SEADA

Showing the World

SDC015 Series HD PTZ Cameras

User Manual
V1.0

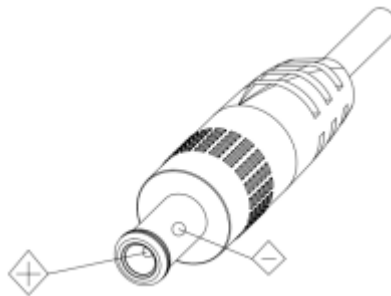# Attentions

Electric Safety

Installation and operation must accord with electric safety standard

Caution with transport

Avoid stress, vibration and soakage in transportation, storage, and installation.

Polarity of power supply

The power supply of the product is ±12V, the max electrical current is 2A. Polarity of the power supply drawing.

Careful of installation

Never move the camera by seizing the camera head. Don't rotate camera head by hand; otherwise, mechanical error will occur.

This series item must be put on a straight smooth desk or platform, and it cannot be installed slanted.

If the camera is installed on a TV or computer, the base can be fixed by four double-sided adhesive trays.

Don't apply corrosive liquid or solids to avoid damage to the cover which is made up of organic material.

Make sure there are no objects within the rotation area of the camera.

Never power on before installation is completed.

Do not disassemble.

We are not responsible for any unauthorized modification or dismantling.

Attention

Electromagnetic field under certain rates may affect camera image!

Content

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1. Fast Installation

1.1 Camera Interface Explanation
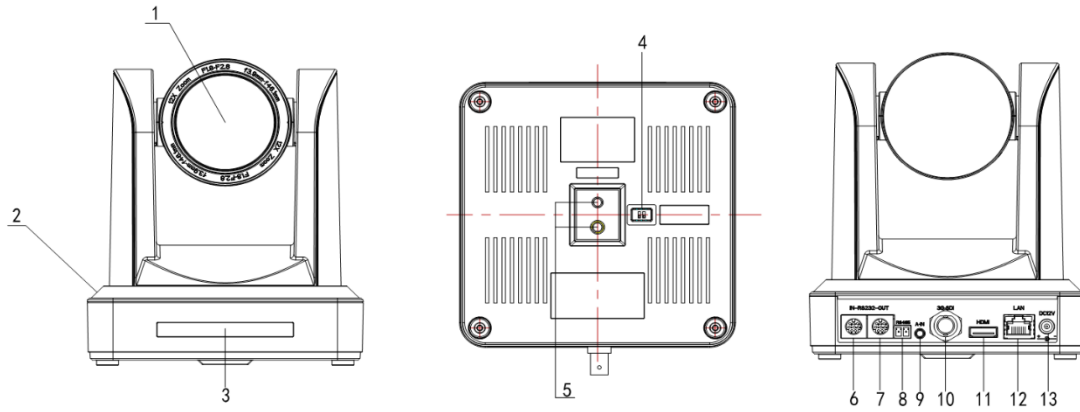
Figure 1.1 SDC015-SHLP/SHLPN Series

(SDI, HDMI, and LAN Outputs with PoE, N stands for NDI)

1、Lens	6、RS232 (IN)	11、HDMI Output
2、Base	7、RS232 (OUT)	12、10/100M LAN Port with PoE
3、Remote Controller Receiver Light	8、RS485 Input (left +, right-)	13、Power Supply
4、Bottom Dial Switch	9、Audio Input	
5、Tripod Screw Hole	10、3G-SDI Output	
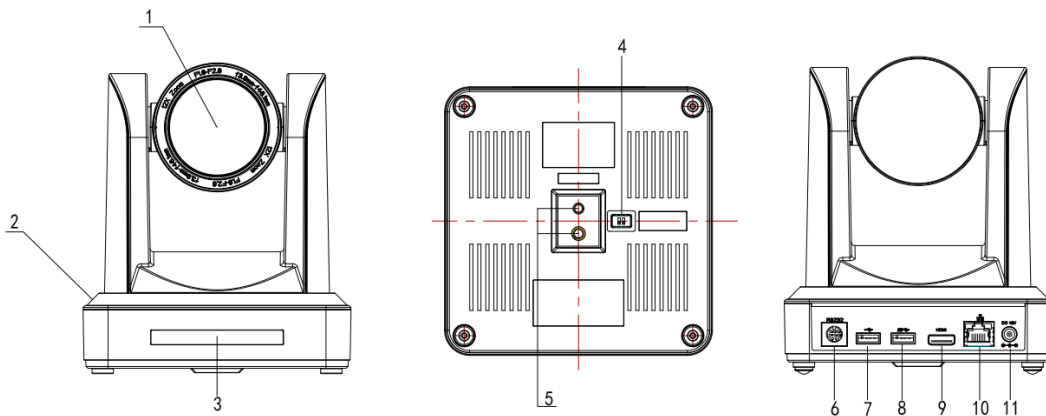
1.2 SDC015-U2U3HL Series

(USB2.0, USB3.0, HDMI, and LAN Outputs)

1、Lens	5、Tripod Screw Hole	9、HDMI Output
2、Base	6、RS232 (IN)	10、10/100M LAN Port
3、Remote Controller Receiver Light	7、USB2.0	11、Power Supply
4、Bottom Dial Switch	8、USB3.0	

Note: Different model has different interface. Users should read the manual according to the device model.

1.2 Initial configuration

1) **Powering on the device:** Connect DC12V power supply adapter with power supply socket or via PoE if the model supports it.

2) **Initialization:** Device is powered on when the power indicator light on the front of the device and remote-control receiver light begins blinking, camera head moves from bottom right to the bottom, and then goes to the HOME position (intermediate position of both horizontal and vertical). When remote control receiver light stops blinking, the initialization is finished

Note: If device has preset 0 setup, when initialization is completed, the camera automatically moves to the preset 0 position.

1.3 Video Output

This series has a variety of video output; SHLP/SHLPN models have video output from LAN, HDMI and 3G-SDI, U2U3HL models from LAN/USB2.0/USB3.0/HDMI ports.

1) **Video Output from LAN**

   a. Network Cable Connection Port: SHLP/SHLPN Model--No.12 in Figure1.1; U2U3HL Model --No.10 in Figure1.2.

   b. Webpage Login: Open your browser and enter 192.168.5.163 in the address bar (factory default); press Enter to get into the login page; click on the "player is not installed, please download and install!" and follow the installation steps for installation if using Internet Explorer/Microsoft Edge. Then enter the username: *admin* and password: *admin* (factory default); press Enter to enter the preview page, users can carry out PTZ control, video recording, playback, configuration, and other operations.

2) **HDMI Video Output**

   a. HDMI Port: SHLP/SHLPN model--No.11 in Figure1.1. U2U3HL models--No.9 in Figure1.2.

   b. Connect the camera and the monitor via an HDMI video cable; video output is available after camera initialization.

3) **3G-SDI Video Output**

   a. 3G-SDI video cable connection: SHLP/SHLPN model--No.10 in Figure1.1

   b. Connect the camera and the monitor via 3G-SDI video cable; video output is available after camera initialization.

4) **USB3.0 Video Output (compatible with USB2.0 output)**

   a. USB3.0 video cable connection: U2U3HL model--No.8 in Figure1.2.

   b. Connect the camera and the PC via USB3.0 video cable, open video display software, select image device, and then video output will be available.

5) **USB2.0 video output**

   a. USB2.0 video cable connection: U2U3HL models--No.7 in Figure1.2.

   b. Connect the camera and the PC via USB2.0 video cable, open video display software, select image device, and then video output will be available.

1.4 Bracket mount

Note: Do not use Bracket on plasterboard. Bracket is optional and ordered separately

