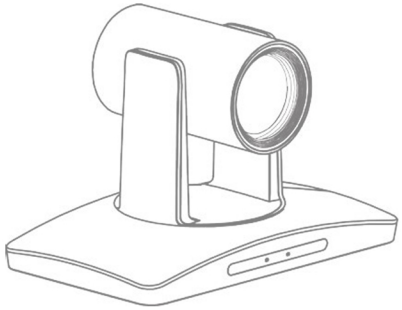
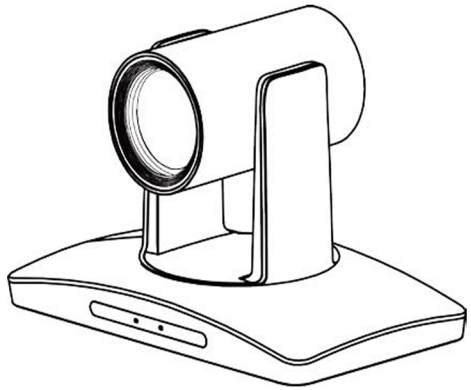
NEXIS

PTZ Video Camera

User Manual V1.0

PTZ320





Please read this instruction before using the device and keep it for future reference

COPYRIGHT INFORMATION

9. After-sale Service

Dear users, in order to ensure that you fully enjoy our quality service, please read the following product service articles carefully.

Limited warranty and lifetime maintenance services are provided.

1. Limited warranty period is 12 months from the date products leaving factory. During the limited warranty period, you will enjoy free service of repair service expect caused by man-made malfunction.

2. Outside the limited warranty period of 12 months, damaged products need be paid for their repair service.

Maintenance response time

1. 24-hour response service will be provided from the day defective products been sent back.

2. To ensure timely response or repair service, before sending defective product(s) back, please contact relevant sales person in advance and then send the product(s) back according to returning instructions provided.

SYMBOLS INSTRUCTION

Symbol	Instructions
🕮 **Explanation**	Explain in detail.
🕮 **Note**	Remind of some important operations or action need to be taken to prevent potential injury and damage.
⚠**Warning**	Indicate a potential risk that, if not avoided, may result in injury, accidents and equipment damage.
⚠**Dangerous**	Indicate a high potential risk that, if not avoided, may result in a significant risk of damage or injury.

SAFETY NOTES

■ During the installation of this camera, please read this manual carefully and operate strictly in accordance with the installation instructions. Keep this manual for future reference.

■ Before powering on the camera, please check the power carefully. Make sure that you are using the right power source.

■ Place the power cable in a place that is not easily accessible. Do not stack any objects on the power cable, protect the cable, especially the connection must be fully and securely contacted.

■ Do not run the camera beyond the specified temperature and humidity. The working temperature range is between 0℃ ~ +40℃. The working humidity range is between 10%RH~90%RH.

■ For safety, foreign matter is prevented from entering the device, do not splash the corrosive liquid onto the camera.

■ When transporting, avoid violent shake or strong force to the camera.

■ Do not disassemble the camera without authorization. If the camera is damaged, please contact professional maintenance personnel for repair.

■ Avoid pointing the camera at objects with strong light, such as the sun etc.

■ When cleaning the camera, please use soft cloth. If the camera is very dirty, wipe it off gently by a soft cloth moistened with a weak solution of water or a neutral kitchen detergent. Wring out all liquid from the cloth before wiping the camera, then wipe away all remaining dirt with a soft, dry cloth. Use lens cleaning paper to clean the lens.

OSD Menu	yes
Image Flip	Stand/Ceiling
Interface	
HDMI	One channel HDMI Video resolution:1080P60, 1080P50, 1080P30, 1080P25, 1080I60, 1080I50, 720P60, 720P50
Audio	One channel LINE IN
Network Interface	One channel RJ-45,10M/100M, POE optional 1. Max support 1920×1080@30fps 2. Image compression support H.265, H.264 3. Audio compression support AAC 4. Protocols support TCP, UDP, RTSP, RTMP, ONVIF 5. Support dual stream
USB Interface	One channel USB2.0, support MJPEG/H.264 Video resolution: 1080P30,720P30,360P30
Control Interface	One channel RS-232 IN, one channel RS-232 OUT
IR Throughout Output	One channel IR throughout output
Power	DC12V
General	
Protocol	VISCA (support daisy chain), PELCO-P, PELCO-D
Address	1~7
Power	DC 12V
Power Consumption	<18W
Work Temperature	0°C ~ + 40°C
Storage Temperature	-20°C ~ +60°C
Work Humidity	10%RH ~ 90%RH
Storage Humidity	10%RH ~ 95%RH
Dimensions （L×W×H)	243 mm×158 mm×163mm
Weight	1.4kg
Body Color	Grey

	DEFAULTS	Used to restore all menu parameter settings to factory default settings.
	NETWORK	View and set the current network of the camera.
Device Information	VIDEO FORMAT	View the video format of the current camera.
	FIRM VERSION	Displays the firmware version of the current camera.

8. Technical Specifications

Items	**Value**
Image Sensor	1/2.8" CMOS, 2.14 megapixel
Focal Lens	f=4.7mm~94.0mm
Iris	F1.6~F3.5
Optical Zoom	20x
Digital Zoom	8x
Horizontal Viewing Angle	59.5°~2.9°
Focus System	Auto, Manual, PTZ Trigger, One Push Trigger
Min. Illumination	0.5Lux
Shutter Speed	1/50s ~1/10,000s
Gain	Auto /Manual
White Balance	Auto, One Push, Manual ,Static
Exposure control	Auto, Manual, Shutter Priority, Iris, Bright
S/N	≥50dB
Digital Noise Reduction	2D/3D
Back Light Compensation	yes
Wide Dynamic	yes
function	
Pan Angle	-170°~+170°
Tilt Angle	-30°~+90°
Pan Speed	0.1°/s~120°/s
Tilt Angle	0.1°/s~80°/s
Preset Number	256

CONTENTS

	BRIGHT	Manually adjust the video brightness.
COLORTONE	WB	AUTO, MANUAL, OPWB, STATIC.
	SATURA	The higher the saturation, the brighter the color effect. On the contrary, the lower the saturation, the more the effect tends to black-and-white photos.
	HUE	Used to adjust the overall tendency of the color of the image, causing the color to rotate.
CAMERA	RUN SCENE	Used to set the scene for the camera's best shot.
	DIGITAL ZOOM	When the optical magnification reaches the MAX., turn on/off the digital magnification function to continue magnifying the image.
PTZ	P/T SPEED	Set camera's Pan / Tilt speeds.
	PTZ TRIG AF	When the camera moves horizontally, vertically and multiplies, it automatically focuses.
	POWER UP	This operation is performed when the camera is powered on and doesn't receive the control command.
SYSTEM	PROTOCOL ADDR	Change the camera address by software without setting the camera address through dip switch.
	IR ADDR	Set the IR control address for the camera.
	MOUNT MODE	The camera image flips 180° vertically and horizontally.
	PROTOCOL	Set the camera control protocol.
	BAUDRATE	View and set the current baud rate of the camera.
	VIDEO FORMAT	View and set the current video format of the camera.
	LANGUAGE	View and set the current language of the camera.
	PROMPT	Turn on/off display of zooming times.

