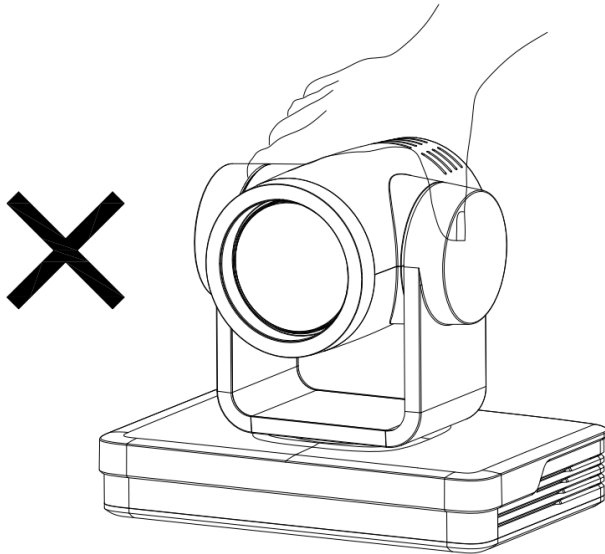**www.alfatronelectronics.com**

**ALFATRON ELECTRONICS GmbH GERMANY**

**ALF-12X-SDIC, ALF-20X-SDIC Full HD Camera
User Manual**

# ⚠ **Warning**

The improper operation may destroy the structure of the product and lead to abnormal operation of the camera. Please pay attention to the following operations.

⚠Do not grasp the lens barrel with your hand while moving the camera；

✔ Move the camera by holding the bottom with both hands and one hand.

Whether electrified or not, do not shake the lens and the platform by hand, otherwise it may damage the platform, resulting in abnormal self-examination of the camera, unable to start normally. 。
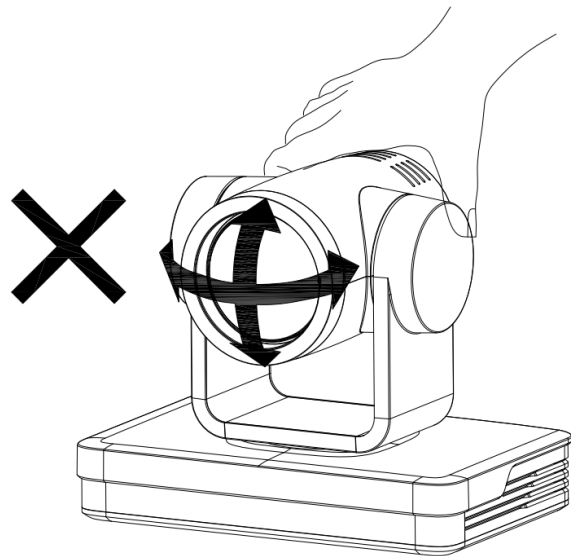
# Preface

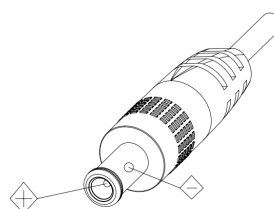This manual describes in detail the functions, installation and operation principles and methods of the product. Before installing and using this product, please read it carefully.

## 1. Use Attention

★ During transportation, storage, installation and use, it is necessary to prevent heavy pressure, severe vibration and immersion so as to avoid damage to products.

★ The product shell is made of organic material. It is strictly forbidden to contact with corroded liquid, gas or solid substances.

★ Don't let the product get wet or rained. Don't use it beyond the limit of temperature and humidity.

★ When cleaning equipment lens, please use dry soft cloth to wipe. When dirt is serious, please use neutral cleaner to wipe gently.

★ Do not use strong or corrosive detergents to avoid scratching the lens and affecting the image effect.

★ This product has no parts that users can repair by themselves, and the damage caused by users 'self-disassembly does not fall within the scope of warranty.

## 2. Electrical safety

★ The installation and use of products must strictly comply with the national and local electrical safety standards.

★ Do not use power adapters beyond the specifications of the power supply, otherwise the equipment components will burn out and will not work properly.

★ In the process of using the product, we should keep enough distance from the high-power equipment, and do a good job of lightning protection, surge protection and other protective measures when necessary.

★ When the product is not in use, please disconnect the power switch and disconnect the power adapter from the power socket.

★ The product uses DC 12V power supply, and the polarity of the power plug is as shown in the right picture.

### 3. Careful installation

★ Do not rotate the cylinder of the product by hand, otherwise it will destroy the rotating shaft of the structure or cause abnormal work of the signal line.

★ Installation and placement of equipment should be horizontal and stable, and the product should not be tilted, otherwise the picture may be skewed.

★ Installation ensures that there are no obstacles in the rotating range of the platform to prevent damage to the rotating shaft of the structure.

★ Do not turn on power until all installation work is completed.

### 4. Magnetic Interference

★ The electromagnetic field at a specific frequency may affect the local image. The product is Class A product. Radio interference may occur in the home environment, and users need to take appropriate measures.

# Content

# 1. Fast Installation

## 1.1 Product introduction



Picture 1.1 Interface

Interface specification：

| | | |
|---|---|---|
| 1. Lens | 7. Power Switch Key | 13. Audio Input Interface (Line-IN) |
| 2. Camera Base | 8. Power input socket（DC12V） | 14. RS232 Input Interface |
| 3. Remote Controller Receiver Light | 9. HDMI Output Interface | 15. RS232 Output Interface |
| 4. Infrared reception | 10. SDI Output Interface | 16. RS485 input interface (left plus right minus) |
| 5. Tripod Screw Hole | 11. USB2.0 Interface (U Disk Storage) | 17. Rotary dial switch |
| 6. Tripod Screw Hole | 12. CVBS Output Interface | 18. Network LAN Interface |

## 1.1 Interface wiring
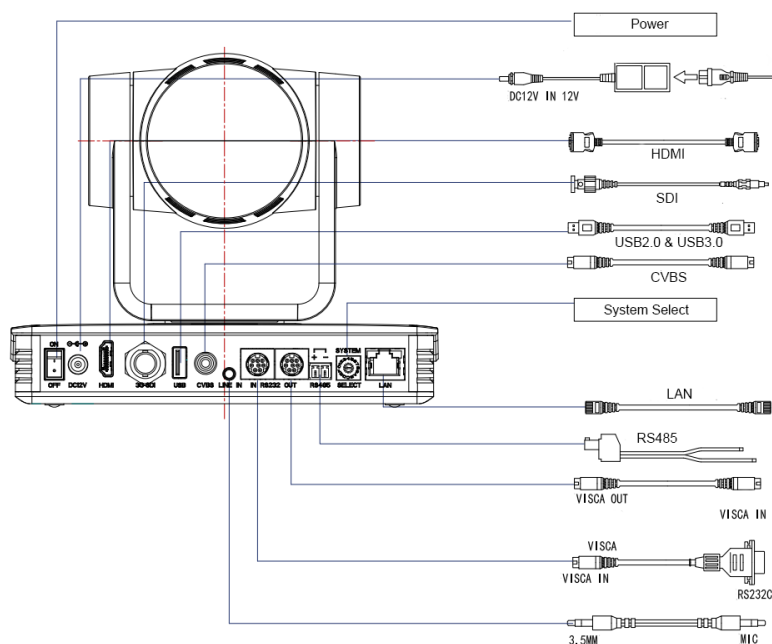
Picture 1.3 Wiring hint

**1. If the No. 0 preset is set, the camera will switch to the No. 0 preset when the power-on self-check is completed.**

**2. The default address of the remote controller is 1#, the menu is restored to the factory default, and the address of the remote controller is restored to 1#**

## 1.2 Bracket mount

Note: Bracket can only be wall mounted or upside down mounted on template and concrete wall but cannot be installed on plasterboard.

