	1/25～1/10000		
BLC	ON/OFF		
WDR	OFF/ Dynamic level adjustment		
Video Adjustment	Brightness, Color, Saturation, Contrast, Sharpness, B/W mode		

SNR	≥50dB

Table2-3 Camera Lens Parameter

AI Function	
Real-time Tracking Mode	The longest tracking distance can reach 6-7 meters, which can support the speaker to walk at a speed of 5-6 mph
Zone Tracking Mode	4 tracking zones are available, which can be set within -110°～+110°in horizontal and 30°～+30° in vertical.

Table2-4 Interface Parameter

Interface Parameter	
Video Interfaces	HDMI、SDI、LAN(Support POE+)、USB2.0、A-IN、RS232-IN、RS232-OUT、RS422（Compatible with RS 485）、Rotary DIP switch、DC12V Power Supply、HDI ｜ HX3（optional）、Dante（optional）、Power Switch
Video Compression Format	LAN：H.264、H.265 USB 2.0：MJPG、H.264、H.265、YUY2、NV12
Audio Input	Double track 3.5mm linear input
Audio Output	HDMI、LAN、USB2.0、SDI
Audio Compression Format	AAC
LAN Jack	10M/100M/1000M adaptive Ethernet port, support POE+（(802.3at）power supply, support audio and video output
Network Protocols	RTSP、RTMP、ONVIF、GB/T28181、SRT、NDI（optional）, Dante AV-H（optional） ；Support network VISCA control protocol；
Control Jacks	RS232-IN、RS232-OUT、RS422 compatible with RS485
Serial Port Communication Protocols	VISCA/Pelco-D/Pelco-P；Support Baudrate: 115200/38400/9600/4800/2400
USB Communication Protocol	UVC（Video Communication Protocol），UAC（Audio Communication Protocol）
Power Supply	HEC3800 Outlet (DC12V)
Power Adapter	AC110V~AC220V to DC12V/2.5A
Input Voltage	DC12V±10%
Input Current	<1A
Consumption	<12W

Table2-5 Dante AV-H Parameter

Dante AV-H	
Video Codec	H.264 codec by SoC
Video Format	1920*1080/1280*720P60/50/30/25

Video Streaming	Unicast or Multicast
Latency-Codec	⩽120ms at 1080p60
Bandwidth	4-8Mbps at 1080p60

Table2-6 PTZ Parameter

PTZ Parameter		
Pan Move	-110°～+110°	
Tilt Move	-30°～+30°	-27°～+27°
Pan Speed	0.1°/s～100°/s	
Tilt Speed	0.1°/s～70°/s	
Preset Speed	Pan: 78.8°/s，Tilt:31.7°/s	
Preset Quantity	Up to 255 preset (10 via remote control)	

Table2-7 Other Parameter

Other Parameter	
Storage Temperature	-10℃～+60℃
Storage Humidity	20%～95%
Working Temperature	-10℃～+50℃
Working Humidity	20%～80%
Dimension	220（L）mm×144mm（W）×159mm（H）
Weight	1.7kg
Environment	Indoors

Table2-8 Accessory Parameter

Accessory	
Supplied Accessory	Power Supply, RS232 Control Cable, USB2.0 Cable, Remote Control, User Manual
Optional Accessory	Ceiling / Wall Mount (Extra Cost)

2.4 Interface Introduction

2.4.1 **Interface Diagram**

The external interfaces of this product include: HDMI interface, USB2.0 interface, SDI interface, and audio input interface, network interface, RS232 input/output, RS422/RS485 interface, DC12V power supply, interface power switch. The external interface diagram is shown in Figure 1-5：

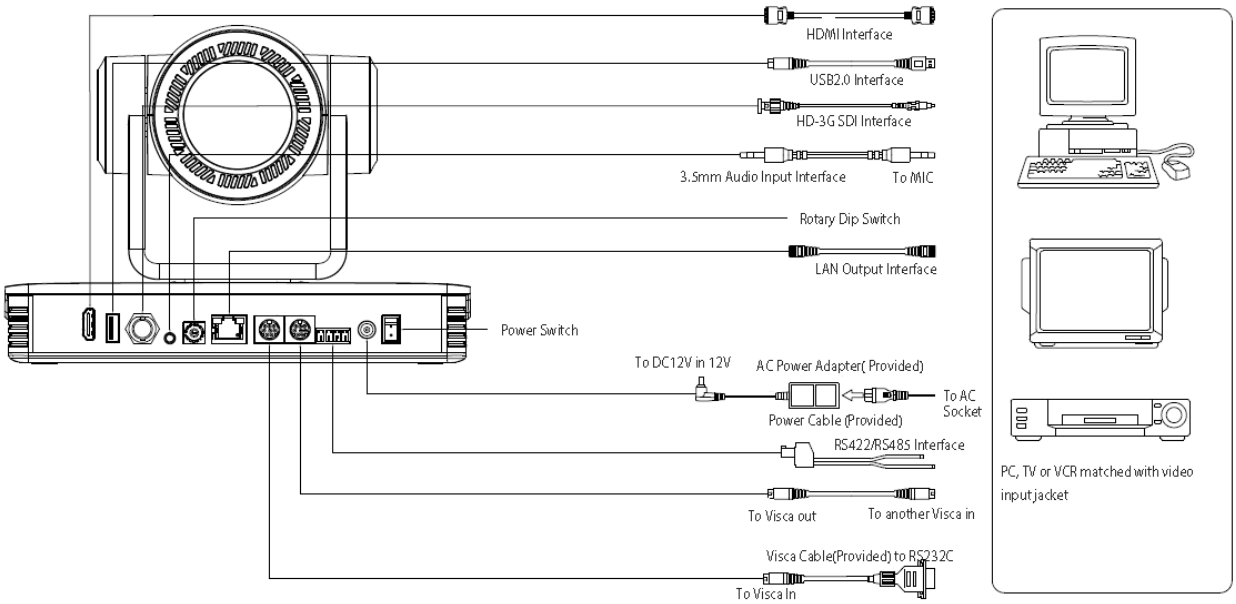


Figure1-5 Interface Diagram

2.4.2 **RS-232**

1）RS-232 Diagram

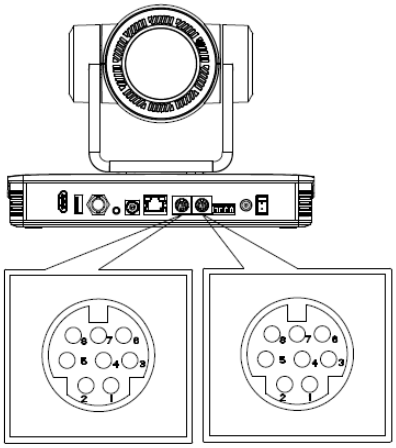
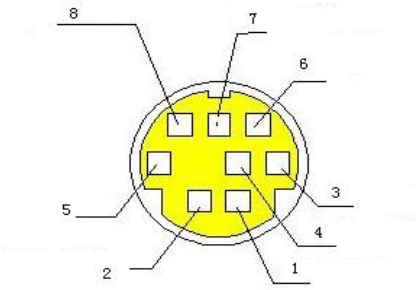


Table2-9 Connecting method to PC or controller

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

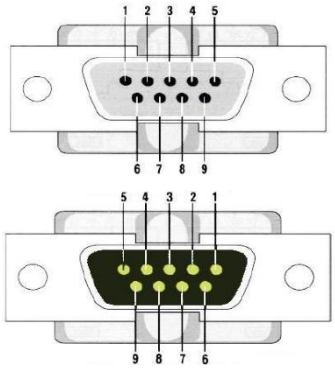
Figure1-6 RS-232 Diagram

2）RS-232 Mini-DIN 8-pin Terminal Port Definition



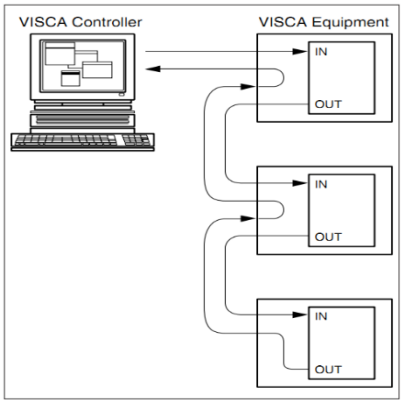
No.	Terminal Port	Definition
1	DTR	Data Terminal Ready
2	DSR	Data Set Ready
3	TXD	Transmit Data
4	GND	System Ground
5	RXD	Receive Data
6	GND	System Ground
7	IR OUT	IR Commander Signal
8	NC	No Connection