7.2.Menu Explanation

1) Press menu button to enter / exit menu.

2) Click the “menu” which is been enlarged means been selected, and click “enter” to get the menu.

3) Click◄ or ► to change the values.

Category	Options	Function
IMAGE	SHARPNESS	Used to adjust the sharpness of image and image edge. The higher the sharpness, the higher and clearer the contrast. But the sharpness value is too high, easy to cause the image distortion.
	BRIGHTNESS	Used to adjust the brightness of the image.
	CONTRAST	Refers to the ratio between the brightest and darkest areas of the image. The greater the ratio, the clearer and brighter the image; Low contrast will make the image gray.
	2DNR	When the camera is a color image, you are advised to disable the DNR function; Otherwise, the image sharpness will be affected.
	3DNR	The higher the level of noise reduction, the more delicate the picture quality, the smaller the shaking feeling.
	DRC	It refers to the adaptability of the camera to strong light, specifically to different range of brightness and color temperature.
	MIRROR	The camera image flips 180° horizontally.
	FLIP	The camera image flips 180° vertically.
EXPOSURE	AUTO	Gain, Shutter Speed and Iris value are adjusted automatically accordingly to working environment.
	MANUAL	Manually adjust Gain, Shutter Speed and Iris.
	SHUTTER	Gain and Iris value are adjusted automatically according to working environment; shutter speed value is adjustable manually.
	IRIS	Gain and shutter speed value are adjusted automatically according to working environment; Iris value is adjustable manually.

1. Overview of Camera

1.1. Quick Guidance

The camera can be accessed and controlled in the following ways:

1. Software CameraCMS: Set up camera, control camera, and change network parameters;

2. VLC access: Watching two streams of camera;

3. Onvif: Camera support Onvif 2.1 version,default username: admin,original password: 123456;

4. Transparent Transmission: The recommendation method to work with live streaming / recording devices.

1.2. CameraCMS Instructions

Refer to the manual.

1.3. The Instructions of RTSP Access

1. Make sure that the computer and equipment are in the same network segment;

2. Two stream url: rtsp://IP/chx,x=1, 2; 1 is main stream, 2 is sub stream;

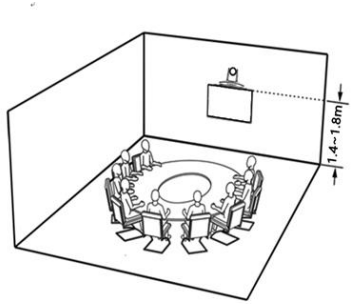
3. IP address is acquired through CameraCMS, the default port of rtsp is 554.

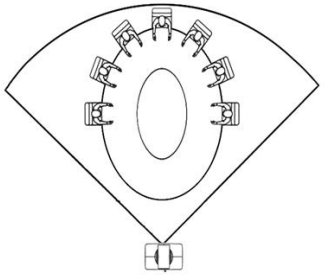
2. Product Introduction

2.1. Performance Characteristics

- 1/2.8 inch CMOS sensor, 2.14 megapixel;
- H.265, H.264 video compression;
- Support HDMI output;
- Dual stream, supporting multi-levels configuration of video quality;
- One channel audio input;
- Precise driving system with high reliability and precision;
- Support multi protocols & control interfaces and Daisy chain;
- OSD menu;
- With IR remote controller;
- Smart AE technology to effectively avoid the interference of complicated lights from projectors, monitors, etc;
- Desktop/Ceiling/ Wall mount optional.

2.2. Application Scenarios





< SYSTEM >
- PROTOCOL ADDR — 1,2,3,4,5,6,7
- IR ADDR — 1,2,3
  (Infrared Address)
- MOUNT MODE — STAND, CEILING
- PROTOCOL — VISCA, PELCO_P, PELCO_D
- BAUDRATE — 2400,4800,9600,38400
- VIDEO FORMAT — 720P60,720P50,1080P60, 1080P50,1080P30,1080P25 1080I60,1080I50
- LANGUAGE — ENGLISH
- PROMPT — ON, OFF
- DEFAULTS — CONFIRM
- NETWORK

<DEVICE INFO>
- FIRM VERSION
- VIDEO FORMAT

<COLORTONE>
- WB
  - AUTO
    - R-GAIN — -7~+7
    - B-GAIN — -7~+7
    - WB-SENSI — LOW, MIDDLE, HIGH
  - MANUAL
    - R-GAIN — 0~16
    - B-GAIN — 0~16
  - OPWB — OPT
    (One Push White Balance)
  - STATIC — COLOR TEMP — 2800~6500
  - WB-SENSI — LOW,MIDDLE,HIGH
- SATURA — 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14
  (Saturation)
- HUE — 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14

<CAMERA>
- RUN SCENE — INDOOR
- DIGITAL ZOOM
  - ON — ×1,×2,×3,×4, ×5,×6,×7,×8
  - OFF

<PTZ>
- P/T SPEED (Pan/Tilt Speed) — 1,2,3,4,5,6,7
- PTZ TRIG AF — ON, OFF
- POWER UP — HOME, PRESET1, PRESET2, PRESET3

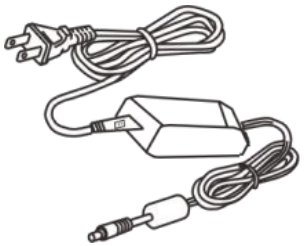
3. Product Components

3.1. Random Accessories

Camera X1

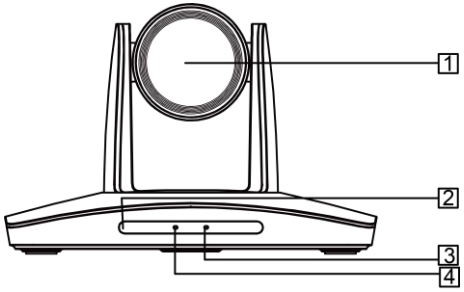
Remote control X1

RS232 cable X 1

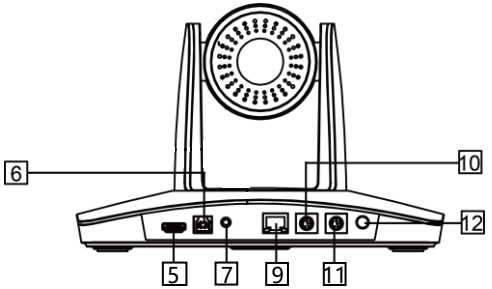


Power Indicator X1

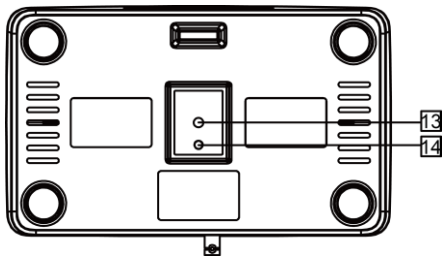
3.2. Main Components and Control Interfaces



