HD PTZ Camera

User Manual V1.2

Copyright Information

Symbols Instruction

Symbol	Instructions
📖 **Explanation**	To represent the supplement and explanation of the text.
📖 **Note**	To remind the user of some important operations or to prevent the potential injury and property damage.
⚠ **Warning**	To indicate a potential risk that, if not avoided, may result in injury accidents, equipment damage or business interruption.
⚠ **Dangerous**	To indicate a high potential risk that, if not avoided, may result in a significant risk of death 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.

Contents

About The Product

Features

● 20x optical zoom, up to 1080P60 resolution, support 59.94/29.97 frame rate;

● Compact appearance design with prominent Tally light auxiliary prompt;

● Network protocols support SRT, ONVIF, RTMPS, VISCA OVER IP;

● Support NDI | HX3, WEB UI;

● Support HDMI, LAN(POE)and USB3.0 video output interface;

● Control Interface support RS-232 IN, RS-485/422;

● Support large collaboration spaces such as classrooms, halls, exhibition halls, etc;

● Compatible with mainstream video conference hosts on the market.

List Of Parts & Accessories

When you open the box, check all accessories according to the packing list.

Camera (1 pcs)
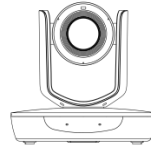
Power Adapter (1 pcs)
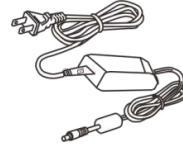
Remote Control (1 pcs)

USB3.0 (1 pcs)
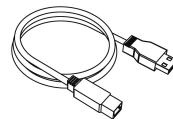
RS484/422(1 pcs)
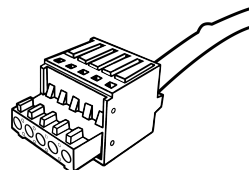
Main Parts & Interfaces

Front View
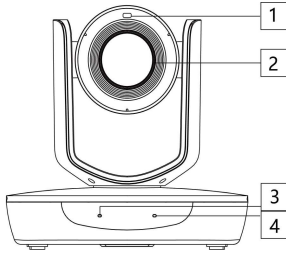
1 Tally Light

2 Camera Module

3 Power Indicator

4 Status Indicator

Rear View
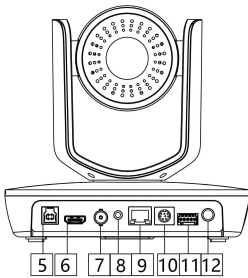
5 USB3.0(Type-B)

6 HDMI

7 3G-SDI

8 Line-in

9 RJ45

10 RS232-IN

11 RS485/422

12 DC12V

Bottom View
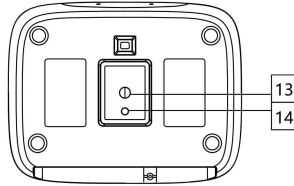
13 Mounting Hole

   1/4"inch screw thread for fixing camera.

14 Locating Hole

   To define installation direction of camera.