**1）** Wall mount step



M6 Nuts      M6 Wall Anchors

STEP 1

M6

100

50

STEP 2

STEP 3

M6
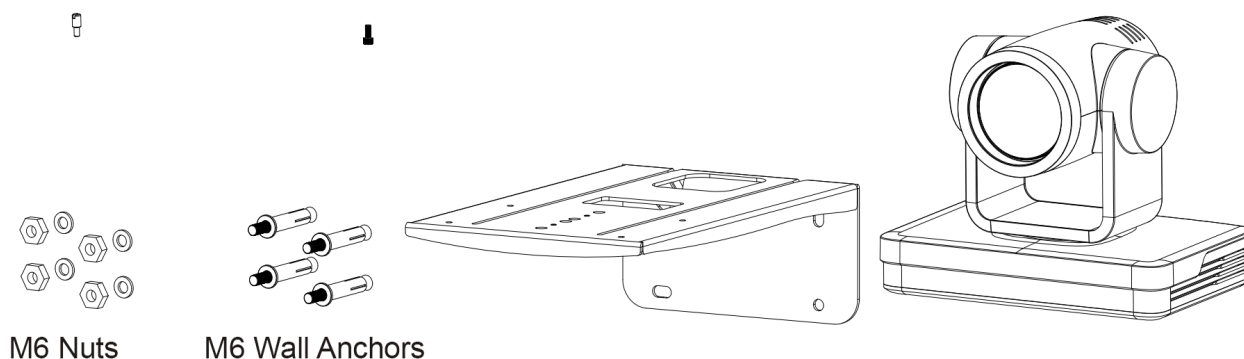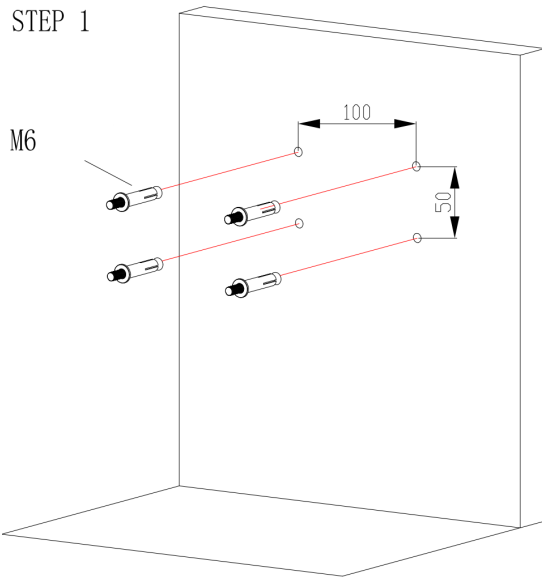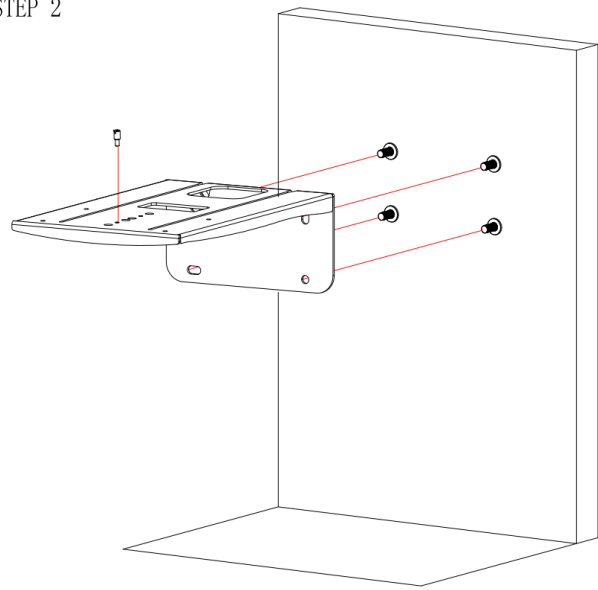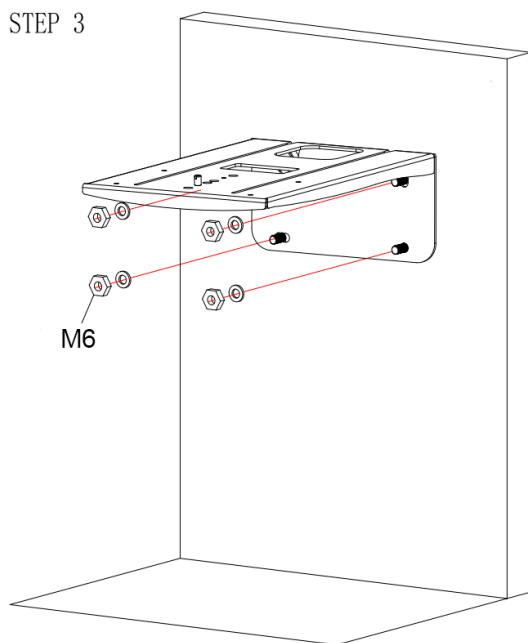
STEP 4
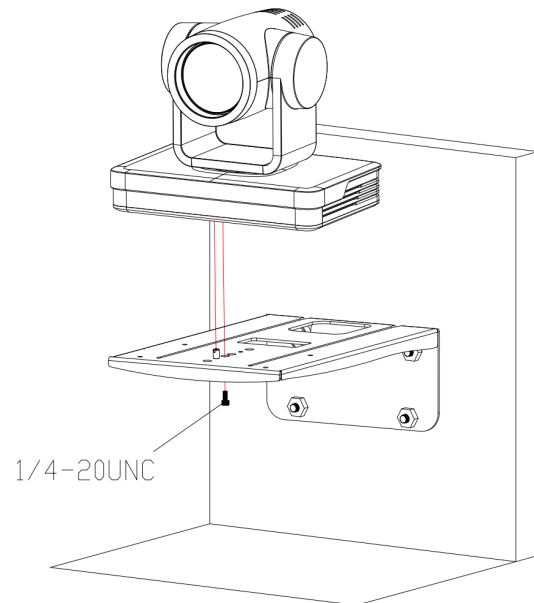
1/4-20UNC

