UHD Video Conference Camera

User's Manual



Version V12509

Please read the manual carefully and follow the instructions strictly.

It is recommended that you save the manual for future reference

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1. Product Description

The video conferencing camera is an all-in-one product that integrates a high-definition color camera, a full-range video intelligent pan/tilt, and a multi-protocol decoder. This product utilizes an integrated design solution, resulting in a compact and compact structure, high strength, easy and quick assembly and disassembly, and excellent heat dissipation. Driven by a precision stepper motor, it ensures smooth operation and accurate positioning.

2. Precautions

- Please read this manual carefully before installing and using the video conferencing camera.
- During transportation, storage, installation and use, the product must be protected from damage caused by heavy pressure, severe vibration, immersion, etc.
- When installing a video conferencing camera, please install it in a location with sufficient bearing capacity. Handle each component with care and avoid touching the camera lens directly with your hands to prevent fingerprints from blurring the lens.
- During installation and use, you must strictly comply with national and regional electrical safety standards, use the dedicated power supply for this machine, and keep RS-485 and video signals at a sufficient distance from high-voltage equipment during transmission. If necessary, take protective measures such as lightning protection and surge protection.
- Do not use this product in conditions that exceed the temperature, humidity, and power specifications (see conference camera specifications for details).
- When using the camera, do not obstruct the air circulation around the camera to prevent heat accumulation and damage to the camera.
- Please do not disassemble the conference camera without authorization. There are no user-serviceable parts inside. The installation and maintenance of this product must be completed by professional and qualified personnel.
- Do not use highly chemically active or corrosive detergents to clean the main body of the machine. Use a dry cloth or neutral detergent to clean dirt, and wipe the dust on the lens with special lens paper.
- Never aim the camera at bright objects at any time, otherwise the photosensitive device in the lens may be damaged.

3. Video conferencing camera accessories

1. Packaging accessories

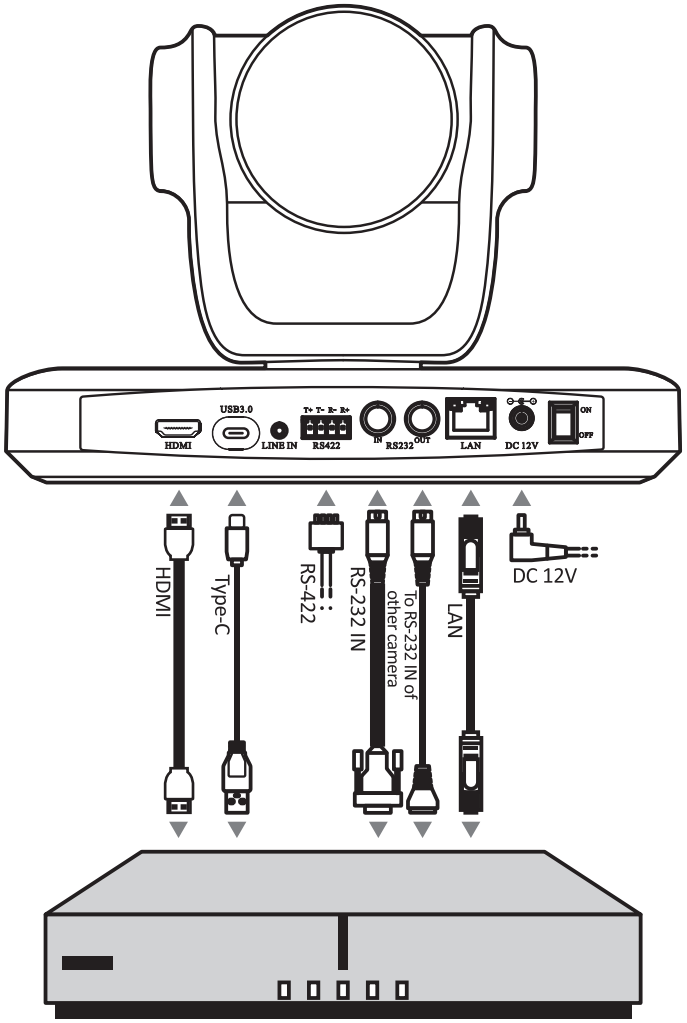
Serial number	Product Name	quantity
1	Ultra-HD video conferencing camera	1 unit
2	DC 12V/2.0A power adapter	1
3	Product User Manual	1 copy
4	RS-232 serial port control line	1 root
5	RS-485 connector	1
6	Remote control (batteries not included)	1
7	USB3.0 TYPE-C cable 1.5 meters	1
8	Certificate of Conformity	1 piece
9	Warranty card	1 piece
10*	HDMI cable 3 meters (optional)	1 root
11*	Ceiling bracket (optional)	1 set
12*	Wall bracket (optional)	1
13*	Screw bag (optional)	1 set