RS485/422 Connector
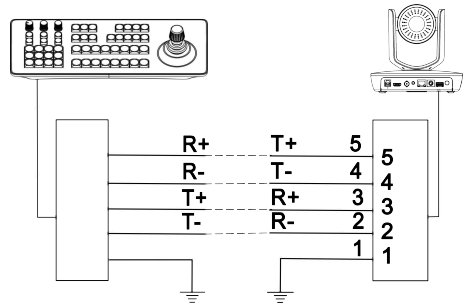
Size And Dimension

Front

Rear

160mm
171mm
42mm
176mm

Top

Side

135mm
137mm

Bottom

137mm

Depth 5-7mm,1/4-20UNC
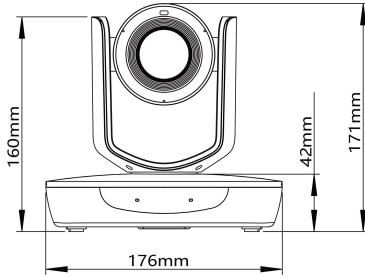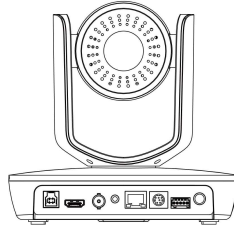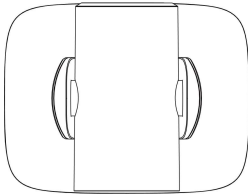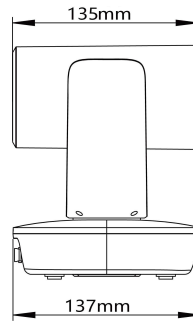
14mm   Depth6mm,φ5mm
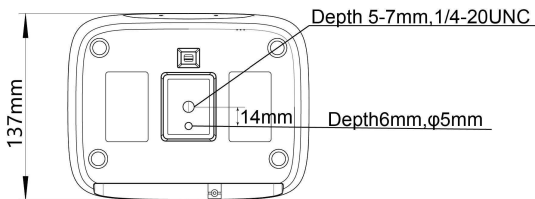
IR Remote Controller
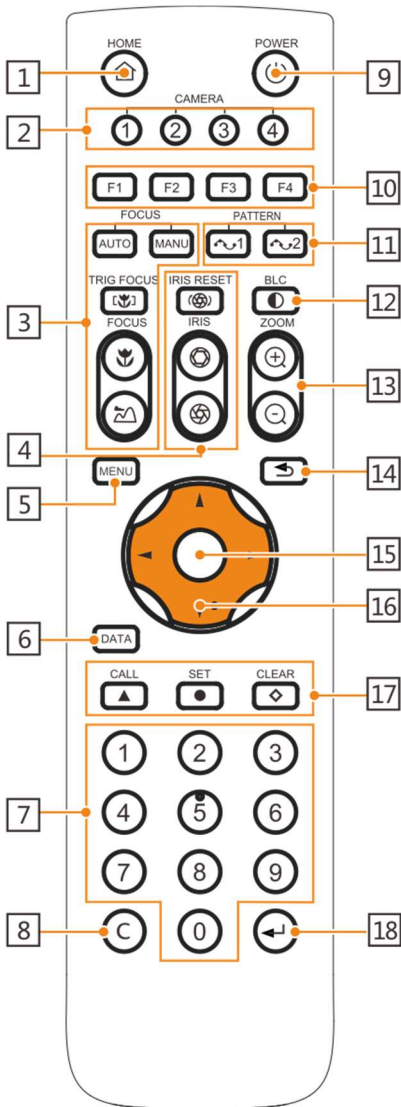
1 HOME

Press "HOME" button, camera moves to initial position.

2 Camera Selection Button

Used to switch among 4 cameras, press 1-4 number buttons to control cameras with 1-4 addresses respectively.

For example, press button 1 to control the camera with address 1.

3 Focus

Press "AUTO" button to switch to Auto Focus, press "MANU" button to switch to Manual Focus mode.

"🌷" button to Focus Near,

"🏔" button to Focus Far,

"[🌷]" button to Auto Focus once every time it is pressed, then switch back to Manual Focus mode.

4 Iris

Press"(⊛)"button to reset iris (image brightness) value to default. ⟲"button to Iris Open (brighter image),

"⟲"button to Iris Close (darker image).

5 Menu

Press "MENU" button to enter / exit menu.

6 Data

Switch preset prompt, turned on by default.

7 Number Keys

Long press remote control numeric key (0-9) to set a preset, short press to call a preset.

8 Cancel

Reserved.

9 Power

After the camera has been connected to power source, press this button to turn on / off the camera.

10 Reserved buttons (F1, **F2**, **F3**, **F4)**

Reserved.

11 Pattern

Reserved.

12 BLC

Used to open / close back light compensation.

13 Zoom

Used to adjust zooming times.

"⊕"button to zoom in,

"⊖"button to zoom out.

14 Back

Press"↩ "button to go back to previous menu.

15 OK

In None-menu status: press this button to switch among pan / tilt control speeds.

In Menu status: get into relative menu option after it has been selected.

16 Direction / Menu Operation

In None-menu status, press these four buttons to pan left/right and tilt up/down.

In Menu ⋏ or ⋎ button to   select among menu options, ◂ or ▸ to change option / value.

17 Preset Setting

"▲" button,

"●" button, Reserved,

"◆" button to clear a preset.

Press this button, and then input number key(s) to clear a preset.

18 Enter

Reserved.

Installation

The camera has 3 installation types: desktop installation, wall mounting (non-standard), and ceiling mounting (non-standard).

> ### 📖 Note
>
> - Before installing, make sure there is enough space to install the camera and its parts;
> - 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.

Desktop Mount Installation

Put the camera on a flat surface. In case the camera has to be placed on an inclined surface, make sure the angle of inclination 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.

Wall Mount Installation

(Wall Bracket Supplied Separately)
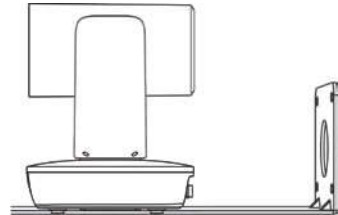
1. According to diameter and position of the 4 installation holes (As shown below) on the bracket, drill 4 holes on the wall and fix the bracket onto the wall by using 4 screws which needs to be prepared by the users.