STEP 5



**2）Upside down mount**



PA3X30

PM3X6

1/4-20UNC

STEP 1



96   96

STEP 2



PA3X30

STEP 3

1/4-20UNC

STEP 4

STEP 5
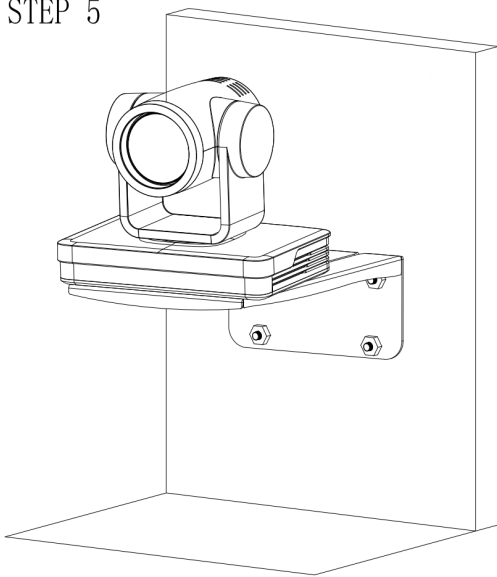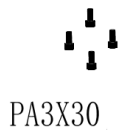
PM3X6
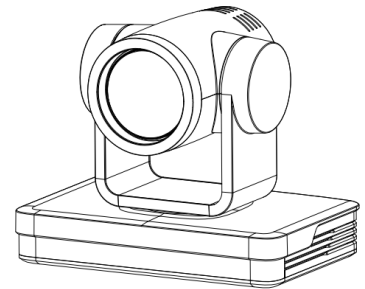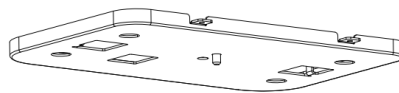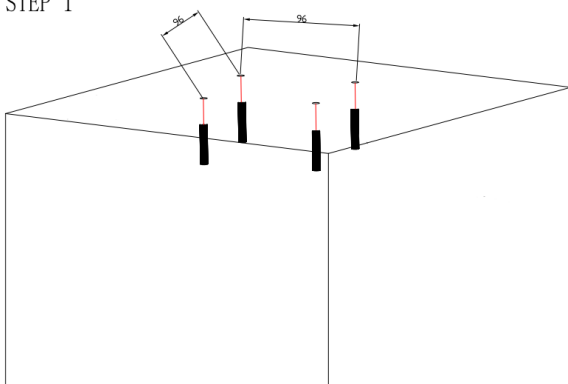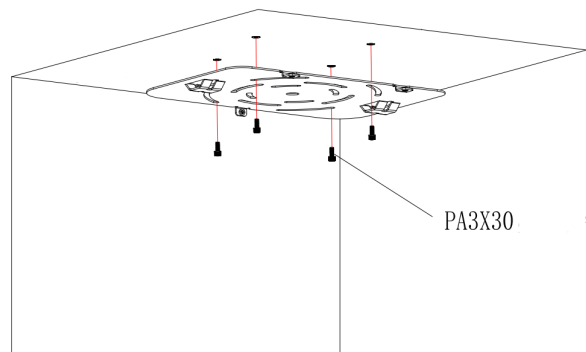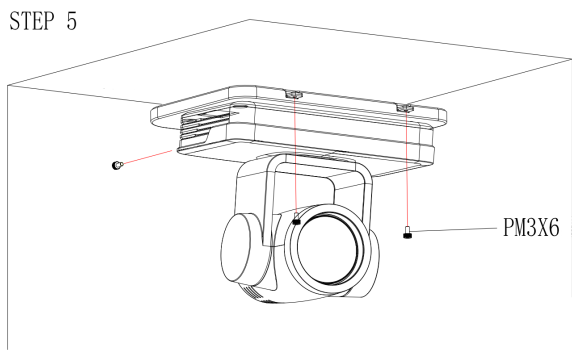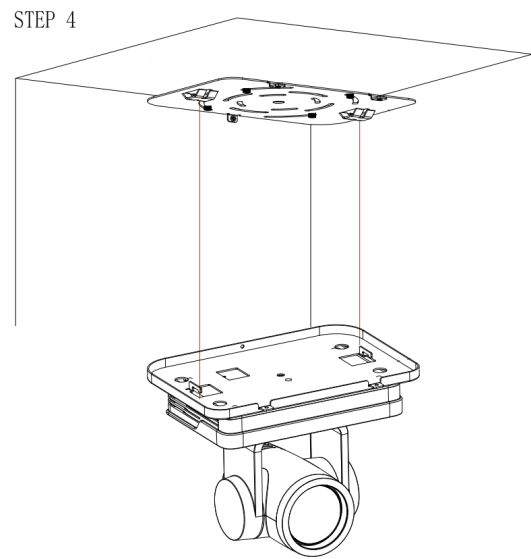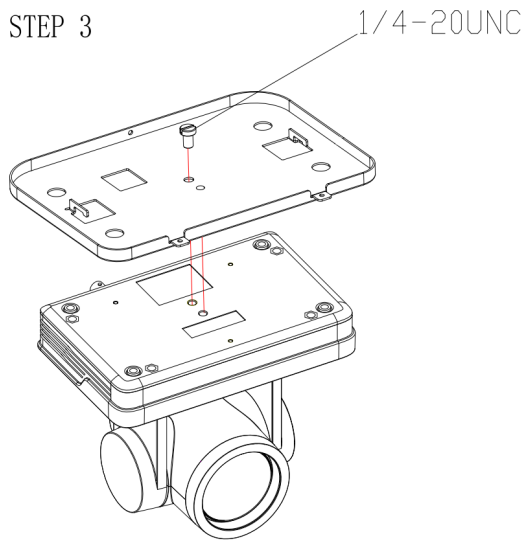
# 2. Product overview

## 2.1 Product Model

There are four main series according to different video formats, lens optical zooms, output interfaces and remote-control modes.