Front



Back



Bottom

NO.	Interface	NO.	Interface
1	Camera Module		
2	Infrared Receiving Sensor	9	Ethernet
3	Power Indicator Light	10	RS232-IN
4	Communication Indicator light	11	RS232-OUT
5	HDMI	12	Power（DC12V）
6	USB 2.0	13	Mounting Holes (depth 6mm, φ5mm)
7	Audio Input	14	Location Hole (depth 5-7mm,1/4-20UNC)

<EXPOSURE >
- AUTO
  - ANTI FLICKER — OFF,50Hz,60Hz
  - BLC — ON,OFF
    (Backlight Compensation)
  - EXP COMP
    - ON — -7,-6,-5,-4,-3, -2,-1,0,+1,+2, +3,+4,+5,+6,+7
    - OFF
- MANUAL
  - GAIN — 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14
  - SPEED — 1/60,1/90,1/100,1/125,1/180,1/250, 1/350,1/500, 1/725,1/1000,1/1500, 1/2000,1/3000,1/4000,1/6000,1/10000
  - LEVEL — F14,F11,F9.6,F8,F6.8,F5.6,F4.8, F4,F3.4,F2.8,F2.4,F2,F1.6,CLOSE
- SHUTTER
  - SPEED — 1/60,1/90,1/100,1/125,1/180,1/250, 1/350,1/500, 1/725,1/1000,1/1500, 1/2000,1/3000,1/4000,1/6000,1/10000
- IRIS
  - LEVEL — F14,F11,F9.6,F8,F6.8,F5.6,F4.8, F4,F3.4,F2.8,F2.4,F2,F1.6,CLOSE
- BRIGHT
  - BRIGHTNESS- 0,1,2,3,4,5,6,7,8,9,10,11 12,13,14,15,16,17,18,19,20 21,22,23,24,25,26,27
  - ANTI FLICKER — OFF,50Hz,60Hz

7. Menu Settings

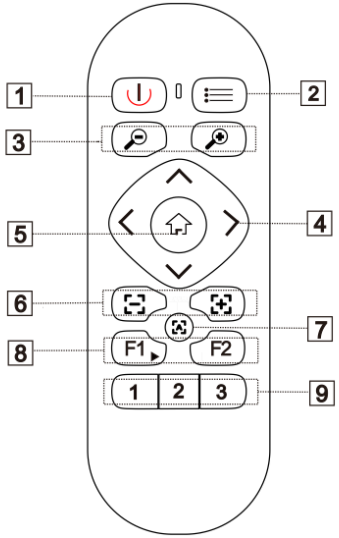
Click the "menu" button to enter or exit the camera menu. Click the "enter" button to enter and use the menu, click the "return" button to return to the previous menu, and click the left and right buttons of PTZ control to change the menu options.

7.1.Menu Configuration

<IMAGE>

- SHARPNESS — 0,1,2,3,4,5,6,7,8,9,10,11
- BRIGHTNESS — 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14
- CONTRAST — 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14
- 2DNR — 0,1,2,3,4,5,6,7
- 3DNR — 0,1,2,3,4,5,6,7
- DRC (Dynamic Range) — 0,1,2,3,4,5
- MIRROR — ON, OFF
- FLIP — ON, OFF

3.3. Remote Controller

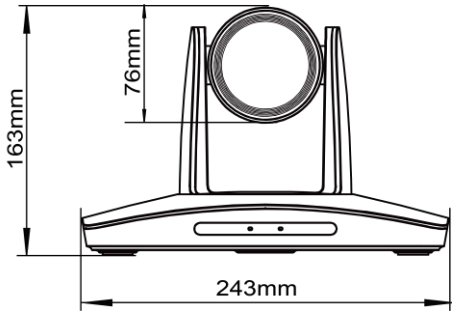


Number	Name	Function
1	Power Switch	Power on/off the camera
2	Menu	Open/Close OSD menu
3	Zoom	⊕ Zoom in, ⊖ Zoom out
4	Direction Operation	In Menu status, select among menu options; In None-menu status, ^ or v means to move vertically, < or > means to move horizontally.
5	HOME	In Menu status, enter the menu; In Non-menu status, camera moves to initial position.
6	Focus	[-]– near focus,[+]– far focus
7	Auto focus	Camera auto focus
8	F1/F2	After long press for 5 second, then press number key to set IR address,F2 is reserved
9	Number keys	Set and call presets