Ø7.50mm   95mm   Ø 45mm   70mm
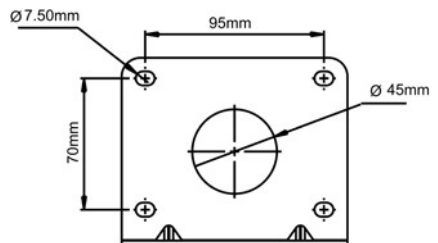
2. Use inch screws to fix the camera on the bracket, fix the limit screw according to actual requirement, and make sure the camera is tightly fixed onto the bracket before your hands leave the camera.
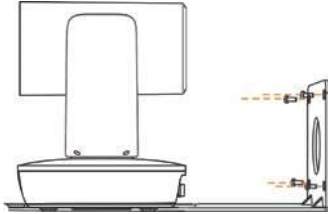
Ceiling Mount Installation

(Wall Bracket Supplied Separately)
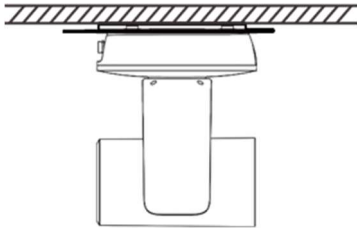
1. According to diameter and position of the 4 installation hole (as shown below), drill 4 holes on the ceiling or cement roof correspondingly.
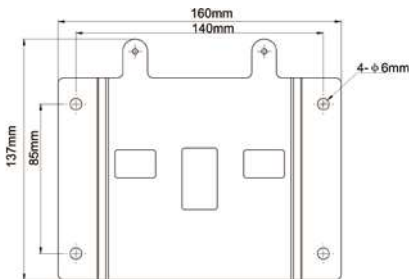
2. Fix the mounting plate onto the ceiling or cement roof with 4 screws according to your own needs.
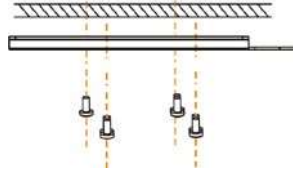
3. Use 1 screws to fix the camera on the ceiling mount plate.
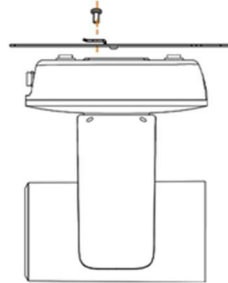
4. Push forward camera's bottom slide according to the mounting plate's bottom slide until they reach their limit. Fix the ceiling mount plate and camera's bottom plate with cross recessed pan head tapping screw.
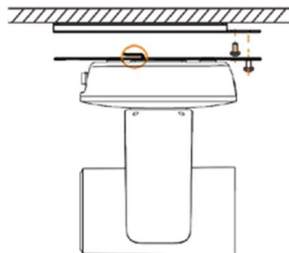
Menu Settings

Menu Configuration Settings

```
<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

          ──── GAMMA ──── 0, 1, 2, 3, 4

          ──── 2DNR ──── 0, 1, 2, 3, 4, 5, 6, 7

          ──── 3DNR ──── 0, 1, 2, 3, 4, 5, 6, 7

          ──── DRC ──── 0, 1, 2, 3, 4, 5

          ──── MIRROR ──── ON, OFF

          ──── FLIP ──── ON, OFF
```

```
<EXPOSURE> ── AUTO ──── ANIT FLICKER ──── OFF， 50HZ， 60HZ

                     ── BLC ──────── ON, OFF

                     └─ EXCOMP ───── ON ───────── -7~+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
```

