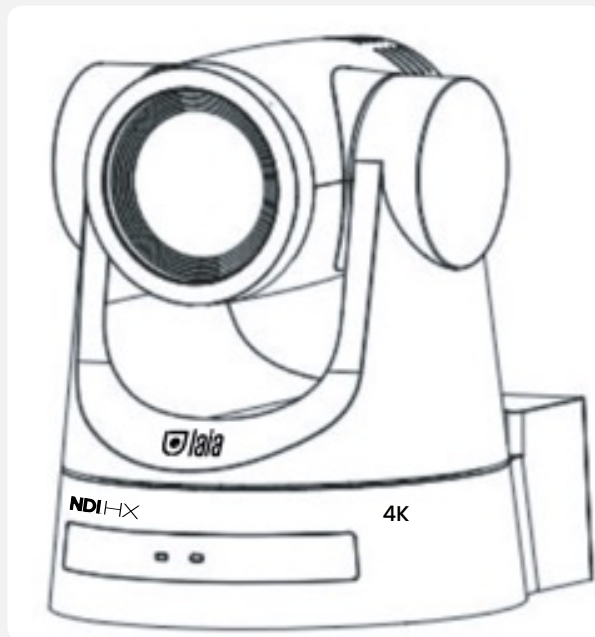




User Manual

## Broadcaster 4K AI

P/N: BRC-412/B



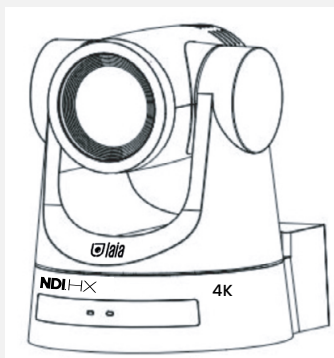
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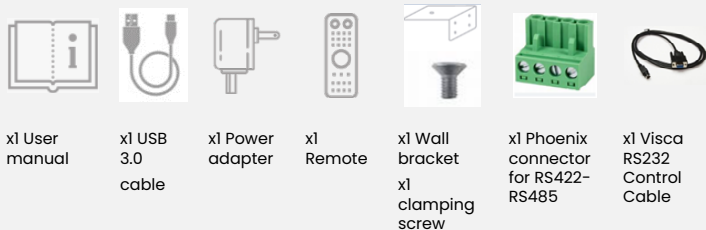
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## 1. Know your product



## 2. What's in the box



- x1 User manual
- x1 USB 3.0 cable
- x1 Power adapter
- x1 Remote
- x1 Wall bracket
- x1 clamping screw
- x1 Phoenix connector for RS422-RS485
- x1 Visca RS232 Control Cable

## 3. Product Features

Laia Broadcaster 4K AI is a device with excellent performance and a wide variety of interfaces. Its ISP processing and advanced algorithms make the image in high definition.

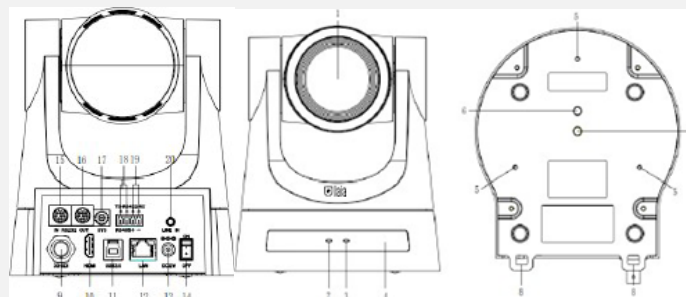
- 4K UHD resolution: High quality 8.5 million pixel CMOS image sensor, with maximum 4K (3840×2160) resolution at 30 frames per second.
- Realistic Ultra HD video that shows the expressions and movements of the participants, offering high image quality with extraordinary clarity and resolution.
- Optical zoom: 12X optical zoom with 70° vision.
- Autofocus: fast, accurate and stable autofocus.
- Low Noise & SNR: A low noise SNR image is achieved thanks to the CMOS sensor. 2D/3D noise reduction technology further reduces noise and ensures high image clarity.
- Multiple video output methods: HDMI, USB 3.0, wired LAN, support POE power and USB3.0 with dual streams.
- Multiple audio/video compression standards: YUY2, MJPEG, H.264, H.265, NV12, MJPEG, H.264 and H.265 video encoding at 3840×2160 30fps resolution, AAC, MP3 and G.711A audio compression.
- Audio input interface: AAC, MP3, G.711A, audio encoding and support 16000, 32000, 44100, 48000 (sampling rate).
- Automatic gyroscope: Built-in gravity sensor, which allows automatic image reversal when the camera is placed face down.
- Multiple Network Protocol: Support ONVIF, GB/T28181, RTSP, RTMP, VISCA, OVER IP, IP VISCA, RTMPS, SRT protocols and RTMP push mode, easy to be connected to streaming server (Wowza, FMS). Supports RTP multicast mode.
- NDI Support: NDI® | HX version2
- Control jack: RS422 input (compatible with RS485), RS232 input/output and RS232 (cascaded)
- Sleep mode: low consumption sleep/wake less than

400mW.

- Multiple control protocol: VISCA, PELCO D, PELCO P and automatic identification.
- Multiple presets: up to 255 presets (10 presets via remote control)
- AI Tracking: High-speed processor and image processing and analysis algorithm. Real time tracking and zone tracking. Users can change the tracking target by dragging and clicking the frame with the mouse

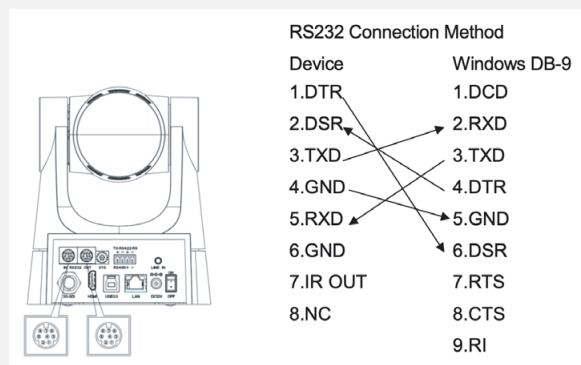
## 4. Interface

### 4.1 External interface diagram

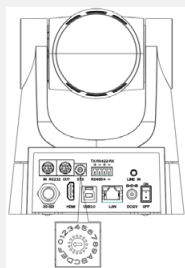


- |                     |  |                           |
|---------------------|--|---------------------------|
| 1. Lens             | 5. Reserved point for installation             | 9. SDI output             |
| 2. Power indicator  | 6. Fixation Hole for Tripod                    | 10. HDMI output           |
| 3. Status indicator | 7. 1/4" thread for fixing to support or tripod | 11. USB3.0                |
| 4. IR Receiver      | 8. Security lock                               | 12. LAN                   |
|                     |  | 13. Power Input (DC12V)   |
|                     |  | 14. Power switch          |
|                     |  | 15. RS232 input           |
|                     |  | 16. RS232 output          |
|                     |  | 17. Rotary DIP switch     |
|                     |  | 18. RS485 input           |
|                     |  | 19. RS422 output          |
|                     |  | 20. Audio input (Line-IN) |

### 4.2 RS-232 diagram



### 4.3 Rotary switch



#### Rotary Dip Switch 0 F Video Formats

0	Video format: 4KP30	8
	Video Format: 1080P59.94	
1	Video Format: 4KP25	9: Video
	format: 1080P29.97	
2	Video Format : 1080P60	A:
	Video Format: 720P59.94	
3	Video Format: 1080P50	B: ---
	---	
4	-----	
C:	-----	
5	-----	
D:	-----	
6	-----	
E:	-----	

Note: After turning the dial to change the video format, it will take effect after turning off and restarting the power.

After dialing 5-F on the rotary switch, the power is turned off and restarted, and the menu can display the video system.

## 5. How to use the device

### 5.1 First use of the camera

After turning on the camera, you will have an initial setup and the light on the receiver will flash. The camera will do a short pan and tilt tour to return to the home position, or if preset 0 is set, the camera will return to the preset 0 position.

Network output: connect this product to your computer via a network cable, open the browser, enter the IP address of the camera (default 192.168.5.163) in the address bar, go to the login page and enter a username and password (by default "admin").

SDI, HDMI output: Connect the monitor with the corresponding video output interface.

USB3.0 output: Connect this product with the USB3.0 interface of the computer, open the device manager to see if there is an imaging device, and whether the universal serial bus controllers recognize the USB3.0 device. After successful identification, please open the software, then the image will be output.

### 5.2 Description of remote control keys



Standby key

After a long press of 3', the camera will enter standby mode. Long press 3' again, the camera will self-diagnose again and return to the HOME position.

Note: If the power-on mode is on and preset 0 is set, and there is no operation in 12', it will automatically point to the specified preset position.

Camera direction selection : Select the direction of the camera you want to control.

Numeric key: Set or run presets 0-9.

Key, \*, # : Use of the key combination.

Focus control key : Auto Focus: Enter auto focus mode. Manual Focus: The focus mode of the camera is manual.

Change the focus mode of the camera to manual focus by pressing [focus +] or [focus -] to adjust it.

Zoom control key : zoom + = zoom in / zoom - = zoom out.

Set or Clear Preset key: Preset: Preset key + number key 0-9.

Clear Preset: Clear preset key + numeric key 0-9.

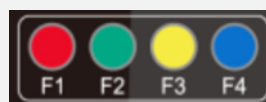
Pan/Tilt control keys : The arrows indicate the direction of the camera once you press it. "HOME" key returns the camera to the middle position or enter the following menu.

BLC control key : On/Off black light.

Menu setting : Open or close OSD menu.

Infrared remote control configuration: By pressing the key combination indicated below, we assign the remote control

to the address indicated in Camera Select



[\*] + [#] + [F1]: Camera Address N° 1

[\*] + [#] + [F2]: Camera Address N° 2

[\*] + [#] + [F3]: Camera Address N° 3

[\*] + [#] + [F4]: Camera Address N° 4

Note: In practice this means that with a single remote control we can manage 4 cameras simultaneously

#### 1. Functions when combining keys

[#] + [#] + [#]: Clear all presets

[\*] + [#] + [6]: Restore factory defaults

[\*] + [#] + [9]: Flip switch

[\*] + [#] + [Auto]: Enter into the aging mode

[\*] + [#] + [3]: Menu set to Chinese

[\*] + [#] + [4]: Menu set to English

[\*] + [#] + Manual: Restore the default user name, password and IP address

[#] + [#] + [0]: Switch the video format to 4KP30

[#] + [#] + [1]: Switch the video format to 4KP25

[#] + [#] + [2]: Switch the video format to 1080P60

[#] + [#] + [3]: Switch the video format to 1080P50

[#] + [#] + [4]: Switch the video format to 1080P30

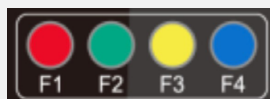
[#] + [#] + [5]: Switch the video format to 1080P25

[#] + [#] + [6]: Switch the video format to 720P60

[#] + [#] + [7]: Switch the video format to 720P50

[#] + [#] + [8]: Switch the video format to 1080P59

## 2. AI control keys



F1: Disable AI detection.

F2: Activate AI detection.

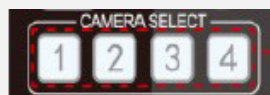
F3: Toggle between real-time tracking mode and region tracking mode

F4: Change tracking target in real tracking mode.