Please see picture 2.1：

Model **X— XX— XX**

IR---Infrared remote controller

WR---Wireless Remote Controller

05---5X Optical Zoom Lens

10---10X Optical Zoom Lens

12---12X Optical Zoom Lens

20---20X Optical Zoom Lens

30---30X Optical Zoom Lens

S---1080P60Downward Compatibility

M---1080P30Downward Compatibility
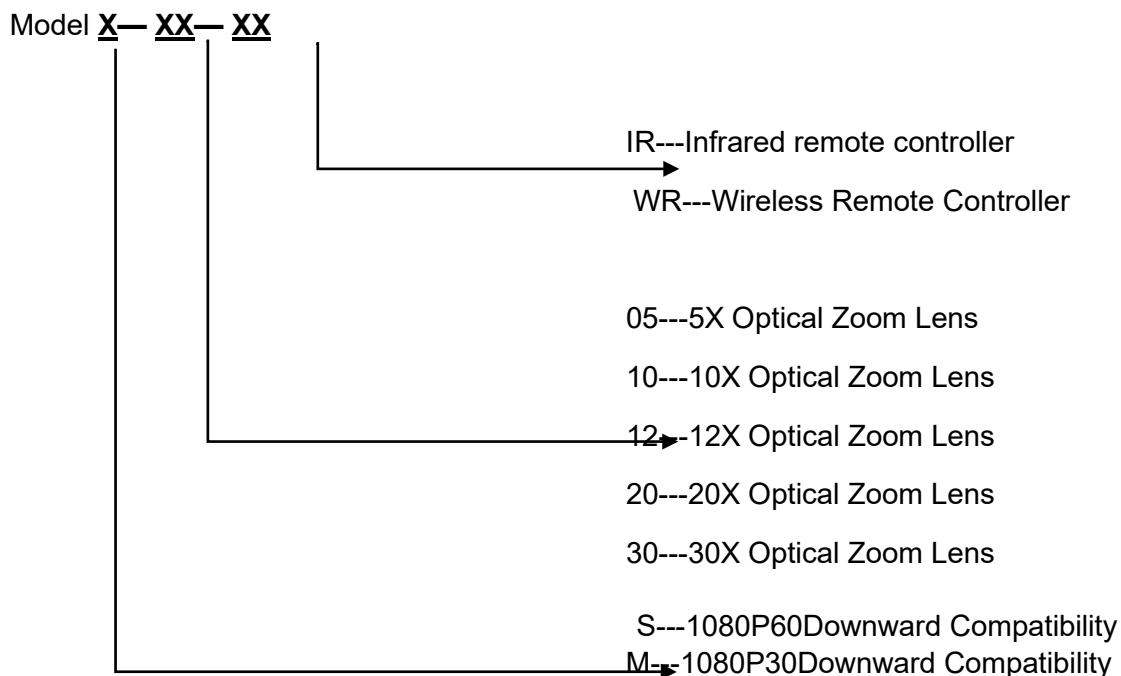
Picture 2.1 Product Model

Please refer to corresponding features in this manual.

## 2.2 Dimension
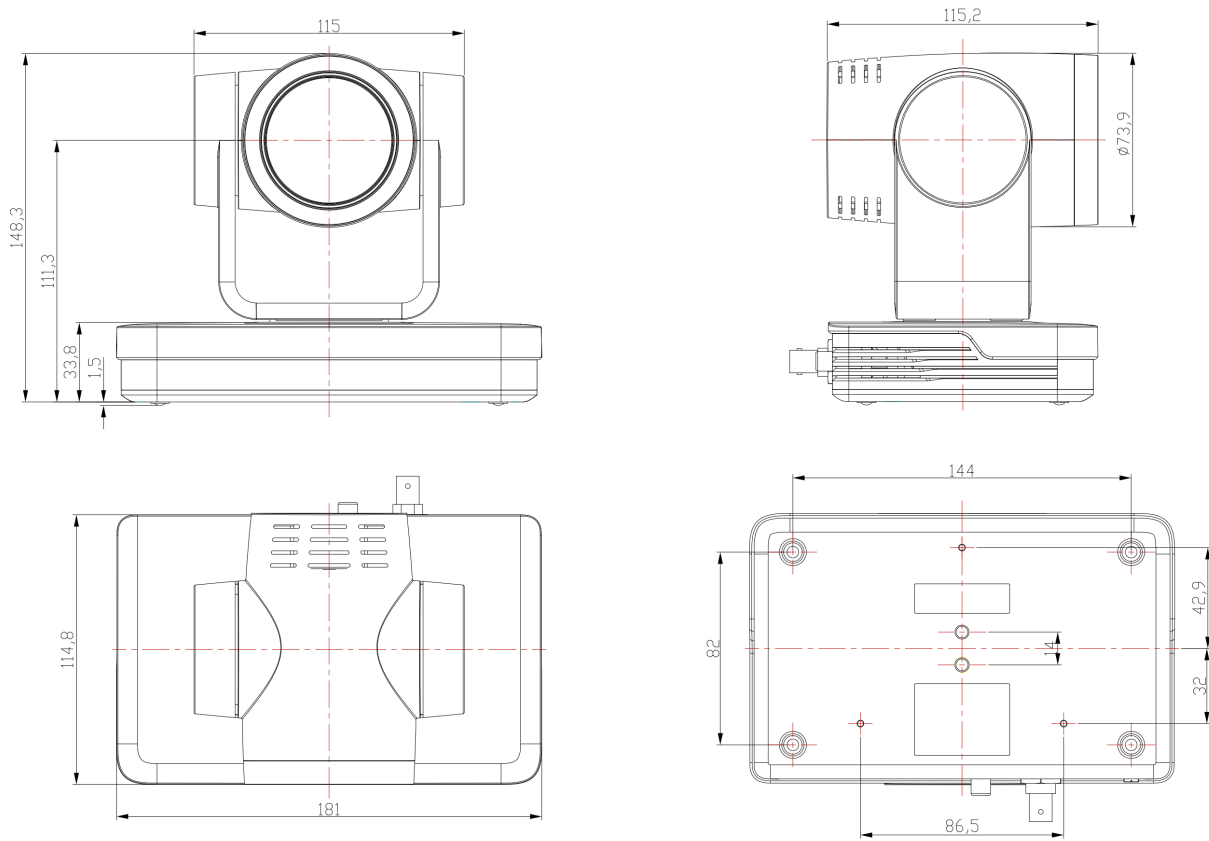
**Figure 2.2     Camera dimension**

## 2.3 Accessory

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

Figure 2.1 Accessory

| Configuration | Standard | Optional |
|---|---|---|
| Accessory | Power adapter 1piece | IR Remote controller 1 piece |
| | USB3.0 Cable (U3 Model) | WR Remote controller 1 piece |
| | RS232 Cable | Wall mounting bracket |
| | User manual 1 | Upside-down mounting bracket |
| | Double-side glue shim | |
| | Warranty card 1 piece | |

**2.4**

**RS-232**

**Interface**

1）RS-232 interface

-10-

Computer or Control Keyboard and
Product Connection Method

| Product | 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 |

MD8M（针）　　　　　　　DB9F（孔）

摄像机RS232
输入口　⇦　　　　　　　　　⇨　电脑或控制键盘
　　　　　　　　　　　　　　　　RS232口

2）Mini-DIN8-pin Port

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

3）RS232(DB9) Port

| 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 mode is as follows:

Product Cascade Connection Method

| Product 1 | Product 2 |
|---|---|
| 1.DTR | 1.DTR |
| 2.DSR | 2.DSR |
| 3.TXD | 3.TXD |
| 4.GND | 4.GND |
| 5.RXD | 5.RXD |
| 6.GND | 6.GND |
| 7.IR OUT | 7.OPEN |
| 8. NC | 8.OPEN |
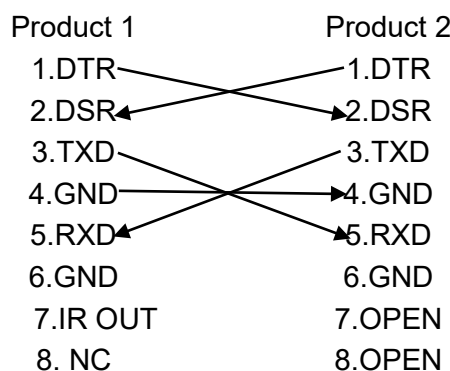
Note: The product has RS232 input and output interface, which can be cascaded in the above way.；

## 2.5 Main Features

This series camera offers perfect functions, superior performance and rich interfaces. The features include advanced ISP processing algorithms to provide vivid images with a strong sense of depth, high resolution and fantastic color rendition. It supports H.265/H.264 encoding which makes motion video fluent and clear 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. The 5X zoom lens is with 83.7 ° wide view angle without distortion.