1) Wall mount steps

M6 nut and shim   M6 swelling bolt   Wall mount bracket   Camera

Step 1

M6 swelling bolt

100

50

Wall

Step2

Wall mount bracket

Wall

Step3

Wall mount bracket

Wall

M6 nuts and shims

Step4

Camera

Wall mount bracket

1/4-20UNC bolt

Wall

Finish

Wall
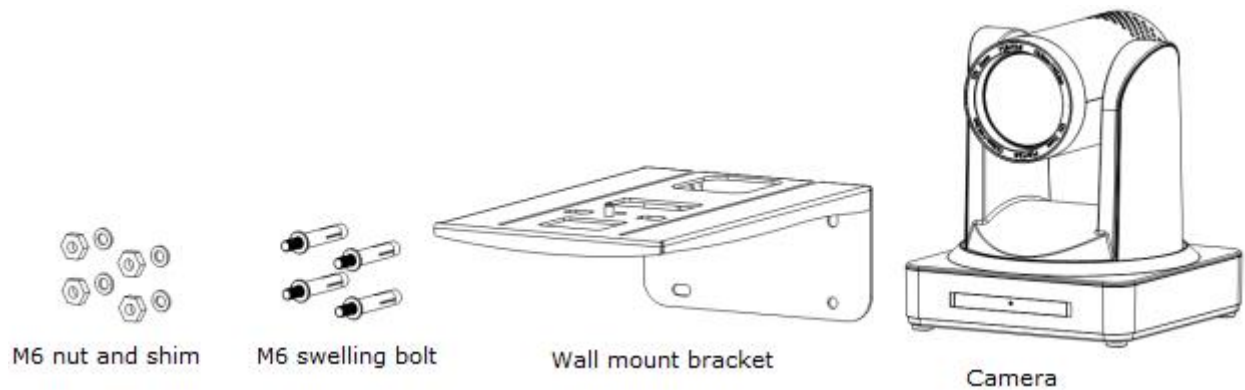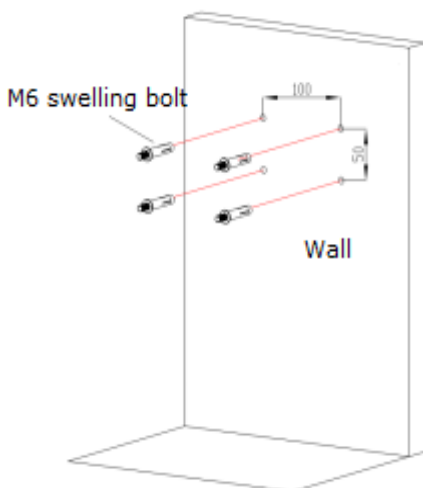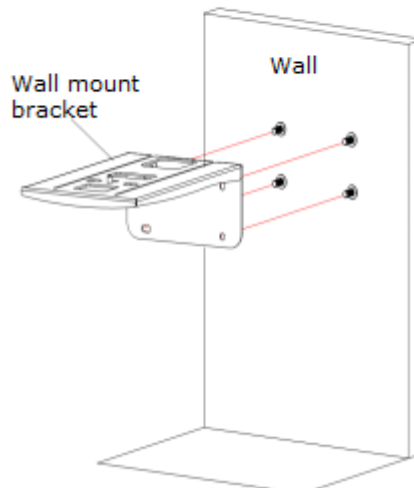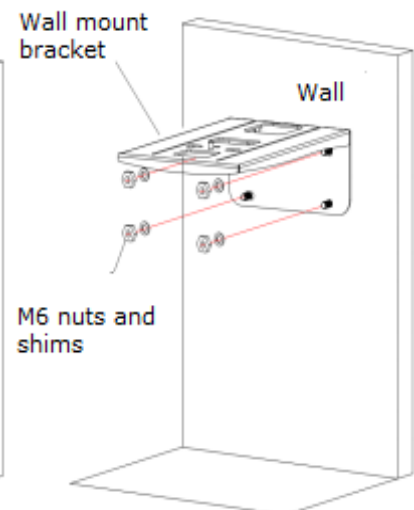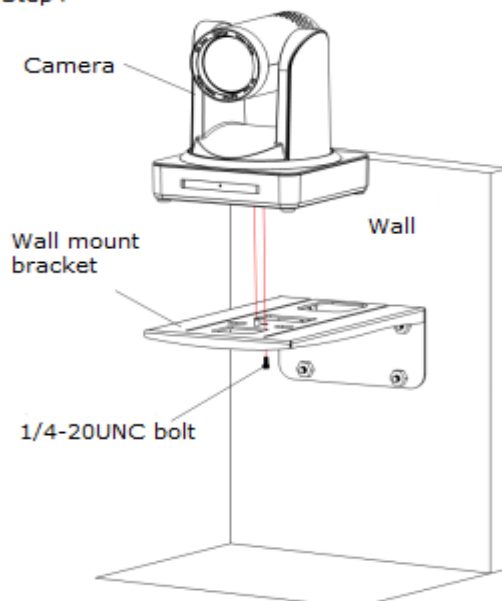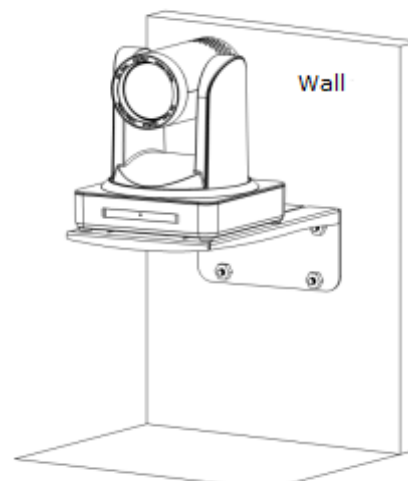
2. Upside down mount steps

PA3X30 self-tapping screws

PM3X6 screws

Ceiling upper covering plate

Camera

Screw stopper

1/4-20UNC screw

Ceiling lower covering plate

Step1

Ceiling

Screw stopper

Step2

Ceiling upper covering plate

Ceiling

PA3X30 self-tapping screws

Step3

1/4-20UNC screw

Ceiling lower covering plate

Camera

Step4

天花板

Ceiling upper covering plate

Ceiling lower covering plate

Camera

Step5

Ceiling

PM3X6 bolt

Camera

2. Product overview

2.1 Product Introduction

2.1.1 Product Model

Models	Optical Zoom	Digital Zoom	Video Interface	NDI	PoE
SDC015-U2U3HL	12x or 20x	10x	USB2.0, USB3.0, HDMI, LAN	No	No
SDC015-SHLP	12x or 20x	10x	HDMI, 3G-SDI, LAN	No	Yes
SDC015-SHLPN	12x or 20x	10x	HDMI, 3G-SDI, LAN	Yes	Yes

2.1.2 Dimension
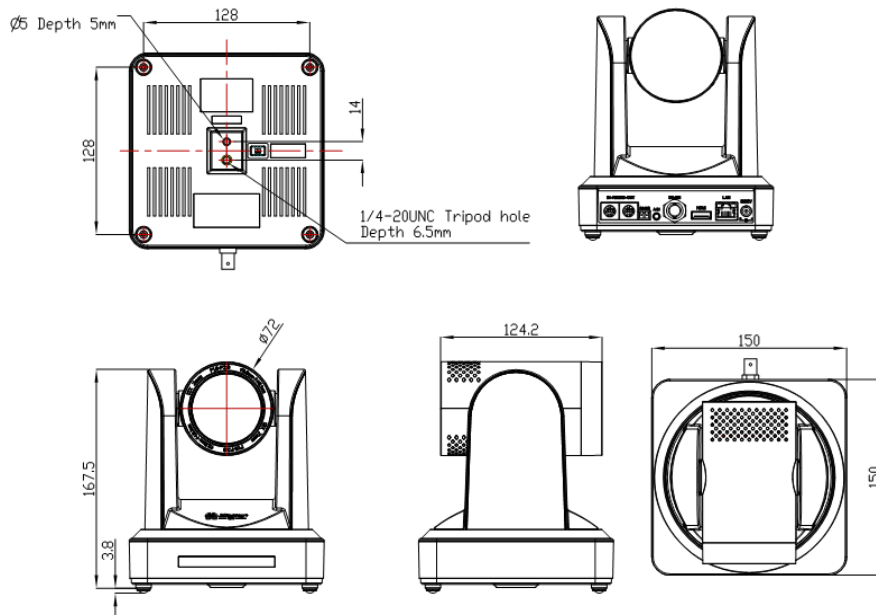
Figure 2.1   Camera dimension

2.1.3 Accessory

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

Model NO.	SHLP/SHLPN Series	U2U3HL Series
Accessory	Power adapter	Power adapter
	RS232 cable	RS232 cable
	IR Remote controller	IR Remote controller
	Download card	Download card
	2 pin Phoenix connector	USB3.0 and USB2.0 cables

USB2.0 Video cable: If need USB2.0 cable to provide power but not a power adapter, USB2.0 Video cable with two ports is needed, among which red port is for power supply and black port for transmitting USB video signals. If using a power adapter, the general USB2.0 video cable without power supply function is ok. For consistent video quality always use the external

power supply provided (U2U3HL series)

2.2 Main Features

2.2.1 Camera Performance

SDC015 family of PTZ camera offers perfect functions, superior performance, and rich interfaces. The features include advanced ISP processing algorithms to provide vivid images with a strong sense of depth, high resolution, and fantastic color rendition. It supports H.265/H.264 encoding which makes motion video fluent and sharp even with less than ideal bandwidth conditions.

1. **Superb High-definition Image:** It employs 1/2.8-inch-high quality CMOS sensor. Resolution is up to 1920x1080 with frame rate up to 60 fps.

2. **Various Optical Zoom Lens:** It has 12X/20X optical zoom lens for options.

3. **Leading Auto Focus Technology:** Leading auto focus algorithm makes lens a fast, accurate and stable auto-focusing.

4. **Low Noise and High SNR:** Low Noise CMOS effectively ensure high SNR of camera video.

5. Advanced 2D/3D noise reduction technology is also used to further reduce the noise, while ensuring image sharpness.

6. **Quiet PTZ**: By adopting high accuracy step driving motor mechanism, it works extremely quiet and moves smoothly and very quickly to designated position.

7. **Multi-Format Video Outputs:** Support HDMI,3G-SDI, USB, and wired LAN. The 3G-SDI is available for 100m transmission at 1080p60 format.

8. **Remote Controls:** Support IR remoter

9. **Low-power Sleep Function:** Support low-power sleep/wake up, the consumption is lower than 500mW under sleep mode

10. **Support Multiple Control Protocol:** Support VISCA, PELCO-D, PELCO-P protocols which can also be automatically recognized. Support VISCA control protocol through IP port.

11. **RS-232 Cascade Function:** SHLP/SHLPN series support RS-232 cascade function which is convenient for installing.

12. **255 Presets Positions:** Up to 255 presets (10 presets by remoter).

13. **Wide Application:** Tele-education, Lecture capture, Webcasting, Videoconferencing, Tele-training, Tele-medicine, Interrogation and Emergency command systems.

2.2.2   Network performance

1. **Audio Input Interface:** Support 16000, 32000, 44100, 48000 sampling frequency and AAC, MP3, PCM audio coding.

2. **Multiple Audio/Video Compression:** Support H.264/H.265 video compression; AAC, MP3 and PCM audio compression; Support compression of resolution up to 1920x1080 with frame up to 60 fps and 2 channel 1920x1080p with 30 fps compression.