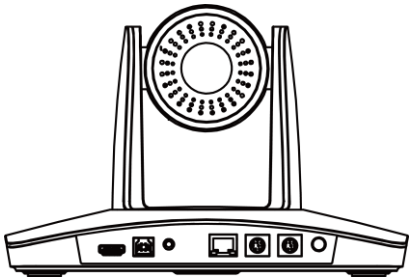
4. Installation

4.1. Outline Dimension Drawing

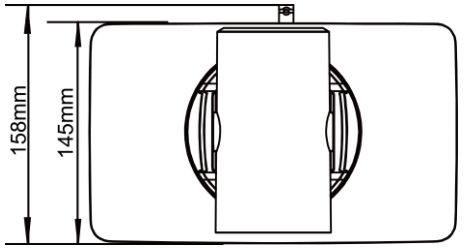
Front view



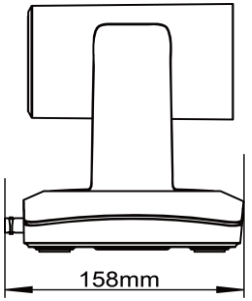
Back view



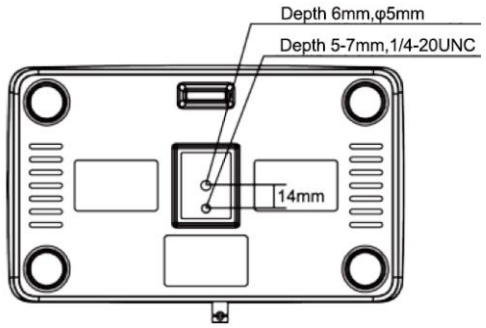
Top view

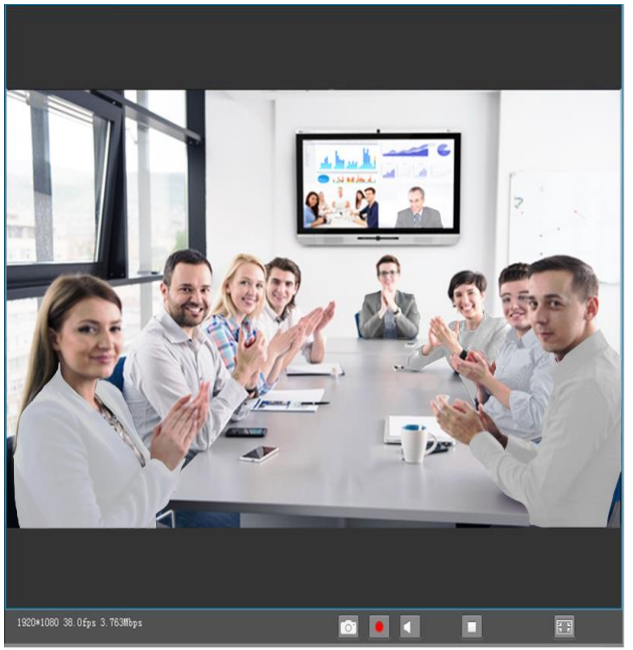


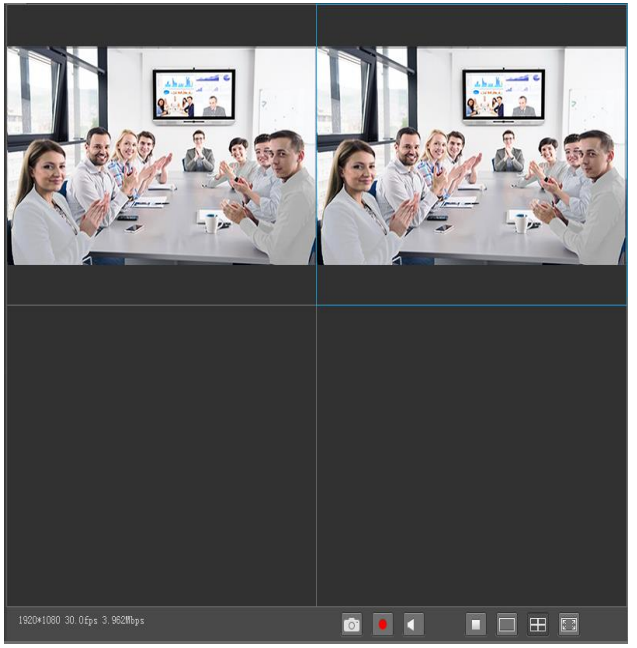
Side view



Bottom view

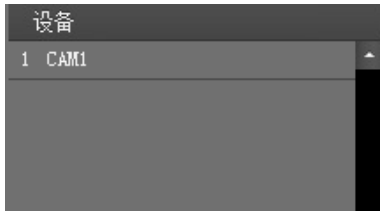




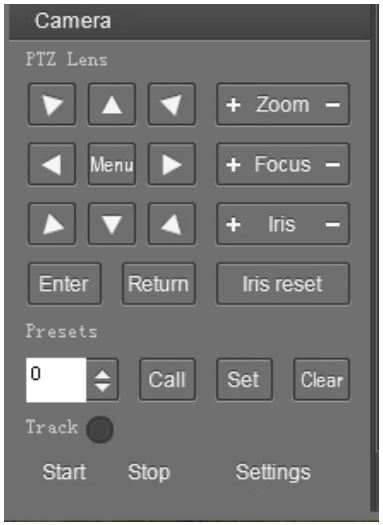


This page includes three main parts: Device List, Device Control, Video Preview.

- Device list: It displays all online cameras added to "Device Management".



- Device control：The camera selected in the device list can recontroled（blue color）.



- Video Preview: double click the camera in the list, main stream of the camera will be displayed, or you can also select the sub-steam through clicking right button for display. Video preview mode can be single video or four channels, when in four channel's mode, click to select a picture, and then click the switch icon in the lower right corner to present a single large picture of the selected picture.
- Video recording: Default save path: {app} | save_ Video folder.

4.2. Installation Instruction

The camera has 3 installation types: desktop, ceiling, wall mount installations.

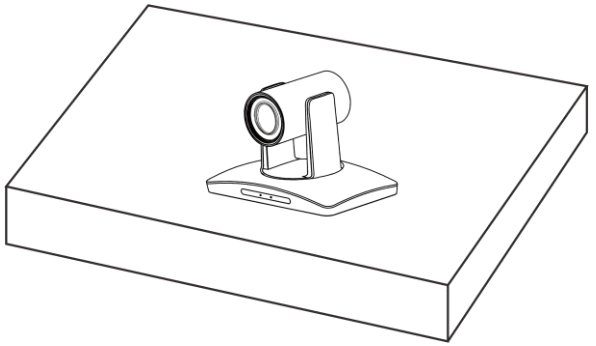
🕮Note

Before installing, make sure there is enough space to install the camera and its components.

Make sure the installed place is strong and safe enough to hold the camera and relative parts, it is suggested that the installed place can withstand 4 times the weight of the camera and its relative parts.

4.2.1. Desktop Mount Installation

1. Put the camera on a flat surface. In case the camera has to be placed on an inclined surface, make sure the cline angle is less than 15 degrees to ensure proper pan /tilt operation.



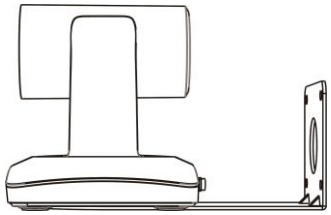
🕮Note

Take effective measures to avoid camera from dropping.

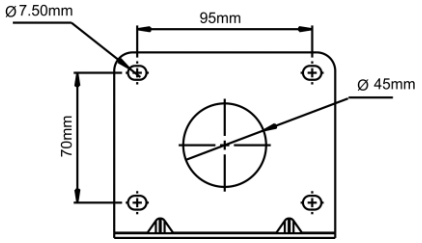
Do not grab the camera head when carrying.

Do not rotate the camera head with hand. It may cause malfunction to the camera.

4.2.2. Wall Mount Installation(optional)



1. According to diameter and position of the 4 installation holes (As shown below) on the bracket, drill 4 holes on the wall and fix the bracket onto the wall by using 4 screws（M6*60）according your own needs.

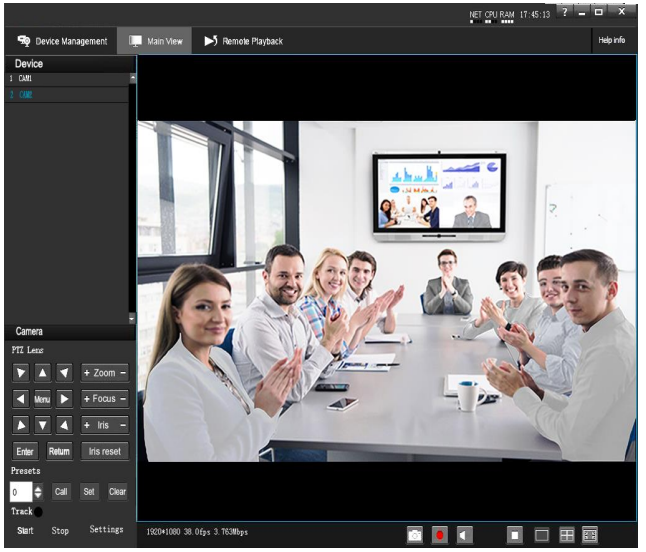


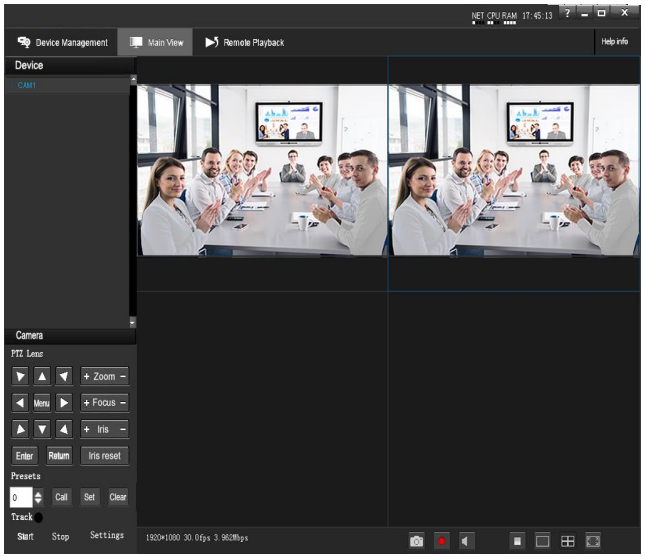
2. Use inch screws to fix the camera on the bracket, fix the limit screw according to actual requirement, and make sure the camera is tightly fixed onto the bracket before you release your hand.