## 5.3 Remote control functionalities

After initialization is complete, you can receive and execute the commands from the remote control. When you press the button on the remote, the indicator light flashes, and when you release the button, the indicator light stops flashing. Users can control pan, tilt and zoom, as well as adjust and run presets using the infrared remote control.

### • Camera selection



Select here the camera you want to control.

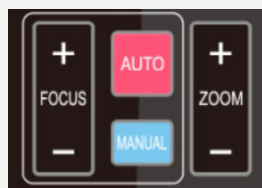
### Pan/Tilt



The arrows indicate the direction of movement of the camera.

Press and hold the up/down/left/right key and he will start moving, from slow to fast, until he reaches the end point. It will stop working as soon as you release the key.

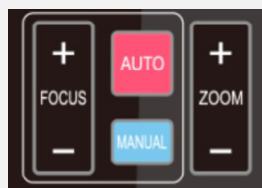
### • Zoom control



Zoom in or out by pressing Zoom+ /Zoom-.

Hold down the key and the camera will continue to zoom in or out and stop as soon as you release the key.

### • Focus control

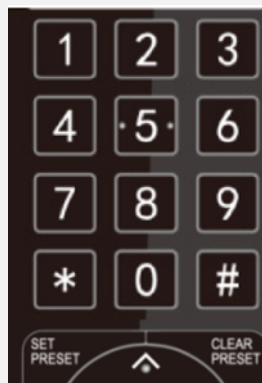


Focus near or far by pressing Focus+/Focus- (only valid in manual mode)

Select auto or manual to activate the function.

Focus will stop as soon as you release the key.

### • Presets, operation and delete



1. Set Preset: To set a preset, select "SET PRESET" and then press number key 0-9. Note: the remote control has 10 presets.

2. Note: the remote control has 10 presets.

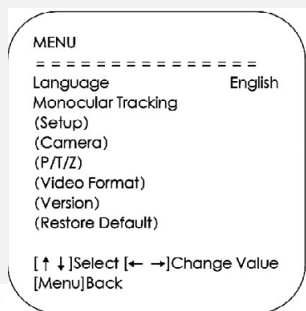
3. Select Preset: Directly press 0-9 keys to run a preset.

4. Note: Action in vain if there is no previous preselection.

5. Clear preset: To clear a preset, first press "CLEAR PRESET" key, and then press number key 0-9 to clear it.

Note: Press the "#" key three times in succession to cancel all the presets

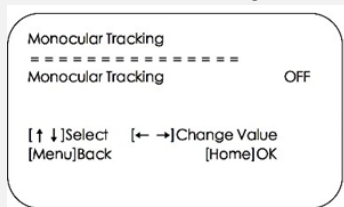
### 5.4 Setting the camera using the remote control



In normal operating mode, press the "MENU" key to display the menu, using the scroll arrow to point or highlight selected items.

Use the arrows to scroll through the main menu and select the value you want to edit or set. Select "HOME" to go back.

#### • Monocular tracking

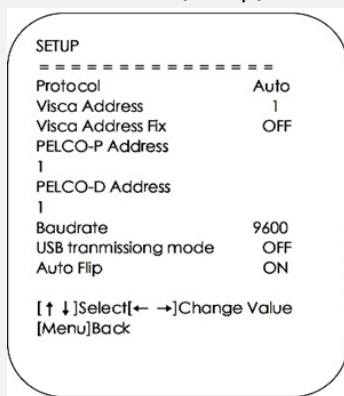


If Monocular Tracking is On, It appears Track Mode. You can select Region Tracking or Real Time Tracking.

Use the arrows to scroll through the main menu and select the value you want to edit or set. Select "HOME" to go back

#### • Setup

Move the pointer to (Setup) in the main menu, click "HOME" and enter the (Setup) as shown below



Protocol: Values: Auto, VISCA, Pelco-D, Pelco-P

Visca Address : Values 1-7 Default: 1

Visca Address Fix: Values On/Off Default: OFF

Pelco-P Address: 1-255 Default: 1

Pelco-D Address : 1-255 Default 1

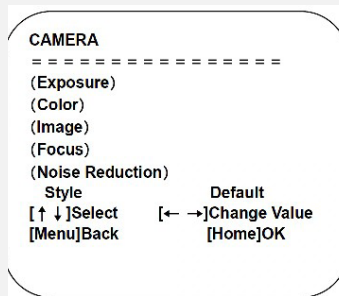
Baud rate: 2400/4800/9600/38400/115200 Default.: 9600

usb transmission mode: On/Off Default: OFF

Auto Flip: Values ON/ OFF Default ON:

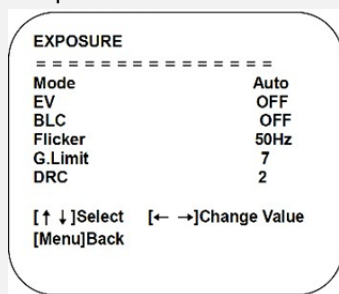
#### • Camera settings

Move the pointer to the (Camera) in the main menu, click the "HOME" key and enter the (Camera) as shown below:



Use the arrows to scroll through the main menu and select the value you want to edit or set. Select "HOME" to go back.

#### • Exposure



Move the pointer to the (Exposure) in the main menu, click the "HOME" key and enter the (Exposure set) as shown below:

Mode : Auto, Manual, SAE, AAE, Bright

EV : On/Off (only in auto mode)

EV level: -7~7 (only in auto mode when EV is on)

BLC: On/Off (only in auto mode)

Flicker: Off/50Hz/60Hz (only in Auto, AAE or Bright Mode)

G. Limit: 0~15(only in Auto, AAE or Bright Mode)

DRC: Close,1~8.

Iris: Close, F11.0,F9.6,F8.0,F6.8,F5.6,F4.8,F4.0,F3.4,F2.8,F2.4,F2.0,F1.8 (only in Manual or AAE Mode)

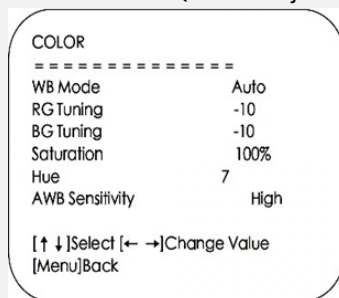
Shutter: 1/25, 1/30, 1/50, 1/60, 1/90, 1/100, 1/120, 1/200, 1/250, 1/350, 1/500,1/1000, 1/2000, 1/3000, 1/4000, 1/6000, 1/10000, 1/20000 (only in Manual or SAE Mode)

Gain: 0~15(only in Manual or SAE Mode)

Bright: 0~20 (only in Bright Mode)

#### • Color

Move the pointer to (Color) in the main menu, click "START" and enter the (Color adjustment) as follows:



WB Mode: Auto, Manual, OnePush, VAR

RG Tuning: -10~10 (only available in Auto WB mode)

BG Tuning: -10~10 (only available in Auto WB mode)  
 Saturation: 0~127  
 Hue: 0~8  
 AWB sensitivity: High/Middle/Low (only available in Auto WB mode)  
 RG (Red Gain): 0~100(only available in manual mode)  
 BG (Blue Gain): 0~100(only available in manual mode)  
 Color temperature: 2400K~7100K (only in VAR Mode)

• Image

Move the pointer to (IMAGE) in the main menu, click “START” and enter the (IMAGE) as follows:

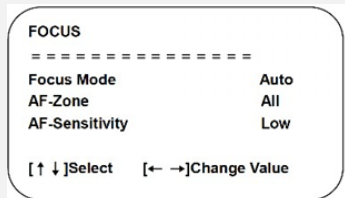
	IMAGE	
=====		
	Brightness	50
	Contrast	
50	Sharpness	5
	B&W-Mode	
Color	Gamma	
Default	DZoom	OFF
	Low-Ligt Mode	OFF

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

Brightness: 0~100  
 Contrast: 0~100  
 Sharpness: 0~15  
 B&W-Mode: Color, B&W  
 Gamma: Default 0.45, 0.50, 0.55, 0.63  
 DZoom: Digital Zoom Options: On/Off  
 Low Light Mode: On/Off

• Focus

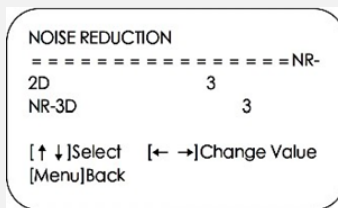
Move the pointer to (Focus) in the main menu, click “HOME” and enter the (Focus) as follows:



Focus Mode: Auto, Manual, OnePush  
 AF Zone: All/Top/Center/Bottom  
 AF Sensitivity: High, Middle, Low

• Noise reduction

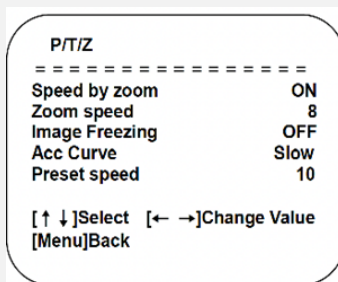
Move the pointer to (Noise reduction) in the main menu, click “START” and enter (Noise reduction) as follows:



NR-2D: Values: Auto, Off, 1-8  
 NR-3D: Values: Auto, Off, 1-8

• PTZ

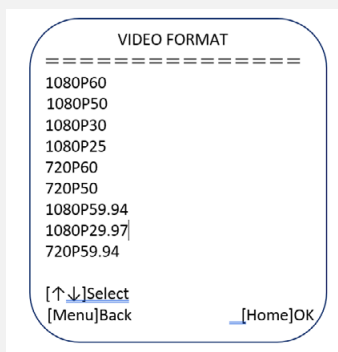
Move the pointer to (PTZ) in the main menu, click “HOME” and enter the (PTZ) as follows:



Speed by zoom: Values: On, Off  
 Zoom speed: Adjust the zoom speed for the remote control. Values 1-8  
 ImageFreezing: On/Off  
 Acc Curve: Fast/Slow  
 Preset speed: 1-10

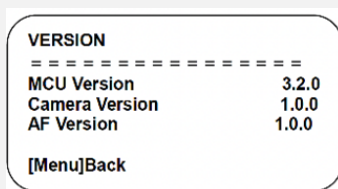
• Video format

Move the pointer to (Video format) in the main menu, click “START” and enter the (Video format) as follows:



• Version

Move the pointer to (Version) in the main menu, click “START” and enter the (Version) as follows:

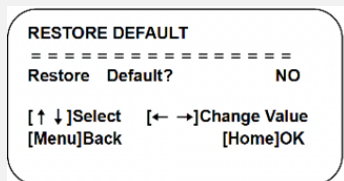


MCU Version: Displays the MCU software version.

Camera Version: Displays the software version of the camera.

AF Version: Displays the focus software version of the camera.

- Restore defaults



Move the pointer to (Restore defaults) in the main menu, click “START” and enter the (Restore defaults) as follows:

Restore Defaults: Yes/No (After restoring defaults, language, color and video format will not be restored.)

Note: If the previous remote control address is not 1, but other than 2,3,4, the corresponding camera address will be reset to 1 when all parameters are reset. User should change the remote address to 1 (press No.1 according to the camera to get normal operation).

### 5.5 Network the camera. Connection methods

Direct connection: Direct connections via “Crossover” network cable.