3. **Multiple network protocol:** Support ONVIF, RTSP, RTMP protocols and RTMP push mode, easy to link streaming media server (Wowza, FMS)

2.3 Technical Specification

Model	12X	20X
Camera Parameter		
Sensor	1/2.8-inch-high quality HD CMOS sensor	
Effective Pixels	16: 9 aspect, 2.07 megapixel	
Video Resolution	**HDMI/SDI video resolution** 1080P60/50/30/25/59.94/29.97;1080I60/50/59.94;720P60/50/30/25/59.94/29.97 **U3 interface video resolution** 1)U3:1920X1080P60/50/30/25;1280X720P60/50/30/25;960X540P30;640X360P30;640X480P30;352X288P30;960X540P30. 2)U3 compatible with U2: 960X540P30; 640X360P30; 1280X720P10/15; 720X576P50; 720X480P60; 640X480P30; 352X288P30. **U2 interface video resolution** 176x144/320x240/320x180/352x288/640x480/720x576/640x360/800X600/960X540/1024X576/1024X768/1600X896/1920X1080/1280X720P30/25/20/15/10/5	
Optical Zoom	12X f＝3.9～46.1mm	20X f＝5.5～110mm
View Angle	6.3° (tele) 72.5° (wide)	3.3° (tele) 54.7° (wide)
AV	F1.8 – F2.4	F1.6 – F3.5
Digital Zoom	10X	
Minimum Illumination	0.5Lux (F1.8, AGC ON)	
DNR	2D & 3D DNR	
White Balance	Auto / Manual/ One Push/ 3000K/ 4000K/5000K/6500K	
Focus	Auto/Manual	
Aperture	Auto/Manual	
Electronic Shutter	Auto/Manual	
BLC	ON/OFF	
WDR	OFF/ Dynamic level adjustment	
Video adjustment	Brightness, Color, Saturation, Contrast, Sharpness, B/W mode, Gamma curve	
SNR	>55dB	

Input/Output Interface	
Video Interfaces	SHLP/SHLPN Model：HDMI, 3G-SDI, LAN UV510A-05/10/12/20/30-U2U3 Model：USB2.0, USB3.0, HDMI, LAN
Image code stream	Double streams outputs simultaneously
Video format	H.264, H.265
Control Interface	RS-232 Ring through RS232 output, RS-485
Control Protocol	VISCA/Pelco-D/Pelco-P; Baud Rate: 115200/9600/4800/2400bps
Audio input Interface	3.5mm linear input;
Audio Format	AAC/MP3/PMC Audio compression
HD IP Interface	100M IP port(100BASE-TX); support IP Visca control protocol
Network Protocol	RTSP/RTMP, ONVIF
Power Interface	HEC3800 outlet (DC12V)

PTZ Parameter	
Pan Rotation	±170°
Tilt Rotation	-30°～+90°
Pan Control Speed	0.1 -180°/sec
Tilt Control Speed	0.1-80°/sec
Preset Speed	Pan: 60°/sec, Tilt: 30°/sec
Preset Number	255 presets (10 presets by remote controller)
Other Parameter	
Supply Adapter	AC110V-AC220V to DC12V/2A
Input Voltage	DC12V±10%
Input Current	1A(Max)
Consumption	12W (Max)
Store Temperature	-10℃ to +60℃
Store Humidity	20% - 95%
Working Temperature	-10℃ to +50℃

Working Humidity	20%--80%
Dimension	150mmX150mmX167.5mm
Weight	1.4KG
Working Environment	Indoor
Remote Operation (IP)	Remote Upgrade, Reboot and Reset

2.4 Interface Instruction

2.4.1 External Interface

1) **External interface of SHLP/SHLPN model:** RS232 Input /Output, RS485 Input, Audio Input,3G-SDI Output, HDMI Output, LAN, DC12V Power Interface.

2) **External interface of U2U3HL model:** RS232 input, USB3.0, USB2.0, HDMI, LAN, DC12V power interface.

2.4.2 Bottom Dial Switch

SHLP/SHLPN and U2U3HL model Bottom Dial Switch diagram shown in Figure 2.6 and 2.7:
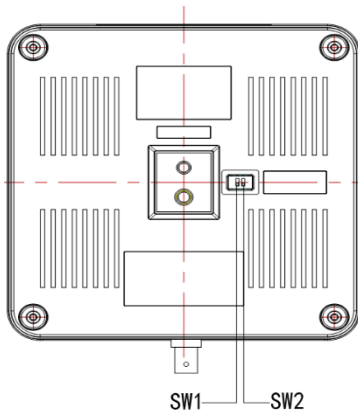
Figure 2.2 Bottom Dial Switch Diagram   Figure 2.3 Bottom Dial Switch Diagram
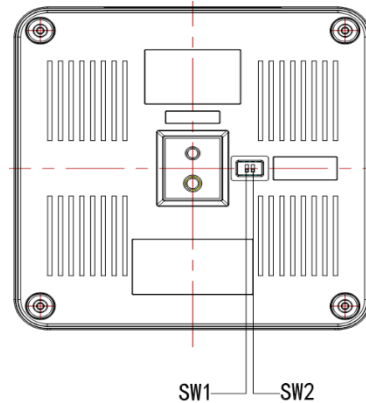
SHLP/SHLPN model: two DIP switches are set to ON or OFF to select different modes of operation as shown in Table 2.2

Table 2.2 Dial Switch setting

No.	SW1	SW2	Explanation
1	OFF	ON	Working mode
2	ON	OFF	Updating mode

U2U3HL model: two DIP switches are set to ON or OFF to select different modes of operation as shown in Table 2.3

Table 2.3 Dial Switch setting

No.	SW2	SW1	Explanation
1	ON	OFF	Working Mode
2	ON	ON	USB3.0 Software Upgrade Mode
3	OFF	ON	ARM Software Upgrade Mode

Note: Working mode can be applicable for web upgrade.

2.4.3 RS-232 Interface

1) SHLP/SHLPN model RS-232 interface specification as shown below
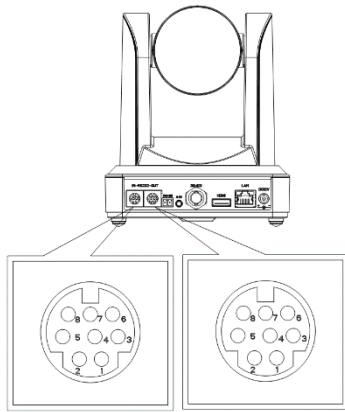
Computer or keyboard and camera connection method

Camera	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

RS232 IN port on camera ⇐ MD8M (PIN) — DB9F ⇒ RS232 port on PC or Control Keyboard
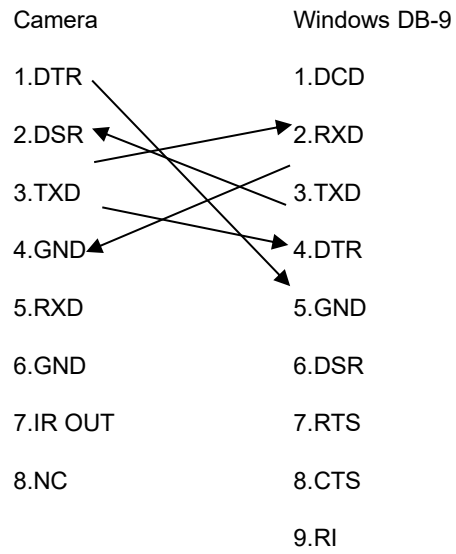
2) RS-232 Mini-DIN 8-pin Port Definition
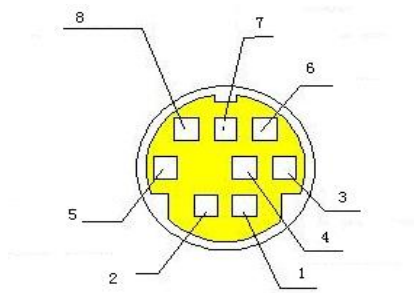
NO.	Port	Definition
1	DTR	Data Terminal Ready
2	DSR	Data Set Ready
3	TXD	Transmit Data
4	GND	System Ground
5	RXD	Receive Data
6	GND	System Ground
7	IR OUT	IR Commander Signal
8	NC	No Connection

3) RS232 (DB9) Port Definition
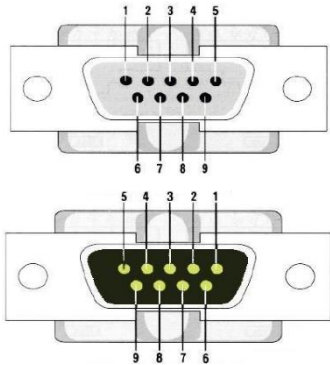
NO.	Port	Definition
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	System Ground
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator

4) VISCA networking as shown below:
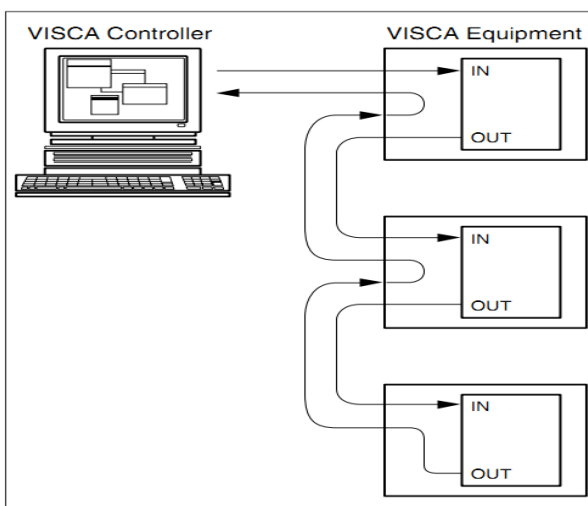
Camera cascade connection method

Camera 1	Camera 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
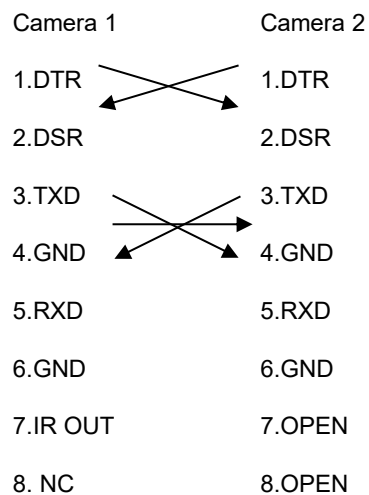
Note: SHLP/SHLPN model has RS232 input and output interface, so users can cascade multi devices together. It won't work for U2U3HL model since it only has RS232 input interface.

3. Operation Instruction

3.1 Video Output

3.1.1 Power-On Initial Configuration

Connecting the power, the camera will have an initial configuration, R indicator light will be flashing. When the camera returns to the HOME position (middle position for P/T), and the lens finishes zooming in/out, the auto-testing is finished. IR led will also stop flashing. If a preset 0 is set, the camera will rotate to the 0 preset position after initial configuration.

3.1.2 Video Output

Connect to the video output cable: the user selects the output mode according to the machine model.

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 username and password (factory default are "admin"), Finally enter the preview page, and the image comes out.

   (Note: If you forget your username, password, IP address, you can manually restore the default by the remote controller key combination * #)

2) **3G-SDI output or DVI (HDMI) output:** Connect the monitor with the corresponding video output interface, then the monitor output image.