6. Preview

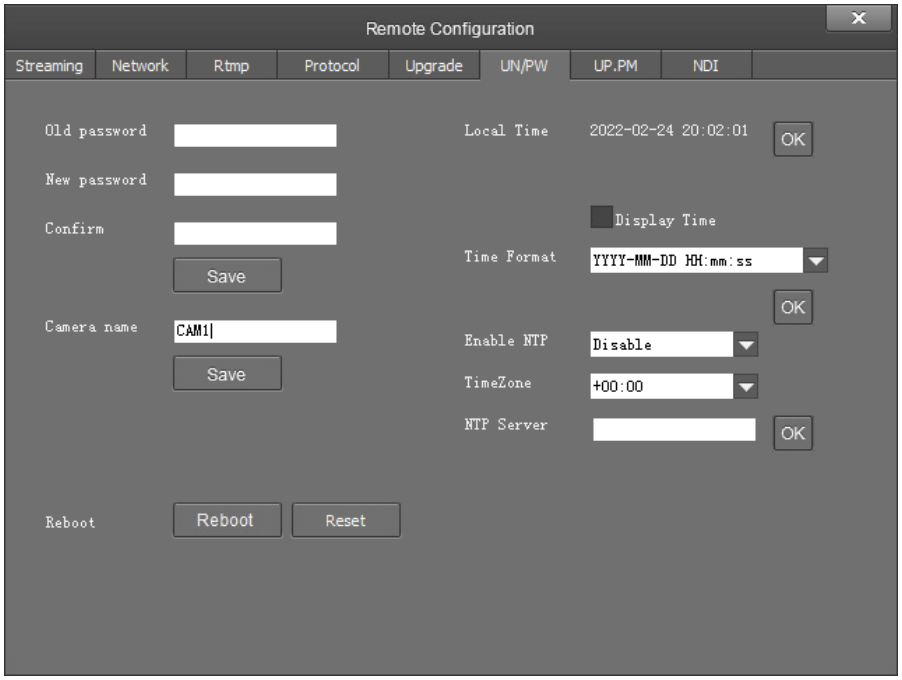
6.1. Introduction to Video Preview

Click “Main View” to get into camera control and preview part as below.

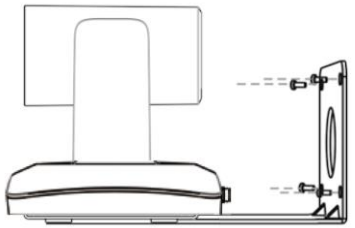




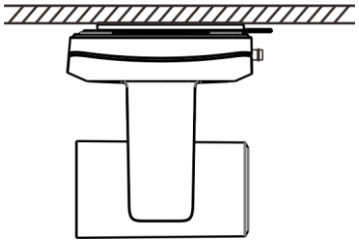
5.3.6. System Setting



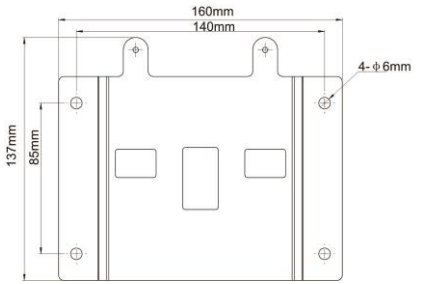
- Password setting: if the camera is set with a password, you can only connect the camera and browse the audio and video of the camera after entering the correct password;
- Camera maintenance: including restarting the camera and restoring the factory configuration;
- Device name: set the name of the camera and click "Save";
- Time configuration:
  a) Synchronize local time;
  b) Whether time information and display format are displayed on CMS video;
  c) NTP (network time service) configuration.



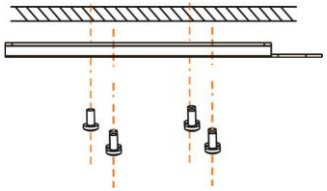
4.2.3. Ceiling Mount Installation(optional)



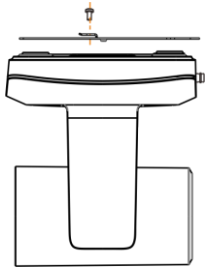
1. According to diameter and position of the 4 installation hole (as shown below), drill 4 holes on the ceiling or cement roof correspondingly.



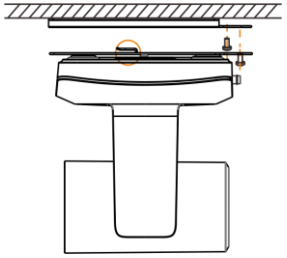
2. Fix the mounting plate onto the ceiling or cement roof with 4 screws according to your own needs.



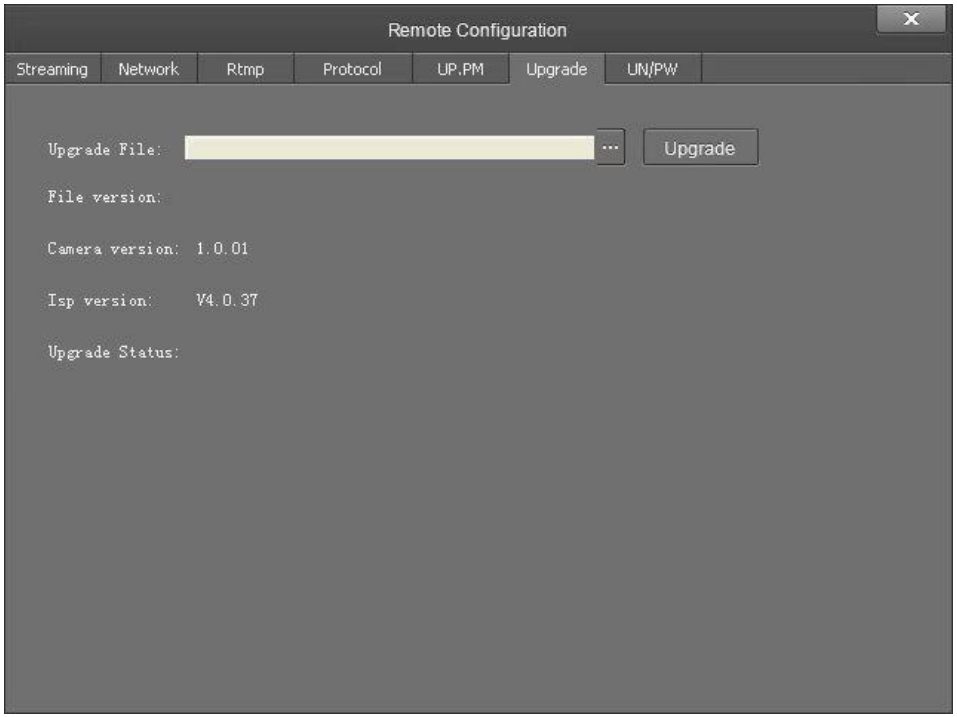
3. Use 1 screws to fix the camera on the ceiling mount plate.