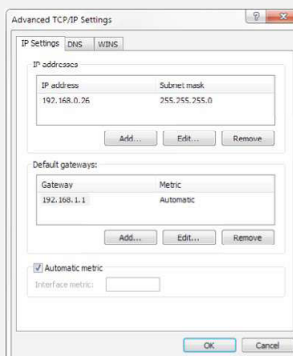
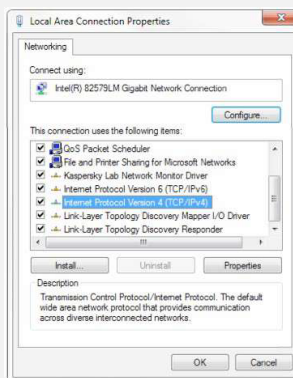
Internet connection mode: Connection via a router or switch using a network cable between the camera and the router or switch.

Note: Please do not place the power and network cables where they can be easily touched to avoid poor video quality due to unstable signal transmission due to poor contact of the cables.

The computer must have the network segment to which the IP address of the camera belongs. The device will not be accessible if it does not have the segment. For example, if the default IP address of the camera is 192.168.5.163, segment 5 needs to be added on the computer.

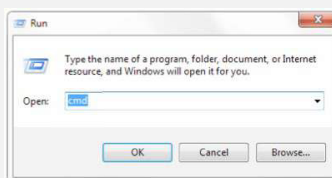
The specific steps are:

- First of all, open the properties window of the computer’s local area connection and select “Internet Protocol version 4 (TCP/IPv4)”, as shown in the image on the left. Double-click or click the “Internet Protocol version 4 (TCP/IPv4)” Property to access the Internet Protocol version 4 (TCP/IPv4) properties window, select “Advanced” to access advanced settings of TCP/IP and add the IP and subnet mask in the IP explorer.
- Select “OK” to finish adding the IP segment. User can add the corresponding network segment according to the revised IP address of the camera.



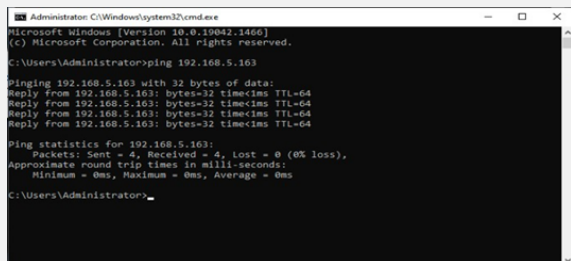
Note: The IP address to be added cannot be the same as that of other computers or devices. It is necessary to verify the existence of this IP address before adding it.

Select “Start” and select “Run” to enter cmd as shown in the following image to check if the network segment has been added successfully.



After the self-test of the camera is finished, the user can also check the network connection by following the steps mentioned above. If the IP is the default, open the DOS command window, enter 192.168.5.163 and press “ENTER”.





It will show message as below: which means network connection is normal.

## 6. Camera web interface

### 6.1 Web login

After assigning an IP address to the camera, you can access the Web Interface by typing the camera's IP address in a web browser.



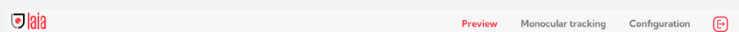
You can log in to this interface as an administrator or as a user. If you are doing this as an administrator, type "admin" in the username and password fields. If doing so as a user, enter "user1" or "user2" in the username and password fields. From the Web Interface, you can control the camera using the arrows on the left. You can also adjust many of the camera's settings through this IP interface.

Note:

1) Login as administrator

Default username and password: admin

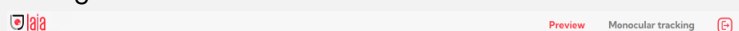
You have full access to configure all the parameters of the camera.



2) Login as a user

Default username and password: "user1" or "user2".

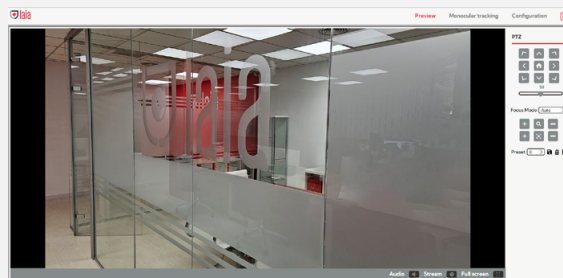
You can control the parameters of the PTZ camera and the tracking of the camera. You do not have access to the settings menu.



3) Supported browsers: Google Chrome, Internet Explorer, Microsoft Edge, Firefox, etc.

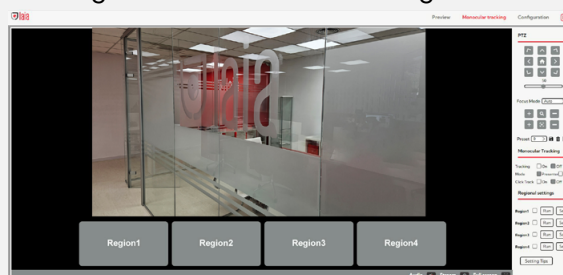
### 6.2 Preview

After logging into the management interface, enter the video preview interface. On the preview screen, users can control PTZ, zoom, focus, video capture, sound, focus, full screen and set preset position, run, delete and other operations.

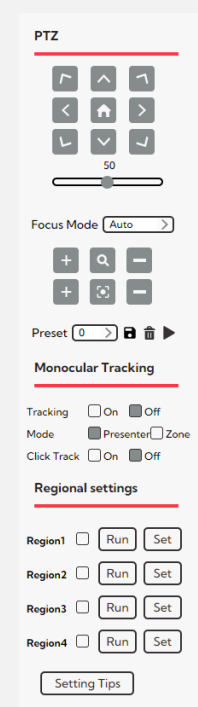


### 6.3 Monocular AI Tracking Function Web Configuration

After login, enter the management interface and enable the tracking under "Monocular Tracking"



The control interface description is as follows:



PTZ. Represents the Pan, Tilt, Zoom, Focus and Preset Controls of the Camera

Pan and Tilt

Zoom  
Focus (Applies if Focus Mode is not Auto)

Camera Preset ( Set, Delete, Run)

Configure Camera Tracking  
Enable/ Disable Tracking  
Tracking Mode  
Set the person to follow

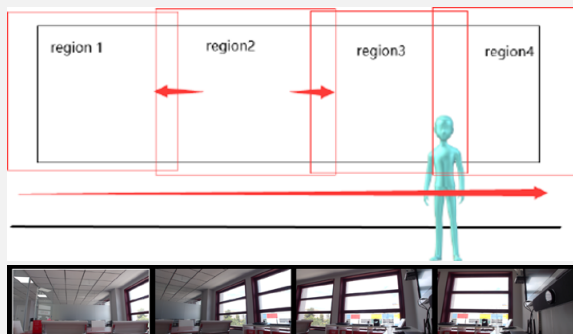
Configure the Tracking Zones

In the PTZ area, adjust the image by clicking the direction buttons to select a region.

After region 1 setup is complete, click "SET" to complete region 1 tracking. Other region settings are the same as region 1.

You can configure 4 different regions, and a minimum of 2 regions. Regional tracking settings can only be configured via the website. Run regional tracking: Click "RUN" of the corresponding region in the "regional settings" area.

Each preview image must be continuous from left to right and overlap when setting the tracking regions. The user will need to check the box next to the region number to save the location of the setting when configuring it.



### 6.4 Configuration of the camera

Click “Configurations” to enter the device parameter setting page.

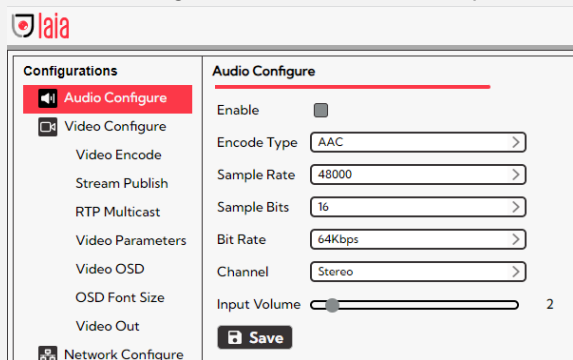
There are the following options: Audio Configure, Video Configure, Network Configure and System Configure

Detailed description see the following table:

Menu	Explanation
Audio Configure	Including audio compressing format, sampling frequency, sampling precision, compressing code rate settings etc.
Video Configure	Including video encoding, video parameters, character-overlapping, character size, video output setting etc.
Network Configure	Including basic parameters, Ethernet, DNS, wireless network setting, GB28181 etc.
System Configure	Including equipment property, system time, user management, version update, Reset, Reboot device settings etc.

#### 6.4.1 Audio Configure

You can configure the camera’s audio parameters



**Enable:** Choose whether or not to activate audio.

**Encode Type:** Set the audio compression format and manually reset the device after change (MP3,PCM,AAC optional by default)

**Sample Rate:** Set the sampling rate and manually reset the device after change (MP3, AAC default 16000, 32000, 44100, 48000 optional, G.711A default is 8000)

**Sample Bits:** Set the sampling precision (default 16bits)

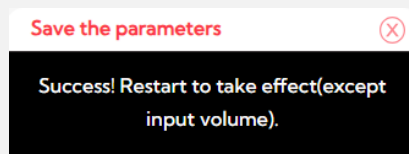
**Bit Rate:** Set the audio compression rate (default 64 Kbps, 32,

48, 96,128 Kbps optional)

**Channel :** Set the channel type (default mono, optional stereo)

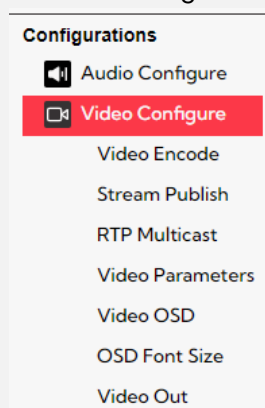
**Input volume:** adjust the input volume (default 2.1-10 optional)

Note: Click “Save” and this message appears will appear. Reboot the camera for it to take effect.



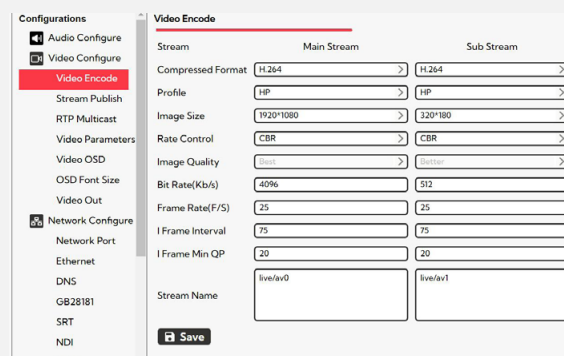
#### 6.4.2 Video Configure

This is the image:



#### 6.4.3 Video Encode

You can configure the video stream parameters of the camera



**Stream:** Different video output mode setting, use different streams (main stream / sub stream)

**Compressed format:** Set video compression format, save to take effect (Main/Sub stream, default:H.264,H.265 optional)

**Profile:** Profile mode setting (default HP,BP,MP optional)

**Image Size:** Adjust the video image resolution, save to take effect (main stream default 3840\*2160 or 1920\*1080. This depends of parameter 4K Output Option defined in Video Out Menu 1280\*720, 640\*360, 640\*480 optional; sub stream default 320\*180, 640\*360, 320\*240,1280\*720,1920\*1080 optional )

**Rate control:** Set the rate control mode, save to take effect (main/sub stream defaults to fix rate (CBR) , variable bit rate

(VBR) is for option)

Image quality: Image quality can only be changed when rate control is VBR, (default main stream is best, default secondary is better, optional values Best, Better, Good, Bad, Worse, Worst)

Bit Rate (Kb/s): Set the video bit rate (main stream default 8192 Kb/s,64- 12288Kb/s optional; sub stream default 512 Kb/s,64-10240 Kb/s optional)

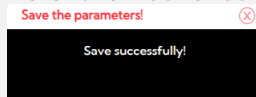
Frame Rate (F/S): Adjust the video frame rate (default primary/sub stream 30 and 25F/S, primary stream 5-30F/S optional, sub stream 5-30F/S optional)

I Frame Interval: Set the keyframe interval (Primary/Secondary stream default 90/75F, Primary/Secondary stream 1-150F optional. Secondary stream 1-150F optional)

I Frame Min QP: Adjust the keyframe interval minimum QP (20 default, 10-51 optional)

Stream Name: When streaming via rtsp or rtmp, the user can modify the stream name. Main Stream(live/av0), sub stream(live/av1)

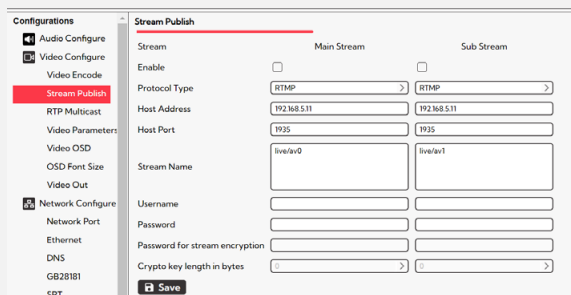
Note: Click "Save" button to pop up the message



, then the settings will take effect.