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

5.**Multi-Format Video Outputs:** support HDMI、SDI、CVBS、LAN interfaces; HDMI、SDI、LAN interfaces support audio and video output simultaneously; SDI supports 100m transmission in 1080P60 format.

6. **Multiple Video compression:** Support H.265/H.264 video compression; Supports video compression up to 1920 x 1080 resolution 60 frames/seconds. Support AAC, MP3, G. 711A audio compression, support 8000, 16000, 32000, 44100, 48000 sampling frequency.

7.Audio and video storage: USB2.0 interface support U disk storage function, real-time recording

and storage

8. Built-in gravity sensor: Built-in gravity sensor, supporting the automatic overturn function of the

platform, convenient for engineering installation.

9.**Multiple Network Protocol**：Support ONVIF, GB/T28181RTSP, RTMP protocols and support

RTMP push mode, easy to link streaming media server (Wowza, FMS); Support RTP multicast mode, support network full command VISCA control protocol.

9. Control interface: RS485, RS232; RS232 support cascade, easy to install and use.

10. **Multiple Control Protocols:** Support VISCA, Pelco-D, Pelco-P and support auto-recognize protocol.

11. Silent platform: High precision stepping motor and precise motor drive controller are used to

ensure stable operation and no noise.

**12.　Low-power sleep function:** Support low-power sleep/wake up, the consumption is lower than

400mW under sleep mode

13. **255 Presets Positions:** Up to 255 presets (10 presets by remoter).

14. Various remote controllers: Users can choose infrared or wireless remote controllers according to the environmental conditions used. 2.4G wireless remote controller is not affected by angle, distance and infrared interference. Support remote control signal transmission function, convenient for the use of back-end equipment.

15. **Wide Application:** Tele-education, Lecture capture, Webcasting, Videoconferencing,

Tele-training, Tele-medicine, Interrogation and Emergency command systems.


## 2.6 Technical Specification


| Model | ALF-20X-SDIC |
|---|---|
| **Camera Parameter** | |
| Optical Zoom | 20X<br>f＝5.5～110mm |
| Sensor | 1/2.8-inch-high quality HD CMOS sensor |
| Effective Pixels | 16：9,　2.07 megapixel |
| Video Format | **HDMI/SDI video format**<br>1080P60/50/30/25/59.94/29.97, 1080I60/50/59.94, 720P60/50/30/25/59.94/29.97<br><br>**CVBS output:** 570i 480i<br><br>**USB3.0 interface video format:** 1920X1080@60fps Max<br><br>**USB2.0 interface video format:** 1080P@30fps Max |
| View Angle | 3.3°（tele）<br>54.7°（wide） |
| AV | F1.6 – F3.5 |
| Digital Zoom | 10X |
| Minimum Illumination | 0.5Lux (F1.8, AGC ON) |
| DNR | 2D & 3D DNR |
| White Balance | Auto / Manual/ One<br>Push/ 3000K/3500K/4000K/4500K/5000K/5500K/6000K/6500K/7000K |
| Focus/Aperture/ Electronic Shutter | Auto/Manual/One Push Focus |
| Iris | Auto/Manual |
| 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 | ALF-20X-SDIC Interfaces: USB3.0 (compatible with USB2.0), HDMI, SDI, LAN (POE), RS232-IN/OUT, RS422(compatible with RS485), A-IN, Rotary dial code, on-off switch |
| Video Output | HDMI, SDI, LAN, USB3.0, USB2.0 |
| Video Stream | Dual stream output |
| Video Compression Format | LAN Interface: H.265, H.264, Dual stream output<br>USB2.0 Interface: H.265, H.264, MJPEG<br>USB3.0 Interface: YUV |
| Audio Input Interface | Double track 3.5mm linear input |
| Audio Output Interface | HDMI, SDI, LAN |
| Audio Compression Format | AAC/MP3/G.711A |
| Network Protocol | RTSP, RTMP, ONVIF, GB/T28181, Support network VISCA control protocol<br>Support remote upgrade, remote restart, remote reset |
| Control Interface | RS232, RS485 |
| Control Protocol | VISCA/Pelco-D/Pelco-P, Baud Rate: 115200/9600/4800/2400bps |
| Power Interface | HEC3800 outlet (DC12V) |
| Input Voltage | DC12V±10% |
| Input Electric Current | Maximum: 1A |
| Power Consumption | Maximum: 12W |
| **PTZ Parameter** | |
| Pan/Tilt Rotation | ±170°, -30°～+90° |
| Pan Control Speed | 0.1 -60°/sec |
| Tilt Control Speed | 0.1-30°/sec |
| Preset Speed | Pan: 60°/sec, Tilt: 30°/sec |
| Preset Number | 255 presets (10 presets by remote controller) |
| **Other Parameter** | |
| Stored Temperature | -10℃~+60℃ |
| Storage Humidity | 20%~95% |
| Working Temperature | -10℃~+50℃ |
| Working Humidity | 20%~80% |
| Dimension | 178mmX115.5mmX150.9mm |
| Weight | 1.38KG |
| **Attachment** | |
| Package | 12V/1.5A Power supply, RS232 control cable, USB3.0 connection cable (U3 model), USB2.0 connection cable (U2 model), Remote Controller, Manual, Warranty Card |
| Accessories Optional | Mount (Extra Cost) |

# 3. Remote Controller

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

## 3.1 Coding of Wireless Remote Controller

Wireless remote control: The steps of using, code checking, and code clearing are as follows.

**A single pair of one-to-one codes**

Press the "Set" button + "*" button for 3 seconds and the LED lights will blink continuously after the key is released. The receiving end will power on and the LED will be extinguished if the code is successfully matched. The product can only be controlled by this remote controller after the code is matched alone. If other remote controllers need this remote controller to clear the code, or the new remote controller can re-code. If the alignment is unsuccessful, the red LED lights flicker for 20 seconds and then go to sleep. At this time, press any key to wake up and re-align.