3）RS232(DB9) Terminal Port Definition



No.	Terminal 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 IR
8	NC	No Connection
9	RI	Ring Indicator

4）VISCA Networking Method



Device Cascading Connection Method

Device 1	Device 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

Figure1-7 VISCA Networking Diagram

Caution

- This camera has RS232 Input/Output interface, you can cascade as above method

2.4.3 **Rotary Dial**

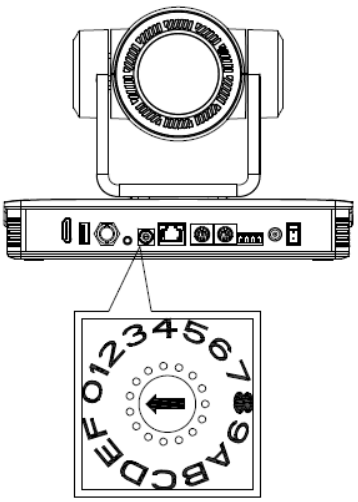


Table2-10 RS232(DB9) Terminal Port Definition

0：Video Format:4K60	8：Video Format:1080P30
1：Video Format:4K50	9：Video Format:1080P25
2：Video Format:4K30	A：Video Format:720P60
3：Video Format:4K25	B：Video Format:720P50
4：Video Format:1080P60	C：Menu can be switched
5：Video Format:1080P50	D：Menu can be switched
6：Video Format:1080I60	E：Menu can be switched
7：Video Format:1080I50	F：Menu can be switched

3.How to Use

3.1 Video Output

3.1.1 **Power-on Self-test**

After powering on, camera will have initial configuration and receiver light will be flashing. Camera will do a brief pan-tilt tour and return to the home position, or if preset 0 is set, the camera will return to the preset 0 position).

3.1.2 **Video Output**

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） **USB2.0 Output:** Connect this product with computer USB2.0 interface, open the Device Manager to see whether there is an image device and whether the Universal Serial Bus controllers recognize USB2.0 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.

⚠ Caution

- The buttons and usage methods of the infrared remote control and the wireless remote control are the same

3.2.1 **IR Remote Contro**

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.

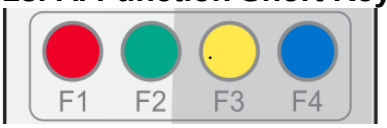
11. Camera IR Remote Control Address Setting
【*】+【＃】+【F1】:Camera Address No.1

【*】+【＃】+【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 4KP60
9) 【#】+【#】+【1】: Switch the video format to 4KP50
10) 【#】+【#】+【2】:Switch the video format to 4KP30
11) 【#】+【#】+【3】:Switch the video format to 4KP25
12) 【#】+【#】+【4】:Switch the video format to 1080P60
13) 【#】+【#】+【5】:Switch the video format to 1080P50
14) 【#】+【#】+【6】:Switch the video format to 1080I60
15) 【#】+【#】+【7】:Switch the video format to 1080I50
16) 【#】+【#】+【8】:Switch the video format to 1080P30
17) 【#】+【#】+【9】:Switch the video format to 1080P25

13. AI Function Short Keys



【F1】: Turn off AI Human Detection
【F2】: Turn on AI Human Detection
【F3】: Toggle between real time tracking mode and region tracking mode
【F4】: Chang tracking target on real tracking mode

3.2.2 Use of remote control

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

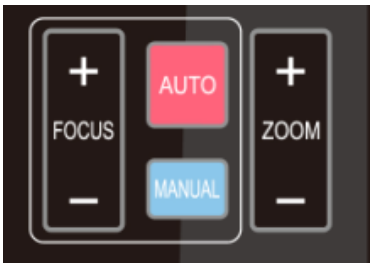
Select the camera address to control.

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.

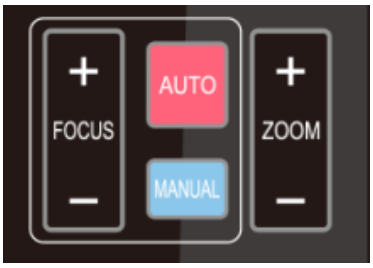
3）Presets Setting, canceling, calling



1.Preset setting: to set a preset position, the users should press the “【SET PRESET】” key first and then press the number key 0-9 to set a relative preset,
Note: 10 preset positions in total are available by remote controller.
2.Preset Running: Press a number key 0-9 directly to run a relative preset.
Note: Action in vain if a relative preset position is not existed.
3. Preset clearing : to clear a preset position, the user can press the “【CLEAR PRESET】” key first and then press the number key 0-9 to clear the relative preset;

Note : press the“【#】” key three times continually to cancel all the presets.

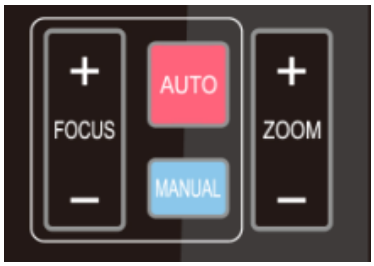
4）Zoom Control



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.

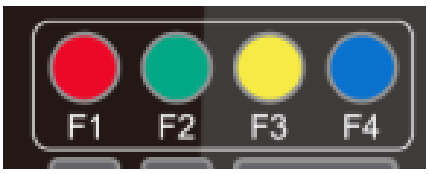
。

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 IR Remote Controller Address Setting

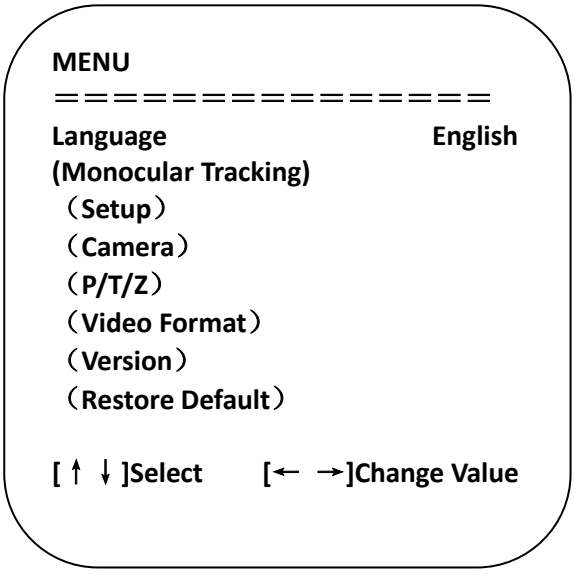


【*】+【＃】+【F1】: Camera Address No.1
【*】+【＃】+【F2】: Camera Address No.2
【*】+【＃】+【F3】: Camera Address No.3
【*】+【＃】+【F4】: Camera Address No.4

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.



Language：Chinese/English

Setting： Enter into submenu of camera parameter

Monocular tracking: Enter the camera monocular tracking submenu item

Camera Parameter：Enter into submenu of camera parameter

P/T/Z： Enter into submenu of PTZ parameter

Version: Enter into submenu of version

Restore Factory Default: Select Yes or No to restore factory default.

[↑↓]Select：Press**[↑↓]** to Select menu

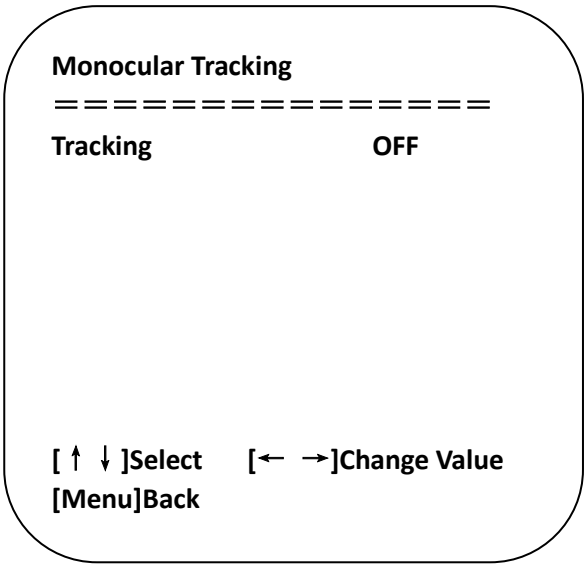
[← →]Revise： Press [← →] to revise parameter

[Menu]Return：Press [Menu] to return

[Home]Confirm：Press [Home] to confirm

3.3.2 **Monocular tracking Settings**

Move the pointer to the (Monocular Tracking) in the Main Menu, click the【HOME】key and enter into the (Monocular Tracking) as shown below.