4. Push forward camera's bottom slide according to the mounting plate's bottom slide until they reach their limit. Fix the ceiling mount plate and camera's bottom plate with cross recessed pan head tapping screw.



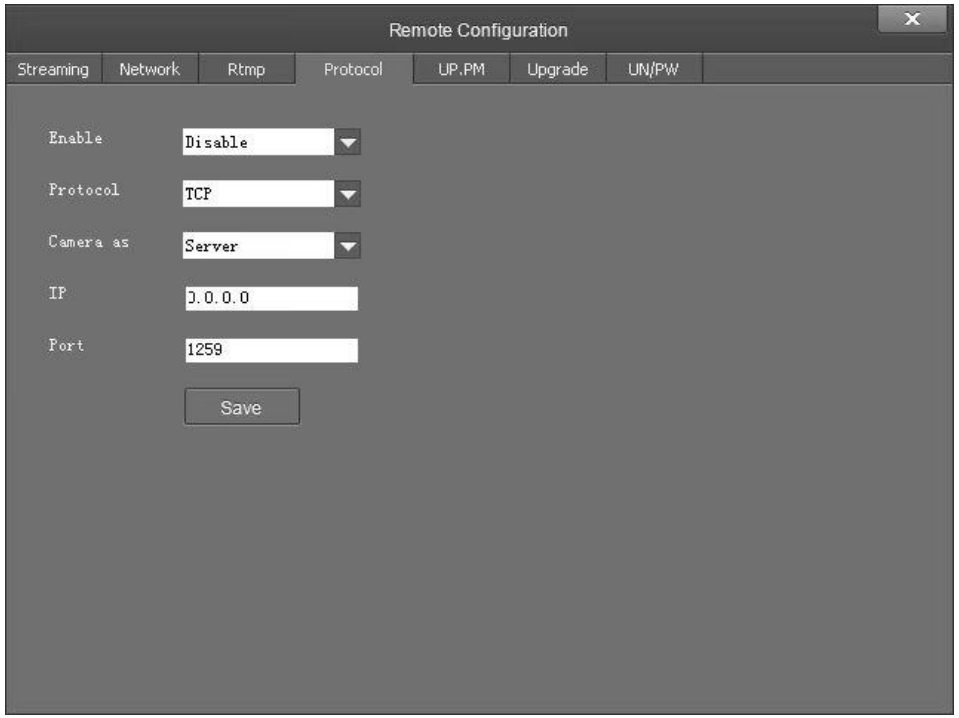
5.3.5. Upgrade



- Click "Upgrade" menu to enter the main interface, as the picture shown above. Click [...] to search and load the updating firmware, then click "Upgrade" to start upgrading. Do not power off the camera during upgrading. After upgrading completes, camera will reboot.

Common mainstream RTMP servers are supported like red5, nginx, crtmpserver, fms, wowza.

5.3.4. Transparent Transmission



Function:

Transmit commands through VISCA-over-IP,

Transmit the status code of camera,

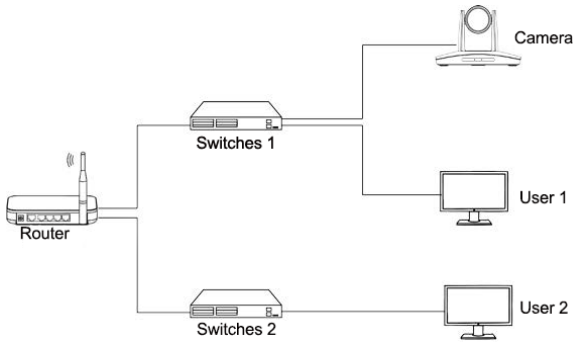
- Enable: enable transparent transmission;
- Protocol: choose TCP or UDP protocols;
- Camera as: choose Client or Server;
- IP: when the camera is set as client, the IP address of the transmitted camera is needed. When the camera is set as server, the IP address can be left as black;
- Port: choose from 1-65535 as transparent transmission port.

5. Device Management

5.1. Device Connection

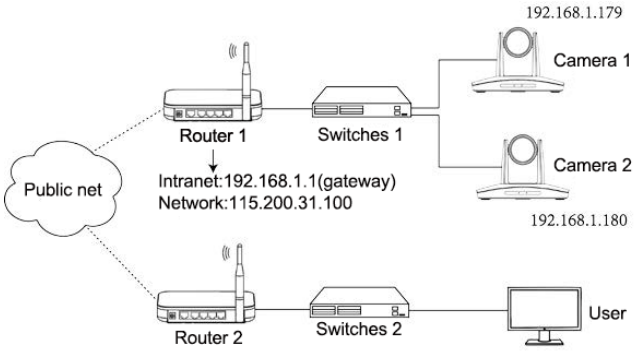
Connect the camera to network through an Ethernet cable, then power on the camera.

5.1.1. LAN Connection



As shown in the above diagram, user1 and user 2 are in the same router, which means in the same LAN. Connecting the camera to the same LAN where the PC is, and referring to the below CameraCMS software instructions, then all the cameras can be found and connected by searching for the online device list.

5.1.2. WAN Connection



As shown in the above diagram, user and the camera are in different routers, which means in a WAN.In this case, the CameraCMS software cannot automatically search for the camera as it does on a LAN. However, if the following three conditions are satisfied, the CameraCMS software can

still search for the camera through the following network configurations: (1) Set camera's IP address as static IP address. (2) Router of the LAN where camera is connected supports Port Mapping. (3) Router of the LAN where camera is connected has fixed public IP address. Follow below steps to connect.

Step One

Set camera's IP address in LAN: connect user PC to the LAN (Router 1) where the camera is connected according to LAN connection instructions, use application software CameraCMS to search and find the camera, then add it to manage; then set camera's IP address in the same network segment as the router 1. Camera's gateway is usually set at Router 1's LAN IP address, for example, 192.168.1.1, then camera's IP address can be set as for example 192.168.1.179 or 192.168.1.180 as long as they are in the same network segment.

Step Two

Router Mapping: The user's computer accesses the LAN of router 1 where the camera is and enters the router configuration interface (administrator rights of router 1 should be required); enter the page of "port mapping",refer to below picture, Do not tick "Do not apply this rule", in the first frame of "External port", fill in any number from 1~65535, such as 10200 (try to select port greater than 10000 to avoid port conflict); Fill in the IP of camera 1 in the internal IP, such as 192.168.1.179, and fill in the internal port 3478 of the camera in the first box of the internal port (all cameras are fixed to this value). "Protocol" and "image line" can be selected by default. Descriptions such as "port mapping of camera 1" can be filled in the description.