### 6.4.4 Stream Publish

You can configure the stream publish parameters of the camera when you want to broadcast live video on the internet



Enable: To turn on/off the main/sub stream.

Protocol Type: Main/Sub stream protocol Values: RTMP, RTSP and SRT

Host Address: IP addresses of the server (default 192.168.5.11)

Host Port: Host port number (default 1935.0-65535 optional)

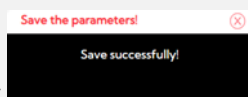
Stream Name: Choose a different stream name (live/av0, live/av1 optional)

Username : Set the username. It does not apply in protocol type SRT

Password: Set the password. It does not apply in protocol type SRT

Password for stream encryption: only applies to protocol type SRT

Crypto key length in bytes: only applies to protocol type SRT Values 0,16,24,32

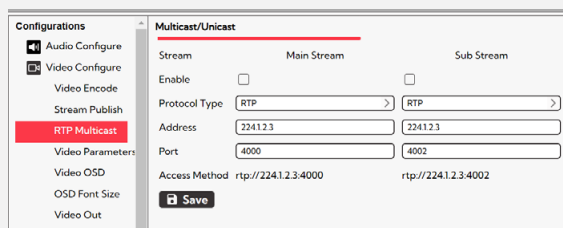


Note: Click "Save" button to display , then

the settings will take effect.

### 6.4.5 RTP multicast

You can configure the camera's Multicast/Unicast transmission parameters



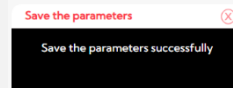
Enable: Main/Sub Stream: On/Off.

Protocol: RTP or TS.

Address: Default 224.1.2.3. It can be edited.

Port: Primary default is 4000, secondary 4002, and primary/secondary is optional from 0 to 65535.

Access Method: The address appears after setting. Ex: rtp://224.1.2.3:4000, udp://@224.1.2.3:4000, tcp://@224.1.2.3:4002

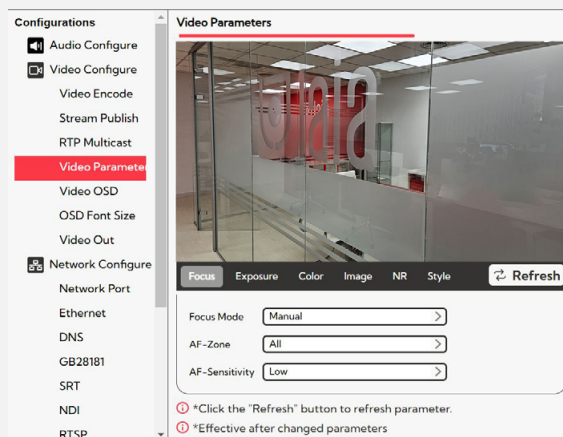


Note: Click "Save" button to display then the settings will take effect.

### 6.4.6 Video parameters

You can configure the different video parameters of the camera optics

### 6.4.7 Focus



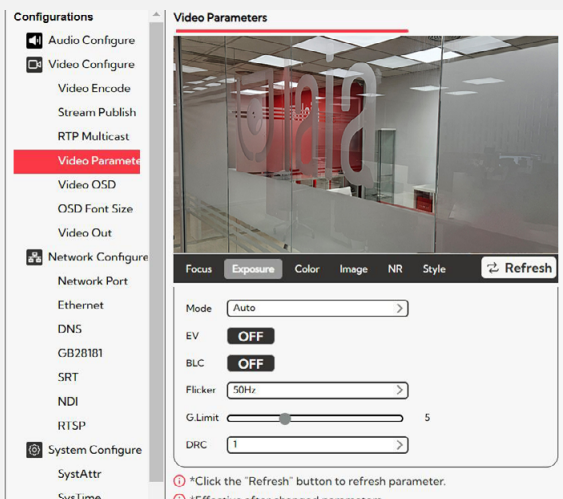
Focus Mode: Set the focus mode (default auto, optional manual, one-push)

AF-Zone: Set the autofocus zone (default All, optional Top, Center, Botton)

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

### 1. Exposure

Exposure mode, exposure compensation, backlight compensation, anti-flicker, gain limit, dynamic range, shutter, aperture, brightness, gain can be adjusted



Mode : Auto, Manual, SAE, AAE, Bright

EV : On/Off (only in auto mode)

EV level: -7~7 (only in auto mode when EV is on)

BLC: On/Off (only in auto mode)

Flicker: Off/50Hz/60Hz (only in Auto, AAE or Bright Mode)

G. Limit: 0~15(only in Auto, AAE or Bright Mode)

DRC: Close,1~8.

Iris: Close, F11.0,F9.6,F8.0,F6.8,F5.6,F4.8,F4.0,F3.4,F2.8,F2.4,F2.0, F1.8 (only in Manual or AAE Mode)

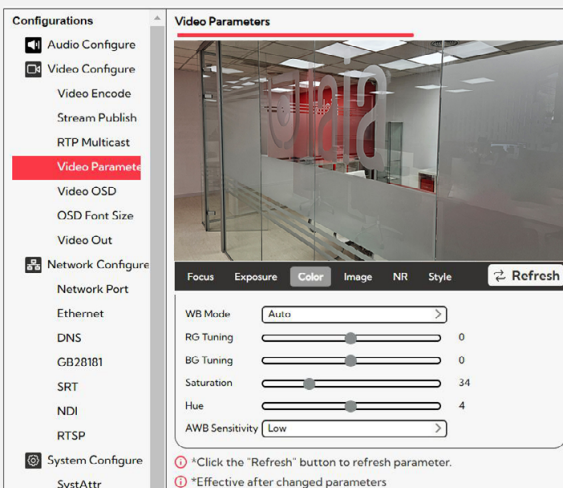
Shutter: 1/25, 1/30, 1/50, 1/60, 1/90, 1/100, 1/120, 1/200, 1/250, 1/350, 1/500, 1/1000, 1/2000, 1/3000, 1/4000, 1/6000, 1/10000, 1/20000 (only in Manual or SAE Mode)

Gain: 0~15(only in Manual or SAE Mode)

Bright: 0~20 (only in Bright Mode)

### 2. Color

White balance, saturation, hue, white balance sensitivity, red fine tune, blue fine tune, red gain, blue gain can be adjusted.



WB Mode: Auto, Manual, OnePush, VAR

RG Tuning: -10~10 (only available in Auto WB mode)

BG Tuning: -10~10 (only available in Auto WB mode)

Saturation: 0~127

Hue: 0~8

AWB Sensitivity: High/Middle/Low (only available in Auto WB mode)

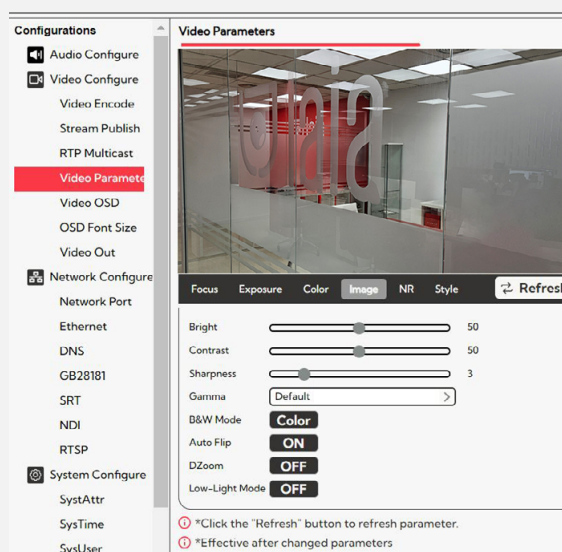
RG (Red Gain): 0~100(only available in manual mode)

BG (Blue Gain): 0~100(only available in manual mode)

Color temperature: 2400K~7100K (only in VAR Mode)

### 3. Image

You can adjust the brightness, contrast, sharpness, gamma curve, dynamic contrast, black and white mode, horizontal flip, vertical flip, electronic zoom, ultra-low illumination.



Bright: 0~100

Contrast: 0~100

Sharpness: 0~15

Gamma: Default 0.45, 0.50, 0.55, 0.63

B&W-Mode: Color, B&W

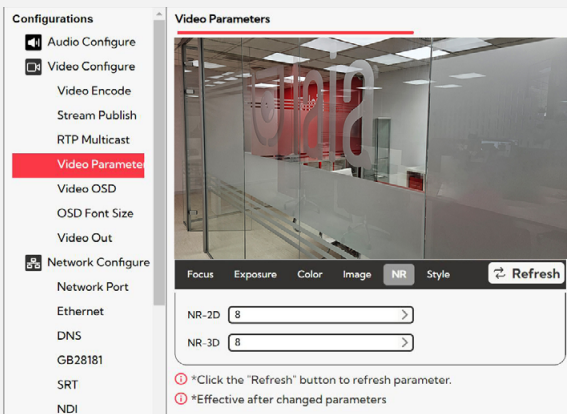
Auto Flip: ON, Off

DZoom: Digital Zoom Options: On/Off

Low Light Mode: On/Off

### 4. NR

You can adjust 2D noise reduction, 3D noise reduction and dynamic dead pixel correction available.

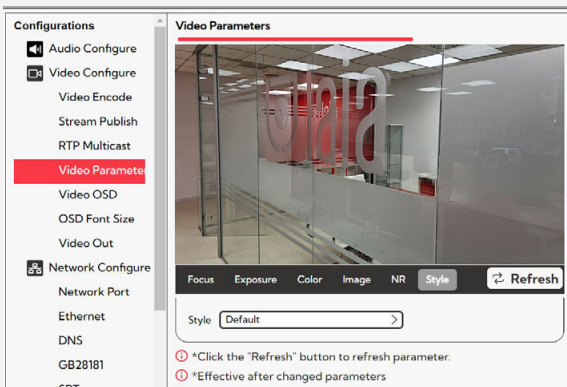


NR-2D: Adjust the level of 2D noise reduction (default 3, 1-8 and optional off).