Track switch:ON/OFF

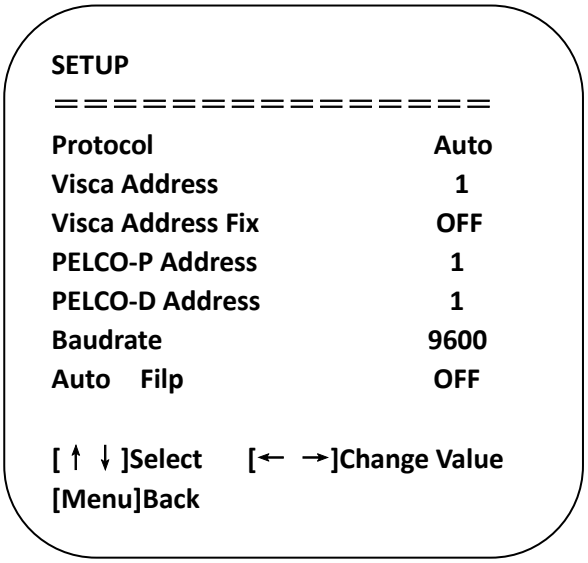
After tracking is turned on, you can select the tracking mode.

Tracking mode: Real-time tracking/area tracking

Region tracking needs to be set up on the web page

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 Address：VISCA=1~7 Pelco-P = 1~255 Pelco-D =1~255

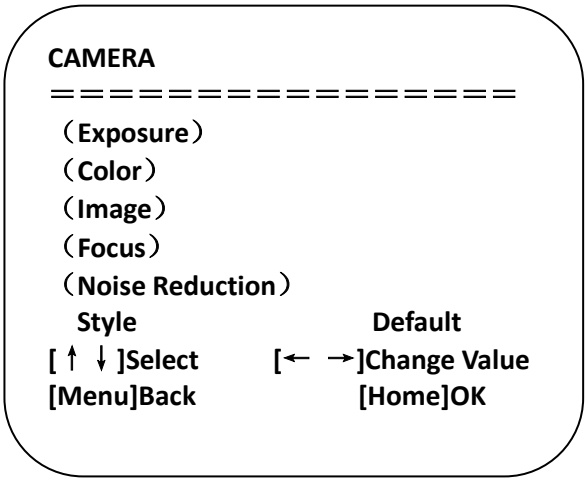
Baudrate ： ： 2400/4800/9600/38400/115200

Visca Address Fix：On/Off

Auto Filp：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 into image setting

Color:
Enter into color setting

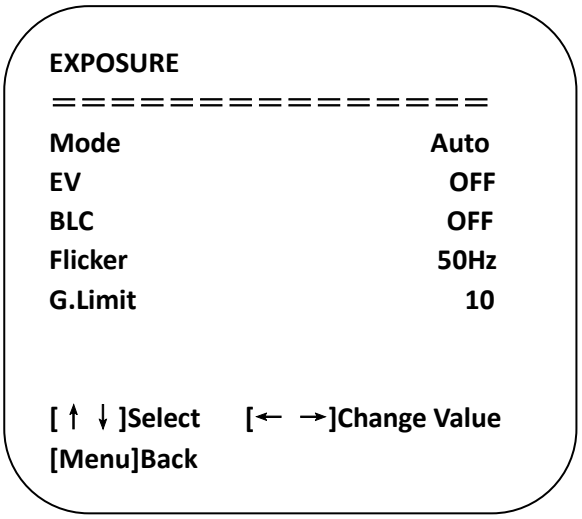
Focus:
Enter into focus setting

Noise Reduction:
Enter into noise reduction

Style：
Default, standard, clear, bright, 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)

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

Shutter:： 1/30、1/60、1/90、1/100、1/125、1/180、1/250、1/350、1/500、1/725、1/1000、1/1500、1/2000、1/3000、1/4000、1/6000、1/10000(only available in Manual and Shutter priority mode)

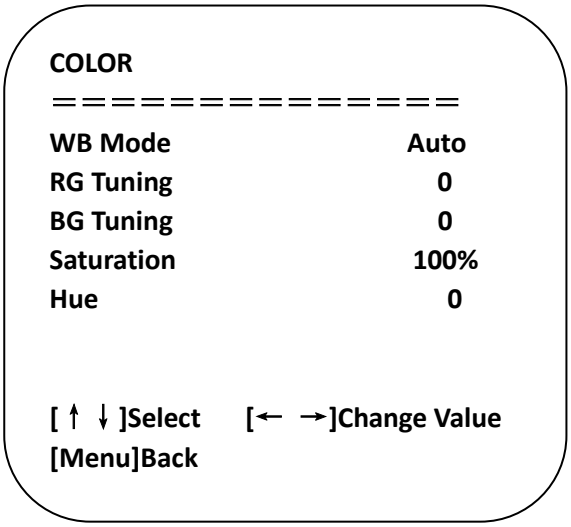
IRIS：OFF、F11.0、F9.6、F8.0、F6.8、F5.6、F4.8、F4.0、F3.4、F2.8、F2.4、F2.0、F1.8(only available in Manual and Iris priority mode)

Brightness: 0~14 (only available in Brightness **priority** mode)

Gain：Setting Gain value：0~36 (only available in Manual and Shutter priority mode)

2）Color

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



WB Mode： Auto, Manual, One Push, Specified color temperature

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

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

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

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

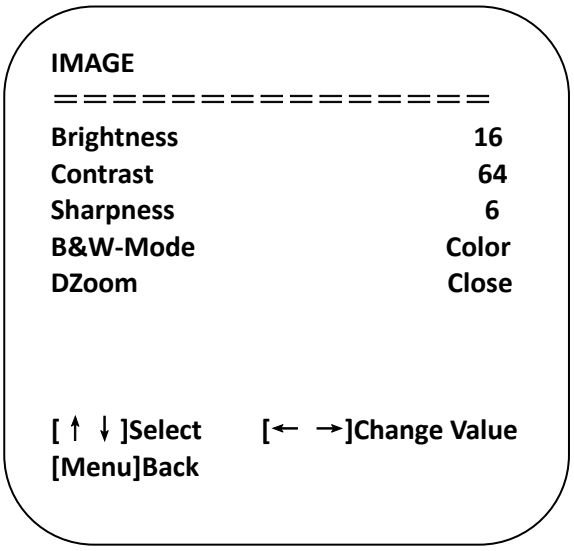
Blue Gain：0~255（only available in Manual mode）

Colour temperature：2400K、2500K、2600K、2700 K、2800 K、2900 K、3000K、3100 K、3200 K、3300 K、3400 K、3500K、3600 K、3700 K、3800 K、3900 K、4000K、4100 K、4200 K、4300 K、4400 K、4500K、4600 K、4700 K、4800 K、4900 K、5000K、5100 K、5200 K、5300 K、5400 K、5500K、5600 K、5700 K、5800 K、5900 K、6000K、6100 K、6200 K、6300 K、6400 K、6500K、6600 K、6700 K、6800 K、6900 K、7000K、7100K