📖 **Notes**

The reference shutter speed parameters from the exposure is based on the 30/60fps for the camera.

```
<COLORTONE> ── WB ──┬── AUTO ──┬── R-GAIN ──── -7~+7
                    │          │
                    │          ├── G-GAIN ──── -7~+7
                    │          │
                    │          └── WB-SENSI ──┬── LOW
                    │                         ├── MIDDLE
                    │                         └── HIGH
                    │
                    ├── ATW
                    │
                    ├── MANUAL ──┬── R-GAIN ──── 0~16
                    │            └── B-GAIN ──── 0~16
                    │
                    ├── OPWB ──── ONE PUSH ──── Press[OK]Key
                    │
                    └── STATIC ──── COLOR TEMP. ──── 2800~6500
         │
         ├── SATURA ──── 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
         │
         └── 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, ×9,
                              │           ×10, ×11, ×12, ×13, ×14, ×15, ×16
                              │
                              └── OFF
```
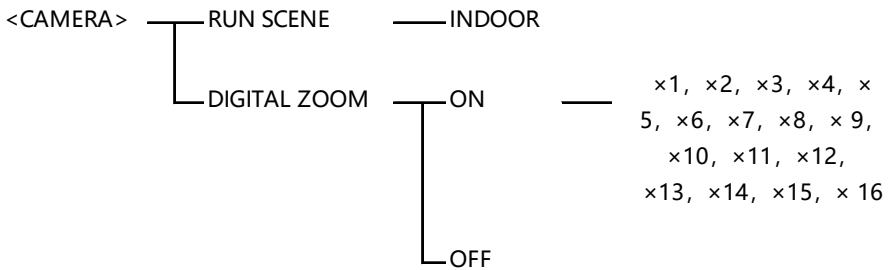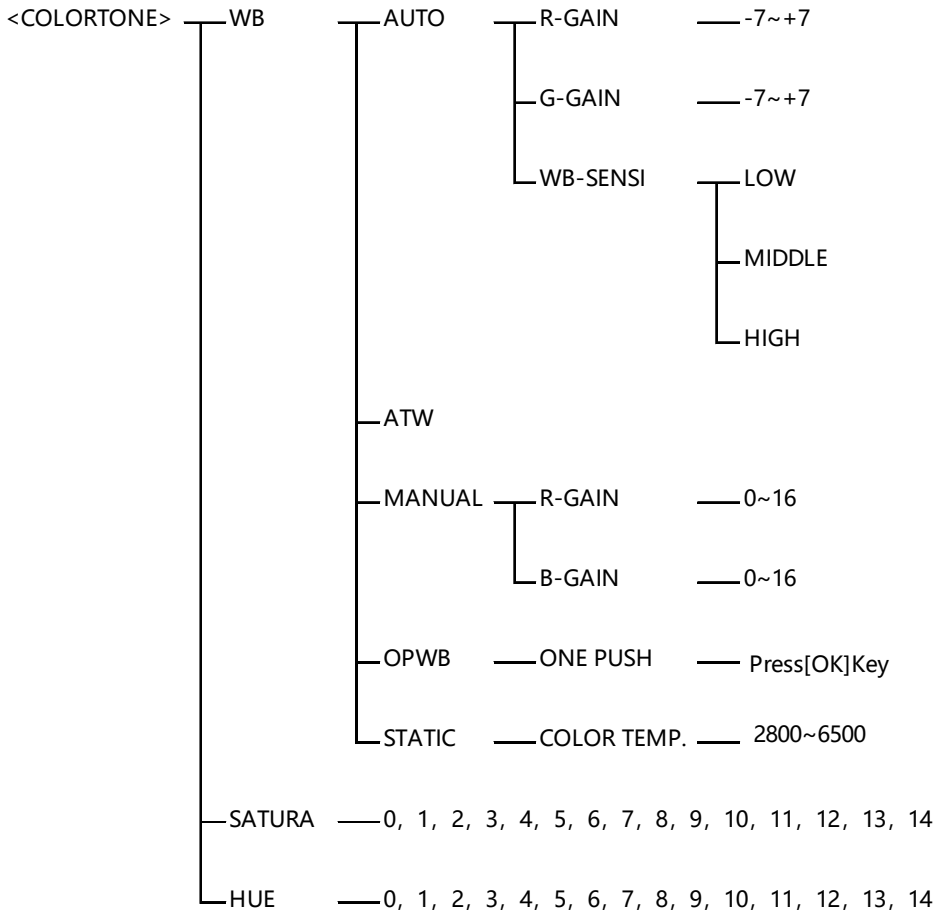
```
<SYSTEM> ——PROTOCOL ADDR ——1，2，3，4，5，6，7

        ——IR ADDR        ——1，2，3，4

        ——MOUNT MODE     ——STAND，CEILING

        ——PROTOCOL       ——VISCA，PELCO-P，PELCO-D

        ——BAUDRATE       ——2400，4800，9600，38400

        ——VIDEO FORMAT   ——1080P60，1080P59.94,1080P50，1080P30，
                           1080P29.97,1080P25，720P60，
                           720P59.94，720P50

        ——COM MODE       ——RS485IN，RS422IN

        ——LANGUAGE       ——ENGLISH，中文

        ——DISPLAY INFO   ——ON，OFF

        ——DEFAULTS       ——CONFIRM

        ——NETWORK        ——NET MODE    ——DHCP

                         ——IP ADDRESS  ——10.0.7.169

                         ——NET MASK    ——255.255.255.0

                         ——GATEWAY     ——0.0.0.0

                         ——DNS1        ——0.0.0.0

                         ——DNS2        ——0.0.0.0

<PTZ> ——P/T SPEED      ——1，2，3，4，5，6，7

      ——PRESRT SPEED   ——1，2，3，4，5，6，7，8

      ——PTZ TRIG AF    ——ON, OFF

      ——POWER UP       ——HOME, PRESET0, PRESET1, PRESET2, PRESET3,
                         PRESET4, PRESET5, PRESET6, PRESET7,
                         PRESET8, PRESET9
```

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```
<DEVICE INFO> ───── VIDEO FORMAT