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

4) **USB3.0 compatible with USB2.0 output:** Connect this product with computer USB2.0 interface (black), open the Device Manager to see whether there is an image device and whether the Universal Serial Bus controllers recognize USB3.0 device. After properly identified, open the software, choose the image device and then it will output image.

3.2 Remote Controller

3.2.1 Keys Instruction

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 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 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 the aging mode
5) 【*】+【#】+【3】: Menu set to Chinese
6) 【*】+【#】+【4】: Menu set to English
7) 【*】+【#】+Manual: Restore the default username, password, and IP address
8) 【#】+【#】+【0】: Switch the video format to 1080P60
9) 【#】+【#】+【1】: Switch the video format to 1080P50
10) 【#】+【#】+【2】: Switch the video format to 1080I60
11) 【#】+【#】+【3】: Switch the video format to 1080I50
12) 【#】+【#】+【4】: Switch the video format to 720P60
13) 【#】+【#】+【5】: Switch the video format to 720P50
14) 【#】+【#】+【6】: Switch the video format to 1080P30
15) 【#】+【#】+【7】: Switch the video format to 1080P25
16) 【#】+【#】+【8】: Switch the video format to 720P30
17) 【#】+【#】+【9】: Switch the video format to 720P25

3.2.2 Operation

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) Zoom Control
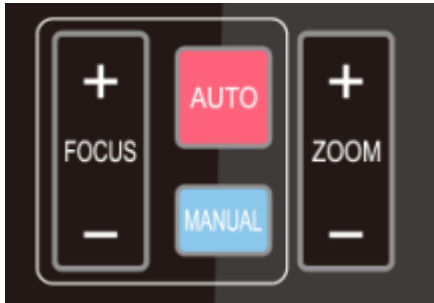
ZOOM IN: press "ZOOM ▼" key
ZOOM OUT: press "ZOOM ◀" key
Press and hold the key, the camera will keep zooming in or zooming out and stops as soon as the key is released.

4) Focus Control
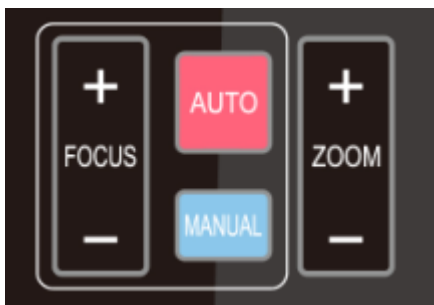
Focus (near): Press "【focus+】" key (Valid only in manual focus mode)
Focus (far): Press "【focus-】"key (Valid only in manual focus mode)
Auto Focus: Support
Manual Focus: Support
Press and hold the key, the action of focus will keep continue and stops as soon as the key is released.

5) BLC Setting

BLC ON / OFF: support

6) Presets Setting, Running, Clearing

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.

7) Camera Remote Controller Address Setting
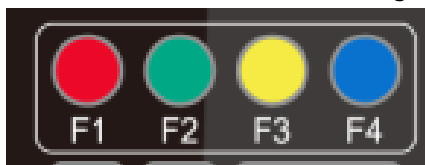
【*】+【#】+【F1】:Camera Address No.1
【*】+【#】+【F2】:Camera Address No. 2
【*】+【#】+【F3】:Camera Address No. 3
【*】+【#】+【F4】:Camera Address No. 4

3.3 MENU SETTING

3.3.1 Main Menu

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

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


[ ↑ ↓ ]Select       [← →]Change
 Value
```
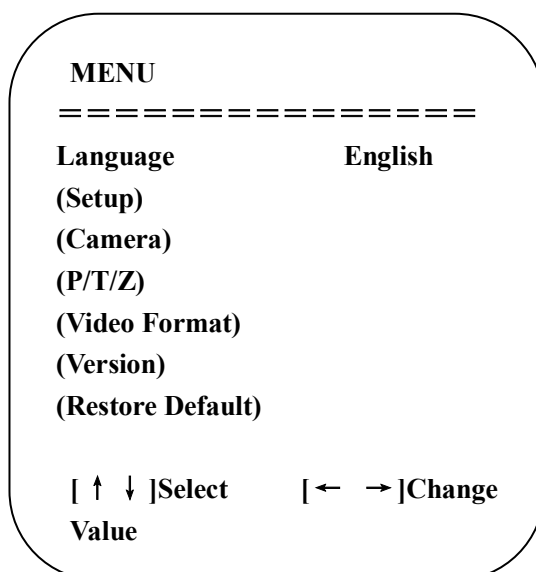
LANGUAGE: Language setting, Chinese / English
SETUP: System setting
CAMERA OPTION: Camera setting

PTZ OPTION: Pan tilt setting

VERSON: camera version setting

Restore Default: Reset setting

[↑↓] Select: for selecting menu
[← →] Change Value: for modify parameters
[MENU] Back: Press [MENU] to return
[Home] OK: Press [Home] to confirm

3.3.2 System Setting

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

```
SETUP
================

Protocol            Auto
Visca Address       1
Visca Address Fix   OFF
PELCO-P Address     1
PELCO-D Address     0
Baudrate            9600


[↑↓]Select    [← →]Change
Value
```
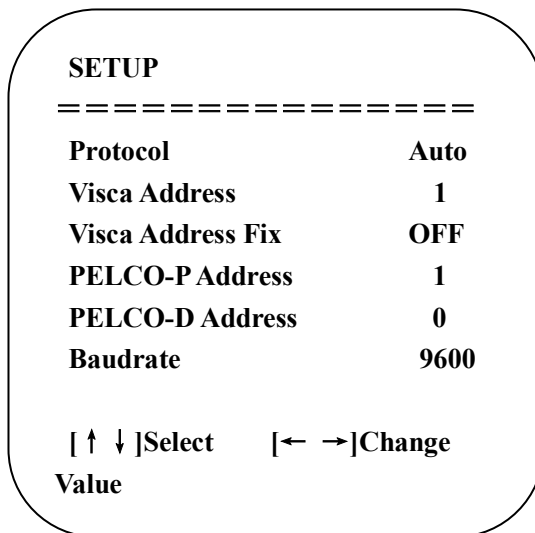
PROTOCOL: VISCA/Pelco-P/Pelco-D/Auto

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

Baud rate: 2400/4800/9600/115200

Visca Address Fix: On/Off

3.3.3 Camera Setting

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

```
CAMERA
================
(Exposure)
(Color)
(Image)
(Focus)
(Noise Reduction)


[↑↓]Select    [← →]Change
Value
```
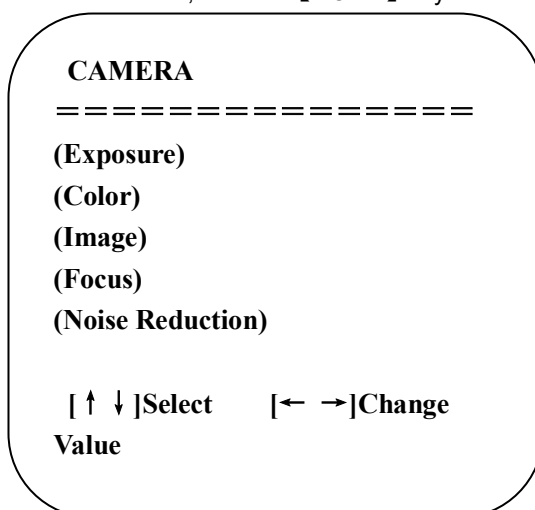
EXPOSURE: Enter Exposure setting

COLOR: Enter color setting

Image: Enter image settings
Focus: Enter focus settings
Noise Reduction: Enter noise reduction

1) EXPOSURE SETTING

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

```
   EXPOSURE
================

   Mode          Auto
   EV            OFF
   BLC           OFF
   Anti-Flicker  50Hz
   Gain Limit    3
   WDR           5


   [↑↓]Select  [← →]Change
   Value
```
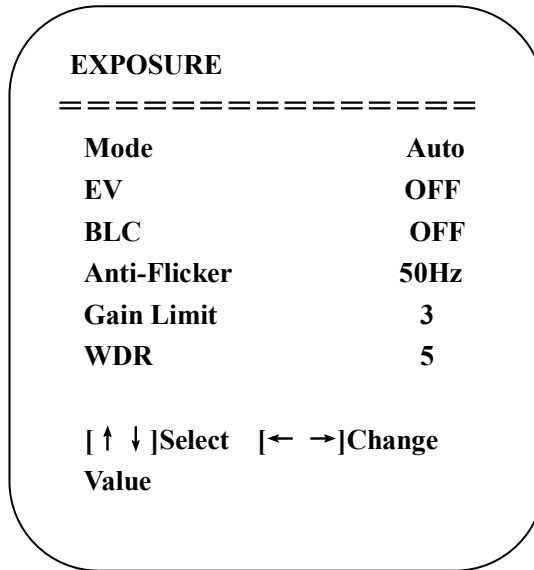
Mode: Auto, Manual, Shutter priority, Iris priority and Brightness priority.

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

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

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

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

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

WDR: Off,1~8

Shutter

Priority:1/25,1/30,1/50,1/60,1/90,1/100,1/120,1/180,1/250,1/350,1/500,1/1000,1/2000,1/3000,1/4000,1/6000,1/10000(only available in Manual and Shutter priority mode)

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

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

2) COLOR SETTING

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

```
   COLOR
================

   WB Mode          Auto
   Saturation       80%
   Hue              7
   AWB Sensitivity  High
   Color style      Default
   Color temp       Low