Hue：-15~15

3）IMAGE

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

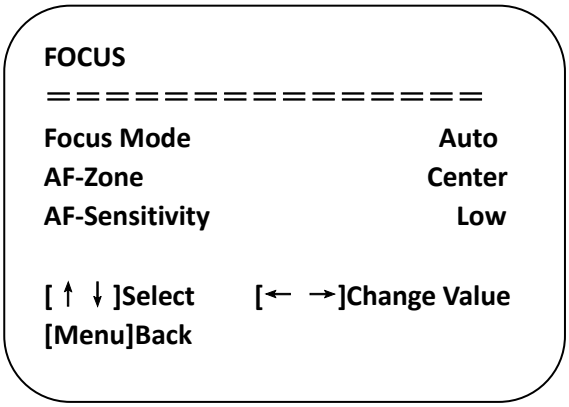


Brightness： 0~32 **Contrast**： 0~128 **Sharpness**： 0~11

B&W-Mode ： Color, black/white **DZoom**：ON/OFF

4）Focus

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



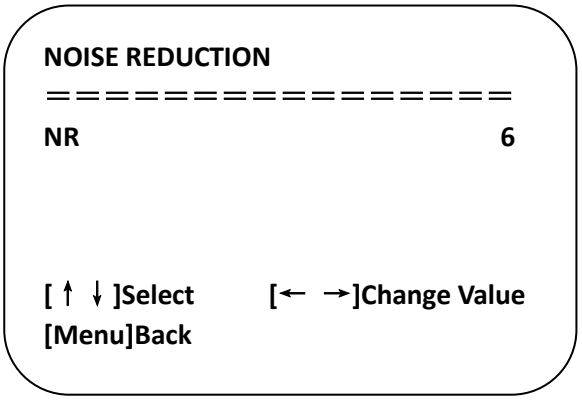
Focus Mode： Auto, Manual

AF-Zone： High, middle, low

AF-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:



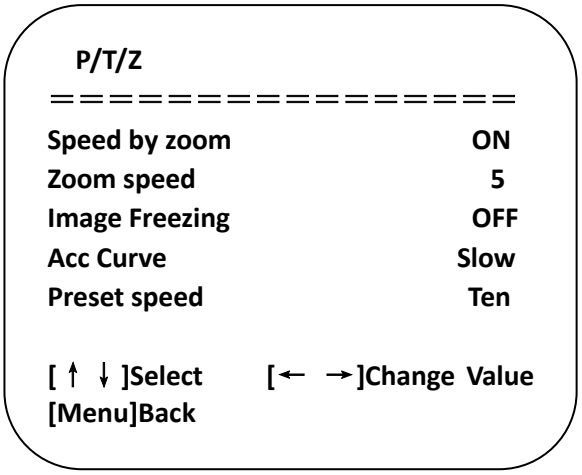
Noise Reduction：Close、1~11

6）Style

Move the pointer to the (Style) in the Menu,click the 【Styly】(Default, standard, clear, bright, soft)

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



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

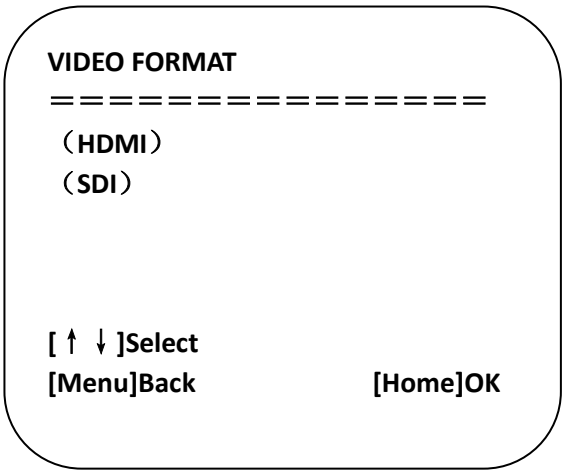
Accelerating Curve: Fast/slow

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

:

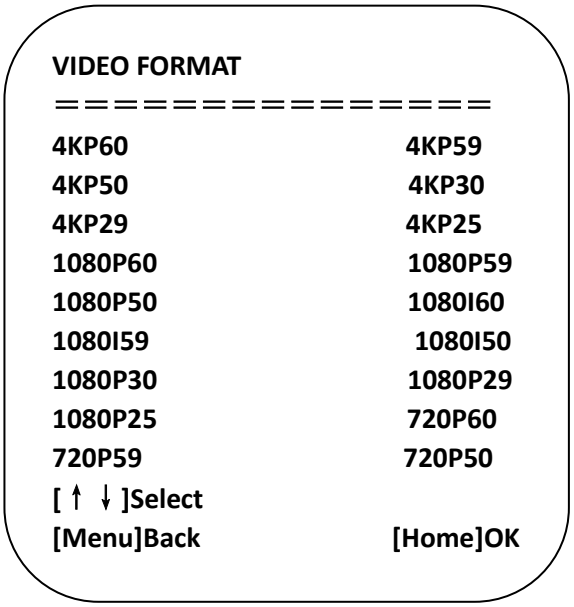


HDMI：Enter HDMI sub-menu item

SDI：Enter the SDI submenu item

1）HDMI

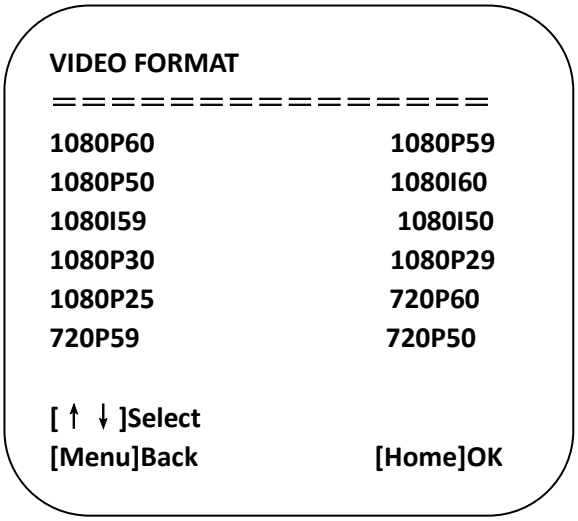
Move the pointer to the (Video Format) in the Menu, click the【HOME】and enter the HDMI (Video Format) as follow:



HDMI：4KP60、4KP59、4KP50、4KP30、4KP29、4KP25、1080P60、1080P59、1080P50、1080I60、1080I59、1080I50、1080P30、1080P29、1080P25、720P60、720P59、720P50

2）SDI

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



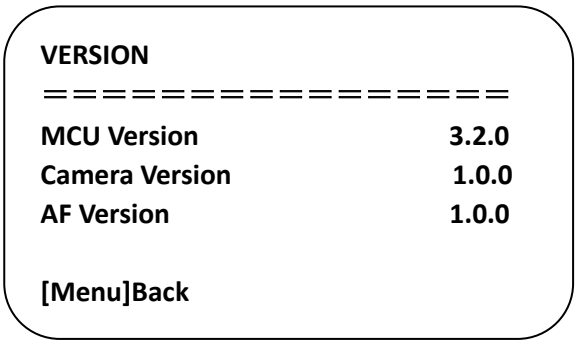
SDI：1080P60、1080P59、1080P50、1080I60、1080I59、1080I50、1080P30、1080P29、1080P25、720P60、720P59、720P50

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



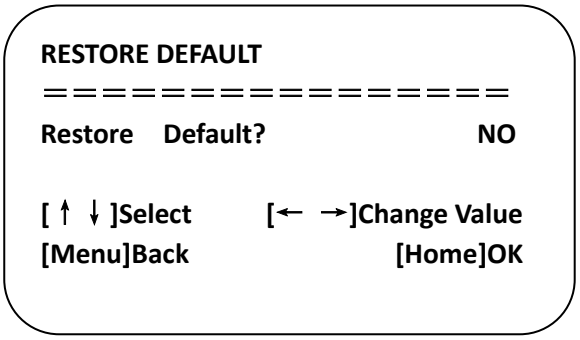
MCU Version：Display MCU version information

Camera Version：Display camera version information

AF Version：Display the focus version information

3.3.8 **Restore Default**

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



Restore default: Yes/No ;(after restoring default, the lcolor, style 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：Direct connections via “cross-over” network cable.
Connection to LAN：Connections to LAN via patch cable to LAN wall jack or LAN switch.

Caution

- Please do not put the power and network cable in places where can be easily touched to prevent video quality lowered by unstable signal transmission due to poor contact of cables。

- The computer must have the network segment where the camera IP address belongs to. The device will not be accessible if without the segment. I.E. The camera default IP address is 192.168.5.163, then segment 5 must be added in the computer. Specific steps are as below:
- Firstly open the window of Local Area Connection Properties on computer, select the “Internet protocol version 4(TCP/IPv4)” as shown by picture on the left. Double click or click the property “Internet” protocol version 4 (TCP/IPv4)to enter into the Internet Protocol Version 4(TCP/IPv4) Properties window, select “Advanced” to enter into the Advanced TCP/IP Setting and add IP and subnet mask in the IP browser as picture shown below. Click the “Confirm” to finish the adding of IP segment. User can add the corresponding network segment according to the revised IP address of the camera.