NR-3D: Adjust the 3D noise reduction level (default 3, 1-8 and off optional)

### 5. Style

Image selection (standard, brightness, clarity etc... can be configured)

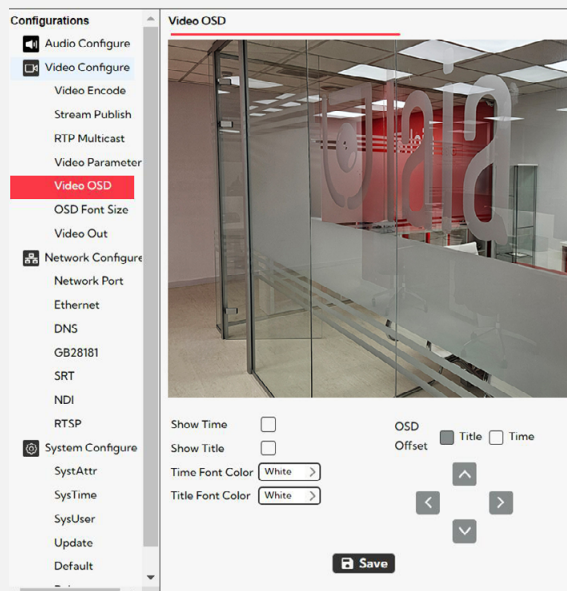


Style: Values: Default, Normal, Clarity, Bright, Soft

Note: Refresh the page after changing the parameters for them to take effect.

### 6. Video OSD

Allows you to insert date, time and name subtitles into the camera video output



Show time : Yes/No

Show Title: Yes/No

Time Font Color: Default white, black, yellow, red and blue optional)

Title Font Color: Default white, black, yellow, red and blue optional)

OSD Offset: Set the location where the time and title will be displayed. Press "up, down, left, right" button to move character location.

Title: Set the title on the device property (default CAMERA1)

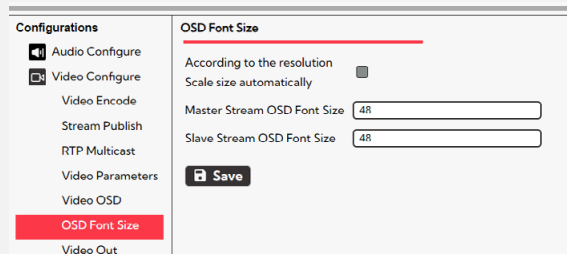
Time: Set the time based on the system time (default 1970/01/01 05:36:00)



Note: Press "Save" button, the "Save the parameters successfully" window will pop up, which means the settings will take effect

### 7. OSD Font Size

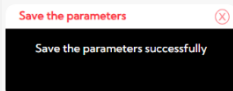
Allows you to set the font size of the date, time and camera name subtitles described in Video OSD



According to the resolution Scale size automatically: Enable/Disable

Master Stream OSD Font Size: Adjust the display character size, the device will automatically reboot after switching (default 48, 28-200 optional)

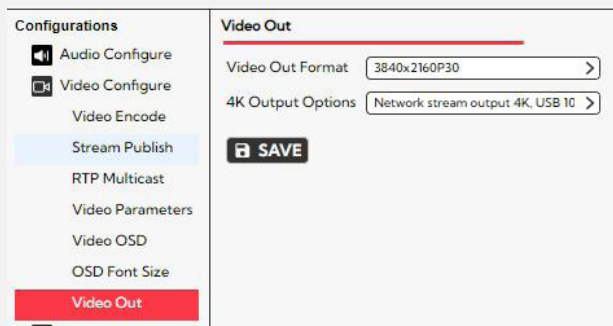
Slave Stream OSD Font Size: Adjust the screen character size, the device will automatically reboot after switching (default 48, 28-200 optional)



Note: Click the “Save” button to pop up the “Save the parameters successfully” window.

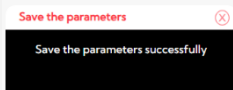
### 8. Video Out

It allows you to configure the video signal format in the HDMI output, USB and network transmission



Video Out format: Values: 3840 x 2160P30, 3840x2160P25, 1080P60, 1080P50, 1080P30, 1080P25, 720P60, 720P50, 1080P59.94, 1080P29.97, 720P59.94 Default: 3840 x 2160P30

4K Output Options: You can select the Network stream output format and USB video format. Values: Network stream output 4K, USB 1080 P or USB output 4K, network stream 1080 P

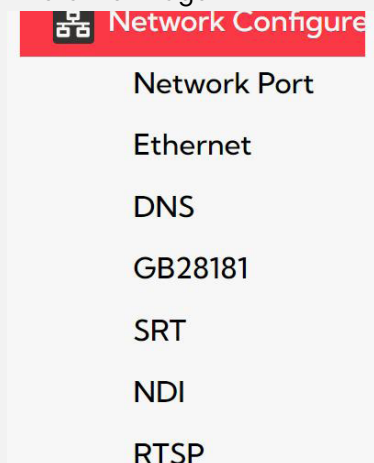


SDI output has a resolution of 1080P30

Note: Click the “Save” button to pop up the “Save the parameters successfully” window.

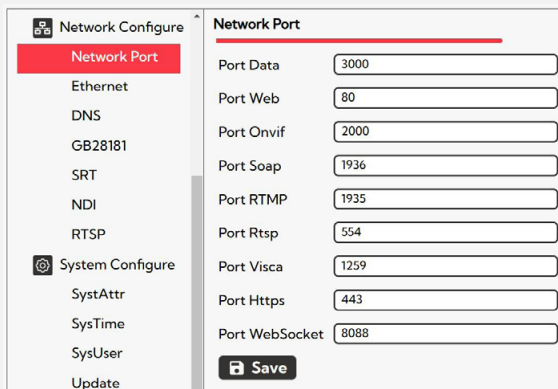
#### 6.4.8 Network Configure

This is the image:



#### 1. Network port:

Allows you to configure the ports that the camera uses for each service



Port Data: Set the data port, the device will automatically reboot after changing it (default 3000.0-65535 optional)

Port Web: Set the web port, the device will automatically reboot after changing (default is 80, 0-65535 is optional)

Port Onvif: Set the Onvif port, the device will automatically reboot after switching (default 2000, 0-65535 optional)

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

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

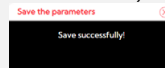
Port Rtsp: Set the RTSP port, the device will automatically reboot after switching (default 554.0-65535 optional)

Port Visca: Set the Visca port, the device will automatically reboot after changing it (default 3001.0-65535 optional)

Port Https: Set the http port, the device will automatically reboot after changing (default 443, 0-65535 optional)

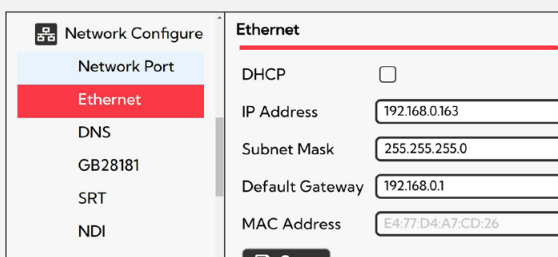
Port WebSocket: Set the WebSocket port, the device will automatically reboot after changing (default 8088, 0-65535 optional)

Note: Click “Save” button, it will be valid when it shows “Save successfully”.



#### 2. Ethernet

Allows you to configure the camera’s network parameters



DHCP: Enable or disable DHCP to obtain the IP address automatically. After saving, please reboot the device to take effect (default: Off)

IP Address: Set the IP address (default 192.168.5.163)

Subnet Mask: Set the Subnet Mask

Default Gateway: Set the Default Gateway

MAC Address: It shows the MAC Address of the camera (Not configurable)

Note: Click “Save” button, it will be valid when “Save

successfully” appears.

Once saved, please reboot the device to take effect

### 3. DNS

Allows you to configure the DNS parameters associated with the camera

Preferred DNS Server: Set the preferred DNS server. (Default 0.0.0.0)

Alternative DNS Server: Set the alternate DNS server. (Default 0.0.0.0)

### 4. GB28181

Allows you to configure the GB28181 parameters associated with the camera.

Enable: Set whether to activate GB28181.

ClockSync: Enables/Disables time synchronization.

VideoType: Set the stream type (default Main Stream, optional Sub Stream)

Registration Valid Time (in seconds): 3600, range 5-65535.

Heartbeat time (in seconds): 60, range 1-65535.

Register ID: 3402000001320000001

Register Name: Default: IPC.

Register Password: Default: 12345678.

Equipment Belong: Users can add their own.

Administrative Region: Users can add their own.

Alarm Areas: Users can add their zone.

Device Address: Users can add their own.

Local SIP Port: Default: 5060 Range 0-65535.

Server IP: IP address of the server GB28181.

Server SIP Port: Default: 5060 Range 0-65535

Server ID: Default: 3402000002000000001.

### 5. SRT

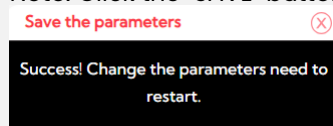
Allows you to configure the SRT parameters of the camera

Port SRT: Set the SRT port (default 9000, 0-65535 optional).

Password for the stream encryption: Set the SRT password.

Crypto key length in bytes: Set the length of the SRT password (default 0, 16, 24, 32 optional).

Note: Click the “SAVE” button and this message appears



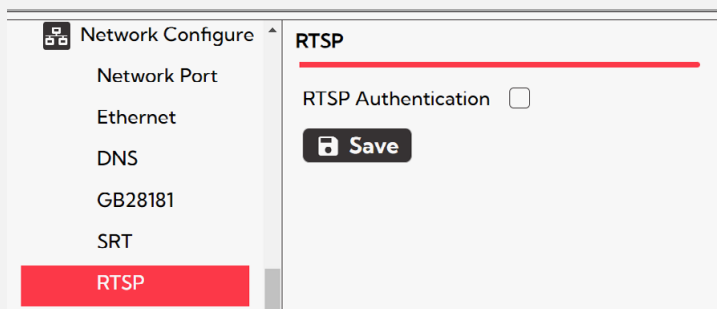
### 6. NDI

Allows you to configure the NDI functionality of the camera

- NDI Enable: Enable or disable NDI feature
- NDI Name: Defines the camera name for NDI applications
- NDI Group: Defines the NDI group to which the camera belongs

### 7. RTSP

Allows you to configure RTSP authentication of the camera.

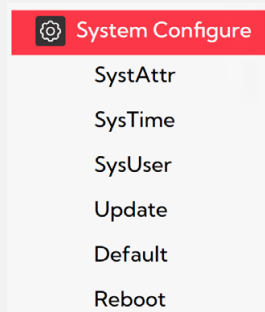


RTSP Authentication: Enable the RTSP authentication, default off, on optional.

Note: Changing the RTSP authentication parameters will take effect after the device is rebooted.

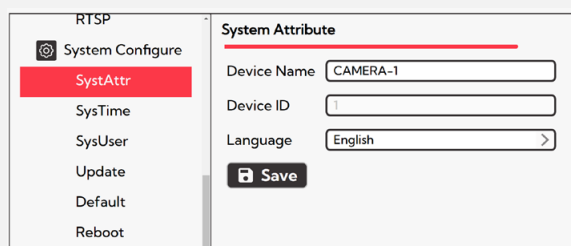
## 6.4.9 System Configure

This is the image



### 1. System Attribute

Allows you to configure the name associated with the camera that will appear if the subtitle option is configured on it.