**Note: After successful code alignment, you need to choose the camera address to be controllable.**

**Clear the code data**

Press the "Setup" button + "" button LED lamp flickers from off to on, the receiver power off and power on again, and the LED extinction indicates the successful removal of the code data.

**Sleep and wake-up**

When working, no operation immediately enters the sleep mode and wakes up by pressing any key. The keys of infrared remote controller and wireless remote controller are the same.

### 3.2 Keys Instruction

After the product starts normally, it receives the infrared command and executes it. Press the key of the remote control. The remote control receives the green flashing of the indicator lamp. Release the key and stop the flashing of the indicator lamp. Infrared remote control can be used for preset setting, positioning, horizontal, pitch rotation and other operations.

1) The key-press mode mentioned in this manual refers to the two actions of pressing and relaxing the keys on the remote controller. For example, "press the [HOME] key" refers to the action of pressing the [HOME] key and then relaxing. If it takes a long time to press the key, it will be specified in the manual.

2) When the combination keys need to be operated according to the instructions, they are operated in the order of the instructions. For example, "press the [*]+ [#]+ [F1] key" means first press the [*] key, then press [#], and finally press the [F1] key.

#### 1. Address selection

Select the camera address to control.

#### 2. 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

#### 3. Focus Control Key
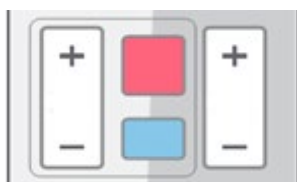
【Auto Focus】： Enter into auto focus mode.
【Manual Focus】： Enter into manual mode；
【Focus＋】：focal length（Effective only in manual focusing mode）
【Focus－】：Focal distance（Effective only in manual focusing mode）
If these two keys are pressed for a long time, they will continue to pull closer/farther and stop when they are released.

#### 4. Zoom Control Key
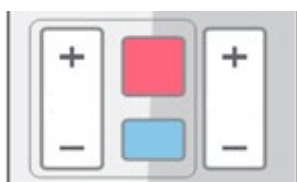
【zoom＋】：Close the picture and increase the lens multiples
【zoom－】：Scene widening and lens multiples narrowing
If these two keys are pressed for a long time, they will

continue to pull closer/farther and stop when they are released.

## 5. **Set or Clear Preset key**

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

Note: Up to 10 presets can be set by remote control.

**Call preset**：Set preset key + 0-9 number key.

Note: If the number key is not preset, it is invalid.

Clear Preset key：Press [clear the preset] first, then press one of the numeric keys 0 - 9, then cancel the corresponding preset.

Note: Press the key three times in a row to cancel all presets.

## 6. **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

**Up and down left and right key: control the top and bottom left and right rotation of the platform; long press the top and bottom left and right rotation button, the platform from slow to fast continuous rotation until the end of the journey position; halfway release stop rotation.**

【HOME】：The platform goes back to the middle or into the next menu.

## 7. **Menu Setting**

【HIME】：Open or close the OSD menu, or Enter / exit the OSD menu or return to the previous menu.

【HOME】：**The PTZ goes back to the middle, decides to modify, or enters the next menu.**

【↑】【↓】：Select controls

【←】【→】：Modify parameter values

【Backlight on/off】：Backlight on /off

## 8. **Remote Controller Address Settings**

【*】+【#】+【F1】：Set Address No. 1

【*】+【#】+【F2】：Set Address No. 2

【*】+【#】+【F3】：Set Address No. 3

【*】+【#】+【F4】：Set Address No. 4

## 9. **Combination key function**

【#】+【#】+【#】：Cancel all presets        【#】+【#】+【0】：Switching Video Format 1080P60

【＊】+【#】+【6】：Restore Factory Defaults 【#】+【#】+【1】: Switching Video Format 1080P50

【＊】+【#】+【3】：The menu is set in Chinese 【#】+【#】+【2】: Switching Video Format 1080I60

【＊】+【#】+【4】：The menu is set in English 【#】+【#】+【3】: Switching Video Format 1080I50

【＊】+【#】+【9】：Switching Forward and Flip 【#】+【#】+【4】: Switching Video Format 720P60

【＊】+【#】+ Auto：Entering the Aging Model 【#】+【#】+【5】: Switching Video Format 720P50

【#】+【＊】+ Auto：Stop aging mode 【#】+【#】+【6】: Switching Video Format 1080P30

【＊】+【#】+ Manual：IP, User name, Password 【#】+【#】+【7】: Switching Video Format 1080P25
Recovery Default

【#】+【#】+【8】：Switching Video Format 720P30

【#】+【#】+【9】：Switching Video Format 720P25

**Note**：If the address of the remote control used before is not 1, but one of 2, 3, 4;

After restoring the default of the factory, the product address corresponding to the remote controller will be restored to 1;

At this time, it is necessary to change the address of the remote controller back to 1, that is, press the remote controller to select the [1] key and then control normally.

## 3.3 Menu introduction

**Note: To modify the parameters in the menu, you need to exit the menu before you can save it by power off.**

**1）Menu Control Key**

【MENU】：Enter/exit OSD menu or return to previous menu

【HOME】：Go to the next menu

【↑】【↓】：Select controls

【←】【→】：Modify parameter values

**3）Menu interface**

```
SETUP
================
Protocol              Auto
Visca Address          1
Visca Address Fix      OFF
PELCO-P Address        1
PELCO-D Address        1
Baudrate              9600
Auto Flip             ON

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

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

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

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

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

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

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

```
VIDEO FORMAT
================
1080P60
1080P50
1080I60
1080I50
1080P30
1080P25
720P60
720P50
720P30
720P25
[↑ ↓]Select
[Menu]Back        [Home]OK
```

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


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

```
VERSION
================
MCU Version：Display MCU
         Version information
Camera Version：Display Camera
         Version information
AF Version： ：Display AF
         Version information

[Menu]Back
```

```
EXPOSURE
================
Mode               Auto
EV                 OFF
BLC                OFF
Flicker            50Hz
G.Limit            4
DRC                4

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

```
COLOR
================
WB Mode            Auto
RG Tuning          0
BG Tuning          0
Saturation         100%
Hue                7
AWB Sensitivity    High

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

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

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

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

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

```
IMAGE
================
Brightness         7
Contrast           7
Sharpness          6
Flip-H             OFF
Flip-V             OFF
B&W-Mode           Color
Gamma              Default
DZoom              OFF
DCI                Close
Low-Light Mode     OFF