2. Function options*

Serial number	Optional functions	illustrate
1	POE	Hardware support is required, and functional requirements must be determined before shipment
2	TOF	

4. Camera connection

1. Camera connection diagram

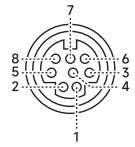


2. Camera connection line sequence description

a. VISCA RS-232C

VISCA RS-232C IN

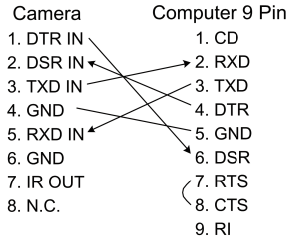
指针序号	对应功能
1	DTR IN
2	DSR IN
3	TXD IN
4	GND
5	RXD IN
6	GND
7	IR Commander Signal OUTPUT
8	NO Connection

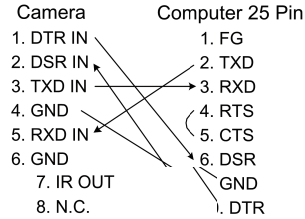


VISCA RS-232C OUT

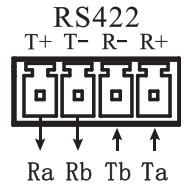
指针序号	对应功能	
	232控制	
1	DTR OUT	
2	DSR OUT	
3	TXD OUT	
4	GND	
5	RXD OUT	
6	GND	
7		
8		

b. Connect the camera to the PC





c. RS422 conversion line connection



d. RS422 keyboard diagram



5. Video Usage Guide

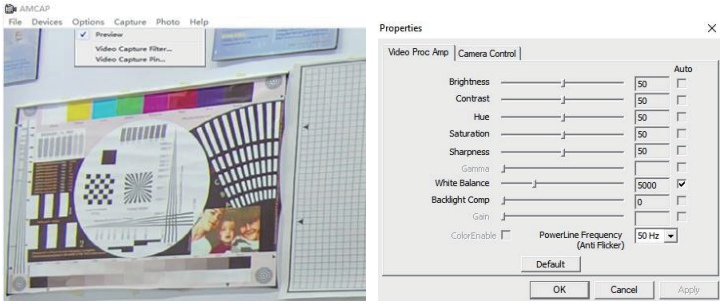
1. USB3.0 transmission output

This product supports Type-C video output, supporting 2160P HD image output, and USB transmission supports the standard UVC protocol. All back-end software that supports the UVC protocol can capture video from this product. The following uses the commonly used AMCAP software to illustrate how to use this product's video. Open AMCAP v3.0.9.exe , select USB Video Device (or similar), and then select Preview, as shown below.

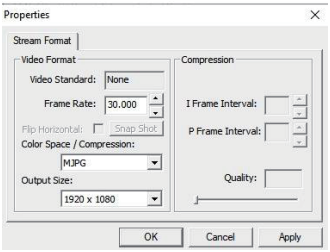
Note: If there is still no image after opening the software, wait until the camera is powered on and initialized, then reopen the software!

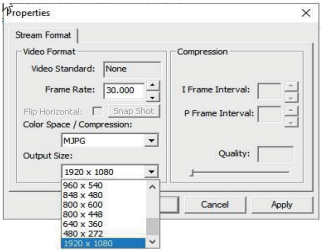


If you need to change different camera parameters to view images, click " **Options "** on the interface and select " **Video Capture Filter ...** " from the drop-down menu . Please refer to the figure below to modify



If you need to change the resolution and frame rate to view the image, click " **Options** " on the interface, select " **Video Capture Pin...** " from the drop-down menu , and refer to the figure below to modify