            ── FIRM VERSION

            ── ISP VERSION

            ── AF VERSION
```
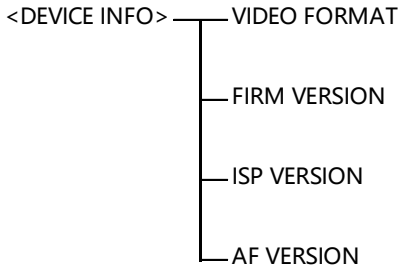
Camera Web

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

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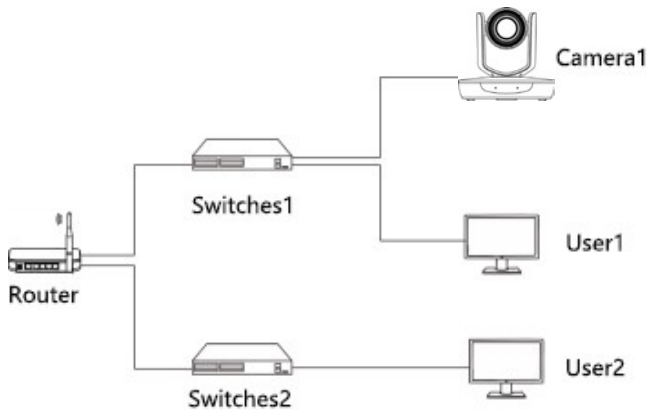
As shown in the above diagram, user1 and user 2 are in the same router, which means in the same LAN. Connecting the camera to the same LAN where the PC is, then all the cameras can be found and connected by searching for the online device list.

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 software cannot automatically search for the camera as it does on a LAN. However, if the following three conditions are satisfied, the software can still search for the camera through the following network configurations:
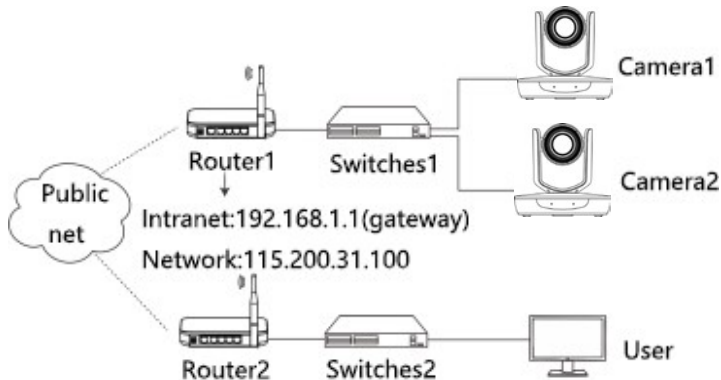
Condition1: Set camera's IP address as static IP address

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 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.

Condition2: Router of the LAN where camera is connected supports Port Mapping

Router Port Mapping: User's PC logs into router configuration menu, gets into "Port Mapping" (router management authorization may be required); 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.

Port mapping

List of rules

Not applied	☐ **Do not apply this rule** If you disable this rule, the following configuration will only be saved but will not applied.
External port	You can input an external port or an external port segment to be mapped to an open port or port segment of an internal host. If you leave it blank, the external port or port segment is identical to the internal port or port segment. The range is between 1 and 65535.
Internal IP	The IP address of the internal host that provides external service. For example:192.168.0.50
Internal port	The open port or port segment of the internal host that provides external services. The range is between 1 and 65535.
Protocol	TCP ▼ The protocol used for port mapping can be TCP, UDP or both.
Mapping line	Any ▼ The line used for port mapping can be single WAN or multi WAN.
Note	You can write a short note to describe this mapping rule. For example:The WEB server for Marketing Department.

Save   Back

Condition3: Router of the LAN where camera is connected has fixed public IP address

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).

Main Interface

Default IP:192.168.1.180. UserName: admin, PassWord: admin123.

Live View

Pan/Tilt

■ Preset

Set preset: Enter the number and click Set;

Recall preset: Enter the number and click Recall;

Effective range of preset：0~255;

Repeated saving of the same preset will be overwritten.

■ Menu

Menu: Display the menu interface;

Enter: View or adjust menu configuration, Exit: Exit the menu interface;

Panorama: Call 0 preset.