Device Name: Set the device name (Camera 1 by default, user can add their own)

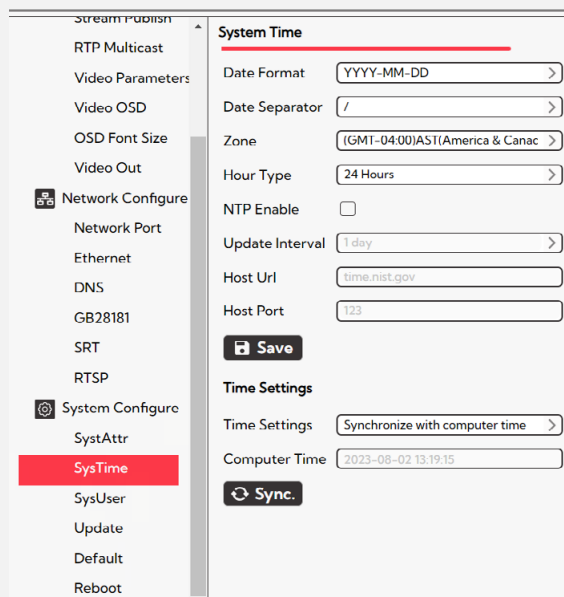
Device ID: Set the device ID (default 1, read only)

System language: Set the system language (default Simplified Chinese/ English) It is necessary to log in again

after modifying and saving the settings.

### 2. System Time

Allows you to configure the camera's date and time options



Date Format: Set the date format (YYYY-MM-DD, MM-DD-YYYY, DD-MM-YYYY)

Date Separator: Set the date separator (default '/',',',';-')

Zone: Set the time zone (default UTC+0 8:00, other time zones optional)

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

NTP Enable: Enable/disable NTP.

Update Interval: Set the automatic update interval of the NTP server. Valid after setting synchronization with NTP server (default one day, 2 / 10 days optional)

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

Host Port: Set NTP server port (default 123) Valid after setting NTP server synchronization from the NTP server.

#### • Time Settings

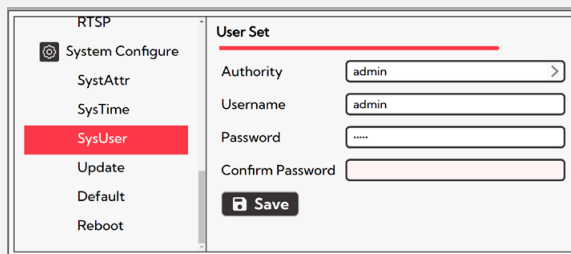
Time Settings: Values: Synchronize with computer time, Synchronize with NTP server, Set manually

Computer Time: Only appears if Time Setting is manually or computer time

### 3. System User

Allows you to configure user credentials for web access to the camera





**Authority:** Set the type of user (the default administrator, user 1, user2 optional)

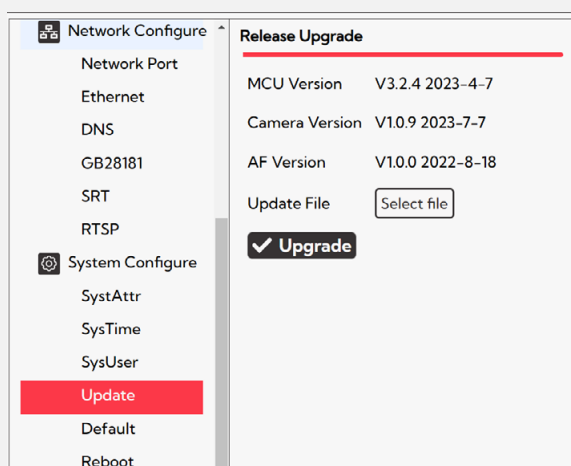
**Username:** Set the user name (select user admin, default admin. Select common user1, default user1, to select common user2, default user2, user can modify their own)

**Password:** Set a password (select user admin, default admin. Select a common user1, default user1, to select a common user2 default user2, user can modify their own)

**Confirm Password:** Confirm whether the entered passwords are the same or not.

#### 4. Update

Allows you to update the camera firmware, showing the current firmware version of the camera



**MCU Version:** Displays the MCU software version.

**Camera Version:** Displays the software version of the camera.

**NDI Version:** Displays the NDI Version

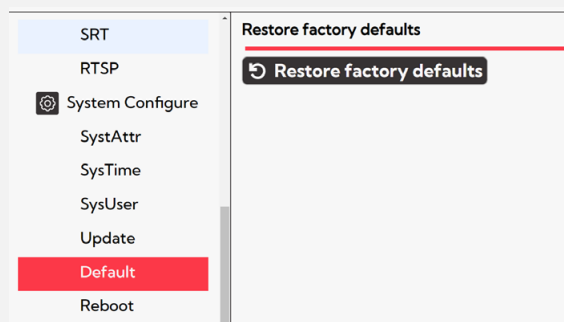
**AF Version:** Displays the focus software version of the camera

**Update File:** Click "Select file" in the pop-up window and select the update file, then press the "Upgrade" button. The update dialog box will pop up. After the update is done, the device will reboot automatically.

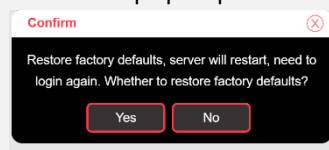
**Note:** Please make sure the device power and network can work during the update, if not, the update will fail. After the version upgrade is finished, you will need to restore factory defaults: a) restore factory defaults via web setting, b) restore factory defaults via menu, c) restore factory defaults with the hot key \*#6 on the remote control. Choose one of the three methods above, in which the "a method" IP account and password are also restored to default.

#### 5. Default

Allows you to restore camera parameters to factory settings



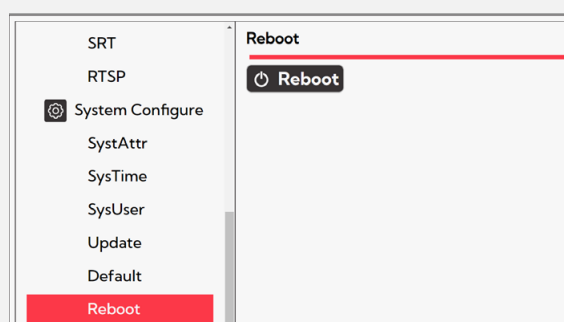
Select "Restore factory defaults" button and choose "yes" or "no" in the pop-up window.



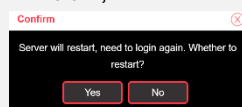
The device will automatically reboot and restore factory settings.

#### 6. Reboot

Allows you to restart the camera. This action is necessary when certain parameters of the same are modified




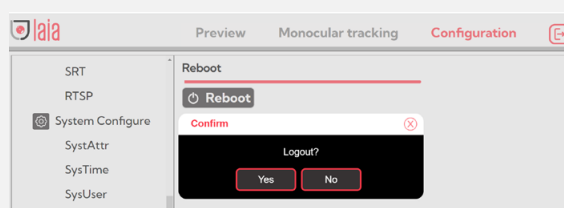
Press "Reboot" button and choose "yes" or "no" in the pop-up window,



The device will reboot automatically

#### 7. Log out

Click  and select "yes" or "no" in the pop-up window. If you choose "Yes", you will exit the current page and return to the user login interface again.



## 7. Serial port communication control

In normal working state, you can control the camera via RS232/RS485 cable (VISCA IN). The RS232 parameters are as follows:

Baud rate: 2400/4800/9600/115200/second.

Start bit: 1 bit.

Data bit: 8 bit.

Stop bit: 1 bit.

Check bit: None.

After power on, the camera will make a brief turn and return to the center position.

The zoom lens is moved to the farthest position and then backed out, after the self-test is complete.

## 7.1 VISCA protocol command list

### 7.1.1 VISCA Protocol list

Ack/Completion Message		
	Command Package	Remark
ACK	z0 41 FF	Returned when the command is accepted.
Completion	z0 51 FF	Returned when the command has been executed.
Error Message		
	Command Package	Remark
Syntax error	z0 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is accepted.
Command buffer full	z0 60 03 FF	Indicates that two sockets are already being used(executing two commands) and the command could not be accepted when received.
Command canceled	z0 6y 04 FF (y: socket No.)	Returned when a command which is being executed in a socket specified by the cancel command is canceled. The completion message for the command is not returned.
No socket	z0 6y 05 FF (y: socket No.)	Returned when no command is executed in a socket specified by the cancel command, or when an invalid socket number is specified
Command not executable	z0 6y 41 FF(y: Execution command Socket No. Inquiry command: 0)	Returned when a command cannot be executed due to current conditions.For example, when commands controlling the focus manually are received during auto focus.

### 7.1.2 Device control command

Command	Function	Command package	Remark
Address Set	Broadcast	88 30 0p FF	p:Address setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear

CAM_Power	On	8x01 04 00 02 FF	Power ON/OFF
	Off	8x01 04 00 03 FF	
CAM_Zoom	Stop	8x01 04 07 00 FF	
	Tele(Standard)	8x01 04 07 02 FF	
	Wide(Standard)	8x01 04 07 03 FF	p=0(low)-7(high)
	Tele(Variable)	8x01 04 07 2p FF	pqrs=Zoom position
	Wide(Variable)	8x01 04 07 3p FF	
	Direct	8x01 04 47 0p 0q 0r 0s FF	
CAM_Focus	Stop	8x01 04 08 00 FF	
	Far(Standard)	8x 01 04 08 02 FF	
	Near(Standard)	8x 01 04 08 03 FF	
	Far (Variable)	8x 01 04 08 2p FF	p=0(low)-7(high)
	Near (Variable)	8x 01 04 08 3p FF	
	Direct	8x 01 04 48 op 0q 0r 0s FF	
	Auto focus	8x 01 04 38 02 FF	
	Manual focus	8x 01 04 38 03 FF	
	One push mode	8x 01 04 38 04 FF	
One push trigger	8x 01 04 18 01 FF	One push trigger	
CAM_Zoom Focus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position tuvw: Focus Position
CAM_AF Sensitivity	High	8x 01 04 58 01 FF	Focus sensitivity setting
	Normal	8x 01 04 58 02 FF	
	Low	8x 01 04 58 03 FF	
CAM_AF Zone	Top	8x 01 04 AA 00 FF	Focus Region Setting
	Center	8x 01 04 AA 01 FF	
	Bottom	8x 01 04 AA 02 FF	
	All	8x 01 04 AA 03 FF	

Command	Function	Command package	Remark
CAM_AWB Sensitivity	Low	8x 01 04 A9 00 FF	WB Sensitivity Setting
	Normal	8x 01 04 A9 01 FF	
	High	8x 01 04 A9 02 FF	
CAM_RGain	Reset	8x 01 04 03 00 FF	Manual Control of R Gain
	Up	8x 01 04 03 02 FF	
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	pq: R Gain
CAM_Bgain	Reset	8x 01 04 04 00 FF	Manual Control of B Gain
	Up	8x 01 04 04 02 FF	
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	pq: B Gain

CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter Priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
	Iris Priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright mode
CAM Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	pq: Shutter Position
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	pq: Iris Position
CAM_Gain Limit	Reset	8x 01 04 0C 00 FF	Gain Limit Setting
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Gain Limit	8x 01 04 2C 0p FF	p: Gain Positon
CAM_Bright	Reset	8x 01 04 0C 00 FF	Bright Setting
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	pq: Bright Positon
CAM_Expcom	On	8x 01 04 3E 02 FF	Exposure Compensation ON/OFF
	Off	8x 01 04 3E 03 FF	
	Reset	8x 01 04 0E 00 FF	Exposure Compensation Amount Setting
	Up	8x 01 04 0E 02 FF	
	Down	8x 01 04 0E 03 FF	
	Direct	8x 01 04 4E 00 00 0p 0q FF	pq: ExpComp Position
CAM_Back Light	On	8x 01 04 33 02 FF	Back Light Compensation
	Off	8x 01 04 33 03 FF	
CAM_WDRS trength	Reset	8x 01 04 21 00 FF	WDR Level Setting
	Up	8x 01 04 21 02 FF	
	Down	8x 01 04 21 03 FF	
	Direct	8x 01 04 51 00 00 00 0p FF	p: WDR Level Positon
CAM_NR	2D	8x 01 04 53 0p FF	P=0-8 0:OFF
	3D	8x 01 04 54 0p FF	
CAM_Gamma		8x 01 04 5B 0p FF	p = 0 - 4 0:Default 1:0.45 2:0.50 3:0.55 4: 0.63