Caution

- The IP address to be added cannot be same with that of other computers or devices.

The existence of this IP address needs to be verified before adding.

Click the “Start” and select “Operation” to input cmd as picture below to verify if the network segment has been successfully added.

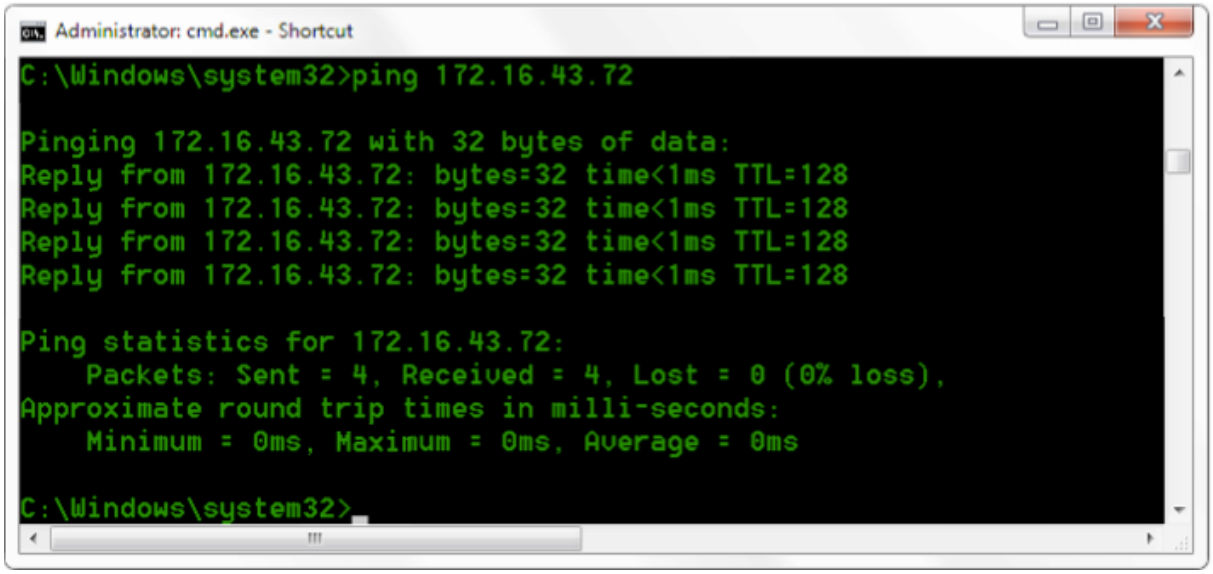


Figure1-8 Network segment successfully added

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.

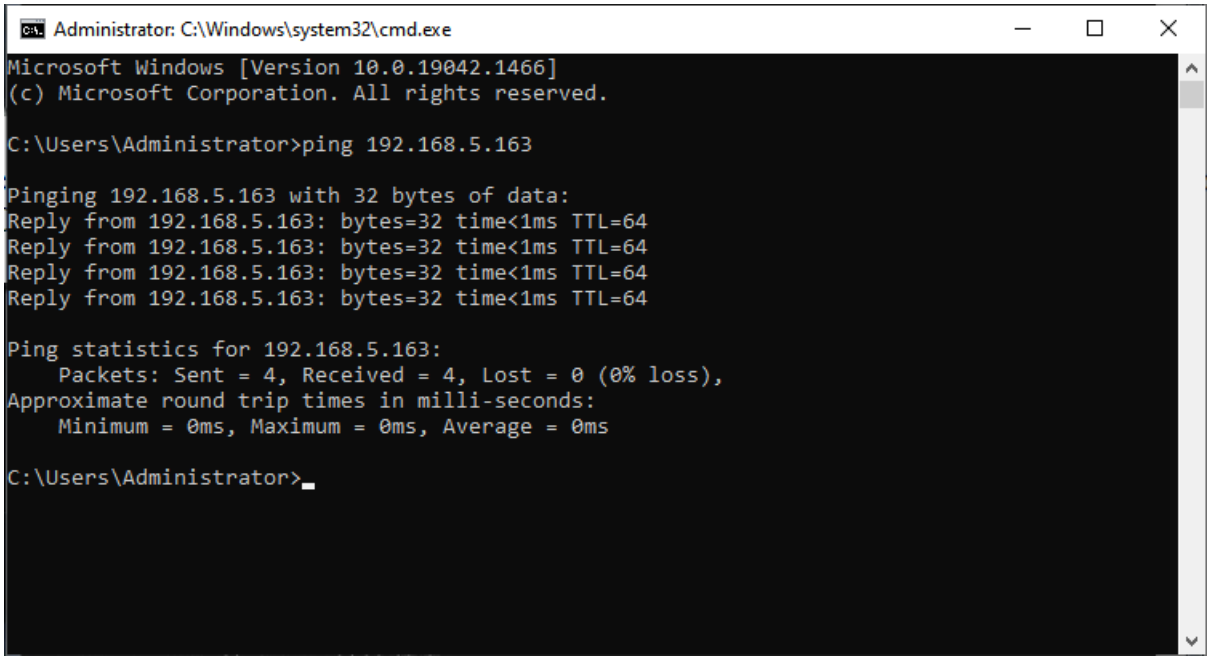


Figure1-9 Network Connection Screenshot

4.2 IE Login

4.2.1 **Web Login**

1）Web Login

After assigning an IP address to the camera, you can reach the Web Interface by typing in the camera's IP address into a web browser. You can log in this interface as administrator or user. If as administrator, type in "admin" into the username and password fields. If as user, type in "user1" or "user2" into the username and password fields. From the Web Interface, you can control the camera using the arrows on the left side. You can also adjust many of your camera's settings via this IP interface.

Note:

1. If login as "user", your rights are limited to preview, playback, and logout (No configuration right)

2. Browsers that support Web function are Google, IE, 360 and other popular browsers.

Language Selection: On the right top of the interface display "中文|English", click

“English”.

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, sound, full screen and set the preset position, run, delete and other operations.

1）Login as administrator

User name and default password: admin

You can control PTZ, zoom, focus, sound, full screen and set run, and delete the preset position and other operations；can preview and log out.

2）Login as user

User name and default password: “user1” or “user2”

You can control PTZ, zoom, focus, sound, full screen and set run, and delete the preset position and other operations；can preview and log out.

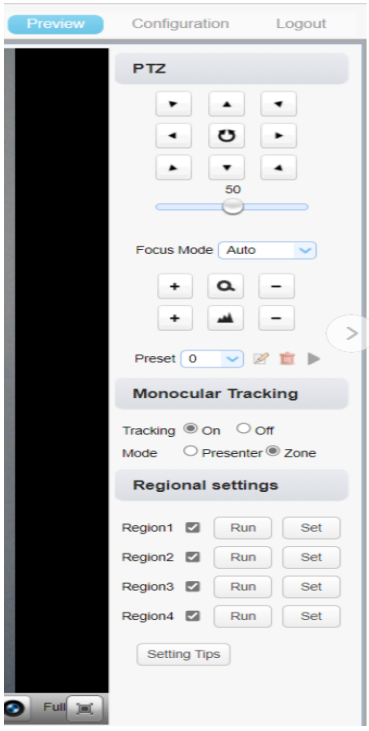
Caution

- Note：Log in as a normal user without configuration permissions.