Step Three

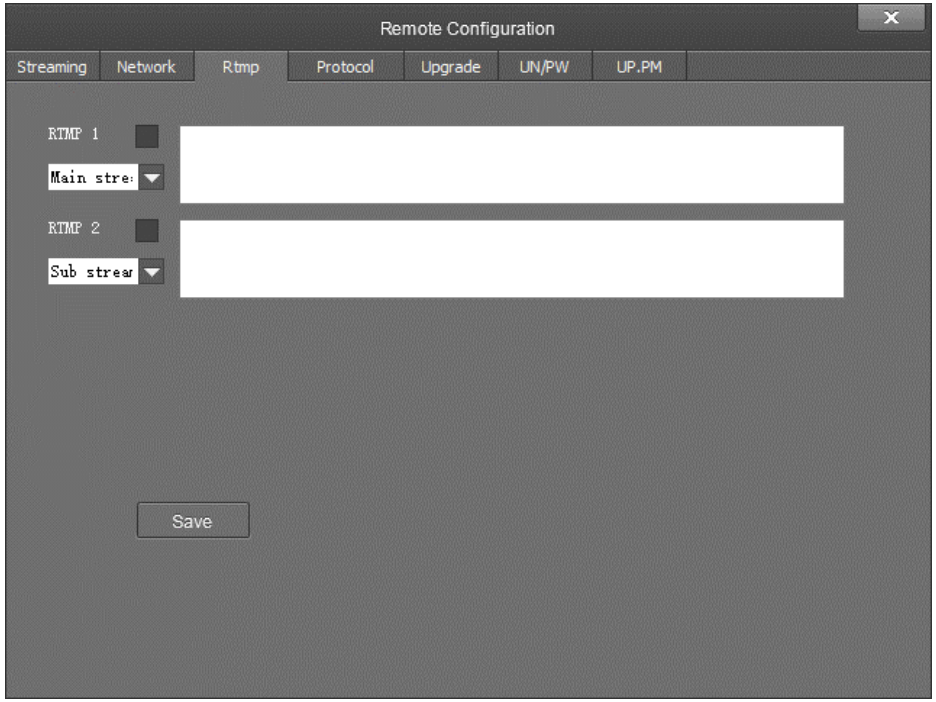
Access from external network: For example, if the external IP address of router 1 is 115.200.31.100, the WAN user under router 2 can access camera 1 through IP address 115.200.31.100 and port 10200 through steps 1 and 2 above. That is to say , in WAN, camera 1 is mapped to (IP 115.200.31.100 + port 10200). Camera 2 can use another external port such as 10320, so camera 2 is mapped to (IP 115.200.31.100 + port 10320) . In the "Managed Device" of the client software CameraCMS, click the button "+Add", enter the IP address 115.200.31.100 and port 10200 and other information, then the camera 1 can be accessed and controlled.

5.2. Search and List the Camera

CameraCMS software process:

- Connect Mode: Static IP or dynamic IP address;
- IP address: input the IP address not used for the camera;
- Mask: input mask address for the camera;
- Gateway: input gateway IP address;
- DNS 1: server-prior, input DNS address for the device;
- DNS 2: It will be used in case that DNS1 server is not working;
- Port: streaming port(RTSP) and application port(SDK connection) can be configured. The range of stream ports is 3479~7999 and 554, the default is 554. The range of application ports is 3479~7999, the default is 5000;
- Click the "Save" button after setting;
- Camera will connect to ethernet following the above operations.

5.3.3. RTMP

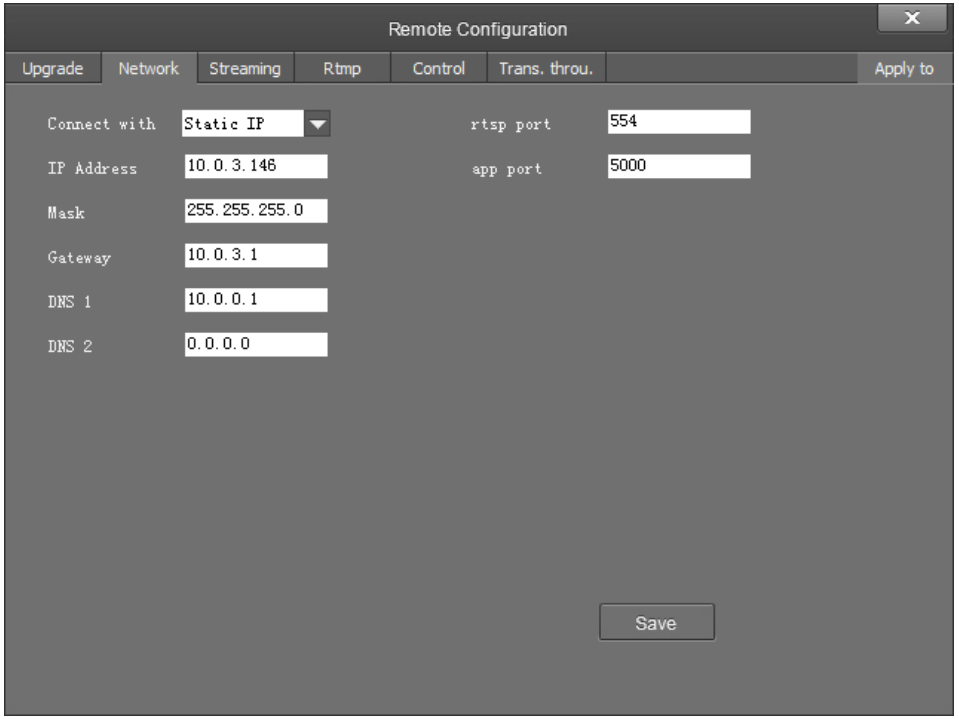


RTMP1 and RTMP2 can choose main stream or sub stream to transmit video.

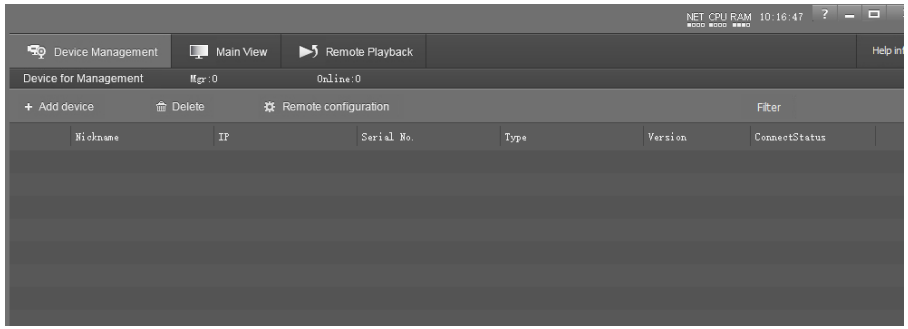
relatively poor. Vice versa, the larger the fluctuation of the byte will be, the higher the image quality will be;

- Video coding type: choose H.264 or H.265;
- Encode level: choose from Base Profile, Main Profile, and High Profile;
- Audio channels: support mono and dual channel;
- Encode type: represent the encode type of current device and support AAC by far. the sampling rate and audio rate need to be set as well;
- Sampling rate: 16KHz, 32KHz, 44.1KHz, 48KHz;
- Audio rate: 48Kbps, 64Kbps, 96Kbps, 128Kbps;
- Input pin: the way of audio input;
- Volume: drag the volume bar to set the volume. The volume ranges from 0 to 100.