■ Pan/Tilt

In Menu status: press ⌃ or ⌄ button to select among menu options, press ⌃ or ▸ button to change option / value;

In None-menu status, press the direction buttons to control the Pan and Tilt movement of the camera;

■ HOME ⌂

In Menu status: save menu operation.

In None-menu status: Press ⌂ button, the camera moves to the initial position.

■ P/T SPEED: Set the camera control speed level. The higher the level is, the faster the speed will be.

■ Initial Position: Initial position of the camera after power-on, 0-9 preset points can be set.

Image

✛ Pan / Tilt	◑ Image	⊙ Focus	♀ Exposure	⚲ White Balance

| Mirror | 2D NR | Contrast | Sharpness | |
| OFF | − ─○─ + | − ─○─ + | − ─○─ + | |

| Flip | 3D NR | Gamma | Brightness | DRC |
| OFF | − ○── + | − ─○─ + | − ─○─ + | − ○──── + |
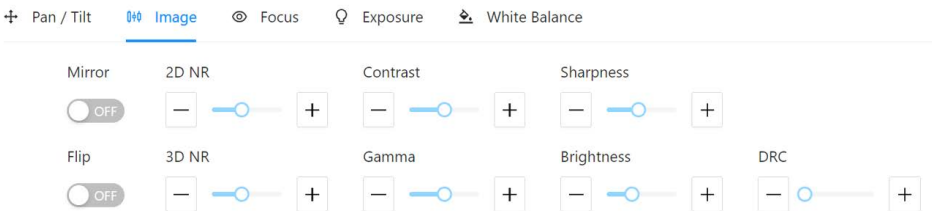
■ MIRROR: The camera image flips 180° horizontally.

■ FLIP: The camera image flips 180°.

■ 2DNR: By comparing adjacent pixels in the current frame, noise is automatically filtered out, reducing image noise and making the image more pure with softer edges. The higher the level of two-dimensional noise reduction in the image, the purer the image. The lower the level of two-dimensional noise reduction in the image, the more noise the image has.

■ 3DNR: By comparing adjacent frames of images, noise is automatically filtered out, resulting in a significant reduction in image noise and a more pure and delicate image. The higher the level of image

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noise reduction, the less noise the image has and the less jitter it feels. The lower the level of image noise reduction, the more noise there is in the image, and the greater the jitter feeling.

■ CONTRAST: Refers to the ratio between the lightest and darkest areas of the image. The image with the higher ratio providing richer color and crisper lineation. The lower ratio makes the image gray.

■ GAMMA: Used to adjust the brightness value of the image, the lower the gamma value is, the brighter the image will be, the higher the gamma value is, the darker the image will be.

■ SHARPNESS: Used to adjust the sharpness of image and acutance of image edge. The sharpness is increased and the contrast of details in the image plane is higher, making it look clearer. If the sharpness value is too high, it may cause the image distortion.

■ BRIGHTNESS: Used to adjust the brightness of the image.

■ DRC: It refers to the adaptability of the camera to strong light, specifically to the range of brightness (contrast) and color temperature (contrast).

Focus
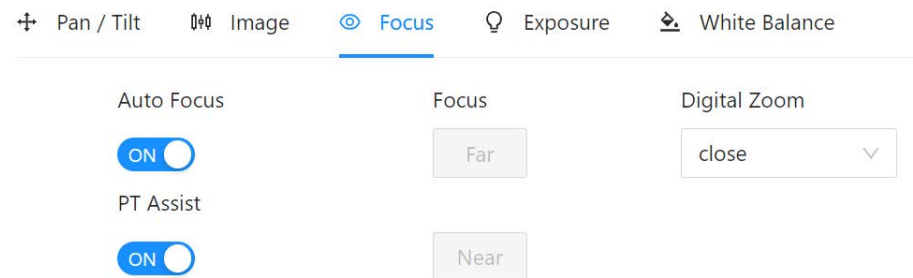
■ Auto Focus: ON/OFF, Select Near or Far focus when Auto Focus is OFF;

■ PT Assist: Focus automatically when the camera PTZ is controlled;

■ Digital Zoom: When it is on, after camera reaches its maximum optical zoom, camera starts digital zoom. The camera will keep receiving zoom in command.

Exposure

+ Pan / Tilt	⬌ Image	👁 Focus	♀ Exposure	♣ White Balance

Exposure Mode	Anti Flicker	Gain	Exposure Brightness	BLC
Auto M... ∨	Closed ∨	— ○ +	— ○ +	OFF

Aperture Level	Shutter Speed	Exposure Level	Exposure Comp	
F2.8 ∨	1/60 ∨	— ○ +	ON	

■ AUTO Mode: Gain, Shutter Speed and Iris value are adjusted automatically accordingly to working environment;

■ Manual Mode: Manually adjust Gain, Shutter Speed and Iris;

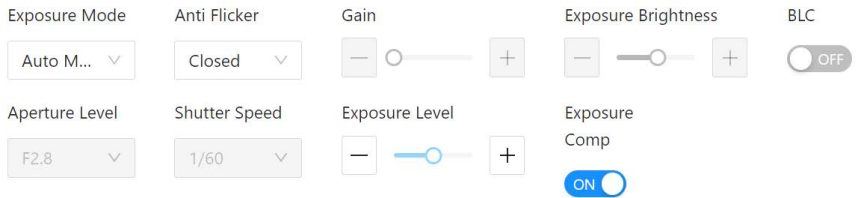■ Shutter Priority: Gain and Iris value are adjusted automatically according to working environment; shutter speed value is adjustable manually;

■ Aperture Priority: Gain and shutter speed value are adjusted automatically according to working environment; Iris value is adjustable manually;

■ Brightness Level: Manually adjust the video brightness.

White Balance

+ Pan / Tilt	⬌ Image	👁 Focus	♀ Exposure	♣ White Balance

White Balance Mode	R-Gain	B-Gain	Color Temperature
Auto M... ∨	— ○ +	— ○ +	— ○ +

WB-Sensi	WB-Satura	Hue	
Middle ∨	— ○ +	— ○ +	One Push
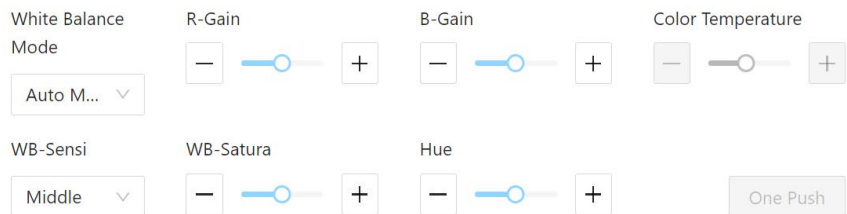
■ White Balance Mode: Switch the white balance mode, AUTO Mode/Manual Mode/Auto Tracking/One Press WB/Static.

Audio Config
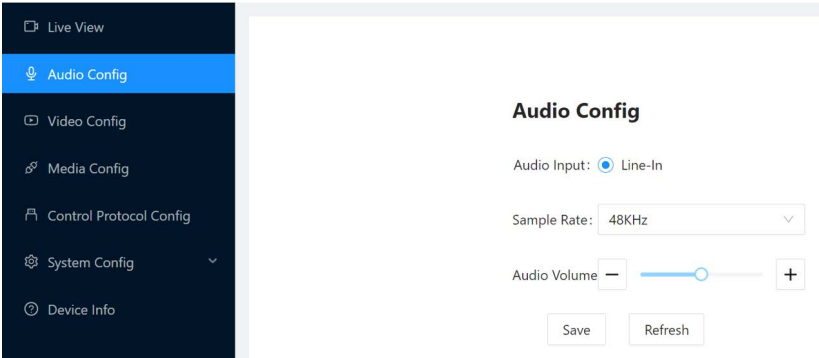
Audio Input: Support Line-In;

Sample Rate: Number of Audio Signal Collections per Unit Time, Current

support 48KHz; Audio Volume: 0-100.

Video Config
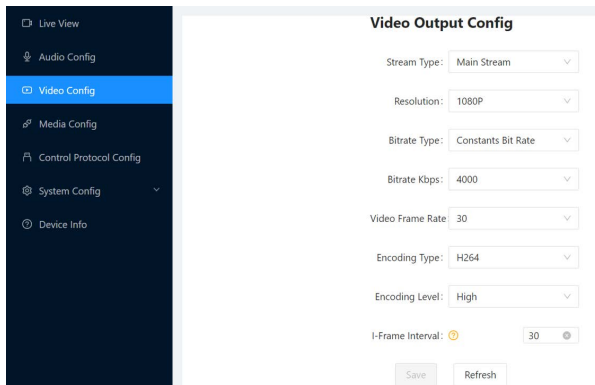
■ Stream type: set the parameters of main stream and sub stream. Different devices support different streams;

■ Resolution: set among1080P, HD720P, 640*360, choose resolutions based on actual requirements and capability of device. The higher the resolution is, the better network requirements will be needed;

■ Bitrate Kbps: Support CBR or VBR;

■ Bitrate Kbps:2000,4000,8000,10000,12000;

- Video Frame rate: Represent the number of frames per second of the video;

- Encoding Type: choose H264 or H265;

- Encode Level: choose from Base, Main, and High;

- I-Frame Interval: 1-255.

Media Config

Media Protocol Config: Support RTSP, RTMP, RTMPS, NDI, SRT Protocols.

Control Protocol Config

- Visca Transmission: Connection support TCP or UDP, Work Mode support Server or Client, IP can be set when select Client; The port is greater than 1 and less than 65534, Don't duplicate the occupied port.

System Config

User Manage

- Click Chanage Password to change the password for logging in to the Web terminal;
- Click Add User add new users, choose to be Operation or User.

Enter Config

Physical Adapter: After turn off DHCP, users can set the values;

- IP Address: input the IP address not used for the camera;

- Subnet Mask: same as those used by other PC's on the network;

- Gateway: input gateway IP address;