4.2.3 **Monocular AI Tracking Function Web Page Configuration**

1、After login, enter into the management interface and turn on / turn off Tracking below “Monocular Tracking”

2、On the right top is PTZ control area, in which you can set the preset region of Regional Tracking. Interface is as below：

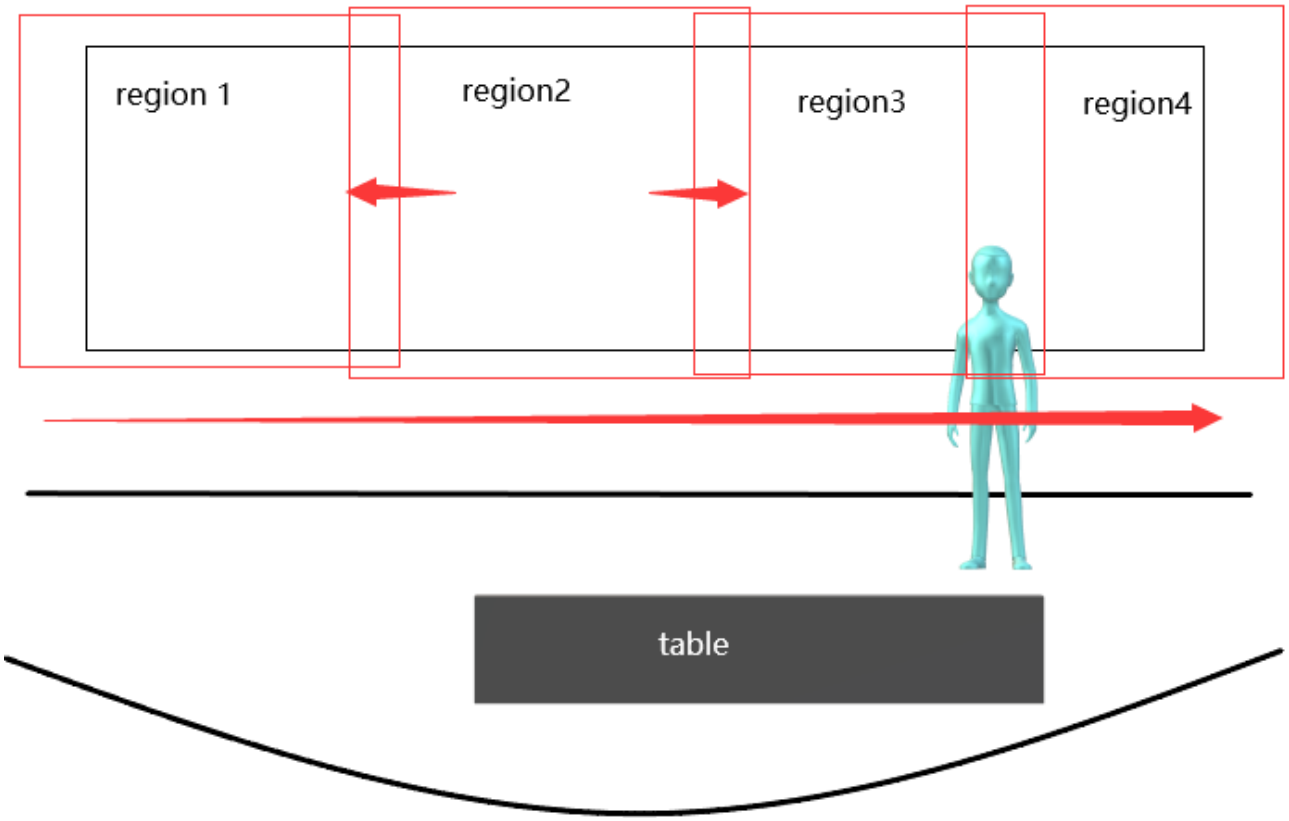


Real-time tracking mode: real-time tracking after turning on

Area tracking mode: Select area tracking mode to perform area tracking.

Regional Settings Steps (We take Region1 as an example):
1. On the PTZ Area, adjust image by clicking direction buttons to select one region.
2. After finishing region1 setting, click “Set” to complete the Region1 Tracking. Other region settings are same as region1 setting steps.
You can set 4 different regions, and minimum 2 regions. And the Regional Tracking settings can only be configured through the webpage.
Call out the regional tracking: Click “Run” of corresponding region on the “Regional settings” area.

1.Each preset preview image must be continuous from left to right and overlap when setting the tracking regions.
2.You need to tick next to the region number to save the setting location when you setting the region.



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

Table4-1 Explanation of Camera Configuration

Menu	**illustrate**
Audio	Including audio compressing format, sampling frequency, sampling precision, compressing code rate settings etc.

Configuration	
Video Configuration	Including video encoding, video parameters, character-overlapping, character size, video output setting etc.
Network Configuration	Including basic parameters, Ethernet, DNS, wireless network setting, GB28181 etc.
System Configuration	Including equipment property, system time, user management, version update, Reset, Reboot device settings etc.

4.2.5 **Audio Configuration**

Switch：Choose to enable the audio or not

Compressing Format: Set audio compressing format and manually reboot the device after change (default PCM,AAC optional)

Sampling Frequency: Set sampling frequency and manually reboot the device after change (AAC default 16000, 32000, 44100, 48000 optional,

Sampling Precision: Set sampling precision (default 16bits)

Compressing Code Rate: Set audio compressing code rate (default 64bits, 32, 48, 96,128bits optional)

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

Input volume: set the input volume (default 2,1-10 optional)

Note Click "SAVE", it will display "Successfully saved. Restart the device to take effect".

4.2.6 **Video Configuration**

1）Video Encoding

Code 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 video image resolution, save to take it effect (main stream default 1920 * 1080 ,3840*2160 or 1280 * 720 optional; default secondary stream 720*480，640*360、320*240、640*480 optional)

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

Rate (Kb / s): Set the video bit rate (mainstream default 8192b/s ,64-81920Kb/s optional; secondary stream default 1024Kb / s,64-5120Kb/s optional)

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

Key frame interval: Set the key frame interval (primary / secondary stream default 25,primary / stream 1-150 optional. secondary stream 1-150 optional).

Minimum QP of key frame interval: Set minimum QP of key frame interval(Default 10, 1-51 optional)

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

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

SRT password： Default is empty. Users can add by themselves

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

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

3）RTP Broadcasting

Main/Sub Stream： On/off

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

Multicast Address： Default 224.1.2.3. It can be edited.

Multicast Port：(The main stream defaults to 4000, the secondary stream defaults to 4002

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

4）Video Parameters

A）Focus: Focus mode, focus area, focus sensitivity can be set.

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

focus area： set the focus area（Default all，upper、middle、lower optional）

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

B）Exposure: Exposure mode, exposure compensation, backlight compensation, anti-flicker, gain limit, shutter, aperture, brightness, gain can be set.

Exposure Mode: Set the exposure mode (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 Exposure Compensation is on (default 0,-7 to 7 optional).

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

Anti-flicker: Set anti-flicker mode, effective only when exposure mode is automatic and aperture/brightness is priority（default 50Hz，off、60Hz optional）

Gain Limit: Set the gain limits, valid in auto focus, iris priority, and brightness priority.

（default 10，0~15 optional)
Gain: Set gain, only valid in manual exposure mode and shutter priority (default 6, 0~36 optional)
Dynamic range：Set Dynamic range（default 4，off、1~8 optional）
Shutter Speed: Set shutter speed value, valid in manual focus and shutter priority. (default 1/30、1/60、1/90、1/100、1/125、1/180、1/250、1/350、1/500、1/725、1/1000、1/1500、1/2000、1/3000、1/4000、1/6000、1/10000）
Aperture Value: Set the aperture value,，valid in Manual focus and iris priority (default F1.8，Close、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, valid in brightness priority mode (default 7，0~14 optional）
C）Color: White balance, saturation, hue, white balance sensitivity, red fine tuning, blue fine tuning, red gain, blue gain can be set.
White Balance Mode: Set the white balance mode（Default automatic，2400K、2500K、2600K、2700 K、2800 K、2900 K、3000K、3100 K、3200 K、3300 K、3400 K、3500K、3600 K、3700 K、3800 K、3900 K、4000K、4100 K、4200 K、4300 K、4400 K、4500K、4600 K、4700 K、4800 K、4900 K、5000K、5100 K、5200 K、5300 K、5400 K、5500K、5600 K、5700 K、5800 K、5900 K、6000K、6100 K、6200 K、6300 K、6400 K、6500K、6600 K、6700 K、6800 K、6900 K、7000K、7100K、manual, one-push white balance optional）
Note: Right click the “Correction” button when selected the One-push white balance mode.
Red Fine Tuning: Set red fine tuning, valid in auto white balance mode.（default 0，-10~10 optional）
Blue Fine Tuning: Set Blue fine tuning, valid in auto white balance mode.（default 0，-10~10 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 0，-15~15 optional）
Auto White Balance Sensitivity: Sensitivity Auto white balance settings（default high，medium、low optional）
Red Gain: Set the red gain, effective when it is manual (default 158, 0-255 optional).
Blue Gain: Set the Blue gain, effective when it is manual (default 56, 0-255 optional).
D）Image: You can set brightness, contrast, sharpness, gamma curve, dynamic contrast, black and white mode, horizontal flip, vertical flip, electronic zoom
Brightness: Set the brightness (default 16, 0-32 optional).
Contrast: Set the contrast (default 64, 0-128 optional).
Sharpness: Set the sharpness value (default 6, 0-11 optional).
BW Mode: Set black and white mode (default color, black/white optional).
Digital Zoom: Set digital zoom (default off, on optional)
E）Noise Reduction：
Noise Reduction:：Set noise reduction level（default 6，1~11、off optional）
F）Style: Select image (Default, standard, brightness, clarity, and soft can be set)