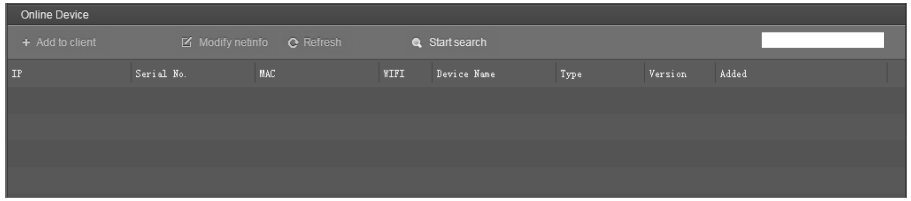
5.3.2. Network



Install and open the CameraCMS software on the PC, enter the interface of "Device Management"

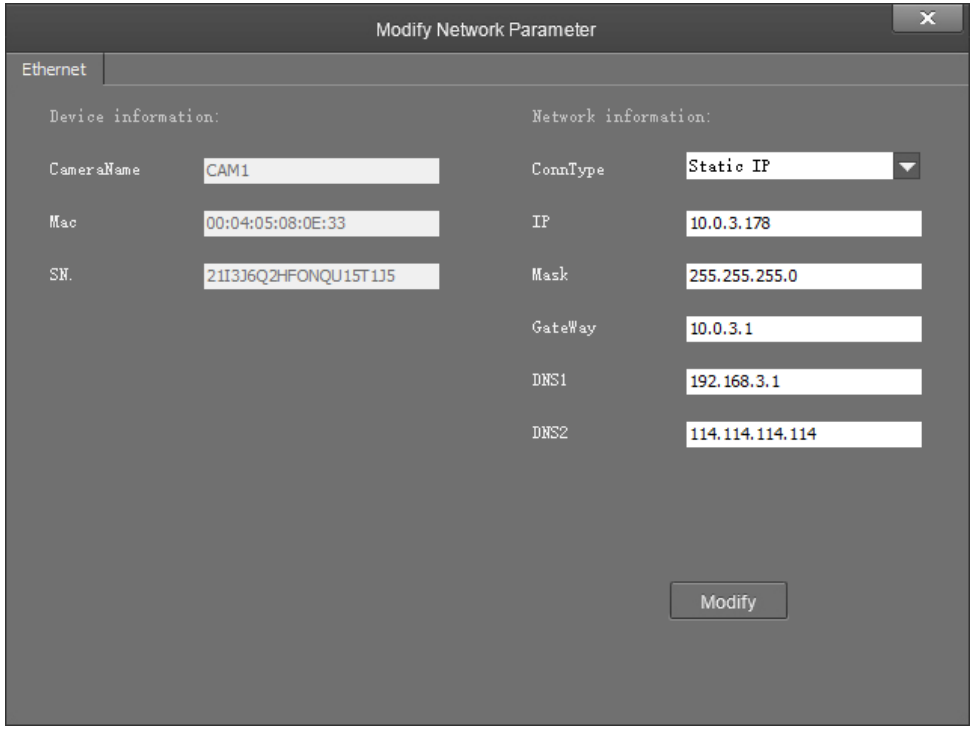


If the camera is in the LAN of PC, click "Start Search", then searching starts and all online devices will be listed, as the picture shown below:

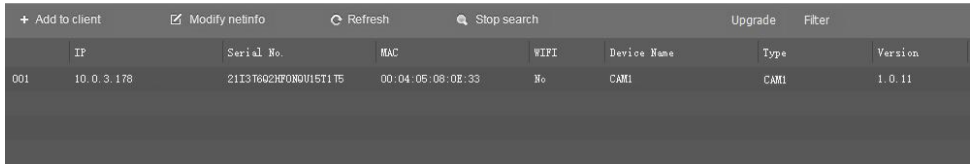


To upgrade multiple cameras in batch, first select multiple devices in the list and Select the upgrade file in the camera program file path, click "upgrade".

To modify the device IP address, choose the device first, then input the IP address, mask, gateway in the "Modify Network" page. Click "modify", the network parameters take effect.



To control and preview a camera, choose the device first, modify its IP address to the IP address of the same LAN, then click “Add to Client” as the picture shown below.

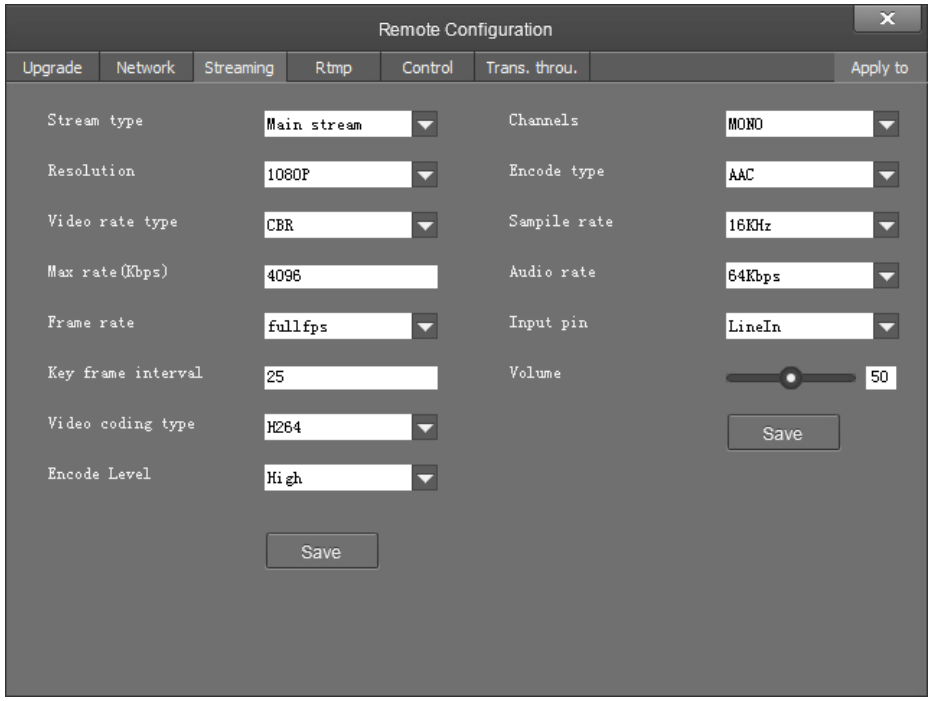


If it is a camera in the WAN, click “WAN access” directly to add the camera.

5.3. Configuration

Choose the camera in the device list, click “Remote Configuration” in the column to upgrade the camera or configure parameters.

5.3.1. Stream Parameter



- Stream type: set up the parameters of main stream, sub stream. Different devices support different streams;
- Resolution: three resolutions can be set:1080P(1920*1080),HD720P(1280*720),360(640*360). It could be selected according to the customer's requirements for video definition and the ability of device support. The higher the resolution, the higher the bandwidth requirements of the network;
- Bitrate Type: support CBR and VBR;
- Frame rate: represent the number of frames per second of the video;
- Key frame interval: configure the number of frames between the two key frames. The larger the key frame interval is, the smaller the fluctuation of the byte will be, but the image quality is