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

```
NOISE REDUCTION
================
NR-2D              3
NR-3D              3
Dynamic Hot Pixel  OFF

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

# 4. Network Connection

## 4.1. Network Connection

Network Connection: Connect products directly with PC external network ports by network wires or connect products to Internet network. Access network can be through routers or switches. Users can login product IP through browsers.

**Caution: Do not place wires and wires where they are easily touched, so as not to cause unstable signal transmission caused by poor line contact and affect video quality.**

**1. Adding Segment Method**

The computer must add the network segment where the product IP is located. If the network segment is not added, it will be unable to log in and so on.

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

**Note: Adding an IP address does not conflict with other computers or products. Verify that this IP exists before adding it.**

The specific process is as follows:

First, open the attributes window of local connection of computer network, double-click "Internet Protocol Version 4 (TCP/IPv4)" or point attribute "Internet Protocol Version 4 (TCP/IPv4)" and enter the attributes window of Internet Protocol Version 4 (TCP/IPv4). Click "Advanced" to enter the advanced TCP/IP settings, and add IP and IPv4 to the IP address bar. Subnet mask, add the completion point "confirm", that is, complete the IP segment addition.

Users can add corresponding network segments according to their modified product IP address.

Verify the success of adding network segments. Open "Start" in the computer, select "Run" to enter cmd, click "OK" and open the DOS command window to enter Ping 192.168.5.26. Press the Enter key.

After the product self-check is completed, the above steps can also be followed to verify whether the network is connected properly. If the default IP opens the DOS command window of the computer, input Ping 192.168.5.163 and press the Enter key.

## 4.2 IE Log In

1. Web client Log In

Input the IP address 192.168.5.163 of the device in the address filed of browser and click Enter button to enter into Web Client login page as below picture. User can login as administrator and normal user. If login as administrator (Default User name/Password: admin), users can preview, playback, configuration and cancel in the Web Client; If login in as normal user(Default User name/Password:user1 or user2),users can only preview, playback and cancel, no option for configuration.

Language Selection: The upper right corner of the login interface shows "Chinese | English" clickers can choose the language type of the web interface.

Note: Web access supported browsers: IE,360 browser and other conventional browser.

If you need preview images from non-IE core browsers such as Google, Opera, Firefox, Safari browser, you need to upgrade the plug-in program without video, width, sound, amplification, full screen, snapshot, playback and other functions.

2. Download/Install Plug in

When first using IE browser to access the web conferencing camera, the login page will appear "Playback plug-in is not installed, please download and install!". Click on this message, download and install MRWebXinstall.exe, according to information prompts.

If a warning fails to download: Solution, Browser - > Tool - > Internet Options - > Security - > Customization Level - > Security Settings - Internet Area; Check ActiveX Control and Plug-in Directory as Enabled or prompted.

## 3. Web login

After installing the plug-in, enter the username and password, click login (initial default username and password is "admin". After entering, you can change the username and password by yourself), and enter the Web client management interface.

## 4.3 Streaming media

## 1. Getting Video Stream

Select Configuration - > Video Configuration - > Video Coding to enter the interface

Configure parameters according to the network environment; note: stream name live/av0 (e.g. live/xxx)

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

**rtsp://192.168.5.163:554/live/av0（av0 Main stream）**
**rtsp://192.168.5.163:554/live/av1（av1 Secondary bitstream）**

If the default IP address of the camera is 192.168.5.163, the way to obtain RTMP video stream is as follows:     **rtmp://192.168.5.163:1935/live/av0（av0Main stream）**
**rtmp://192.168.5.163:1935/live/av1（av1 Secondary bitstream）**

## 1. Push Video Stream

Select Configuration - > Video Configuration - > Stream Publishing to enter the interface

To push RTMP audio and video streams to the server, the camera IP must be mapped to the external network, otherwise the connection to the server is unsuccessful.

Host address: Server address, either domain name or IP address

Host Port: Server Default Port Number

Stream name: live/test (for example: live/xxx)

User name and password: User name and password set by the server, not set, cannot fill in

**Access url: rtmp://server domain name address: server port number/live/xxx**

**Or (rtmp://server IP address: server port number/live/xxx)**

### 4.4 Software upgrade

1. After successful login, it enters the management interface. By default, it enters the video preview interface. In the preview interface, you can control the platform, zoom, focus, video, snapshot, sound, amplification, full screen and preset settings, operation, deletion and other operations.

2. Select Configuration - > System Configuration - > Software Upgrade to enter the interface

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

4. Upgrade completed, product reboot and prompt "Upgrade Success". Log on to the network at this time, check whether the software version is consistent with the upgrade file to ensure the upgrade success, then click "Restore factory default", restart and restore parameters to factory default (IP default 192.168.5.163, account admin, password admin)

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

## 5.1 VISCA protocol list

## 5.1.1 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. |

## 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) |
| | 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 |
| CAM_WB | 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 | |
| | 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 |

| Command | Function | Command packet | Note |
|---|---|---|---|
| | Up | 8x 01 04 0A 02 FF | |
| | Down | 8x 01 04 0A 03 FF | |
| | Direct | 8x 01 04 4A 00 00 0p 0q FF | pq: Shutter Position |
| CAM_Iris | Reset | 8x 01 04 0B 00 FF | Iris Setting |
| | Up | 8x 01 04 0B 02 FF | |
| | Down | 8x 01 04 0B 03 FF | |
| | Direct | 8x 01 04 4B 00 00 0p 0q FF | pq: Iris Position |
| CAM_Gain Limit | 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 |
| 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 |

| Command | Function | Command packet | Note |
|---------|----------|----------------|------|
| 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<br>0:1080P60                    8:720P30<br>1:1080P50                    9:720P25<br>2:1080i60                    A：1080P59.94<br>3:1080i50                    B：1080i59.94<br>4:720P60                    C：720P59.94<br>5:720P50                    D：1080P29.97<br>6:1080P30                    E：720P29.97<br>7:1080P25 |
| Pan_tiltDrive | Up | 8x 01 06 01 VV WW 03 01 FF | VV: Pan speed 0x01 (low speed) to 0x18 (high speed)<br>WW: Tilt speed 0x01 (low speed) to 0x14 (high speed)<br>YYYY: Pan Position<br>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<br>YYYY: Pan Limit Position(TBD)<br>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<br>mn pq rs tu vw FF | ab cd :    vender ID ( 0220 )<br>mn pq :   model ID ST ( 0950 )<br>            U3（3950）<br>rs tu  :    ARM Version<br> vw   :      reserve |
|---|---|---|---|
| VideoSystemInq | 8x 09 06 23 FF | y0 50 0p FF | P: 0~E    Video format<br>0:1080P60<br>8:720P30<br>1:1080P50<br>9:720P25<br>2:1080i60<br>A：1080P59.94<br>3:1080i50<br>B：1080i59.94<br>4:720P60<br>C：720P59.94<br>5:720P50<br>D：1080P29.97<br>6:1080P30<br>E：720P29.97<br>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<br>0z 0z 0z 0z FF | wwww: Pan Position      zzzz: Tilt Position |