⚠ Caution

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

5）Character Overlapping
Display Time & Date: Yes/No
Display Title: Yes/No
Time, Font and Color: Default white, black, yellow, red and blue optional)
Title Font Color: Default white, black, yellow, red, and blue optional)
Move Character: Set the location where the time and title to display. Click " up, down, left, right" button to move the characters' location.
Title: Set title on device property (default CAMERA1)
Time: Set time on system time (default 1970/01/01 05:36:00)
Click "Save" button, "parameters are successfully saves" window pop-up, which means the setting take effect.

6）Character Size
Automatically Adjust According to the Resolution: Yes/No
Main Stream Character Size: Set the character size of the display, the device will automatically restart after changed (default 48, 28-200 optional)
Secondary Stream Character Size: Set the character size of the display, the device will automatically restart after changed (default 48, 38-200 optional)
Click "Save" button, "parameters are successfully saves" window pop-up, which means the setting take effect.

7）Video Output
Set the video output format：
SDI output format: default 1080P30，1080P60、1080P59、1080P50、1080I60，1080I59、1080I50、1080P30、1080P29、1080P25、720P60、720P59、720P50 optional.
HDMI output format: default 3840x2160P30 ， 3840x2160P60 、 3840x2160P59 、3840x2160P50、3840x2160P30、3840x2160P29、3840x2160P25、1080P60、1080P59、1080P50、1080I60、1080I59、1080I50、1080P30、1080P29、1080P25、720P60、720P59、720P50 optional.

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 80，0-65535 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 Visca port，the device will restart automatically after changed（default 443，0-65535 optional）
WebSocket Port：Set Visca port，the device will restart automatically after changed（default 8088，0-65535 optional）
Click on the "Save" button, it will be valid when display "Save successful".
RTSP Access：rtsp:// equipment IP address:554/live/av0 （av0 main stream; av1 second stream）
RTMP Access：rtmp:// equipment IP address:1935/live/av0 （av0 main stream; av1 second stream）

2）Ethernet Parameter
DHCP：Enable or disable obtain IP automatically can be set. After saved, reboot the device to takes effect (default: OFF)
IP Address：Set the IP address, after saved, reboot the device to takes effect (default 192.168.5.163).

⚠ Caution
- **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 192.168.5.1）
Physical Address: Set the physical address (the parameter is read-only)
Click 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 8.8.8.8)
Alternate DNS Server: Set alternate DNS server. (Default 0.0.0.0).
Click the "Save" button, it will be valid when display "Save successful".

4）GB28181
Switch: Set whether to activate GB28181
Time Synchronization: Enable/Disable time synchronization
Stream Type: Set stream type (default main stream, secondary stream optional)
Signing 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，the device will restart automatically after changed（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!"

6）RTSP
Enable RTSP: Enable/Disable RTSP
Click the "Save" button, and the prompt message "Parameters saved successfully! It will take effect after restarting!"
7）NDI
Enable NDI：Enable/Disable NDI
Enable **NDI HX3**：**Enable/Disable NDI HX3**
Nmme：Set the NDI Name，default NDI-412253
NDI NDI Group：(Set the NDI Group)，default public

4.2.8 **System Configuration**
1）Device Properties
Device Name：Set the device name (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 the "Save" button, and the prompt message "Parameters saved successfully! It will take effect after restarting!"

2）System Time
Date Format：Set the date format（YYYY-MM-DD default year - month - day，MM-DD-YYYY namely Month - Day - Year,）
Date Separator：set the date separator (default '/','.','-' Optional).
Time Zone：Set the time zone (default UTC+08:00, other time zones optional).
Time Type：Set the time types (default 24 hours, optional 12 hours).
Enable NTP：Enable/disable NTP
Update Interval: Set the NTP server automatic updated time interval. Valid after setting NTP server synchronization (default one day, 2-10 days Optional).

NTP Server Address or Domain Name: Set NTP server address or domain name (default time.nits.gov). Valid after setting NTP server synchronization.
NTP Server Port: Sets the NTP server port (default 123).Valid after setting NTP server synchronization.
Click on the "Save" button, it will be valid when display "Save successful".
Time setting： Set the time mode (optional synchronization with computer time, synchronization with NTP server, manual setting)
Computer time： Display the computer time (only the time setting mode is valid for synchronizing with the computer time), click the "Sync" button
Set time manually： Click the calendar icon on the right to manually set the time (only the time setting mode is valid for manual setting）

3）User Management
Select Users: Set the user type (the default administrator, User 1, 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, and the prompt message "Parameters saved successfully! It will take effect after restarting!"
Please note the case-sensitivity of the user name and password.

⚠ Caution

- If login page by a common user's name and password, one does not have configuration privileges but can only operate to preview, playback, logout.

4）Version Upgrade
Users only read the version information above which is consistent with the menu version but can not modify. The information varies from device types.
Update File: Click "Browse ..." installation, to select the upgrade file in the pop-up window.
Click on the "Upgrade" button, the upgrade dialog will appear, the device will reboot automatically after update successfully.
(Note: Make sure the power and network is keeping connected during the process, or the upgrade will fail)

⚠ Caution

- After the version upgrade is completed, you need to restore the factory default values

a、restore the factory default through web configuration；

b、restore the factory default value through the menu；

c、remote control shortcut key *#6 restore factory default；

Choose one of the above three methods, in which the IP account and password of "method a" are also restored to the default.

5）Restore Factory Setting

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

6）Reboot

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

4.2.9 **Logout**

Click "Logout"; and select "Yes" or "No" on pop-up window. If choose “Yes”, you will exit the current page and return to the user login interface again.

5.Serial Port Communication Control

In normal working state, you can control the camera through RS232C/RS485 (VISCA IN) cable.
The parameter of RS232C is as below:
Baud rate:2400/4800/9600/115200 /second；
Start Bit：1 bit；
Data Bit：8 bit；
Stop Bit：1 bit；
Verification Bit：None.
After power-on, the Camera will first move to the lower-left position and then return to the center position.
The zoom lens will be extended to the farthest position and then pulled back to the nearest position for self-check completion.
If the device has saved preset position 0, after initialization, the device will move to preset position 0.
At this point, the user can control the device using serial commands.

5.1 VISCA Protocol List

5.1.1 **Camera return command**

Ack/Completion Message		
	Command packet	**Remark**
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	**Remark**
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.