- DNS 1: server-prior, same as other PC's on the LAN;

- DNS 2: It will be used in case DNS1 server is not working;

Click the Apply button after setting is completed.

Firmware Update

| Live View |
| Audio Config |
| Video Config |
| Media Config |
| Control Protocol Config |
| System Config |
| User Manage |
| Enternet Config |
| Firmware Update |
| Device Info |

—— Firmware Update ——

Click or drag file to this area to upload firmware

Reset   Reboot
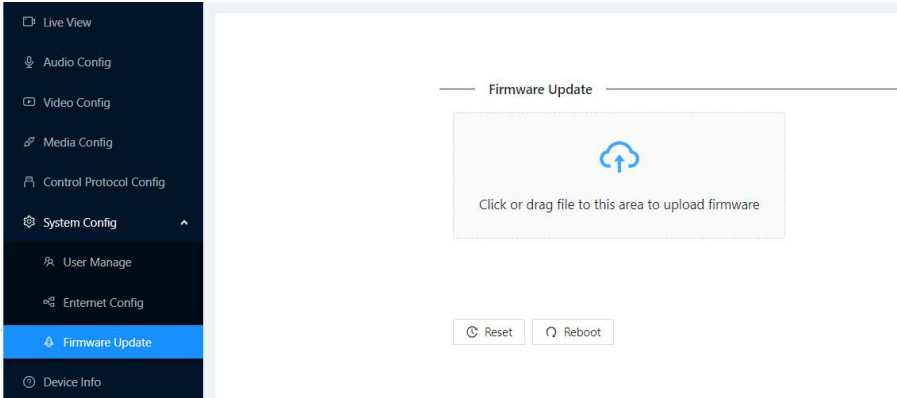
Click ⬆ to search and load the updating firmware, then click Confirm to start upgrading. Do not power off the camera during upgrading. After upgrading is completed, camera will reboot.

Technical specifications

Items	
Image Sensor	1/2.8'' CMOS, 214MP
Focal Lens	f=4.7mm~94mm
Iris	F1.6~F3.5
Field Of View	59.5°~2.9°
Optical Zoom	20x
Digital Zoom	16x
Focus System	Auto, Manual, PTZ Trigger, One Push Trigger
Exposure Control	Auto, Manual, Shutter Priority, Iris Priority, Bright Priority
Min. Illumination	50Lux
Shutter Speed	1/50s ~1/10,000s
Gain	Auto, Manual
White Balance	Auto, One Push, Manual, Static Color Temperature
S/N	50dB
Menu	Yes
PTZ	
Pan Angle	-170°~+170°
Tilt Angle	-30°~+90°
Pan Speed	0.1°/S~120°/S
Tilt Speed	0.1°/S~90°/S
Preset Number	256(Network)
Image Flip	Support
Interface	
3G-SDI	
Video Format	1080P60/P50/P30/P25，720P60/P50
Broadcast resolution	1080P59.94/P29.97, 720P59.94
HDMI	
Video Format	1080P60/P50/P30/P25, 720P60/P50
Broadcast resolution	1080P59.94/P29.97, 720P59.94
LAN	
Network Interface	1×10M/1000M RJ45 (POE)
Image Compression	H.265, H.264
Audio Compression	AAC, G.711
Protocols	ONVIF, RTSP, RTMP, SRT, TCP, UDP，RTMPS, VISCA ,VISCA OVER IP

Video Output Format	1080P60/P50/P30/P25; 720P60/P50/P30/P25; 360P60/P50/P30/P25
	Support Multiple Dual streams Support NDI | HX3
USB	
	1×USB 3.0 Type-B, UAC Audio Format PCM, USB3.0 Compatible with USB2.0： 1. Support UVC1.1. 2.UVC Video Format Support； H.264/H.265/MJPEG,Video resolution: 1080P60/P50/P30/P25，720P60/P50/P30/P25，480P60/P50/P30/P25 360P60/P50/P30/P25; YUY2/NV12、Video resolution: USB3.0: 1080P30/P25，720P30/P25，480P30/P25， 360P30/P25; USB2.0: 480P30/P25，360P30/P25;
Audio Input	1×LINE IN 3.5mm
Control Interface	1 channel RS-232 IN, 1 channel RS485/422
Power	DC12V
Remote Interface	IR Remote control
Display Interface	Supports red and green dual color Tally lights
General	
Protocols	VISCA
Power Consumption	<15W
Operating Temperature	0°C~+40°C
Operating Humidity	10%RH ~ 90 %RH
Storage Temperature	-20°C~+60°C
Storage Humidity	10%RH ~ 95 %RH
Dimensions （W×H×D）	176mmx137mmx171mm
Weight	≤1.2kg

After-sales 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.

The user manual is only for a reference, if there are any changes or differences, please ask for the latest version from your supplier

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