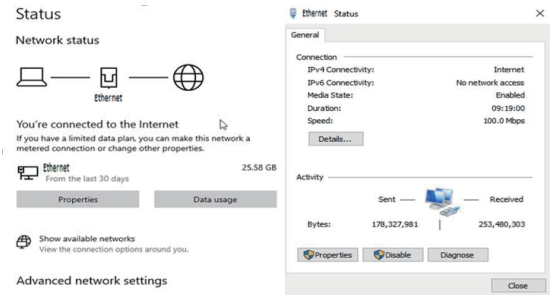


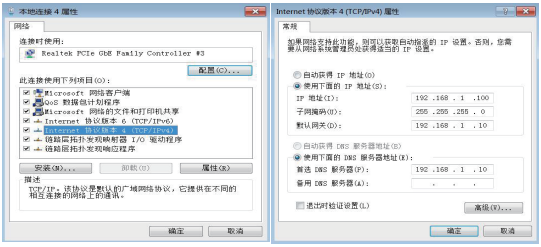


2. Network transmission output

This product can transmit image and video streams that comply with various network protocols through the network interface. Customers can choose the image transmission interface to use according to their needs. Connect the device to the network cable and ensure that the device and PC are in the same network segment (as shown in the figure below).

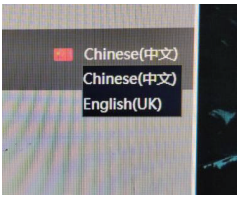
a. IP network segment settings:

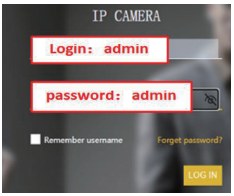


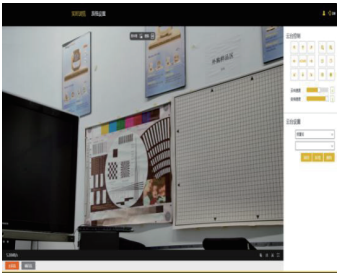


b. Network login

Open the IE browser and enter the IP address http://192.168.1.188 to enter the main interface (as shown in Figure 5-6 below) . In the upper right corner, you can select the login language (Chinese/English). The default login account and password are admin, and you can enter the network camera image viewing interface (if you cannot see the image, it may be that the browser has not installed the plug-in. Just follow the browser prompts to install the plug-in)







c . Control camera rotation and set preset positions

①. The camera can be controlled by the PTZ, including up and down rotation, left and right rotation, lens zoom, manual focus, IRCUT switch and other parameters; (as shown in the figure below)



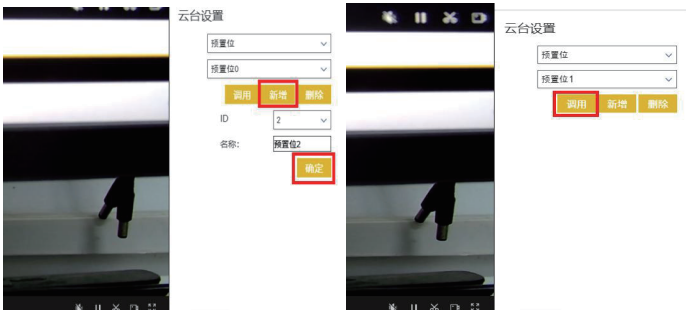
Button Function Description		
icon	Button Description	effect
	Directional control keys	Control the camera to move up, down, left, and right
	Return to origin key	Control the camera to return to the origin
	Zoom out	Control the camera lens to zoom in and out
	Zoom	Control the camera lens zoom
	Proximal focus	Control the lens's close focus (Need to change to manual focus in system settings)
	Telefocus	Control the lens's focus at a distance (Need to change to manual focus in system settings)
	IRCUT close button	Turn off image IRCUT
	IRCUT open button	Open Image IRCUT
	PTZ speed setting bar	Set the camera rotation speed PTZ speed range 1-8 , default speed 4
	Zoom speed setting bar	Set the lens zoom speed Speed range 1-5, default speed 1

②. Set preset position

Setting 1: Control the camera up, down, left, and right, then control the camera to

move to the specified position, press "Add" to set, and then click Save after the setting is completed (setting range: 0-255, except for special preset positions).

Call 1: Click the preset position and then press "Call" to automatically move the camera to the preset position.



d. Lens parameter settings/image resolution

①. Video parameters can be adjusted through system settings, including image adjustment, exposure mode, white balance setting, image enhancement and other parameters;



②. You can set the encoding parameters and the relative parameters of the main stream and auxiliary stream through the system settings;



e. View and modify network ports

You can view and change the values of various ports (RTSP port, VISCA port, etc.) of the current camera by selecting "Network Port" in the network settings of the system settings. Note: After changing the port value, you need to restart the camera for it to take effect.