5.1.2 **Camera Control Command**

Command	Function	Command Packet	Remark
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	
	Tele(Variable)	8x 01 04 07 2p FF	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
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) - 7(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_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	Remark
	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	
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
	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	

Command	Function	Command Packet	Remark
	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	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

Command	Function	Command Packet	Remark
CAM_NR（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_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_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)

Command	Function	Command Packet	Remark
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	IR(remote commander)receive message via the VISCA communication ON/OFF
	Off	8x 01 7D 01 13 00 00 FF	
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
	Direct	8x 0A 01 32 0p 0q FF	HDMI to SDI
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 0:1080P60 8:720P30 1:1080P50 9:720P25 2:1080i60 A：1080P59.94 3:1080i50 B：1080i59.94 4:720P60 C：720P59.94 5:720P50 D：1080P29.97 6:1080P30 E：720P29.97 7:1080P25

Command	Function	Command Packet	Remark
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	
	Reset	8x 01 06 05 FF	

Command	Function	Command Packet	Remark
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 0F FF	
Tracking	Tracking OFF	81 0A 01 32 00 00 03 00 FF	Tracking OFF/ON
	Tracking ON	81 0A 01 32 00 00 02 00 FF	
	Real time tracking mode	81 0A 01 32 00 00 02 00 FF	
	zone tracking mode	81 0A 01 32 00 00 02 01 FF	

5.1.3 **Inquiry Command**

Command	Command Packet	Return Packet	Remark
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_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

Command	Command Packet	Return Packet	Remark
		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
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_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_GainLimitInq	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

Command	Command Packet	Return Packet	Remark
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_PictureEffectModeInq	8x 09 04 63 FF	y0 50 00 FF	Off
		y0 50 04 FF	B&W
CAM_MemoryInq	8x 09 04 3F FF	y0 50 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	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
		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

Command	Command Packet	Return Packet	Remark
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 ST (0510) 、 U2(0512)、U3 (0513) rs tu：ARM Version vw：reserve
VideoSystemInq	8x 09 06 23 FF	y0 50 0p FF	P: 0~E Video format 0:1080P60 8:720P30 1:1080P50 9:720P25 2:1080i60 A：1080P59.94 3:1080i50 B：1080i59.94 4:720P60 C：720P59.94 5:720P50 D：1080P29.97 6:1080P30 E：720P29.97 7:1080P25

Command	Command Packet	Return Packet	Remark
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: In the table above, 【x】 represents the address of the device to be operated, and 【y】 is equal to 【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

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
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

5.3 Pelco-P Protocol Command List

Function	Byte1	Byte2	Byte 3	Byte 4	Byte5	Byte6	Byte 7	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）If the camera will not be used for a long time, please turn off the power switch.

2）Use a soft cloth or lotion-free tissue to clean the camera body.

3）Use a soft dry lint-free cloth to clean the lens. If the camera is very dirty, clean it with a diluted neutral detergent. Do not use any type of solvent or harsh detergent, which may damage the surface.

6.2 Troubleshooting

1）No image

a、Check if the device's power is properly connected and if the power indicator is lit.

b、Power off and restart the device to check if it performs a normal self-check.

c、Check if the bottom DIP switch is set to the correct operating mode (refer to Table 2-9)）

d、Verify if the video output and the connection cables to the video display are functioning properly.

2）Abnormal display of image

Check if the video output and the connection cables to the video display are functioning properly.

3）Image is shaky or vibrating.

a、Check if the camera installation position is secure

b、Check if there are any mechanical vibration sources around the camera

4）The remote control is not functioning

a、Check if the remote control address is set to 1 and if it is controllable (If the device is restored to the factory default settings, the remote control address will also be restored to 1)

b、Verify if the remote control battery is properly installed or if it has low power

c、Check if the camera is in the normal operating mode (refer to Table 2-9)

d、Ensure that the menu is not active. Exit the menu to regain control. If the image is being displayed on a webpage, the menu will not be visible. If no operations are performed, the menu will automatically exit after 30 seconds, and control can be regained.

5）Serial port cannot be controlled

a、Check if the camera is it the standard control line for our company

b、Check if the serial port device protocol, baud rate, and address match the camera

c、Check if the control line is properly connected

d、Check if the camera is in normal working mode(refer to Table 2-9)

6）Unable to log in to the webpage

a、Check if the camera is producing a normal image

b、Check if the network cable is properly connected (network port indicator blinking)

c、Check if the computer has added the same network segment as the camera's IP address

d、Open "Start" on the computer, select "Run," type "cmd," and click "OK" to open the computer's DOS command window. Enter "ping 192.168.5.163" and press Enter. If you receive a response as shown in Figure 6-1, it indicates that the network connection is norma.

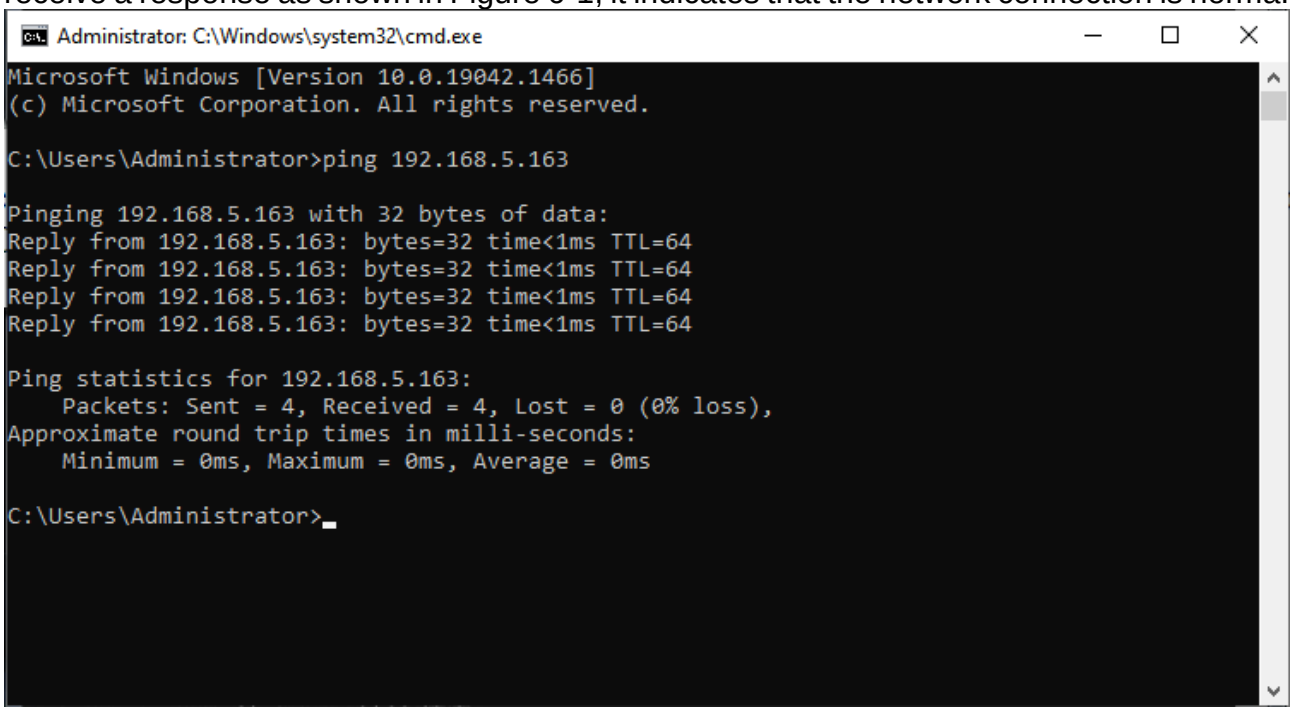


Figure 6-1 Network connection screenshot

7）HDMI 4K60 No image

a、Check if the HDMI cable used by the customer supports the HDMI 2.0 protocol

b、Check if the customer's TV supports HDMI 2.0. Refer to the display instructions for specific operations. Here is an example:

Sony TV (model: KD-49X8300C)

Using the TV remote control, press the main menu button to access the menu interface.；

Figure6-2 press the main menu button

Figure6-3 Enter the menu interface

Drag the menu interface to the bottom and select "Settings". In the settings menu, locate the "External Inputs" option.

Figure6-4 Click settings

Figure6-5 select the external input option

In the "External Inputs" option, select "HDMI Signal Format". It is recommended to choose a channel ending with "ARC" to enable enhanced format.；

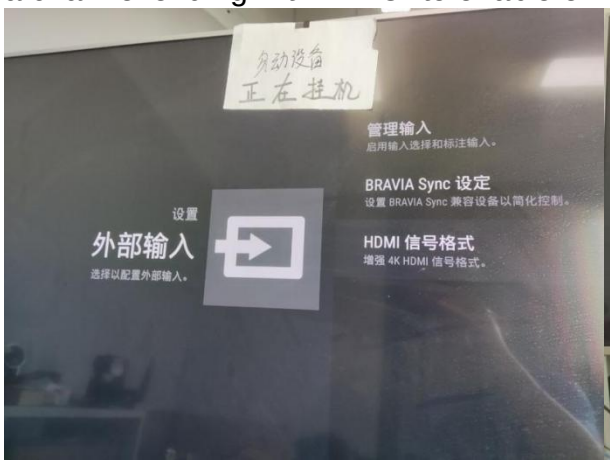


Figure6-6 Click HDMI Signal format

Figure6-6 Select enhanced format with ARC ending

Finally, check if the interface channel and input selection are corre