   [↑↓]Select    [← →]Change
   Value
```
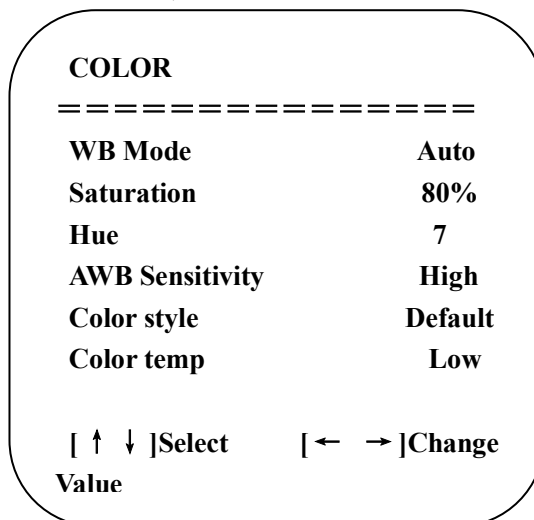
WB Mode: Auto, 3000K、 3500K、 4000K、 4500K、 5000K、 5500K、 6000K、 6500K、 7000K, Manual, One Push

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

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

Saturation: 60%,70%,80%,90%,100%,110%,120%,130%

Hue: 0~14

AWB Sensitivity: high/middle/low

Color Style: Default, style1~4.

Color Temp: high/middle/low

3) IMAGE

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

```
  IMAGE
  ================

  Brightness              6
  Contrast                8
  Sharpness               7
  Flip-H              OFF
  Flip-V              OFF
  B&W-Mode            Color
  Gamma               Default
  DZoom               OFF
  DCI                 Close
  [↑ ↓]Select     [← →]Change
  Value
```
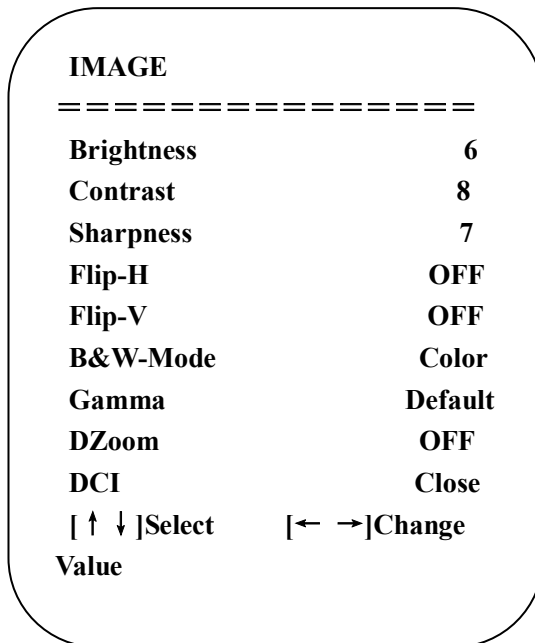
Brightness: 0~14
Contrast: 0~14
Sharpness: 0~15
Flip-H: On/Off
Flip-V: On/Off
B&W Mode: Color, black/white
Gamma: Default, 0.47, 0.50, 0.52, 0.55
DZoom: Digital zoom options: On/Off
DCI: Dynamic Contrast: Off,1～8

4) FOCUS

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

```
  FOCUS
  ================
  Focus Mode              Auto
  AF-Zone                 Center
  AF-Sensitivity          Low


  [↑ ↓]Select     [← →]Change
  Value
```
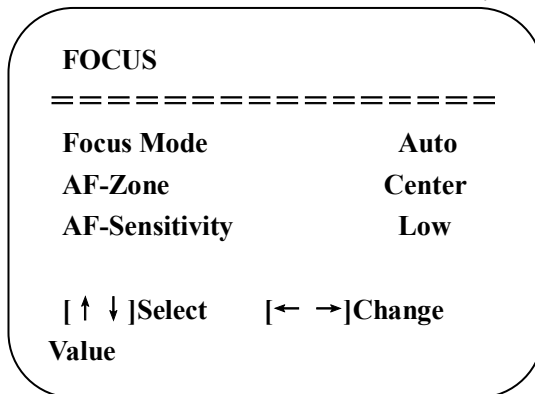
Focus Mode: Auto, manual
AF-Zone: Up, middle, down
AF-Sensitivity: High, middle, low

5) NOISE REDUCTION

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

```
  NOISE REDUCTION
 ==================

 NR-2D                Auto
 NR-3D                3
 Dynamic Hot Pixel    OFF


 [↑ ↓]Select    [← →]Change
 Value
```
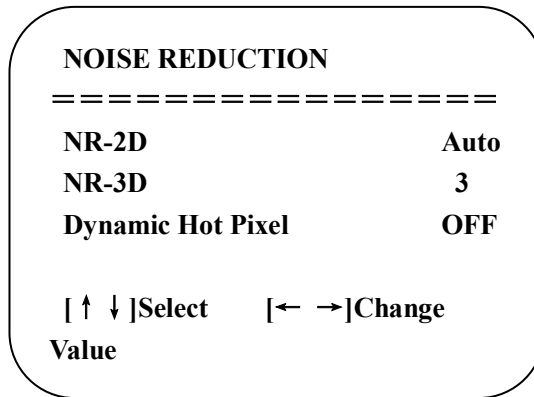
2D Noise Reduction: Auto, close, 1~7
3D Noise Reduction: Close, 1~8
Dynamic Hot Pixel: Close, 1~5

3.3.4 P/T/Z

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

```
  P/T/Z
 ================

 Depth of field       ON
 Zoom speed           8
 Image Freezing       OFF
 Acc Curve            Slow


 [↑ ↓]Select    [← →]Change
 Value
```
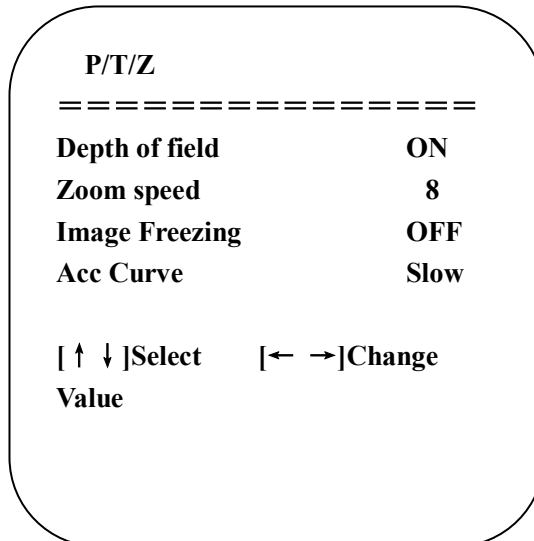
Depth of Field: Only effective for remote controller, On/ Off.
When zoom in, the PT control speed by remoter will become slow),
Zoom Speed: Set the zoom speed for remote controller,1~8
Image Freezing: On/Off
Accelerating Curve: Fast/slow

3.3.5 Video Format

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

```
  ┌─────────────────────────────┐
  │                             │
  │   VIDEO FORMAT              │
  │                             │
  │  ===============           │
  │  1080P60          1080P50   │
  │  1080I60          1080I50   │
  │  1080P30          1080P25   │
  │  720P60           720P50    │
  │  720P30           720P25    │
  │  1080P59.94       1080I59.94│
  │  1080P29.97       720P59.94 │
  │  720P29.97                  │
  │  [      ↑      ↓      ]Select│
  │  [Menu]Back                 │
  │                             │
  └─────────────────────────────┘
```
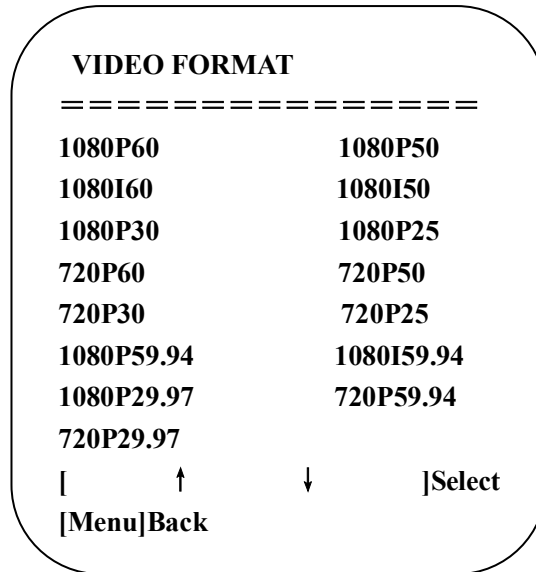
Note: 1. S: 1080P60 Downward Compatibility; M: 1080P30 Downward Compatibility

2. Exit menu after modifying parameter to save it after powered off

S Version：1080P60，1080P50、1080P30、1080P25、1080I60、1080I50、720P60、720P50、720P30、720P25、1080P59.94、1080I59.94、1080P29.97、720P59.94、720P29.97 Optional

M Version：1080P30，1080P25、1080I60、1080I50、720P60、720P50 Optional

3.3.6 Version

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

```
  ┌─────────────────────────────┐
  │                             │
  │  VERSION                    │
  │                             │
  │  ===============           │
  │  MCU Version   2.0.0.15  2015-12-18 │
  │  Camera Version 2.0.0.13  2015-12-18 │
  │                             │
  │  AF Version    2.0.0.6   2015-12-11 │
  │  Lens          12X(20X)     │
  │                             │
  │  [Menu]Back                 │
  │                             │
  └─────────────────────────────┘
```
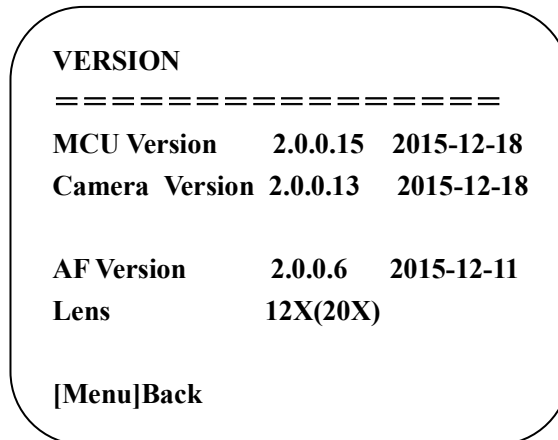
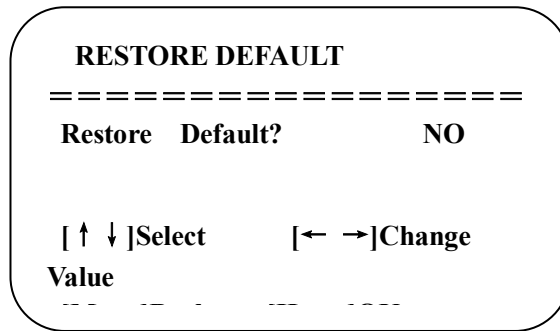**MCU Version**: Display MCU version information
Camera Version: Display camera version information
AF Version: Display the focus version information
Lens: Display the lens zoom

3.3.7 Restore Default

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