Command	Function	Command package	Remark
CAM_Low- Light Mode	On	8x 01 04 2D 01 FF	Low-Light Mode Setting
	Off	8x 01 04 2D 00 FF	
CAM_Gain		8x 01 04 4C 00 00 0p 0q FF	pq: 0-15
CAM PresetSpeed		8x 01 01 01 0p FF	p: 1-10
CAM_Flicker	Off	8x 01 04 23 00 FF	Off
	50Hz	8x 01 04 23 01 FF	50Hz
	60Hz	8x 01 04 23 02 FF	60Hz
CAM_Aperture	Reset	8x 01 04 02 00 FF	Aperture Control
	Up	8x 01 04 02 02 FF	pq: Aperture Gain
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	
CAM_Picture effect	B&W-Mode	8x 01 04 63 04 FF	Picture effect setting
CAM_Me- mory	Reset	8x 01 04 3F 00 pq FF	pq: Memory Number(=0 to 254) Corresponds to 0 to 9 on the Remote Commander
	Set	8x 01 04 3F 01 pq FF	
	Recall	8x 01 04 3F 02 pq FF	
CAM_LR_Reverse	On	8x 01 04 61 02 FF	Image Flip Horizontal ON/OFF
	Off	8x 01 04 61 03 FF	
CAM_Pictu- reFlip	On	8x 01 04 66 02 FF	Image Flip Vertical ON/ OFF
	Off	8x 01 04 66 03 FF	
CAM_Color- Saturation	Direct	8x 01 04 49 00 00 00 0p FF	P:CAM_ColorSaturation
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	pqrs: Camera ID (=0000 to FFFF)
SYS_Menu	On	8x 01 04 06 06 02 FF	Turn on/off the menu screen
	Off	8x 01 04 06 06 03 FF	
IR_Receive	On	8x 01 06 08 02 FF	IR(remote commander) receive On/Off
	Off	8x 01 06 08 03 FF	
CAM_Setting Reset	Reset	8x 01 04 A0 10 FF	Reset Factory Setting
CAM_Brightness	Direct	8x 01 04 A1 00 00 0p 0q FF	pq: Brightness Position
CAM_Contrast	Direct	8x 01 04 A2 00 00 0p 0q FF	pq: Contrast Position
CAM_Flip	Off	8x 01 04 A4 00 FF	Single Command For Video Flip
	Flip-H	8x 01 04 A4 01 FF	
	Flip-V	8x 01 04 A4 02 FF	
	Flip-HV	8x 01 04 A4 03 FF	

CAM_ VideoSystem	Set Camera video system	8x 01 06 35 00 0p FF	P: Video format 0:1080P60; 1:1080P50 4:720P60; 5:720P50 6:1080P30; 7:1080P25 A:1080P59.94; C:720P59.94; D:1080P29.97; 0x19:4KP30; 0X1A:4KP25
Pan_tiltDrive	Up	8x 01 06 01 VV WW 03 01 FF	VV: Pan speed 0x01 (low speed) to 0x18 (high speed) WW: Tilt speed 0x01 (low speed) to 0x14 (high speed)
	Down	8x 01 06 01 VV WW 03 02 FF	
	Left	8x 01 06 01 VV WW 01 03 FF	
	Right	8x 01 06 01 VV WW 02 03 FF	YYYY: Pan Position ZZZZ: Tilt Position
	Upleft	8x 01 06 01 VV WW 01 01 FF	
	Upright	8x 01 06 01 VV WW 02 01 FF	
	Downleft	8x 01 06 01 VV WW 01 02 FF	

Command	Function	Command package	Remark
	Down right	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	Absolute Position	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Relative Position	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Home	8x 01 06 04 FF	
	Reset	8x 01 06 05 FF	
Pan- tiltLimitSet	Set	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W:1 UpRight 0:DownLeft YYYY: Pan Limit Position(TBD) ZZZZ: Tilt Limit Position(TBD)
	Clear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	

### 7.1.3 Tracking Commands

Command Tracking	Function	Command package	Remark
	Tracking OFF	81 0A 01 32 00 00 03 00 FF	Real time tracking mode
	Tracking ON	81 0A 01 32 00 00 02 00 FF	
	Zone Tracking Mode	81 0A 01 32 00 00 02 01 FF	

### 7.1.4 Enquiry Command

Command	Command package	Return Package	Remark
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CAM_ PowerIn q	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off(Standby)
CAM_ ZoomPo slnq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_ FocusA FModelnq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
		y0 50 04 FF	One Push mode
CAM_ FocusP oslnq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_ AFSensi tivitylnq	8x 09 04 58 FF	y0 50 01 FF	High
		y0 50 02 FF	Normal
		y0 50 03 FF	Low
CAM_ AFZone lnq	8x 09 04 AA FF	y0 50 00 FF	Top
		y0 50 01 FF	Center
		y0 50 02 FF	Bottom
		y0 50 03 FF	All
CAM_ WBMod elnq	8x 09 04 35 FF	y0 50 pq FF	Pq=WBMode
CAM_ AWBSe nsitivitylnq	8x 09 04 A9 FF	y0 50 00 FF	High
		y0 50 01 FF	Normal
		y0 50 02 FF	Low
CAM_ RGainln q	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain
/	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_ AEMod elnq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter priority
		y0 50 0B FF	Iris priority
		y0 50 0D FF	Bright
CAM_Shutter Poslnq	8x09044AFF	y0 5000000p0q FF	pq: Shutter Position
CAM_ IrisPosl nq	8x09044BFF	y0 5000000p0q FF	pq: Iris Position
CAM_Gain Limitlnq	8x 09 04 2C FF	y0 50 0p FF	p: Gain Positon
CAM_ BrightPosilnq	8x 09 04 4D FF	y0 5000000p0q FF	pq: Bright Position
CAM_ExpCo mpModelnq	8x 09 04 3E FF	y0 50 02 FF	On
		y0 50 03 FF	Off

Command	Command package	Return Package	Remark
CAM_ExpCo mpPoslnq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_ Backligh tModelnq	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off



CAM_ WDRStrengthInq	8x 09 04 51 FF	y0 50 00 00 00 0p FF	p: WDR Strength
CAM_ NRLevel(2D) Inq	8x 09 04 53 FF	y0 50 0p FF	P: 2DNRLevel
CAM_ NRLevel(3D) Inq	8x 09 04 54 FF	y0 50 0p FF	P:3D NRLevel
CAM_ FlickerModeInq	8x 09 04 55 FF	y0 50 0p FF	p: Flicker Settings(0: OFF, 1: 50Hz, 2:60Hz)
CAM_ ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_ PictureEffectModelInq	8x 09 04 63 FF	y0 50 00 FF	Off
		y0 50 04 FF	B&W
CAM_ Memory	8x 09 04 3F FF	y0 50 0p FF	p: Memory number last operated
SYS_ MenuModeInq	8x 09 06 06 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_LR_ ReverseInq	8x 09 04 61 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ PictureFlipInq	8x 09 04 66 FF	y0 5002FF	On
		y0 5003FF	Off
CAM_ ColorSaturationInq	8x090449FF	y0 50 00 00 0p FF	p: Color Gain setting 0h (60%) to Eh (130%)
CAM_IDInq	8x 09 04 22 FF	y0 50 0p FF	p: Camera ID
IR_ReceiveInq	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ BrightnessInq	8x 09 04 A1 FF	y0 50 00 00 0p 0q FF	pq: Brightness Position
CAM_ Contrast Inq	8x 09 04 A2 FF	y0 50 00 00 0p 0q FF	pq: Contrast Position
CAM_FlipInq	8x 09 04 A4 FF	y0 50 00 FF	Off
		y0 50 01 FF	Flip H
		y0 50 02 FF	Flip V
		y0 50 03 FF	Flip HV
CAM_ Gamma Inq	8x 09 04 5B FF	y0 50 0p FF	p: Gamma setting
CAM_ VersionInq	8x 09 00 02 FF	y0 50 ab cd mn pq rs tu vw FF	ab cd : vender ID ( 0220 ) mn pq : model ID rs tu:ARM Version vw:reserve
VideoSystem	8x 09 06 23 FF	y0 50 0p FF	P: Video format 0:1080P60 1:1080P50 4:720P60 5:720P50 6:1080P30 7:1080P25 A:1080P59.94 C:720P59.94 D:1080P29.97 0x19:4KP30 0X1A:4KP25

Command	Command package	Return Package	Remark
Pan- tiltMaxSpeedInq	8x 09 06 11 FF	y0 50 ww zz FF	ww: Pan Max Speed zz: Tilt Max Speed
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	www: Pan Position zzz: Tilt Position

## 7.2 Pelco-D Protocol command list

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Up	0xFF	Address	0x00	0x08	Pan Speed	Tilt Speed	SUM
Down	0xFF	Address	0x00	0x10	Pan Speed	Tilt Speed	SUM
Left	0xFF	Address	0x00	0x04	Pan Speed	Tilt Speed	SUM
Right	0xFF	Address	0x00	0x02	Pan Speed	Tilt Speed	SUM
Upleft	0xFF	Address	0x00	0x0C	Pan Speed	Tilt Speed	SUM
Upright	0xFF	Address	0x00	0x0A	Pan Speed	Tilt Speed	SUM
Down left	0xFF	Address	0x00	0x14	Pan Speed	Tilt Speed	SUM
Down right	0xFF	Address	0x00	0x12	Pan Speed	Tilt Speed	SUM
Zoom In	0xFF	Address	0x00	0x20	0x00	0x00	SUM
Zoom out	0xFF	Address	0x00	0x40	0x00	0x00	SUM
Focus far	0xFF	Address	0x00	0x80	0x00	0x00	SUM
Focus near	0xFF	Address	0x01	0x00	0x00	0x00	SUM
Stop	0xFF	Address	0x00	0x80	0x00	0x00	SUM
Set preset	0xFF	Address	0x00	0x03	0x00	Preset ID	SUM
Clear preset	0xFF	Address	0x00	0x05	0x00	Preset ID	SUM
Call preset	0xFF	Address	0x00	0x07	0x00	Preset ID	SUM
Query Pan Position	0xFF	Address	0x00	0x51	0x00	0x00	SUM
Query Pan response	0xFF	Address	0x00	0x59	Value High Byte	Value Low Byte	SUM
Query Tilt Position	0xFF	Address	0x00	0x53	0x00	0x00	SUM
Query Tilt Position response	0xFF	Address	0x00	0x5B	Value High Byte	Value Low Byte	SUM
Query Zoom position	0xFF	Address	0x00	0x55	0x00	0x00	SUM
Query Zoom Position response	0xFF	Address	0x00	0x5D	Value High Byte	Value Low Byte	SUM

## 7.3 Pelco-P Protocol command list

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Up	0xFF	Address	0x00	0x08	Pan Speed	Tilt Speed	0xAF	XOR