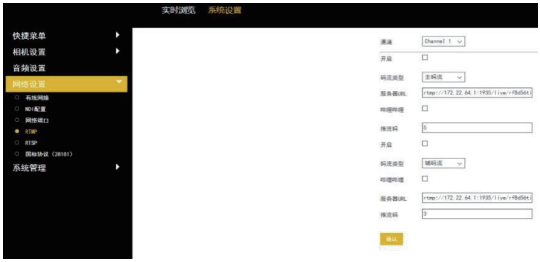
f. Modify IP address

You can modify the IP address parameters by selecting "wired network" in the network settings in the system settings;



g. Query RTMP and RTSP

You can view the parameters by selecting "RTMP" or "RTSP" in the network settings in the system settings;

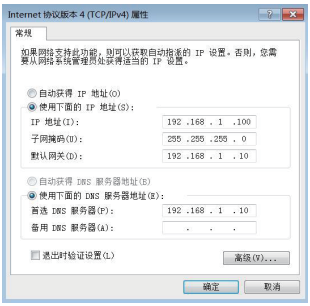




6. NDI protocol function description

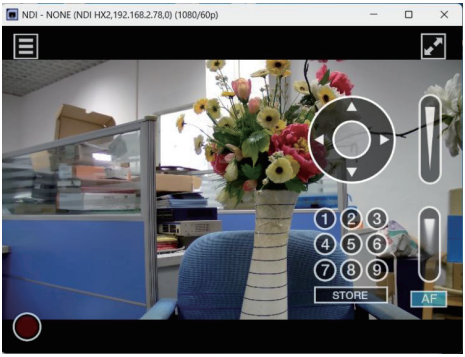
1. NDI|HX environment configuration.

Connect the LAN ports of the PC and the device to the same switch or router. Ensure that the device and PC are in the same network segment, have different IP addresses, and have the same subnet mask and gateway. Then log in to the web page to enable NDI|HX, as shown below:





Open the NDI Studio Monitor provided by NDI to test whether the NDI|HX function is normal, as shown below:



The last step is successful, indicating that NDI|HX can be used normally.

Note: The NDI standalone fail-safe address is 192.168.2.188

2. NDI|HX network coding parameter configuration

Log in to the web interface → System Settings → Network Settings → NDI Configuration, and change the parameters of this interface according to actual conditions.



7. OSD menu function

If you want to query or modify the parameters such as protocol, PTZ speed, TOF auxiliary focus, etc., you can press the menu button on the remote control to modify the parameters (Figure 1).



Figure 1

If you want to query or modify the brightness, exposure, color, image and other parameters, you can press the remote control lens menu button to modify the parameters (Figure 2)



Figure 2

The HD conference camera has two main menus, namely the PTZ settings (dome camera) menu and the image settings (lens) menu, as shown in Figure 1 and Figure 2 above: PTZ settings include submenus such as protocol, PTZ, TOF assisted focus, information, language, and exit; image settings include submenus such as exposure, color, image, information, language, mirror, and exit.

Note: 1. The TOF load focusing function is only available at 12x magnification. The other magnifications do not have this function.

2. TOF assisted focus option: If the user's product supports TOF assisted focus function, there will be a TOF assisted focus option bar and related function description in the gimbal menu settings.

3. The gimbal cannot be panned or tilted while the menu is displayed.

1. Detailed introduction of PTZ menu:

Main Menu

Option Name	Parameter Description
protocol	Adjustment of ball camera address, communication protocol, baud rate, etc.
PTZ	Adjustment of infrared address, horizontal speed, vertical speed, preset position loading, etc.
TOF assisted focus	Assisted lens focus
information	View model, version and other information
language	Switch between Chinese and English
quit	Exit the PTZ settings main menu

a. Agreement

Option Name	Parameter range	default	Parameter Description

Dome camera address	1-7	1	Switch the dome camera address
Communication Protocol	V isca /Pelco-D	V isca	Switching Control Protocol
Baud rate	2400 , 4800 , 9600 , 38400	9600	Switch the baud rate of the dome camera
return	/	/	Return to previous menu

b. PTZ

Option Name	Parameter range	default	Parameter Description
Infrared Address	1-3	1	Adjust infrared address
horizontal speed	1-24	14	Adjust the horizontal rotation speed of the lens
vertical speed	1- 18	10	Adjust the vertical rotation speed of the lens
Preset loading	Close, 30, 60, 90	30	Turn on/off the preset position loading function
return	/	/	Return to previous menu

c. TOF assisted focus (optional)

Option Name	Parameter range	default	Parameter Description
TOF assisted focus	Close/Open	closure	Assisted lens focus
return	/	/	Return to previous menu

d. Information

Option Name	Parameter Description
Version	Software version
model	Machine model
date	date
IP address	Set the IP address

e. Language

Option Name	Parameter range	default	Parameter Description
language	Chinese/English	Chinese	Select the language for the menu

f. Exit

The Exit option means exiting the PTZ settings main menu.

2. Detailed introduction of image setting menu:

Main Menu

Option Name	Parameter Description

exposure	Adjustment of image brightness, backlight, exposure, shutter, anti-flicker and other parameters
color	Adjustment of image contrast, hue, saturation, clarity, white balance, color temperature and other parameters
image	Adjust parameters such as image flip, image frame rate, image style, AI, HDMI format, etc.
information	View model, version and other information
language	Switch between Chinese and English
OSD mirroring	Switching between mirroring and non-mirroring the image
quit	Exit the Image Settings main menu

a. Exposure

Option Name	Parameter range	default	Parameter Description
brightness	0 - 100	50	Adjust image brightness
Backlight	Close/Open	closure	Turn backlight on/off
exposure	Auto/Shutter	automatic	Switch exposure mode
shutter	1/25-1/10000	1/25	Switch shutter parameters
Anti-flicker	50Hz/60Hz	50	Adjust the impact of external power frequency on the image
return	/	/	Return to previous menu

b. Color

Option Name	Parameter range	default	Parameter Description
Contrast	0-100	50	Adjust image contrast
tone	0-100	50	Adjust image hue
Saturation	0-100	50	Adjust the saturation of the image
Clarity	0 -1 00	50	Adjust image clarity
White balance	Automatic/Manual	automatic	Switch image white balance
Color temperature	1500-15000	5000	Adjust the image color temperature
return	/	/	Return to previous menu

c. Image

Option Name	Parameter range	default	Parameter Description
Image Flip	Off, Mirror, Top and Bottom, Fully Open	closure	Image flip switch
Image frame rate	25/30/50/60	30	Switch image frame rate
Graphic style	Standard/Clear/Bright/Beauty	standard	Switch image style
AI	Close/Open	closure	Automatic tracking function
HDMI format	720P50/720P60/1080P25/ 1080P30/1080P50/1080P60/ 2160P25/2160P30	2160P30	Set HDMI output format
return	/	/	Return to previous menu

d. Information

Option Name	Parameter Description

Version	Software version
model	Machine model
date	date
IP address	Set the IP address

e. Language

Option Name	Parameter range	default	Parameter Description
language	Chinese/English	English	Select the language for the menu

f. OSD mirror

Switching between mirrored menu and non-mirrored menu

g. Exit

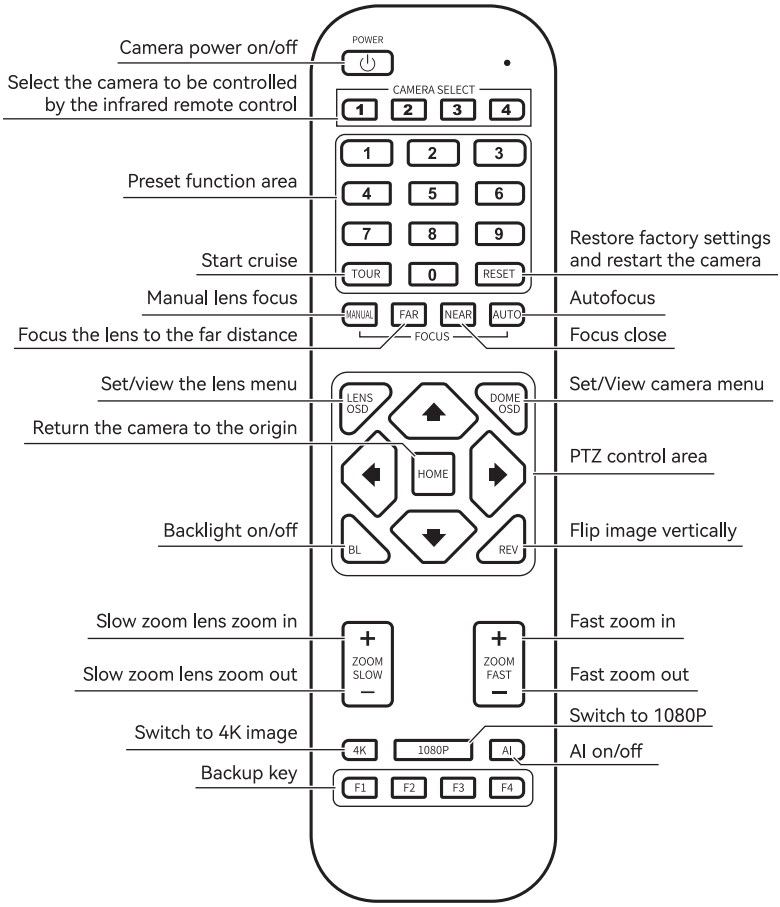
The Exit option means exiting the image setting main menu.

illustrate :

① **The gimbal cannot be panned or tilted while the menu is displayed.**

8. Remote control

1. Remote control appearance



2. Remote control instructions

Serial number	Region Name	Area buttons	Corresponding functions
1	**Power switch**	⏻	Camera power switch
2	**Camera selection button**	1 ~ 4	Select the camera to be controlled by the infrared remote control
3	**Preset function area**	0 ~ 9	Select the preset position number
4	**cruise**	巡航	Start cruise

5	**Restart button**		Restore factory settings and restart the camera
6	**Focus control area**		Manual focus lens
			The lens focuses on the distance
			The lens focuses close
			Lens autofocus
7	**OSD menu area**		Setup/View Lens Menu
			Setting up the camera menu
8	**PTZ control area**		Control the camera to rotate upward
			Control the camera to rotate downward
			Control the camera to turn left
			Control the camera to turn right
			The camera returns to the origin
9	**Backlight**		Backlight on/off
10	**Flip**		Flip the image vertically
11	**Zoom control area**		Slow zoom of camera lens
			Slow zooming of the camera lens
			Camera lens rapid zoom
			Camera lens rapid zoom
12	**4K**		Switching to 4K images
13	**1080P**		Switch to 1080P image
14	**AI**		AI on/off
15	**Alternate Key**		F1-F4

Note: If the remote control does not work, it may be due to battery exhaustion. Please replace it with new batteries (AAAX2).

9. Basic operations of the control keyboard

The control keyboard can realize the full control of the ball camera, including direction rotation, setting and calling preset positions, setting and starting cruise, setting and starting scan, etc. (refer to the manual of the keyboard used).

Status Name	Corresponding functions
Joystick up	PTZ rotates upward
Joystick down	PTZ rotates downward
Joystick left	PTZ rotates left
Joystick right	PTZ rotates right
Rotate the joystick left	Lens zoom out
Rotate the joystick right	Lens zoom

10. Special preset position function

The following preset positions are reserved for the system, so users cannot set them but can only call them. When the following preset positions are called, the system will have special functions.

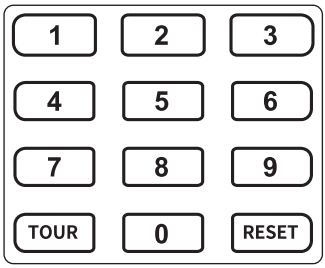
Preset position number	Special Features
76	Start dormancy of the speed dome camera
90	Image Flip
91	Enter the system menu OSD
92	Set the horizontal scan left boundary
93	Set the horizontal scan right boundary
94	Restore factory settings and restart
95	Lens adjustment OSD menu
96	The ball camera returns to the origin
97	Start horizontal range scanning

98	Start cruise
99	Start horizontal scan

11. Preset position operation

Remote control operation instructions

Preset operation area



Preset position setting

Setting 1: First, match the infrared address code of the camera with the infrared address code of the remote control so that the camera can be controlled up, down, left, and right. Then control the camera to move to the specified position. Press and hold any number key 1-9 in the "preset position address area" for 3S, and the preset position will be set successfully.

For example: To set preset position 1

First move the camera to the desired position, and press and hold the number key "1" in the "preset address area" for 3S.

Preset position call

Setting 1: Short press the preset position number key to be called in the "Preset Position Address Area" and the preset position will be called successfully.

For example: To call preset position 1

Short press the number key "1" in the "Preset Address Area".

Note: 1. Only 10 preset positions (including "0") can be set via the remote control. This unit supports 255 preset positions. The remaining preset positions (including special preset positions) can be set via the control software via the USB to RS232 port.

12. Technical indicators

Ultra-HD video conferencing camera			
sensor	1/2.8“, CMOS, effective pixels: 8.42 Megapixel;		
Optical magnification	12x	21x	30x
Lens focal length	f=4.14-47.08mm	f = 5.33 ~ 107 mm	f = 5.2 ~ 148.4mm
lens aperture	F1.8-F2.8	F1.65 - F3.8	F1.3-F4.8
Horizontal viewing angle	7.4° -7 2.6° (±2%)	4.2°-59.8° (±2%)	3° - 59° (±2%)
Vertical viewing angle	4.16°-40.83° (±2%)	2.36° - 3 3.63° (±2%)	1. 6 8 ° - 3 3° (±2%)
diagonal	8.4°-80.1° (±2%)	4.88° - 6 6.92° (±2%)	3.54 ° - 65.9 ° (±2%)
shutter	1/25～1/10,000 seconds		
White balance	Auto, Shutter Priority		
Backlight compensation	support		
Digital noise reduction	2D/3D digital noise reduction		
Signal-to-noise ratio	≥50dB		
Graphic style	Standard , Clear, Beauty, Bright		
Image Flip	Horizontal mirror, vertical mirror		
AI Intelligence	Support human tracking		
Rotation range	Horizontal: -165 ° to +165° Vertical: -30 ° to +90°		
Rotation speed	Horizontal: 1.7° to 86.7° /S Vertical: 1.7° to 52.2° /S		
PoE power supply	Support (optional)		
Network keyboard control	support		
TOF	Support (optional)	Not supported yet	Not supported yet
Preset digits	255		
Preset position accuracy	0.1°		

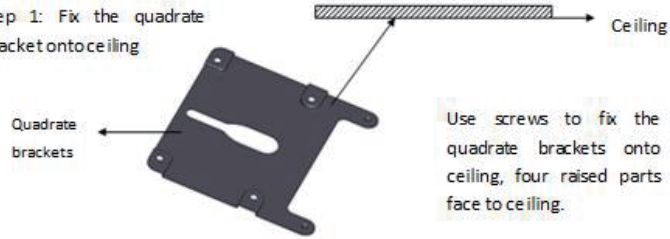
Uncompressed professional video output	**HDMI:** 4KP30, 4KP25 , 1080P60, 1080P50, 1080P30, 1080P25, 720P60, 720P50
Input and output interfaces	
HDMI output	1 HDMI, version: 1.4b
Network interface	1-way, RJ45: 10M/100M/adaptive Ethernet
Audio Interface	1-way, Line In, 3.5mm audio interface
USB interface	1-way, USB 3.0, Type-C socket
Communication interface	1-way, RS232 In: 8-pin mini DIN, maximum distance 30 meters, VISCA/PELCO-D protocol; 1-way, RS232 Out: 8-pin mini DIN, maximum distance 30 meters, VISCA/PELCO-D protocol; 1-way, RS422 : 4-core Phoenix port, maximum distance 1200 meters, VISCA/PELCO-D protocol;
Power interface	JEITA type (DC IN 12V)
Network characteristics	
Video Coding Standards	H.265/H.264
Video stream	First stream, second stream
First Road	3840x2160, 1920x1080, 1280x720, etc.
Second Road	704x576, 640x480, 640x360, 576x480, 352x288, 320x240 , 320x180 , etc.
Video bitrate	First channel: 100 bps -40960kbps Second channel: 100 bps -4096kbps
Bitrate Control	Variable bit rate, fixed bit rate
Frame rate	5fps-30fps
Audio compression standards	AAC , G.726 , G.711a , G.711u
Audio bitrate	32 kbps, 40 kbps, 48 kbps, 64 kbps, 96kbps, 128kbps
Support Agreement	TCP/IP, HTTP, RTSP, RTMP/RTMPS, Onvif, DHCP, Multicast, GB/T28181 , NDI® | HX2 (optional, requires separate authorization) , etc.