```
 ╭─────────────────────────────────╮
 │                                 │
 │    RESTORE DEFAULT              │
 │   ═══════════════════          │
 │    Restore  Default?        NO │
 │                                 │
 │                                 │
 │    [↑ ↓]Select      [← →]Change │
 │   Value                         │
 ╰─────────────────────────────────╯
```

Restore default: options: yes/no; after restoring default, the video format won't be restored.

Note: 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 Connecting Mode
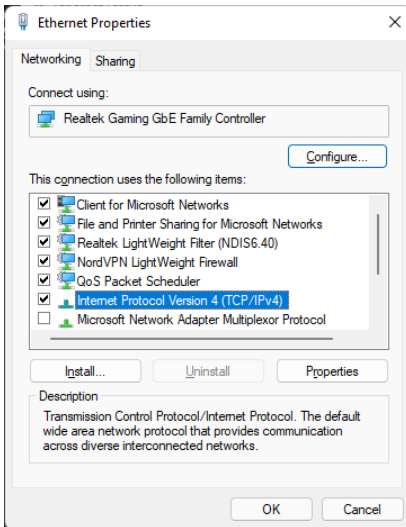
Direct connection: Connect the camera and computer by network connecting cable.

Internet connection mode: Connect the camera to Internet by Router or Switch and user can log in the device by browser.

Note: 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 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 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.
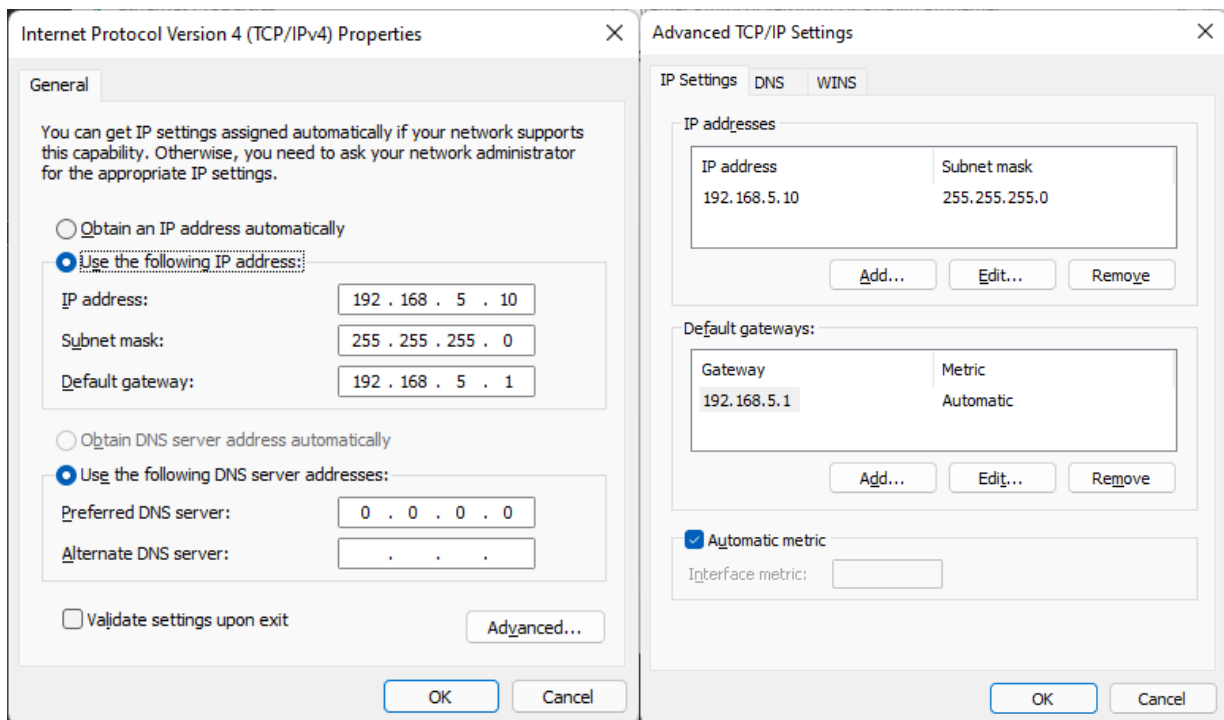
Note: The IP address to be added cannot be same with that of other computers or devices. The existence of this IP address needs to be verified before adding.

4.2 Web Browser Log In

4.2.1 Web client

To Access the Web Client Interface, type the device's IP address (default = 192.168.5.163) in the address field of your internet browser and press enter to access the Web Client login page. You can log in as a standard user or as an administrator. When logging in as an administrator (**Default Username: admin; Password: admin**), administrators can preview the camera image and configure the camera settings; If logging in as a '**standard user**' (**Default Username and Password: user1 or user2**), users can only access the preview, no options for the camera configuration is accessible as '**user**' log-in.

When using browser to access the web conferencing camera, enter username and password, click and sign (initial default username and password: "**admin**", users can change the username and password on their own after entering) into the Web client management interface.

4.2.2 Preview

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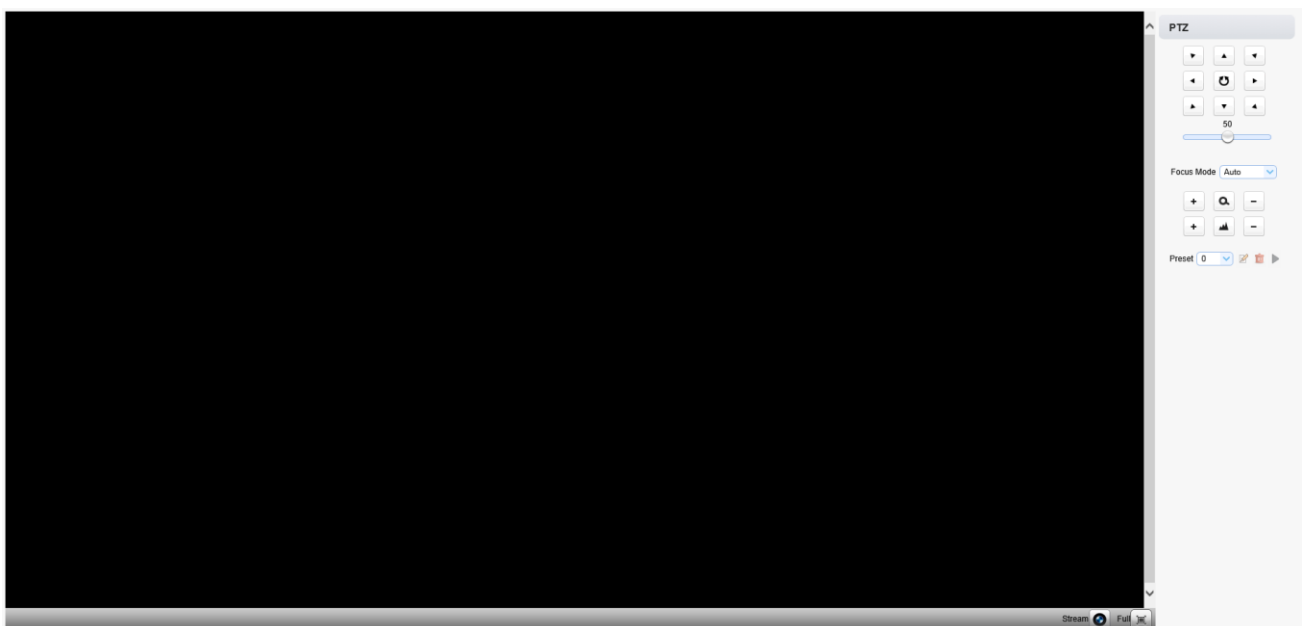
1) Login as administrator

Default Username, password: admin

PTZ control can be carried out, zoom, focus, video capture, sound, zoom, full screen and set the preset position, run, and delete; you can preview, configuration and log off.

Default Username/password: user1 or user2.

PTZ control can be carried out, zoom, focus, video capture, sound, zoom, full screen and set the preset position, run, and delete; you can preview and log off.

NOTE: There is no configuration right for normal user login.

4.2.3 Audio Configuration

Enable: Choose to enable the audio or not.

Encode Type: Set audio compressing format and the device will reboot automatically after change (default MP3, PCM, AAC optional)

Sample Rate: sampling frequency and the device will reboot automatically after change (default 44100, 16000, 32000 and 48000 optional)

Sampling Bits: Set sampling precision (default 16bits)

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

Channel: Set the audio channel (Default: Stereo, other option: Mono).

Input Volume: Set the input audio volume (Default 4, ranges from 1~10)

Note, click "**SAVE**", it will pop up "**Enable has changed. Restart the device to take effect after the success of the save.**", then please reboot the camera to make new setting effect.
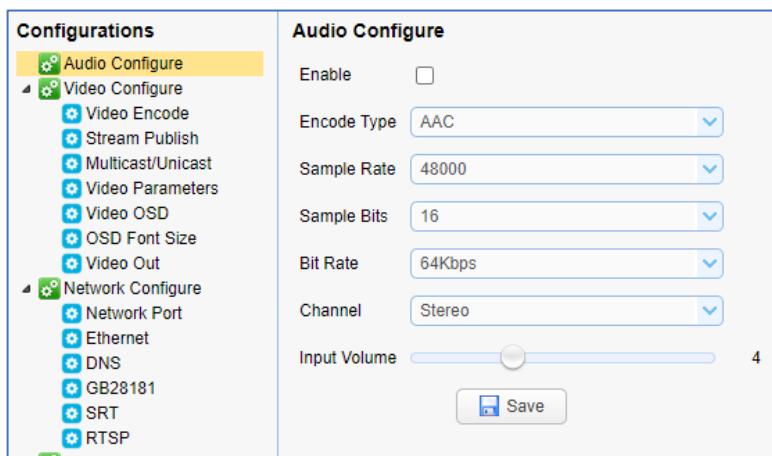
4.2.4 Video configuration

1) Video encoding

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

Compressed Format: Set the video compression format, save and reboot to take it effect (Main/Sub stream default: H.264, H.265 optional)

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

Image Size: Set video image resolution, save and reboot to take it effect (Main stream default 1920 * 1080 or 1280 * 720 optional; default Sub stream 640 * 320,320 * 180,1280 * 720,1920 * 1080 optional)

Rate control: Set rate control mode, save and reboot to take it effect (Main/Sub stream default variable bit rate, fixed rate is for option).

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

Bit Rate (Kb/s): Set the video bit rate (Main stream default 4096Kb/s, 64 - 12288Kb/s optional; Sub stream default 1024Kb/s, 64 - 10240Kb/s optional).

Frame rate (F/S): Set the video frame rate (Main/sub stream default 25F/S, Main stream 5 - 60F/S optional, Sub stream 5 - 30F/S optional).

Frame interval: Set the key frame interval (Main/Sub stream default 75F, Main/Sub 1 - 300F optional. Sub stream 1 - 150F optional).

Frame Min QP: Set the minimum QP of the key frame (Default 10, ranges from 10~51)

Stream Name: When streaming via RTSP or RTMP, user can modify stream name: Main stream(live/av0), Sub stream(live/av1).

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

2) Stream Publish

Stream: Choose from Main/Sub video stream output.

Enable: Turn on/off the Main/Sub stream.

Protocol Type: Main/Sub stream applies RTMP protocol.

Host Address: server IP addresses (default 192.168.5.11)

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

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

Username: Set the username.

Password: Set the password.

Click on the "**Save**" button to display the pop up "**Save successful**" message, which ensures setting have been set.

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

3) Multicast/Unicast

Stream: Choose from Main/Sub video stream output.

Enable: Enable the RTP Multicast.

Protocol Type: Choose the multicast protocol (Default: RTP, TS for option).

Address: Default 224.1.2.3. It can be edited.

Port: Main stream Default Port: 4000, Sub Stream Default Port: 4002

Note: Access Method: rtp://224.1.2.3:4000; udp://@224.1.2.3:4000.

4) Video Parameters

A: Focus:

Focus Mode: set the focus mode (the default auto, manual optional)

AF-Zone: set the focus range (the default middle, the upper and lower optional)

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

B: Exposure:

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

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

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

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

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

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

DRC: set the dynamic range (default 5,0-8 optional).

Shutter: active when it is status of manual or shutter-priority (default 1/100，1/25、1/30、1/50、1/60、1/90、1/100、1/120、1/180、1/250、1/350、1/500、1/1000、1/2000、1/3000、1/4000、1/6000、1/10000 optional).

C: Color:

WB Mode: Set the white balance mode (the default automatic,3000K,4000K,5000K,6500K, manual, One-push optional).
Note: Click the "Correction" button when selected the One-push white balance mode.

Saturation: Set the saturation (default 80%,60%,70%,80%,90%,100%,110%,120%,130%, optional).

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

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

Color Temp: set color temperature (Default setting: High, with low, middle for options)

RG Tuning: Set the red gain, effective when it is manual (default 255,0-255 optional).

BG Tuning: Sets the Blue gain, effective when it is manual (default 199,0-255 optional).

D: Image:

Bright: Set the brightness (default 6,0-14 optional).

Contrast: set the contrast (default 8,0-14 optional).

Sharpness: Set the sharpness value (default 7, 0-15 optional).

B&W Mode: Set black and white mode (default color, black/white optional).

Gamma: Gamma value setting (default,0.45,0.50,0.52,0.55 optional).

Flip-H: Set Flip Horizontal (default Off/On optional).

Flip-V: Set vertical flip (default Off/On optional).

DCI: To set the DCI value (Default: OFF, other options: 1~8).