Down	0xFF	Address	0x00	0x10	Pan Speed	Tilt Speed	0xAF	XOR
Left	0xFF	Address	0x00	0x04	Pan Speed	Tilt Speed	0xAF	XOR
Right	0xFF	Address	0x00	0x02	Pan Speed	Tilt Speed	0xAF	XOR
Upleft	0xFF	Address	0x00	0x0C	Pan Speed	Tilt Speed	0xAF	XOR
Upright	0xFF	Address	0x00	0x0A	Pan Speed	Tilt Speed	0xAF	XOR
Down left	0xFF	Address	0x00	0x14	Pan Speed	Tilt Speed	0xAF	XOR
Down right	0xFF	Address	0x00	0x12	Pan Speed	Tilt Speed	0xAF	XOR
Zoom In	0xFF	Address	0x00	0x20	0x00	0x00	0xAF	XOR
Zoom out	0xFF	Address	0x00	0x40	0x00	0x00	0xAF	XOR
Focus far	0xFF	Address	0x00	0x80	0x00	0x00	0xAF	XOR
Focus near	0xFF	Address	0x01	0x00	0x00	0x00	0xAF	XOR
Stop	0xFF	Address	0x00	0x00	0x00	0x00	0xAF	XOR
Set preset	0xFF	Address	0x00	0x03	0x00	Preset ID	0xAF	XOR
Clear preset	0xFF	Address	0x00	0x05	0x00	Preset ID	0xAF	XOR
Call preset	0xFF	Address	0x00	0x07	0x00	Preset ID	0xAF	XOR
Query Pan Position	0xFF	Address	0x00	0x51	0x00	0x00	0xAF	XOR
Query Pan response	0xFF	Address	0x00	0x59	Value High Byte	Value Low Byte	SUM	XOR
Query Tilt Position	0xFF	Address	0x00	0x53	0x00	0x00	SUM	XOR
Query Tilt Position response	0xFF	Address	0x00	0x5B	Value High Byte	Value Low Byte	SUM	XOR
Query Zoom position	0xFF	Address	0x00	0x55	0x00	0x00	SUM	XOR
Query Zoom Position response	0xFF	Address	0x00	0x5D	Value High Byte	Value Low Byte	SUM	XOR

## 8. Specifications

Model	Broadcaster 4K AI
Optical Zoom	12X
Image Sensor	1/2.8 inch high quality CMOS sensor
Effective Pixel	2.07M, 16: 9
Video Signal	HDMI/SDI: 4KP30, 4KP25, 1080P60, 1080P50, 1080P30, 1080P25, 720P60, 720P50, 1080P59.94, 1080P29.97, 720P59.94 Main Stream: YUY2/NV12: 1920×1080/1280×720/1024×576/800×600/800×448/640×360/480×270/320×180@30/25/20/15/10/5fps; MJPG/H264: 1920×1080/1600×896/1280×720/1024×576/960×540/800×600/800×448/720×576/720×480/640×360/640×480/480×270/352×288/320×240@30/25/20/15/10/5fps; Sub Stream: YUY2/NV12: 1280×720/1024×576/800×600/800×448/640×360/640×480/480×270/320×180@30/25/20/15/10/5fps; MJPG/H264: 1920×1080/1600×896/1280×720/1024×576/960×540/800×600/800×448/720×576/720×480/640×360/640×480/480×270/352×288/320×240@30/25/20/15/10/5fps;
Optical Lens	12X f=4.1 ~ 49.2mm
Viewing Angle	6.57°(N) 70.28° (W)
Iris Value	F1.8 – F2.68
Digital Zoom	X10
Minimum Illumination	0.5Lux(F1.8, AGC ON)
DNR	2D&3D
White Balance	Auto/Manual/One-push/Specified Color Temperature
Focus Mode	Auto/Manual/One-push
Exposure Mode	Auto, Manual, Shutter Priority, Iris Priority, Brightness Priority
Iris	F1.8 ~ F11, CLOSE
Shutter Speed	1/25 ~ 1/20000
BLC	On/Off
Dynamic Range	Off, 1 ~ 8
Video Adjustment	Brightness, Hue, Saturation, Contrast, Sharpness, Black and White Mode, Gamma Curve
SNR	>50dB

Back Panel	
Interface	HDMI, SDI, LAN(POE), USB3.0,Audio-IN, RS232-IN, RS232-OUT,RS422(compatible with RS485),DC12V Power Supply, Rotary Dip Switch, Power Switch
Video Output	HDMI, SDI, LAN, USB 3.0

Video Compression Format	LAN: H.264, H.265 USB 3.0, MJPG, H264, YUY2, NV12
Audio Input	Dual Channel 3.5mm linear input
Audio Output	HDMI, SDI, LAN, USB 3.0
Audio Compression Format	AAC, MP3, G.711A
Network Port	10M/100M/1000M adaptive Ethernet port, support POE power supply, support audio and video output
Network Protocols	RTSP, RTMP, ONVIF, GB/T28181, VISCA OVER IP, IP VISCA, RTMPS, SRT and NDI, support remote upgrade, remote restart, remote reset
Control	RS232-IN, RS232-OUT, RS422 compatible with RS485
Serial Port Communication Protocols	VISCA/Pelco-D/Pelco-P Baud rate: 115200/38400/9600/4800/2400
USB Communication Protocols	UVC (Protocolos de comunicación de video), UAC (Protocolos de comunicación de audio)
Power Port	HEC3800 Power socket(DC12V)
Power Adapter	Entrada: AC110V~AC220V Salida: DC12V/2.5A
Input Voltage	DC12V±10%
Input Currency	<1A
Power Consumption	<12W

#### PTZ Parameter

Pan Move	-170°- +170°
Tilt Move	-30°- +90°
Pan Speed	0.1°/s - 35°/s
Tilt Speed	0.1°/s - 30°/s
Preset Speed	Pan: 35°/s, Tilt: 30°/s
Preset Quantity	Up to 255 preset (10 via remote control)

#### Other Parameter

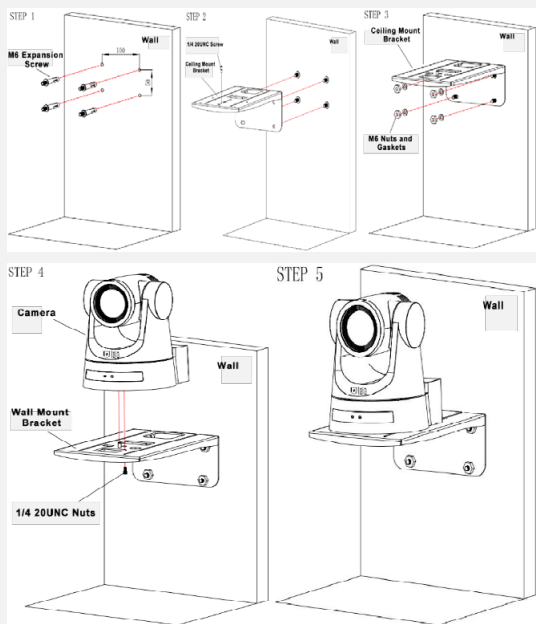
Storage Temperature	-10°C - 70°C
Storage Humidity	20% - 95%
Working Temperature	-10°C - 50°C
Working Humidity	20% - 80%
Dimension	143(L)mm*176mm(W)*169mm(H)
Weight	1.3kg
Environment	Indoors
Supplied Accessories	Power Supply, IR Remote Control, Wall Mount Bracket, 200 cm RS232 Control Cable, 150 cm USB3.0 Cable, User Manual

#### Function

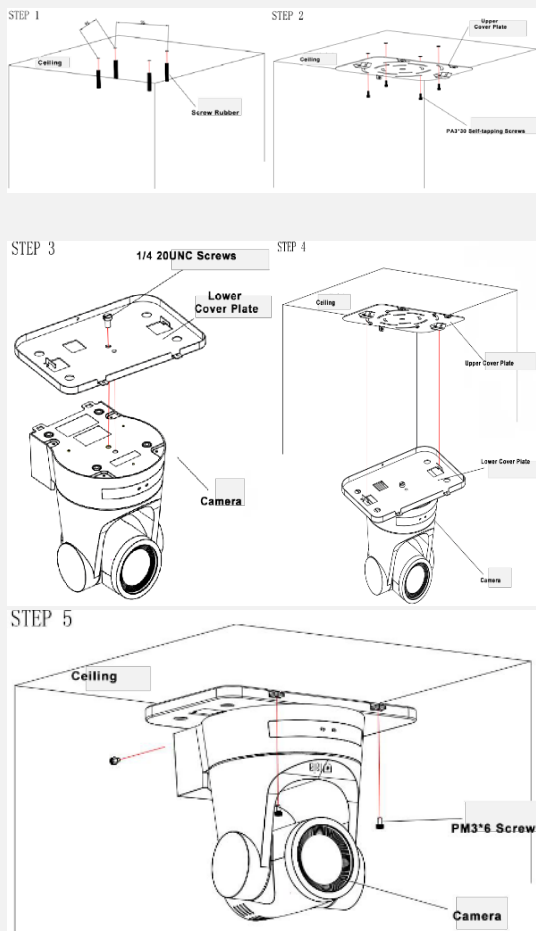
Real time tracking	The longest tracking distance can reach 6 to 7 meters, which can support the speaker to walk at a speed of 3 to 4 mph
Zone tracking	Support setting 4 tracking areas, support horizontal -170° - 170°, vertical 30° - 90°

## 9. Mounting options

### 9.1 Wall mounting



### 9.2 Ceiling Mount



## 10. Troubleshooting & tips

### 10.1 Camera maintenance

If you are not going to use the camera for a long time, turn it off. Use a soft cloth or tissue to clean the camera body. Use a soft, dry, lint-free cloth to clean the lens. If the camera is very dirty, clean it with a diluted neutral detergent. Do not use any type of solvent or strong detergent, as this could damage the surface

### 10.2 Not recommended uses

- Do not photograph extremely bright objects for a long period of time, such as sunlight, ultra-bright light sources, etc.
- Do not use the camera in unstable lighting conditions, as the image may flicker.
- Do not use the camera near strong electromagnetic radiation, such as TV or radio transmitters, etc.

### 10.3 Problem solving

No image:

- Check if the power cord is connected, the voltage is correct, and the power indicator is on.
- Check if the camera can “self-test” after power on (the camera will briefly pan, tilt and return to the home position, or if preset 0, the camera will return to the preset 0 position)
- Check that the HDMI cable is connected correctly.

Abnormal image display:

- Check the setting of the rotary dial on the back of the camera. Be sure to use a resolution and refresh rate supported by the software.

Image shakes or vibrates:

- Check if the camera is mounted firmly or on a horizontal and level surface.
- Check whether the supporting furniture vibrates. Roof mounts tend to be more affected by building vibrations than wall mounts. Any external vibration that is affecting the camera will be more apparent when it is zoomed in.

### 10.4 Precautions

This product can only be used under the specified conditions to avoid any damage to the camera:

- Do not expose the product to rain or moisture.
- To avoid the risk of electric shock, do not open the case. Installation and maintenance should only be carried out by qualified technicians.
- Do not use the product at temperatures, humidity or power sources higher than specified.
- Do not violently rotate the camera head, otherwise it may cause mechanical failure. This product should be placed on a stable desktop or other horizontal surface. Do not install the product obliquely, otherwise it may display a tilted image. Make sure there are no obstacles in the bracket's turning radius. Please do not power on before fully installed.



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