USB features	
Support system	Windows 7, Windows 8, Windows 10, Windows 11, MacOS, Linux 2.4.6 and above , Kylin, Tongxin , Android requires a version that includes UVC related drivers
Color Space	YUY2 / MJPEG
Video format	MJPEG: 3840x 2160, 2560x1440 , 1920x 1080, 1600x896 , 1280x 720, 1024x768, 1024x576, 720x576, 960x540, 848x480, 800x600, 800x448, 640x480, 640x360, 480x272, 325x288 , 320x240 , etc. YUY2: 1920x1080 , 1600x896 , 1280x720 , 1024x768, 1024x576, 720x576, 960x540, 848x480, 800x600, 800x448, 640x480, 640x360, 480x272 , 325x288, 320x240 , etc. MJPEG frame rate: 30, 25, 20, 15, 10, 5 fps for 3840x2160 and 2560x1440, 60, 50, 30, 25, 20, 15, 10, 5 fps for other resolutions YUY2 frame rate: 60, 50, 30, 25, 20, 15, 10, 5 frames
USB video	UVC1.0 , UVC1.1 , UVC1.5
UVC PTZ control	support
General Specifications	
Input voltage	DC12V/PoE (802.3af)
Input current	800mA (max)
Power consumption	< 10 W
Storage temperature	-40~60℃
Operating temperature	0~50℃
Operating humidity	0-95% RH
size	224mm x 132mm x 162mm
Body weight	1500g
Body color	Iron Gray

13. Ceiling installation

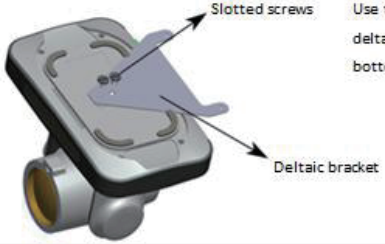
Installation mount kits provided with camera in the package.

Step 1: Fix the quadrate bracket onto ceiling



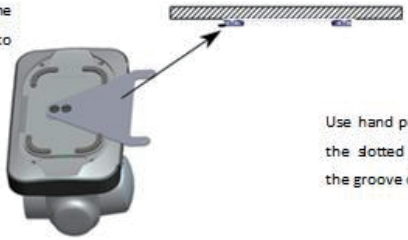
Use screws to fix the quadrate brackets onto ceiling, four raised parts face to ceiling.

Step 2: Fix the deltaic bracket.



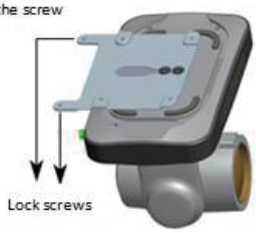
Use the screws to fix the deltaic bracket with the bottom plate of camera

Step 3: Connect the deltaic bracket to quadrate bracket.



Use hand prop the camera, let the slotted screw nut through the groove of quadrate bracket.

Step 4: Lock the screw





Use the screws to lock the quadrate and deltaic brackets to finish the installation.

14. Common troubleshooting

Before seeking service from maintenance personnel or manufacturers, you can first follow the steps below to troubleshoot the problem. If the problem cannot be solved, please consult the dealer or manufacturer.

Fault phenomenon	reason	Workaround
The camera cannot be turned on	The power adapter is not securely connected to the AC power source or the DC IN12V terminal is not securely connected to the camera.	Check the connection between the power adapter and the AC power and the camera end, and make sure the power adapter is firmly connected to each connection end.
USB not recognized	The USB cable interface is not properly connected	Reseat the USB cable
	Using an extension cord that is too long or of poor quality	Use a signal amplifier extension cable
HDMI No Signal	The HDMI cable connector is loose	Reseat the HDMI cable
	The signal source is not selected correctly	Use remote control to debug the signal source and select the normal signal
	The signal cannot be transmitted due to poor quality of the line used	Use a good quality HDMI cable
The network cannot view the picture	Is the network cable connected? Is the IP address changed to 192.168.1.188?	Check whether the network cable is connected properly and whether the IP address is modified
The camera cannot be rotated horizontally, vertically, or zoomed.	The menu is displayed on the monitor screen	Press the "Lens Menu" button or "Image Menu" button on the remote control to close the menu on the monitor.
	The horizontal and vertical rotation range is limited	Check whether you have entered menu mode
The remote control does not work	The number of the "Camera Select" button pressed on the remote control does not match the number of the camera's "IR Select" switch setting	Press the Camera Select button that corresponds to the IR Select switch setting.
	Remote control battery exhausted	Please replace with new batteries (AA A x 2)
The computer connected to the camera cannot be controlled by VISCA	The connection between the computer and the camera is incorrect	Make sure the computer and camera are properly connected (see the connection diagram)
The camera cannot be operated at all	Is the machine turned on?	Unplug the power cord from the socket, wait for a while, and then plug it back in. Or turn off the power switch, wait for a while, and then turn it back on.