Low-Light Mode: Default: OFF

E: NR

NR-2D: Set 2D noise reduction level (default Auto,1-7 and off optional).

NR-3D: Set 3D noise reduction level (default 5,1-8 and off optional).

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

Note: Click "Refresh" to make revision of any video parameters of A, B, C, D, E effective.

F: Style:

Style: Set the image style. (Default, Normal, Clarity, Bright, Soft)

5) Video OSD

Show Time: Set whether to display the time and date (default display).

Show Title: Set whether to display the title (default display).

Time Font Color: Set font color of time and date (default white, black, yellow, red, blue optional).

Title Font Color: Set font color of title (default white, black, yellow, red, blue optional).

Moving characters: Set the display position of moving date, time, and title, click on the "up, down, left, right" buttons to move the corresponding character position.

Title Content: Set title content (default CAMERA1).

Time Content: Set time content (default 1970/01/10 05:36:00)

Click on the "**Save**" button and display the "**Save successful**" message, then valid.

6) OSD Font Size

According to the resolution Scale size automatically: Check to automatically increase/decrease font size according to the resolution

Master Stream OSD Font Size: Set the character size of the display, the device will restart

automatically after changed and saved (default 24,24,16 optional)

Slave Stream OSD Font Size: Set the character size of the display, the device will restart automatically after changed and saved (default 16,24,16 optional)

Click on the "**Save**" button to display "**Parameter saved successfully**" message, set to take effect.

7) Video output

Video Out Format: Set the video output format (default 1080P60,1080P50,1080P30,1080P25,1080I60,1080I50,720P60,720P50,720P30,720P25,1080P59.94,1080I59.94,1080P29.97,720P59.94,720P29.97 optional).

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

4.2.5 Network configuration

1) Network port

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

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

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

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

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

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

Port Visca: Set Visca port, the device will restart automatically after changed (default 3001,0-65535 optional).

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

RTMP access: RTMP: / / equipment IP address: 1935 / live/av0 (av0 mainstream; av1 second stream)

RTMP Access：rtmp://equipment IP address: 1935 / live/av0 (av0 mainstream; av1 second stream)

2) Ethernet

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

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

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

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

MAC Address: Set the physical address (the parameter is read-only but cannot be modified).

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

3) DNS

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

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

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

4) GB28181

Enable: set whether open GB28181, can check

ClockSync: whether synchronization time is set, you can check

Video Type: stream type setting (the default mainstream, secondary stream optional)

Registration Valid Time (in seconds): 3600 Range 5-65535

Heartbeat time (seconds): 60 Range 1-65535

Register ID: 34020000001320000001

Register Name: IPC

Register Password: 12345678

Equipment Belong: Users can add their own

Administrative Regions: Users can add their own

Alarm Areas: Users can add their own

Device Address: Users can add their own

Local SIP Port: 5060 Range 0-65535
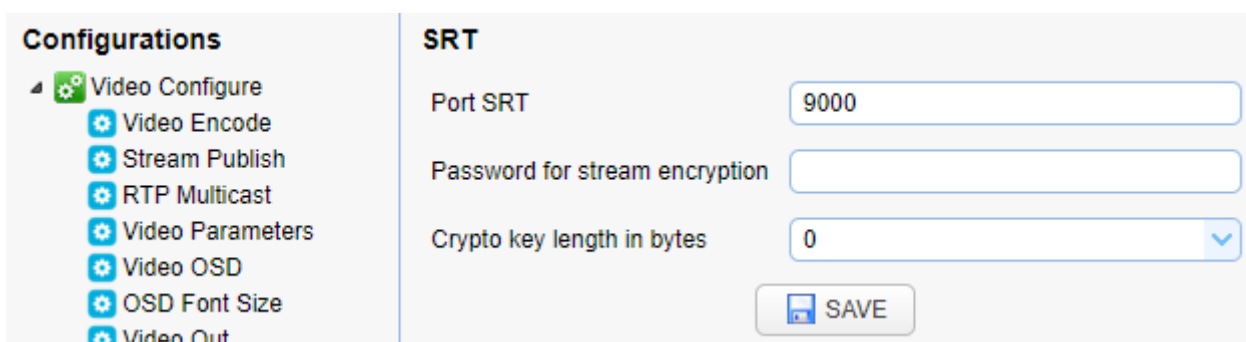
Server IP: IP address of the computer

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

Port SRT: set SRT port

Click on the "**Save**" button, it will be valid when display "**Save successful**".
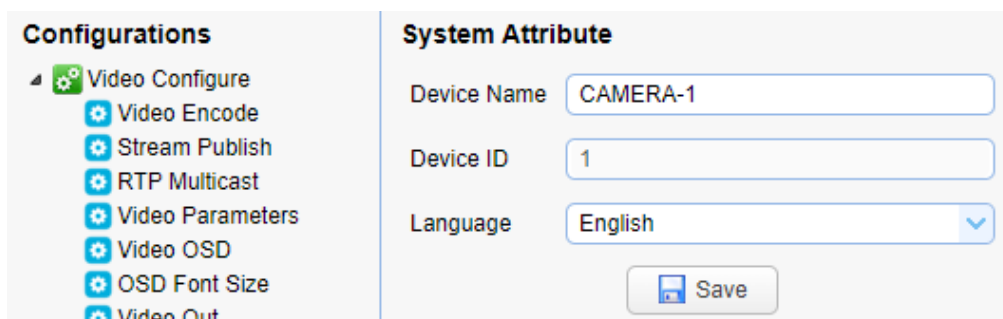
6) RTSP

RTSP Authentication: set whether open RTSP authentication, can check

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

4.2.6 System configuration

1) SystAttr

Device Name: Set the device name (the default Camera1, users can add their own).

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

Language: Set the system language, Need to re-login after modifying and saving the setting.

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

Date Format: Set the date format

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

Zone: Set the time zone

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

Update interval: Set the NTP server automatic updated time interval. Valid after setting NTP server synchronization (default one day,2-10 days Optional).

Host Url: Set NTP server address or domain name (default time.nits.gov). Valid after setting NTP server synchronization.

Host Port: Sets the NTP server port (default 123). Valid after setting NTP server synchronization.
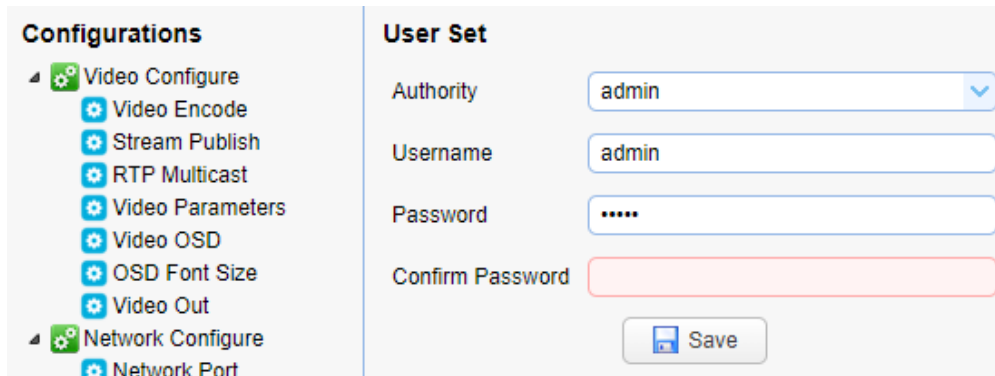
Set the time manually, Effective when set manually.

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

Computer Time: Set the computer synchronization valid.

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

3) SysUser

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

Username: set the username (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).

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

Click on the "**Save**" button to display the "**Save successfully**" message, then the set is to take effect.

Note: Please note the case-sensitivity of the username and password.

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

4) Update

Users only read the version information which is consistent with the menu version but cannot modify. Different types of the machine have different information.

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 are connected during the process. Or the upgrade will fail)

Note: After the version upgrade is complete, you need to restore factory defaults; a, through web to restore the factory default configuration; b, through the recovery menu; c, remote control shortcut * # 6.

Choose one of the above three ways. If chose a, the IP accounts, passwords also need to be restored to the default.

5) Default

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

6) Reboot

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

4.2.8 Logout

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

5. Serial Communication Control

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

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

After powering on, the camera will first go far right, then back into the center position. Self-test is finished after the zoom moved to the farthest point and then back to the nearest point. If the camera has a preset saved as 0 before, it will default back to that position after initialization. At this point the user can control the camera by the serial commands.

5.1 VISCA protocol list

5.1.1 Camera return command

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

z = camera address + 8

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

Please NOTE [x] = VISCA Address (Default value is 1) this can be changed using the remote OSD under the "Setup" tab.

5.1.2 Camera control command

Command	Function	Command packet	Note
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) - 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)

Command	Function	Command packet	Note
	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	
	One Push Mode	8x 01 04 38 04 FF	
	Manual Focus	8x 01 04 38 03 FF	
CAM _Zoom Focus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position tuvw: Focus Position
	Auto	8x 01 04 35 00 FF	
	3000K	8x 01 04 35 01 FF	
	4000k	8x 01 04 35 02 FF	
	One Push mode	8x 01 04 35 03 FF	
	5000k	8x 01 04 35 04 FF	
CAM_WB	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	
	Reset	8x 01 04 03 00 FF	
CAM _RGain	Up	8x 01 04 03 02 FF	Manual Control of R Gain
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	pq: R Gain
	Reset	8x 01 04 04 00 FF	
CAM_ Bgain	Up	8x 01 04 04 02 FF	Manual Control of B Gain
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	pq: B Gain
	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
CAM_AE	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
	Reset	8x 01 04 0A 00 FF	
CAM_Shutter	Up	8x 01 04 0A 02 FF	Shutter Setting
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	pq: Shutter Position
	Reset	8x 01 04 0B 00 FF	
CAM_Iris	Up	8x 01 04 0B 02 FF	Iris Setting
	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
	Reset	8x 01 04 0D 00 FF	
CAM_Bright	Up	8x 01 04 0D 02 FF	Bright Setting
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	pq: Bright Positon
	On	8x 01 04 3E 02 FF	Exposure Compensation ON/OFF
	Off	8x 01 04 3E 03 FF	
CAM_ExpComp	Reset	8x 01 04 0E 00 FF	Exposure Compensation Amount Setting
	Up	8x 01 04 0E 02 FF	

Command	Function	Command packet	Note
	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
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 1：0.47 2：0.50 3：0.52 4：0.55
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=0-7 0:60% 1:70% 2:80% 3:90% 4:100% 5:110% 6:120% 7:130%
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	IR(remote commander)receive message via the VISCA communication ON/OFF
	Off	8x 01 7D 01 13 00 00 FF	
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 0:1080P60　　　　　　8:720P30 1:1080P50　　　　　　9:720P25 2:1080i60　　　　　　A：1080P59.94 3:1080i50　　　　　　B：1080i59.94

Command	Function	Command packet	Note	
			4:720P60	C：
			720P59.94	
			5:720P50	D：
			1080P29.97	
			6:1080P30	E：
			720P29.97	
			7:1080P25	
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		
Pan-tiltLimitSet	Set	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W:1 UpRight 0:DownLeft YYYY: Pan Limit Position(TBD) ZZZZ: Tilt Limit Position(TBD)	
	Clear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF		

5.1.3 Inquiry command

Command	Function	Command packet	Note
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off(Standby)
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_FocusAFModeInq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
		y0 50 04 FF	One Push mode
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_WBModeInq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	3000K
		y0 50 02 FF	4000K
		y0 50 03 FF	One Push Mode
		y0 50 04 FF	5000K
		y0 50 05 FF	Manual
		y0 50 00 FF	6500K
		y0 50 06 FF	6500K
		y0 50 07 FF	3500K
		y0 50 08 FF	4500K
		y0 50 09 FF	5500K
		y0 50 0A FF	6000K
		y0 50 0B FF	7000K
CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter priority
		y0 50 0B FF	Iris priority
		y0 50 0D FF	Bright

CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_Gain LimitInq	8x 09 04 2C FF	y0 50 0p FF	p: Gain Positon
CAM_ BrightPosiInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_ExpCompModeInq	8x 09 04 3E FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_BacklightModeInq	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_WDRStrengthInq	8x 09 04 51 FF	y0 50 00 00 00 0p FF	p: WDR Strength
CAM_NRLevel(2D) Inq	8x 09 04 53 FF	y0 50 0p FF	P: 2DNRLevel
CAM_NRLevel(3D) Inq	8x 09 04 54 FF	y0 50 0p FF	P:3D NRLevel
CAM_FlickerModeInq	8x 09 04 55 FF	y0 50 0p FF	p: Flicker Settings(0: OFF,1: 50Hz,2:60Hz)
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_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
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 (0950) U3（3950） 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
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

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
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

5.3 Pelco-P protocol command list

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte 8
Up	0xA0	Address	0x00	0x08	Pan Speed	Tilt Speed	0xAF	XOR
Down	0xA0	Address	0x00	0x10	Pan Speed	Tilt Speed	0xAF	XOR
Left	0xA0	Address	0x00	0x04	Pan Speed	Tilt Speed	0xAF	XOR
Right	0xA0	Address	0x00	0x02	Pan Speed	Tilt Speed	0xAF	XOR
Upleft	0xA0	Address	0x00	0x0C	Pan Speed	Tilt Speed	0xAF	XOR
Upright	0xA0	Address	0x00	0x0A	Pan Speed	Tilt Speed	0xAF	XOR
DownLeft	0xA0	Address	0x00	0x14	Pan Speed	Tilt Speed	0xAF	XOR
DownRight	0xA0	Address	0x00	0x12	Pan Speed	Tilt Speed	0xAF	XOR
Zoom In	0xA0	Address	0x00	0x20	0x00	0x00	0xAF	XOR
Zoom Out	0xA0	Address	0x00	0x40	0x00	0x00	0xAF	XOR
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. Camera Maintenance and Troubleshooting

6.1 Camera Maintenance

1) If camera is not used for long time, please turn off power adapter switch and AC plug.

2) Use soft cloth or tissue to clean the camera cover.

3) Use soft cloth to clean the lens; Use neuter cleanser if bad smeared. Do not use strong or corrosive cleanser to avoid scuffing.

6.2 Troubleshooting

1) No video output

—— A: Check whether the camera power supply is connected, the voltage is normal, the power indicator is lit.

B: Whether the machine could do self-inspection after restarted.

C: Check whether the bottom of the DIP switch is the normal operating mode (see Table 2.2 and Table 2.3)

D: Check whether the video output cable or video display is normal

2) No image sometimes

——A: Check whether the video output cable or video display is normal

3) Image dithering when zoom-in or zoom-out

——A: Check whether the camera installation position is solid

B: Whether there is shaking machine or objects around the camera

4) Remote controller cannot work

——A: Remote control address is set to 1 (if the machine is set back to the factory defaults, remote control addresses need to be back to 1 too)

B: Check whether the battery is installed on the remote controller or low.

C: Check the camera working mode is the normal operating mode (see Table 2.2 and Table 2.3)

D: Check the menu whether is closed, camera control through remote controller is only available after exiting the menu. If video output from LAN, menu will not be displayed, menu will automatically exit 30s later, then it can be controlled by remote controller.

5) Serial port cannot work.

——A: Check whether the camera serial device protocol, baud rate, address is consistent

B: Check whether the control cable is connected properly

C: Check whether the camera working mode is the normal operating mode (see Table 2.2 and Table 2.3)

6) Web pages cannot log in

——A: Check whether the camera is showing normally.

B: Check whether the network cable is connected properly (Ethernet port yellow light flashes to indicate normal network cable connection)

C: Check whether your computer is added the segment and the segment is consistent with the IP address of the camera

D: Click "Start" and select "Run" and then type "cmd" in the computer; Click "OK" then turn on a DOS command window to enter ping 192.168.5.163. Press the Enter key to appear message as follows: Description network connection is normal

```
Administrator: Command Prompt                                    —  □  ✕

Microsoft Windows [Version 10.0.22000.556]
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C:\WINDOWS\system32>ping 192.168.5.163

Pinging 192.168.5.163 with 32 bytes of data:
Reply from 192.168.5.163: bytes=32 time=2ms TTL=64
Reply from 192.168.5.163: bytes=32 time=1ms TTL=64
Reply from 192.168.5.163: bytes=32 time<1ms TTL=64
Reply from 192.168.5.163: bytes=32 time=1ms TTL=64

Ping statistics for 192.168.5.163:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\WINDOWS\system32>
```

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