**Note:**[X] in the above table indicates the camera address to be operated, 【y】 = 【x + 8】 .

# 5.2,Pelco-D protocol command list

| Function | Byte1 | Byte2 | Byte3 | Byte4 | Byte5 | Byte6 | Byte7 |
|---|---|---|---|---|---|---|---|
| Up | 0xFF | Address | 0x00 | 0x08 | Pan Speed | Tilt Speed | SUM |
| Down | 0xFF | Address | 0x00 | 0x10 | Pan Speed | Tilt Speed | SUM |
| Left | 0xFF | Address | 0x00 | 0x04 | Pan Speed | Tilt Speed | SUM |
| Right | 0xFF | Address | 0x00 | 0x02 | Pan Speed | Tilt Speed | SUM |
| Upleft | 0xFF | Address | 0x00 | 0x0C | Pan Speed | Tilt Speed | SUM |
| Upright | 0xFF | Address | 0x00 | 0x0A | Pan Speed | Tilt Speed | SUM |
| DownLeft | 0xFF | Address | 0x00 | 0x14 | Pan Speed | Tilt Speed | SUM |
| DownRight | 0xFF | Address | 0x00 | 0x12 | Pan Speed | Tilt Speed | SUM |
| Zoom In | 0xFF | Address | 0x00 | 0x20 | 0x00 | 0x00 | SUM |
| Zoom Out | 0xFF | Address | 0x00 | 0x40 | 0x00 | 0x00 | SUM |
| Focus Far | 0xFF | Address | 0x00 | 0x80 | 0x00 | 0x00 | SUM |
| Focus Near | 0xFF | Address | 0x01 | 0x00 | 0x00 | 0x00 | SUM |
| 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 | 0xFF | Address | 0x00 | 0x5B | Value High | Value Low | SUM |

| Response | | | | | Byte | Byte | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Query Zoom Position | 0xFF | Address | 0x00 | 0x55 | 0x00 | 0x00 | SUM |
| Query Zoom Position Response | 0xFF | Address | 0x00 | 0x5D | Value High Byte | Value Low Byte | SUM |

# 5.3 Pelco-P protocol command list

| Function | Byte1 | Byte2 | 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. Maintenance and troubleshooting

## 6.1. Product maintenance

1) If the equipment is not in long-term use, disconnect the power switch when not in use and disconnect the AC power adapter from the AC socket.

2) When removing dust from the outer shell of the equipment, please use soft cloth or cotton paper to avoid scratches.

3) When cleaning equipment lens, please use dry soft cloth to wipe, if dirt is serious, please use neutral detergent to wipe gently. Do not use strong or corrosive detergents to avoid lens scratches and affect image effects.

## 6.2 Troubleshooting

1）Video output without image
　　Solution：
　　A. Check whether the power supply of the equipment is properly connected and whether the power indicator is on
　　B. Whether the power-off restart equipment is normal or not
　　C. Check whether the bottom dial switch is working in normal mode (see Table 2.2 and Table 2.3)
　　D. Check whether the connection of video output and video display is normal
2）Images are sometimes absent
　　Solution：A. Check whether the connection of video output and video display is normal
3）Lens zoom image jitter
　　Solution：
　　A. Check whether the installation position of the equipment is firm or not
　　B. Are there any vibrating machinery or objects around the equipment?
4）Remote Controller Not Controllable
　　Solution：
　　A. Is the remote control address set to 1 controllable (if the equipment restores the factory default value, the remote control address is also restored to 1)
　　B. Check whether the remote control battery is installed or the power supply is insufficient
　　C. Check whether the working mode of the equipment is normal (see Table 2.2 and Table 2.3)
　　D. Check whether the menu has not exited, then it can be controlled normally after exiting the menu. If the page outputs images, it will not display the menu and do nothing. After 30 seconds, the menu automatically exits and can be controlled.

5）Serial Port Can't Be Controlled
  Solution:
  A. Whether to allocate control lines for our company?
  B. Check whether the protocol, baud rate and address of serial devices are consistent with the equipment.
  C. Check whether the control line is connected properly
  D. Check whether the working mode of the equipment is normal (see Table 2.2 and Table 2.3)

6）Web pages cannot be logged in
  Solution:
  a. Check whether the equipment is working properly with the display.
  B. Check whether the network connection is normal (the yellow indicator flashes at the outlet, indicating that the network connection is normal)
  C. Check whether the computer adds a network segment and the network segment is identical to the device IP address
  D. Open "Start" in the computer, select "Run" and enter cmd; click "OK" and then open the computer DOS command window and enter Ping 192.168.5.163. Press the Enter key and the information appears as follows: Describe the network connection.

# Warranty

# Limited warranty in respect of Alfatron Products Only

1.1 This limited warranty covers defects in materials and workmanship in this product.

1.2 Should warranty service be required, proof of purchase must be presented to the Company. The serial number on the product must be clearly visible and not have been tampered with in any way whatsoever.

1.3 This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by the Company to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover equipment enclosures, cables or accessories used in conjunction with this product.

This limited warranty does not cover the cost of normal maintenance. Failure of the product due to insufficient or improper maintenance is not covered.

1.4 The Company does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

1.5 Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

1.6 Unless otherwise specified, the goods are warranted in accordance with the manufacturer's product specific warranties against any defect attributable to faulty workmanship or materials, fair wear and tear being excluded.

1.7 This limited warranty only covers the cost of faulty goods and does not include the cost of labor and travel to return the goods to the Company's premises.

1.8 In the event of any improper maintenance, repair or service being carried out by any third persons during the warranty period without the Company's written authorization, the limited warranty shall be void.

1.9 A 7 (seven) year limited warranty is given on the aforesaid product where used correctly according to the Company's instructions, and only with the use of the Company's components.

1.10 The Company will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1.10.1 Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition.; or

1.10.2 Replace this product with a direct replacement or with a similar product deemed by the Company to perform substantially the same function as the original product; or

1.10.3 Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

1.11 The Company is not obligated to provide the Customer with a substitute unit during the limited warranty period or at any time thereafter.

1.12 If this product is returned to the Company this product must be insured during shipment, with the insurance and shipping charges prepaid by the Customer. If this product is returned uninsured, the Customer assumes all risks of loss or damage during shipment. The Company will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. The Company will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

1.13 Please be aware that the Company's products and components have not been tested with competitor's products and therefore the Company cannot warrant products and/or components used in conjunction with competitor's products.

1.14 The appropriateness of the goods for the purpose intended is only warranted to the extent that the goods are used in accordance with the Company's installation, classification and usage instructions.

1.15 Any claim by the Customer which is based on any defect in the quality or condition of the goods or their failure to correspond with specification shall be notified in writing to the Company within 7 days of delivery or (where the defect or failure was not apparent on reasonable inspection by the Customer) within a reasonable time after discovery of the defect or failure, but, in any event, within 6 months of delivery.

1.16 If delivery is not refused, and the Customer does not notify the Company accordingly, the Customer may not reject the goods and the Company shall have no liability and the Customer shall pay the price as if the goods had been delivered in accordance with the Agreement.

1.17 THE MAXIMUM LIABILITY OF THE COMPANY UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT