

Smart iToF People Counter

User Manual



1. Safety Instructions

1.1. Laser safety

The device has passed CLASS I certification and will not cause harm to the human body during normal use according to the requirements of EN60825. During operation, invisible lasers will be emitted. It is recommended to avoid looking directly into the lens at close range for safe use.

1.2. Installation safety

Before installing the device, please disconnect the external connections of the device and refer to the installation instructions for normal installation.

1.3. Electrical connection

The device is powered by DC power supply, DC power supply use for 12V, below 12V product work abnormally, higher than 12V may lead to product damage.

Please do not plug and unplug with brute force during the process of powering up the device, it may damage the camera power supply interface or power cord.

1.4. Unauthorized modification of devices is prohibited

Do not perform operations such as disassembling the camera or modifying the unit without authorization. Each camera is precisely calibrated before it leaves the factory, and disassembling or modifying it may result in a loss of camera accuracy or damage to the product, and may also have a serious impact on the safety of the operator.

In case of malfunction or related questions, please contact us.

2. Product Specification

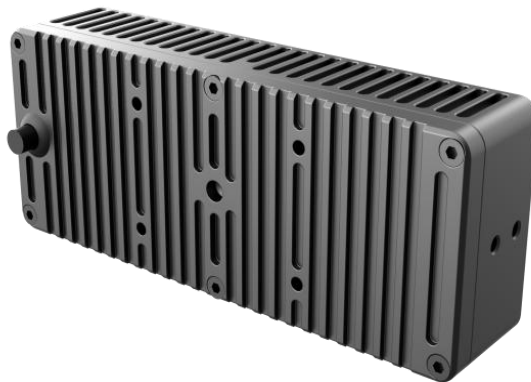
Model		X-D535L	X-D535H
Accuracy		≥98%	
Mounting Height		1.9m~3.5m	3.5m~7.0m
TOF Tech	Field of view	H 98° x V 80°	H 60° x V 45°
	Detection distance	0.2m~3.5m	0.2m~7.0m
	ToF light wavelength	940 nm	
	Multiple detection lines (multiple entrances and exits)	4 customized irregular fold lines	
	Area headcount	Support, up to 4 detection zones plotted simultaneously	
	Employee identification	Support, differentiated by wearing employee tags on both shoulders OR wearing an employee lanyard	
Headcount statistics		1,000,000 records	

Model		X-D535L	X-D535H
Wired	Receiver	8 customized MQTT/HTTP receivers	
	Ethernet port	100Mbps	
	RS485	Industrial RS485 communication	
	DI/DO	1/1(choose one from the two, factory configuration)	
physical interface	Power Input	1×DC5521 female connector	
	Network Interface	1×RJ45	
	Multi-Interface	1×DI/DO(choose one) ; 1×RS485	
	Indicators	Three indicator lights (see below for functional descriptions)	
Property parameter	Power Supply	802.3at PoE power receiving; 12V/2.0A DC power supply (round DC female connector)	12V/3.0A DC power supply (round DC female connector)
	Power Consumption	Max. 14.31W Avg. 7.45W	Max. 32.3W Avg. 12.5W
	Sleeping Power Consumption	4.55W	
	Protection Rating	IP66	
	Relative Humidity	0%~95% (No condensation)	
	Operating Temperature	-20°C ~ 50°C	
	Dimensions	140 × 34 × 55mm	
	Weight	419g	
	Mounting Methods	Suspended ceiling, ceiling extension & lintel installation (optional multi-function bracket)	

3. Product Structure

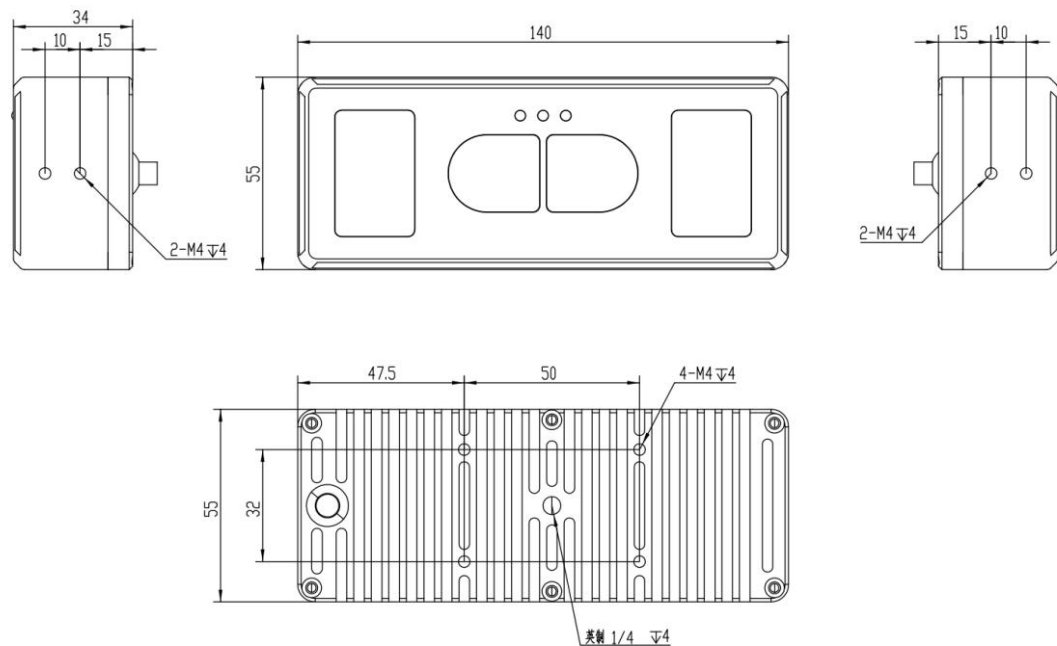
3.1. Product Picture

Physical images from different angles of the camera are shown below:



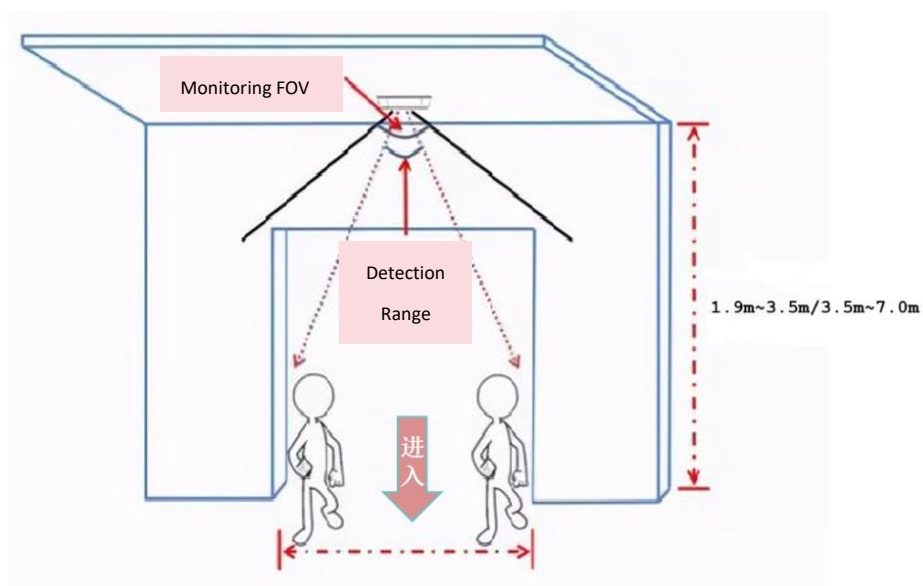
3.2. Camera Size

The camera size structure diagram is as follows:



4. Install

The equipment is easy to install and supports customized detection areas. It can be installed above the entrance gates of places with heavy passenger flow, such as office buildings, supermarkets, airports, subways, bus stations, smart toilets, etc. The hanging position height range is between 1.9-3.5 meters/3.5-7 meters, and can be installed and debugged according to actual conditions.



4.1. Recommended detection range

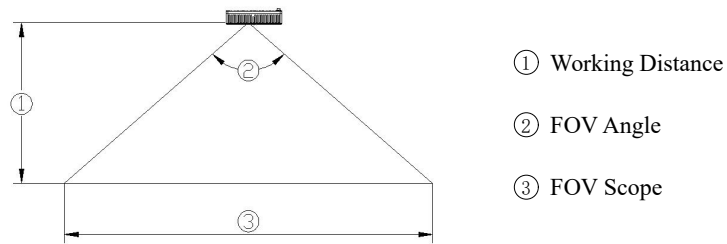
➤ Standard version

Mounting Height (m)	Field of View Range (m)	Detection Range (m)
2.5	5.75 x 4.20	1.84 x 1.34
2.6	5.98 x 4.36	2.07 x 1.51
2.7	6.21 x 4.53	2.30 x 1.68
2.8	6.44 x 4.70	2.53 x 1.85
2.9	6.67 x 4.87	2.76 x 2.01
3.0	6.90 x 5.03	2.99 x 2.18
3.1	7.13 x 5.20	3.22 x 2.35
3.2	7.36 x 5.37	3.45 x 2.52
3.3	7.59 x 5.54	3.68 x 2.69
3.4	7.82 x 5.71	3.91 x 2.85
3.5	8.05 x 5.87	4.14 x 3.02

➤ Higher Mounting Version

Mounting Height (m)	Field of View Range (m)	Detection Range (m)
3.5	4.04 x 2.90	2.08 x 1.49
3.7	4.27 x 3.07	2.31 x 1.66
3.9	4.50 x 3.23	2.54 x 1.82
4.1	4.73 x 3.40	2.77 x 1.99
4.3	4.97 x 3.56	3.00 x 2.15
4.5	5.20 x 3.73	3.23 x 2.32
4.7	5.43 x 3.89	3.46 x 2.49
4.9	5.66 x 4.06	3.70 x 2.65
5.1	5.89 x 4.22	3.93 x 2.82
5.3	6.12 x 4.39	4.61 x 2.98
5.5	6.35 x 4.56	4.39 x 3.15
5.7	6.35 x 4.72	4.62 x 3.31
5.9	6.81 x 4.89	4.85 x 3.48
6.1	7.04 x 5.05	5.08 x 3.65
6.3	7.27 x 5.22	5.31 x 3.81
6.5	7.51 x 5.38	5.54 x 3.98

4.2. Installation Instructions



Installation parameters schematic description:

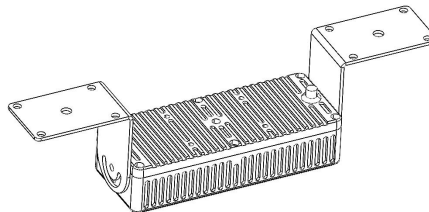
- (1) The installation distance of the equipment is shown in the diagram ①, and the recommended working distance is 1.9m-3.5m/3.5m-7m;
- (2) equipment field of view ② $98^{\circ} \times 80^{\circ} / 60^{\circ} \times 45^{\circ}$;
- (3) Field of view range at different working distances ③, see the recommended range table;
- (4) Under the requirement of meeting the field of view range ③, the closer the working distance ①, the higher the corresponding precision and the higher the accuracy;

4.3. Recommended installation method

- ① There are four M4 and one inch 1/4 mounting holes on the back of the device, allowing you to select the appropriate mounting according to your needs.



- ② 2 M4 mounting holes are reserved on each side of the device, so that you can choose the appropriate mounting method according to the actual scene;



4.4. Lowering Surface Temperature

Heat Dissipation Requirements:

- The device is heat-generating component. Please try to maximize the hear dissipation area.
- The installation surface of the device should be installed in contact with metal parts as much as possible to increase heat conduction and dissipation.
- The area where the device is installed should be as open as possible to increase heat exchange with the air.
- It is prohibited to use the device wrapped up, as it will result in the inability to dissipate heat
- The operating modes and parameters used may increase the surface temperature.

5. Electrical Characteristics

5.1. Electrical connections

Observe the following instructions before performing the electrical installation

- The camera must be connected by a qualified electrician. Observe the electrical data in the technical data.
- Camera with protection class III (PCIII).
- Power supply can only be achieved via PELV circuits.
- The overcurrent protection device must be able to shut down a current of 6A within 120s. For the correct rating of the overcurrent protection device, please consider the technical data of the camera and wiring.
- The separation of external circuits must comply with UL61010-2-201.
- For cable lengths <30m, use additional protection against surge voltages in accordance with IEC 6100-4-5.
- Turn off the power supply before connecting the camera.

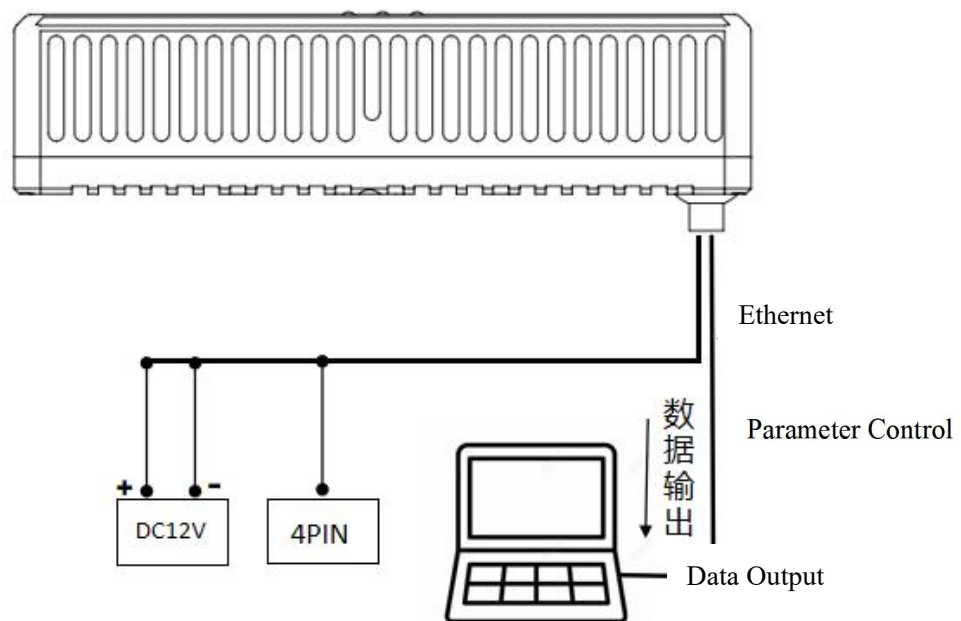
6. Wiring interface

6.1. Wiring interface definition

Photo	Interface	Definition/Purpose
	RJ45	100M Ethernet/POE power supply
	DC5521 female terminal	DC power supply
	4PIN terminal	Green PH3.5-4P; 1: DI_COM 2: DO_COM 3: RS485-A 4: RS485-B

6.2. Wiring equipment connection method

The camera connection diagram is as follows:



7. Web-based platform operation instructions

7.1. Operating environment and adaptation requirements

Operating system: 64-bit Windows 7 or above

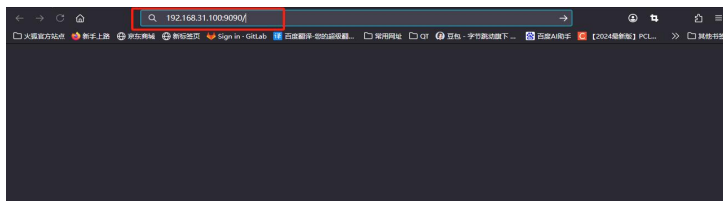
7.2. Website

192.168.31.100:9090 (192.168.31.100 is the camera IP, 9090 is the port number);

7.3. Instructions

7.3.1. Account activation and login

(1) Enter the website and enter the URL



(2) Enter the password to activate the account;



(3) Set security questions

安全问题配置

安全问题 1 你最喜欢的游戏是什么

答案 1

安全问题 2 你最喜欢的书是什么

答案 2

安全问题 3 你最喜欢的颜色是什么

答案 3

x ✓

(4) Enter your account and password to log in to the website

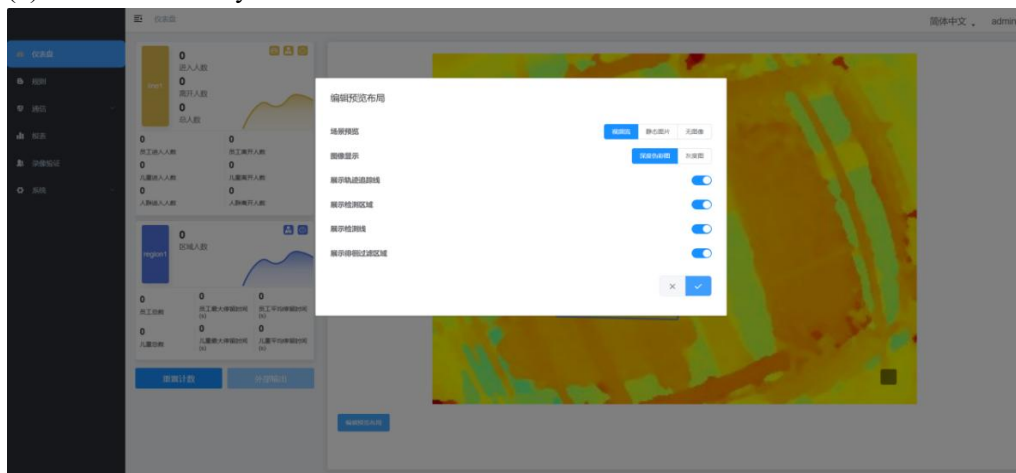
客流平台

admin

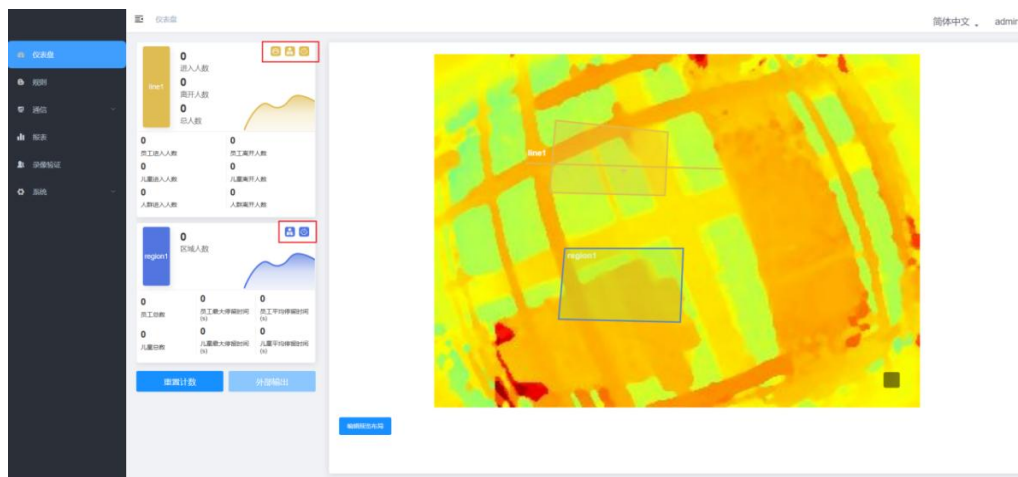
登录

7.3.2. Dashboard

(1) Edit Preview Layout



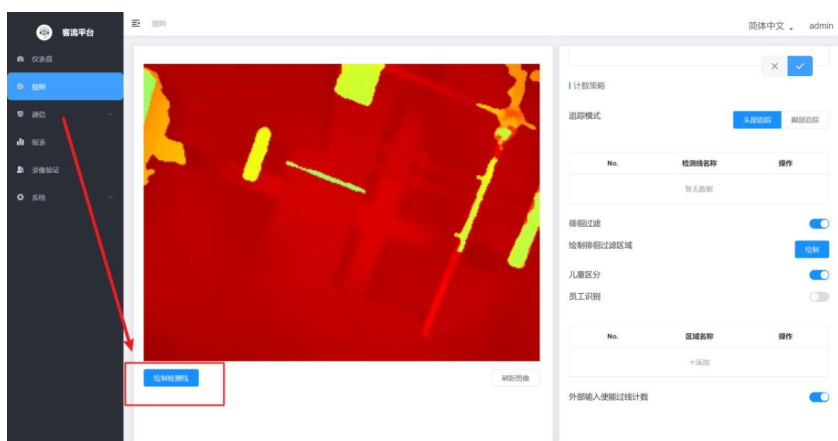
(2) Configure the display content on the left;



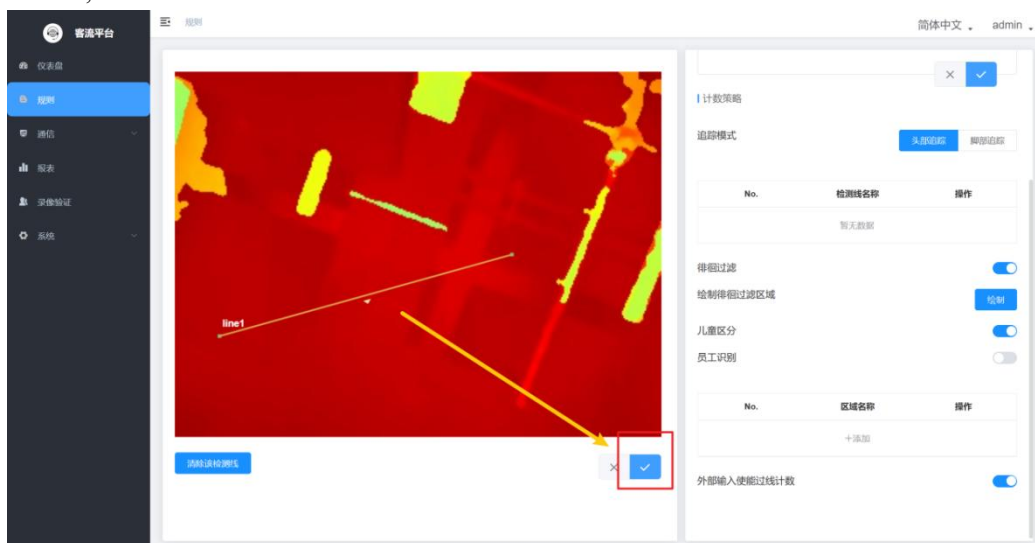
7.3.3. Configuration rules

7.3.3.1. Drawing Line Rules

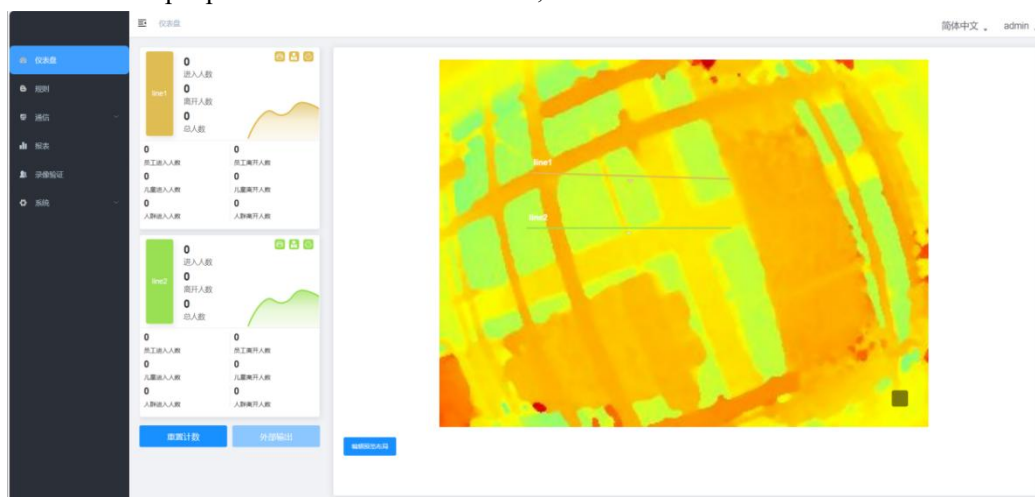
(1) Click to draw the detection line



- (2) When you are finished drawing the line segments on the picture, click OK to submit the test line;

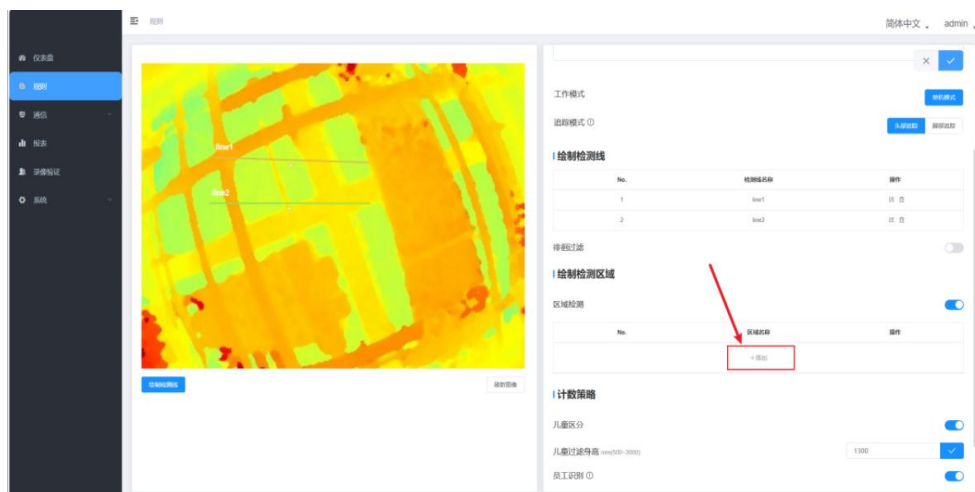


- (3) On the home page you can view the line rules drawn and the corresponding statistics of the number of people who have crossed the line;

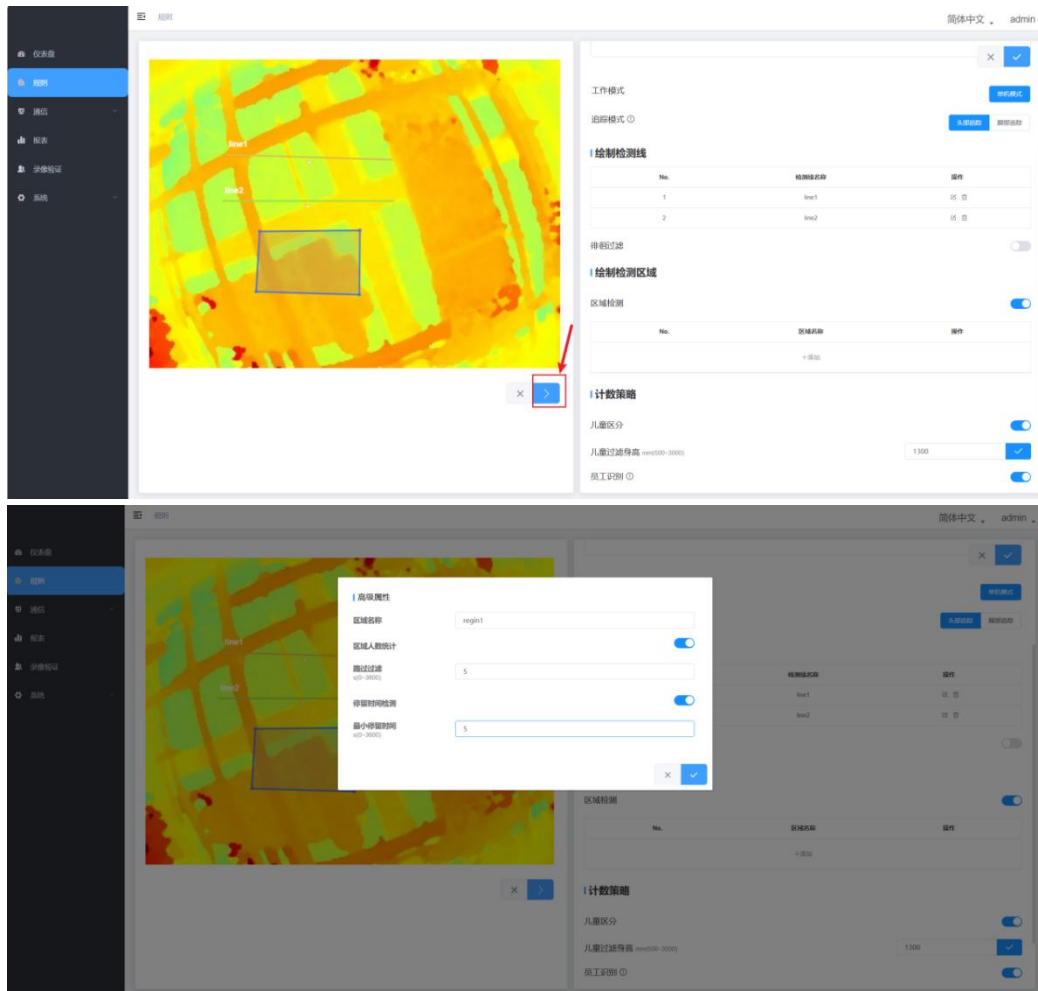


7.3.3.2. Drawing areas

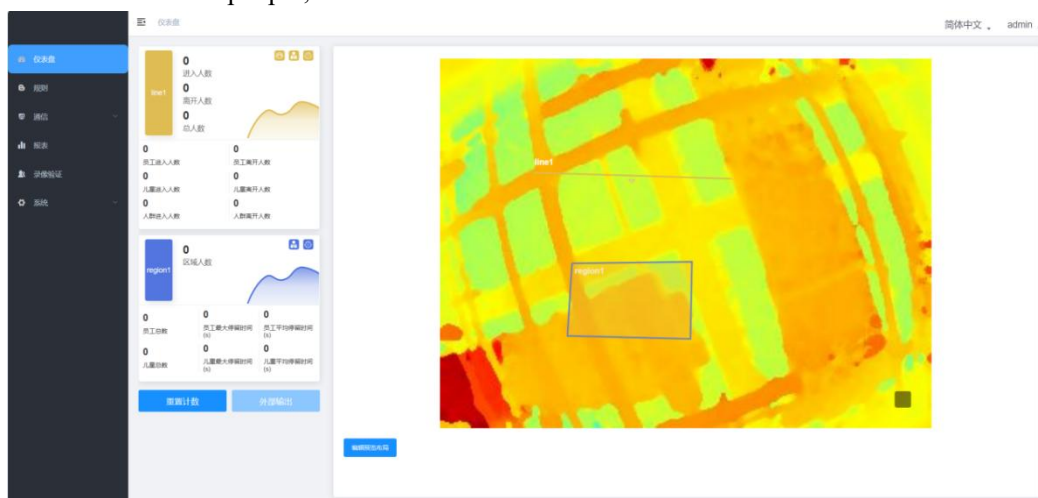
- (1) Draw Area Click to Add Draw Area Rule



- (2) Move on the picture and click the mouse to draw the region, when the last point coordinates coincide with the starting coordinates to complete the drawing, click the right arrow to submit the region rules, enter the region name, the region's number of people counting switches, the pass-by filtering thresholds, the dwell time detection switches, the minimum dwell time thresholds, and click OK to complete the region drawing;

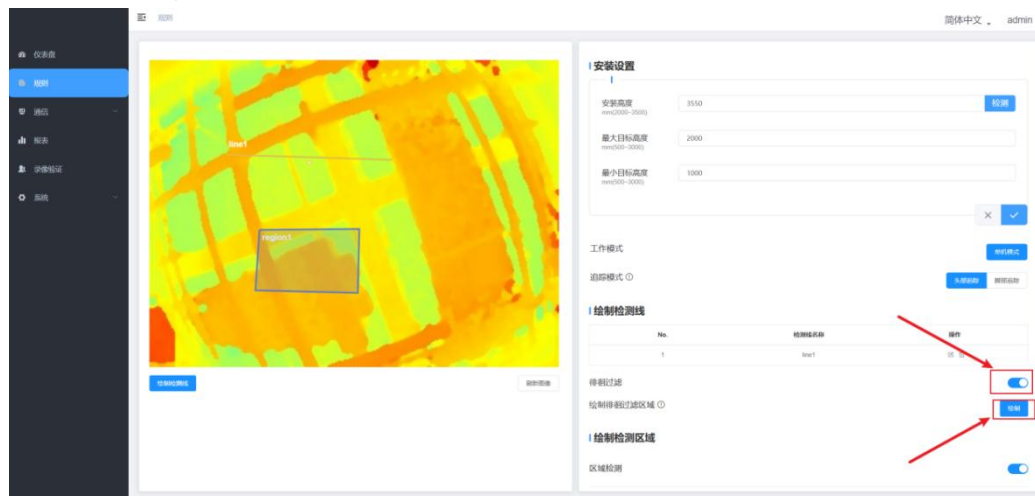


- (3) On the home page, you can view the rules of the region and the corresponding statistics of the number of people;

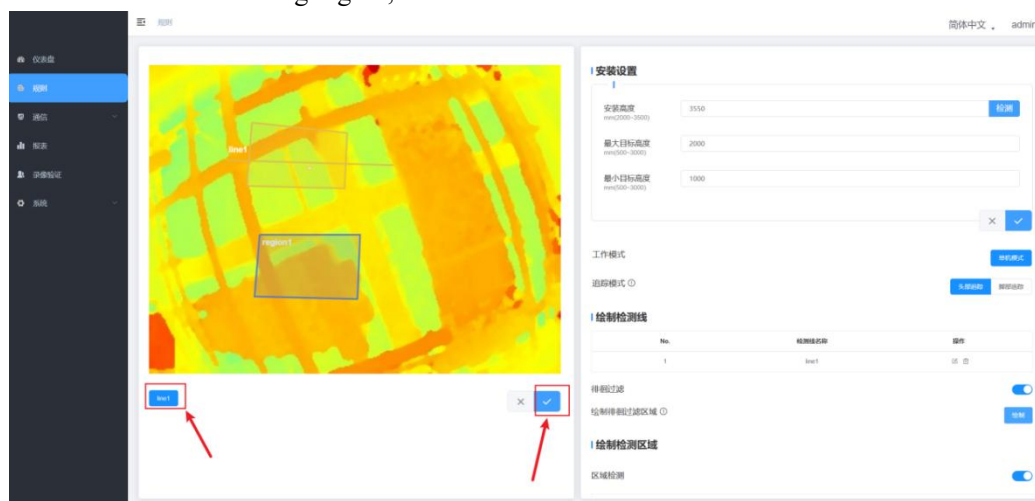


7.3.3.3. Drawing the Wandering Filter Region

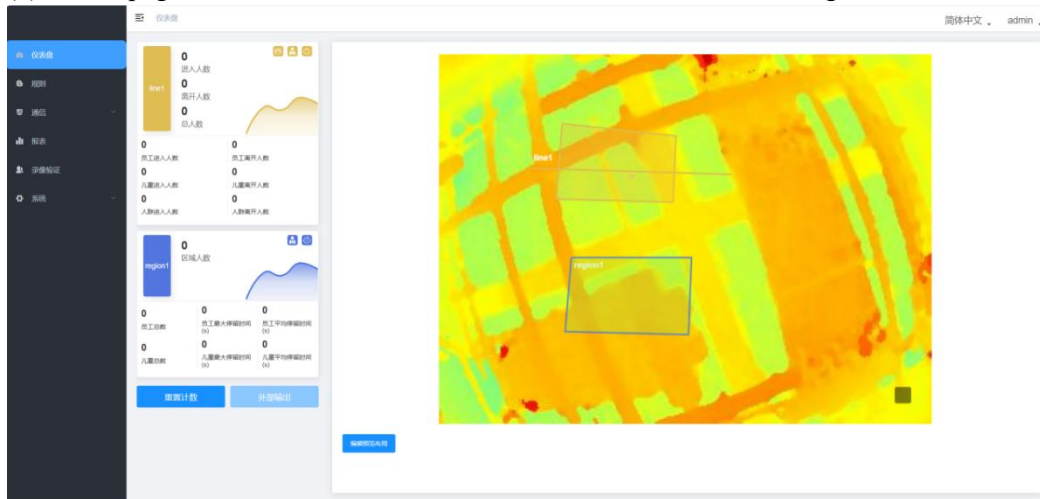
- (1) Turn on the Wandering Filter switch and click the Draw button to start drawing the wandering filter area;



- (2) Select the detection line corresponding to the wandering region below the image on the left, move on the image and click the mouse to draw the region, complete the drawing when the last point coordinates coincide with the starting coordinates, and click the right arrow to submit the wandering region;



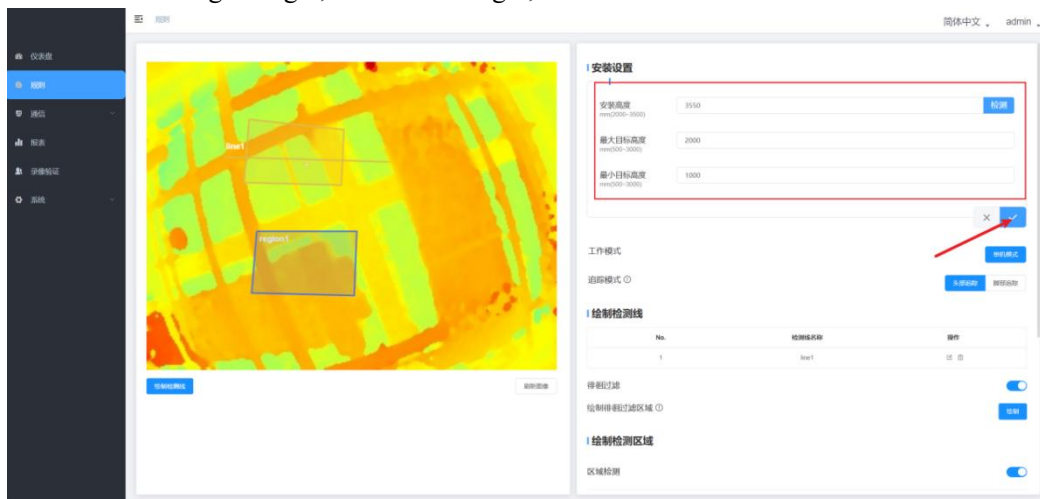
(3) Home page to see the rules and headcount statistics for the Wandering Filter area;



7.3.4. Device rule parameter settings

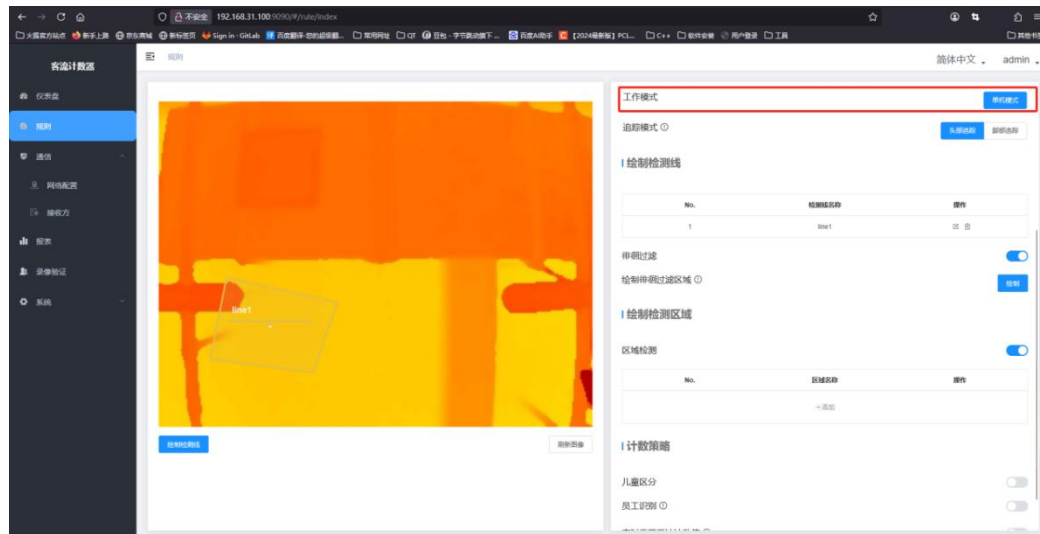
7.3.4.1. Set deployment parameters such as height

(1) Setting parameters such as the installation height of the device, maximum target height, minimum target height, child filter height, etc.



7.3.4.2. Working mode

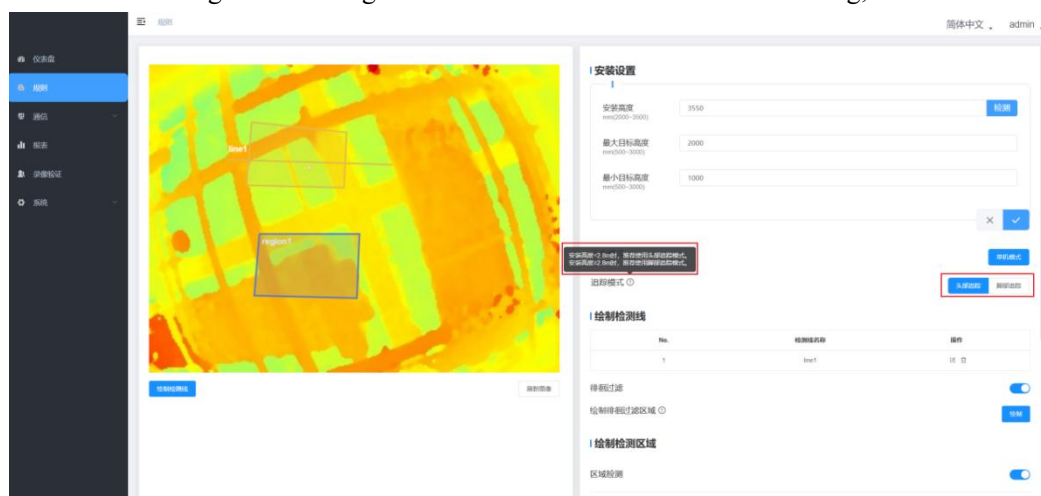
(1) The device working mode is currently stand-alone mode;



7.3.4.3. Set the tracking mode for counting

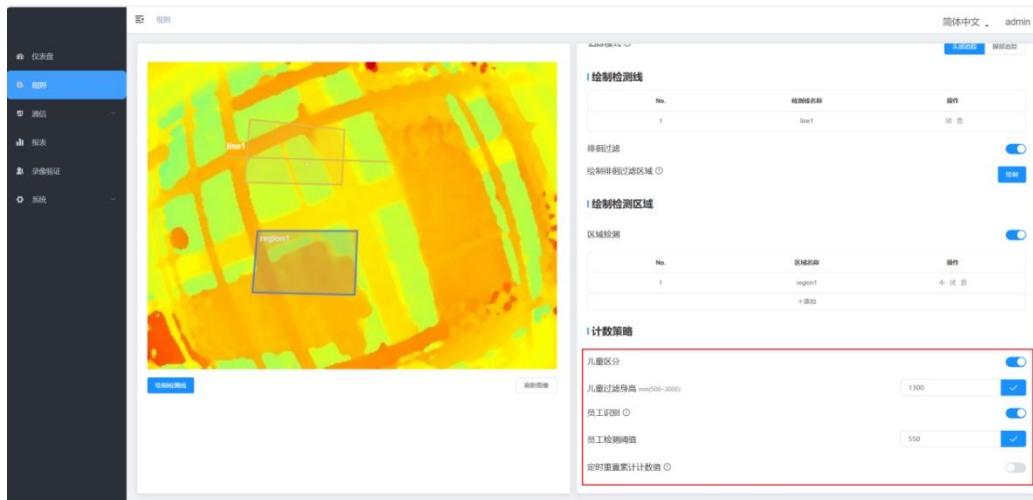
(1) The tracking modes are mainly categorized into “head tracking” and “foot tracking”, as shown below:

- Head tracking: the counting sensor device follows the head for counting;
- Foot tracking: the counting sensor device follows the feet for counting;



7.3.4.4. Configuration of child distinction, employee identification, etc.

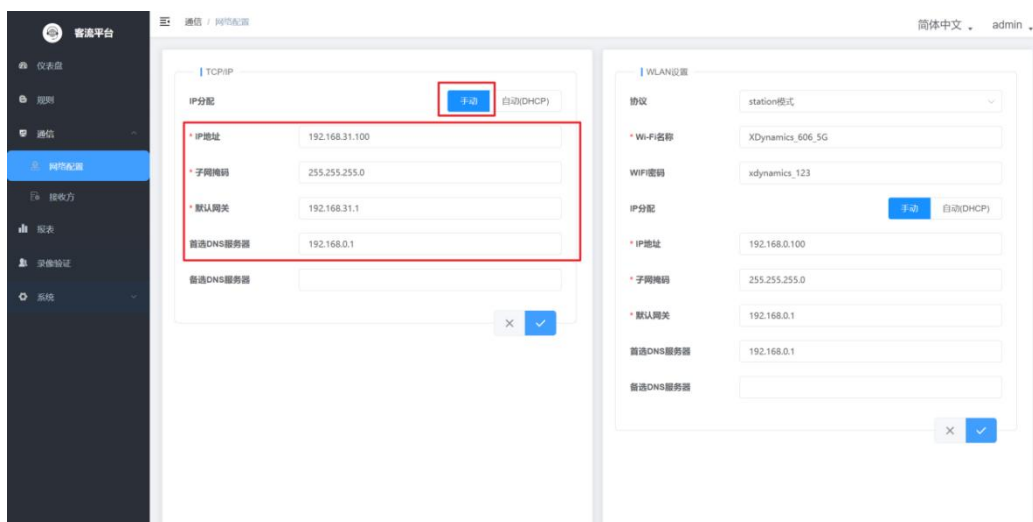
- (1) Configure child differentiation, employee identification (employee detection threshold), crowd counting, heat map, external input to enable over-the-line counting, and timed reset of accumulated count values;



7.3.5. Network Configuration

7.3.5.1. TCP/IP configuration

- (1) When ip assignment is set to manual, enter the ip address, subnet mask, and default gateway to set (the camera's default IP is “192.168.31.100”);



- (2) When ip assignment is set to auto, the ip address, subnet mask, and default gateway of the device are obtained automatically and do not need to be set manually;

The screenshot displays the network configuration interface. On the left is a sidebar with navigation options: 仪表盘 (Dashboard), 规则 (Rules), 通信 (Communication), 网络配置 (Network Configuration), 接收方 (Receiver), 设备 (Device), 设备验证 (Device Verification), and 系统 (System). The main area is titled '网络配置' (Network Configuration) and contains two panels: 'TCP/IP' and 'WLAN设置' (WLAN Settings). In the 'TCP/IP' panel, the 'IP分配' (IP Assignment) section has a red box around the '自动(DHCP)' (Automatic (DHCP)) button. The 'WLAN设置' panel shows the '协议' (Protocol) set to 'station模式' (Station Mode) and the 'IP分配' section also has a red box around the '自动(DHCP)' button. Both panels show fields for IP address, subnet mask, default gateway, and DNS servers.

7.3.5.2. WLAN configuration

- (1) Wired network settings - protocol select station mode, enter wifi name, wifi password, when ip assignment is selected manual, enter ip address, subnet mask, default network administrator for setting; when ip assignment is selected automatic, ip address, subnet mask, default gateway and other data will be obtained from the device automatically. No need to input manually;

This screenshot shows the 'WLAN设置' (WLAN Settings) panel in detail. A red box highlights the 'station模式' (Station Mode) dropdown menu. Another red box highlights the 'Wi-Fi名称' (Wi-Fi Name) and 'WIFI密码' (WIFI Password) fields. A third red box highlights the 'IP分配' (IP Assignment) section, which includes the '自动(DHCP)' button and fields for IP address, subnet mask, default gateway, and DNS servers. The 'TCP/IP' panel on the left is also visible, showing the '手动' (Manual) button for IP assignment.

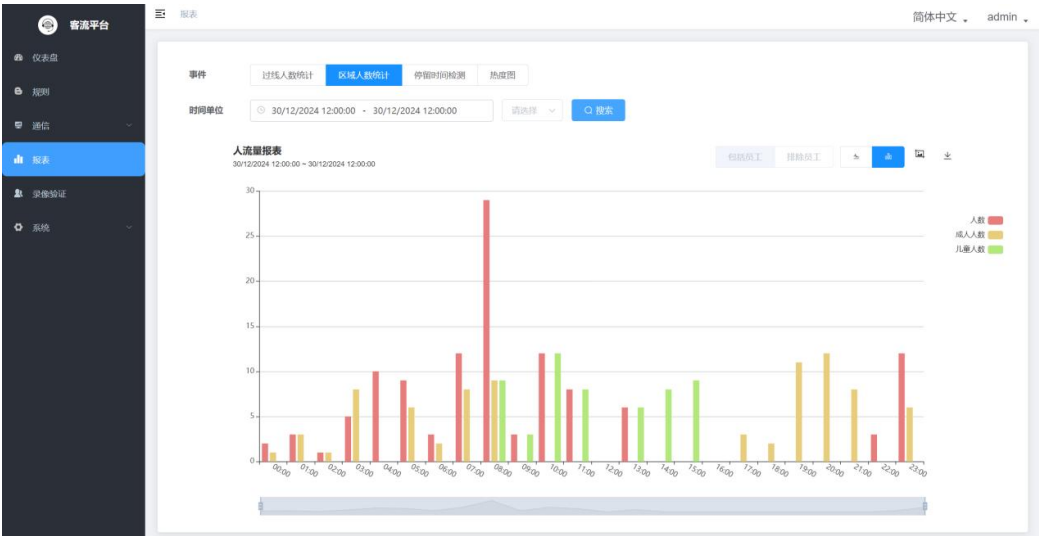
(2) Wireless Network Configuration - Protocol select AP2.4G mode or AP5G mode, enter wifi name, wifi password, device and ip start segment to set;

7.3.6. Querying report data

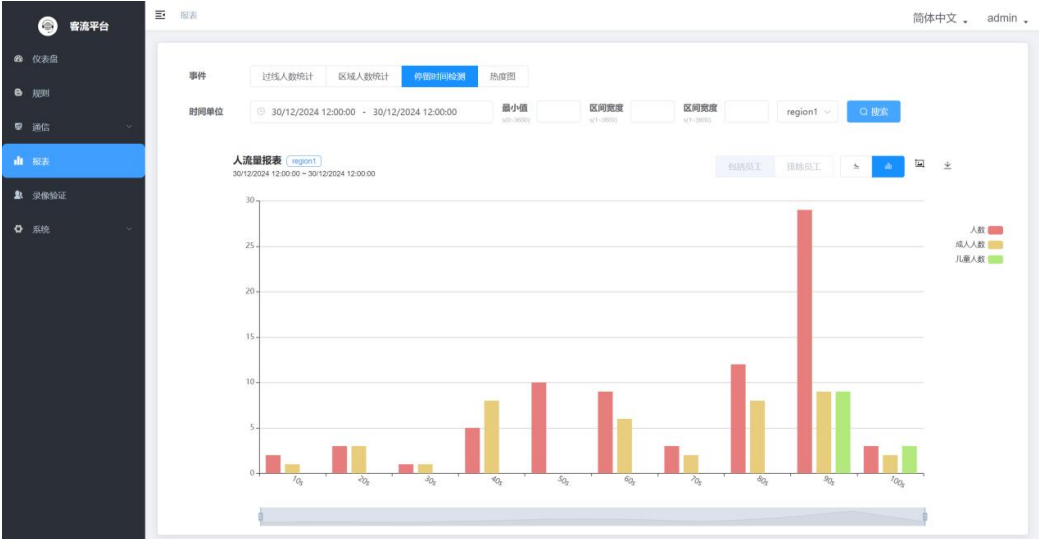
7.3.6.1. Statistical statement on the number of people who crossed the line



7.3.6.2. Regional population statistics report

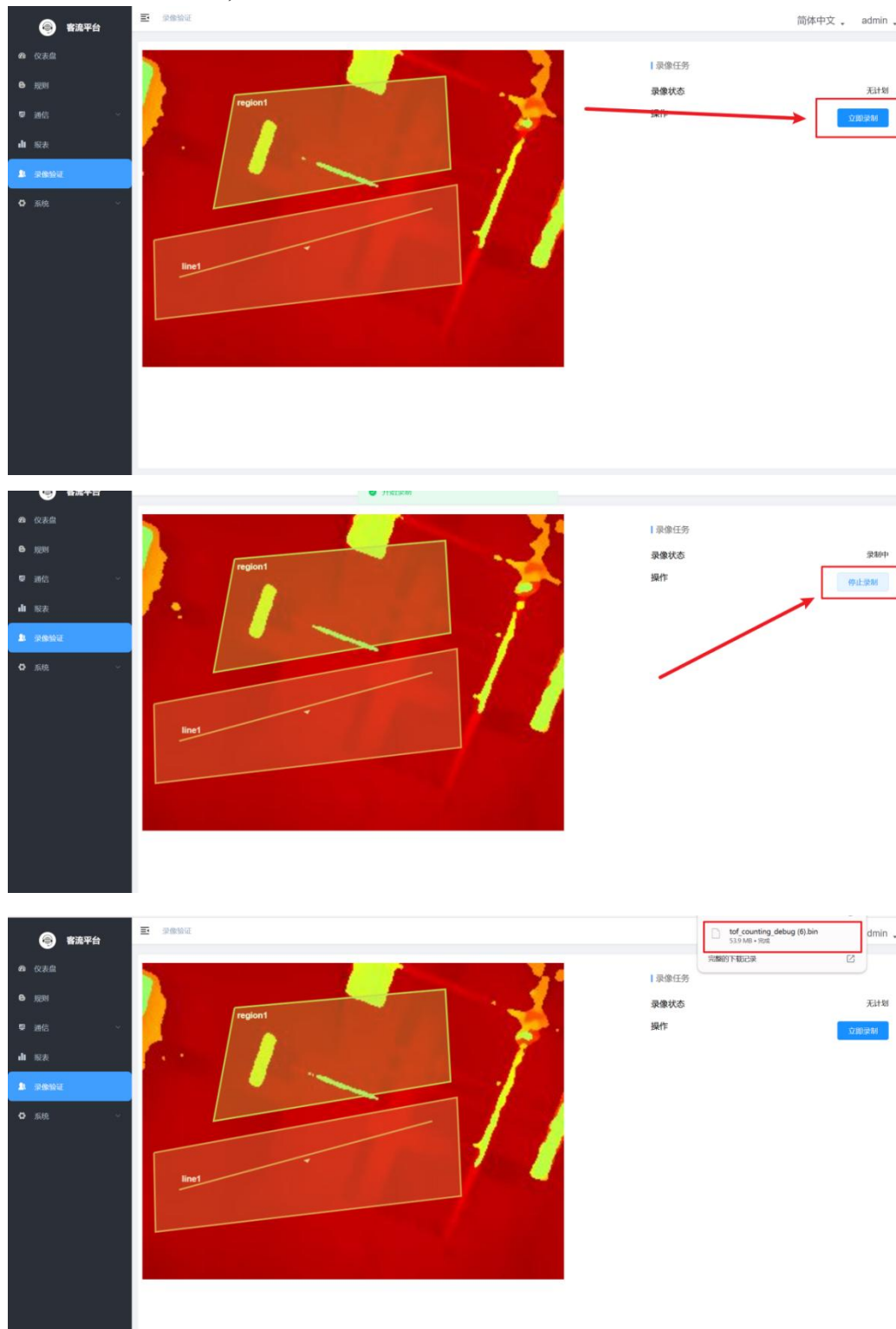


7.3.6.3. Dwell time detection



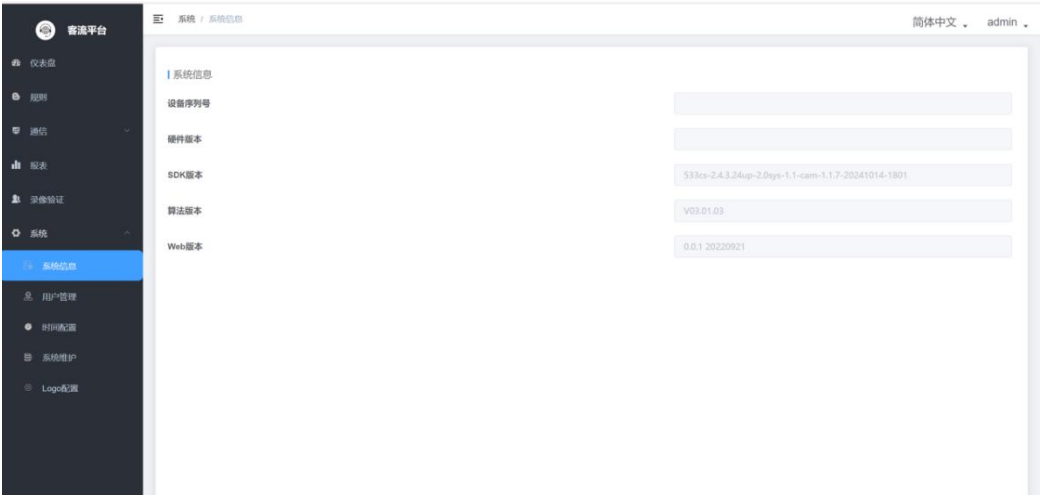
7.3.7. Video verification

- (1) Click the Record Now button to start recording, click the Stop Recording button to stop recording when it's finished, and the video will be automatically downloaded and saved when it's finished;



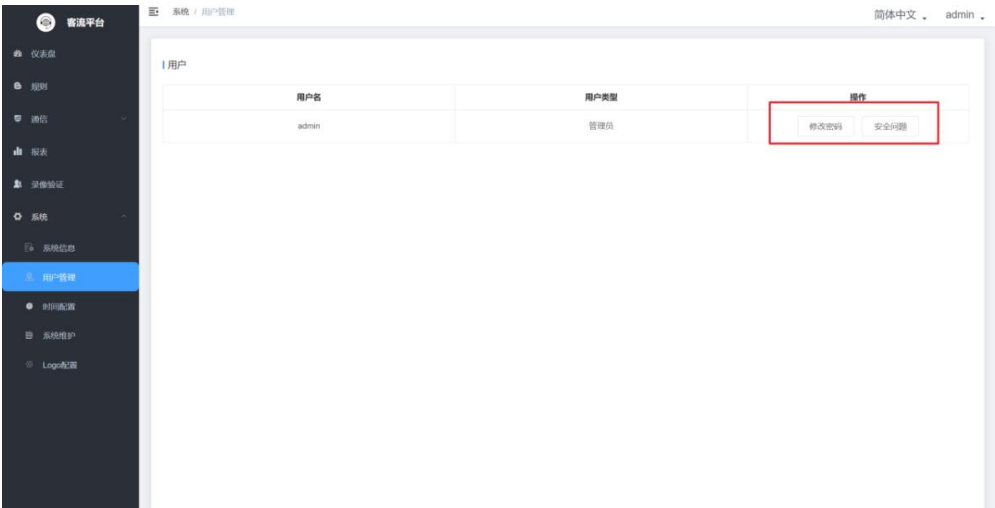
7.3.8. Systems

7.3.8.1. Viewing System Information

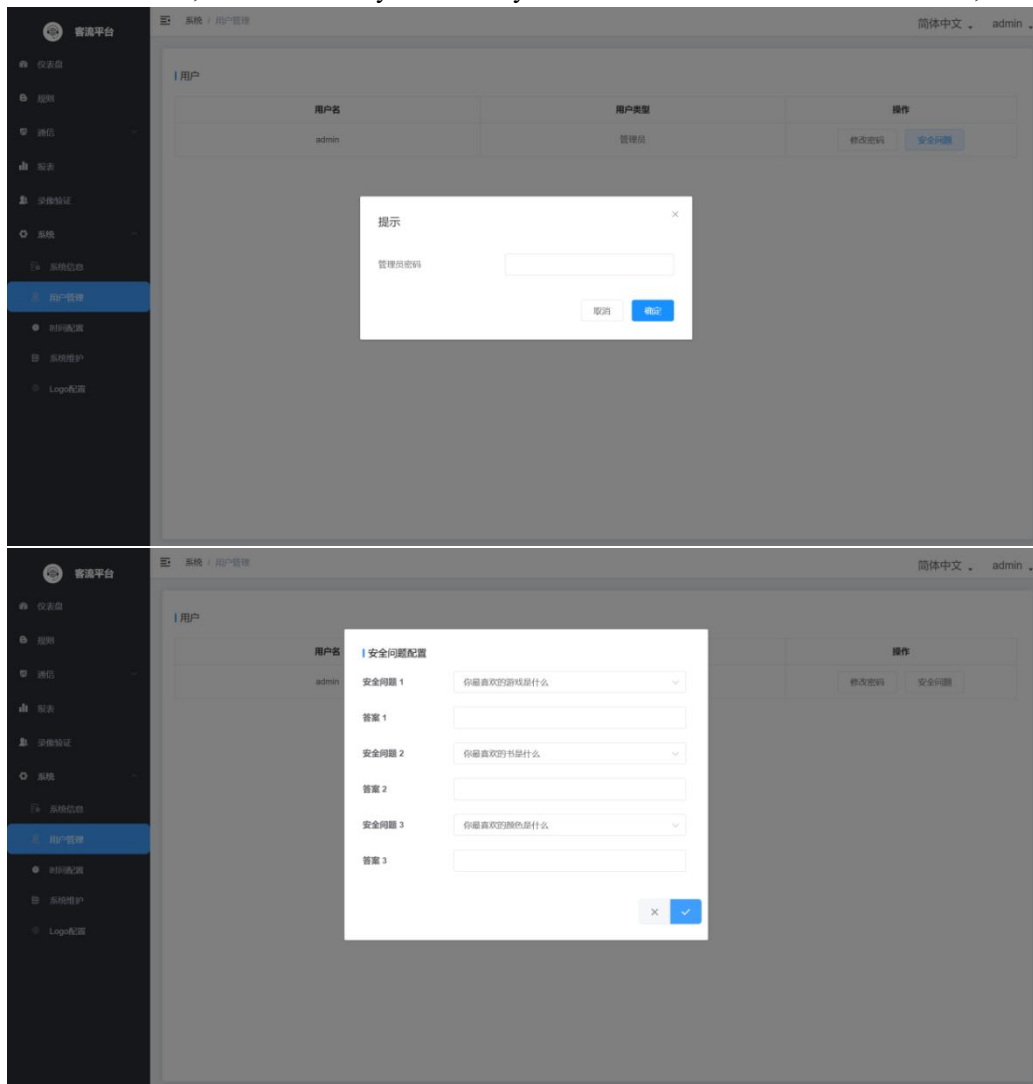


7.3.8.2. User Management

(1) You can change user passwords and modify security issues;

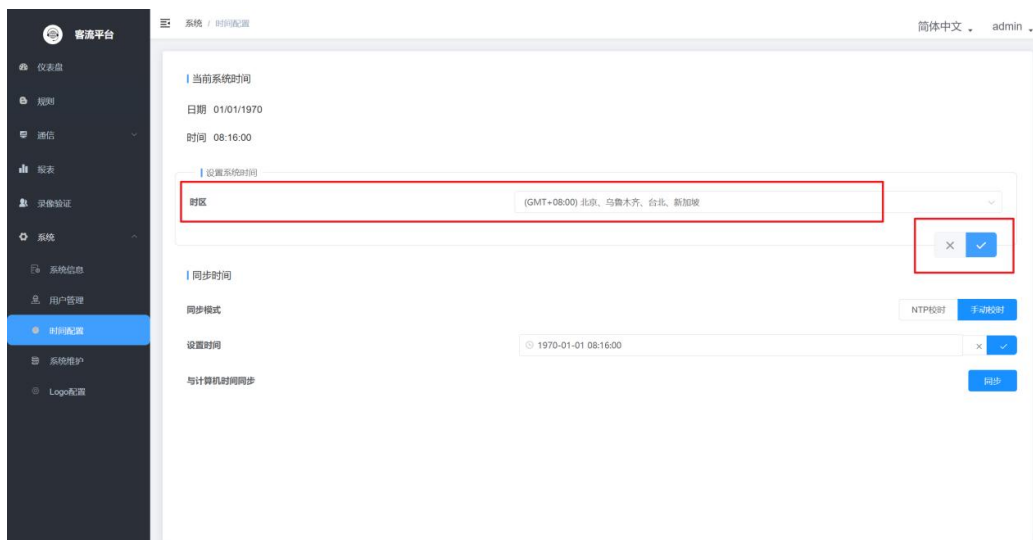


- (2) Before modifying the security issue, you need to enter the administrator password for verification, and then modify the security issue after the verification is successful;

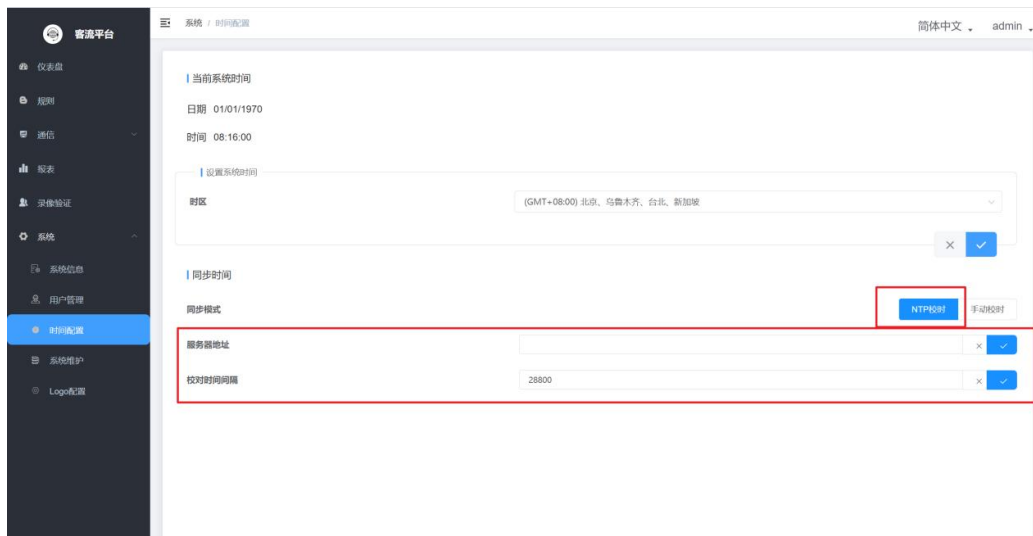


7.3.8.3. Time Configuration

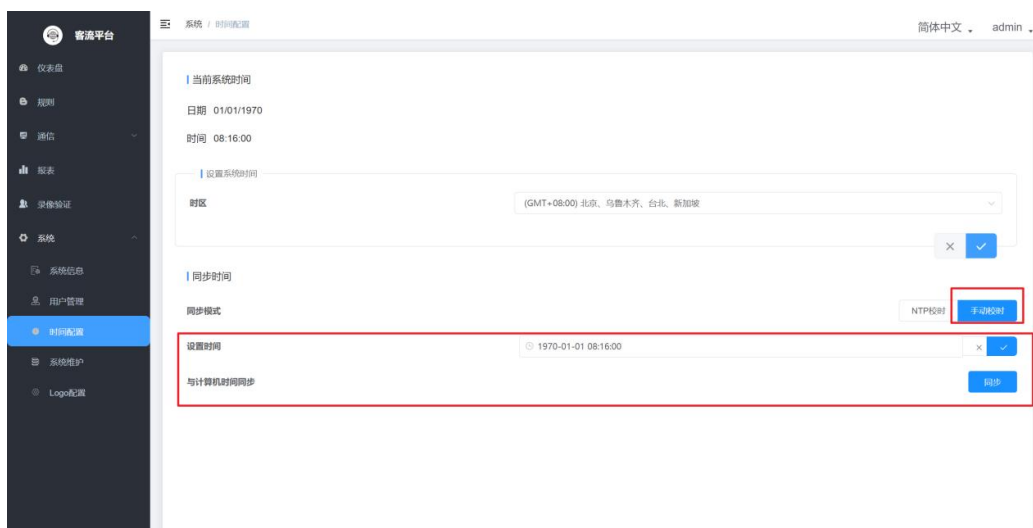
- (1) Modify the time zone configuration;



- (2) Set the synchronization mode to NTP proofreading, set the server address and proofreading interval;

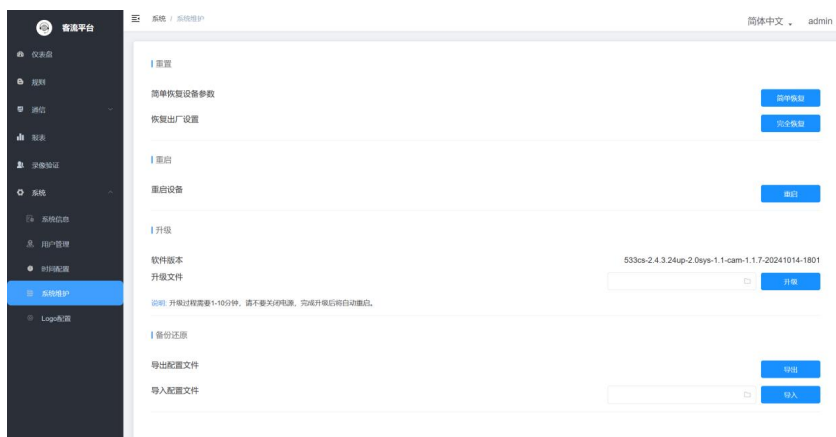


- (3) Set the synchronization mode to manual timekeeping, set the time or select to keep synchronized with the computer time;



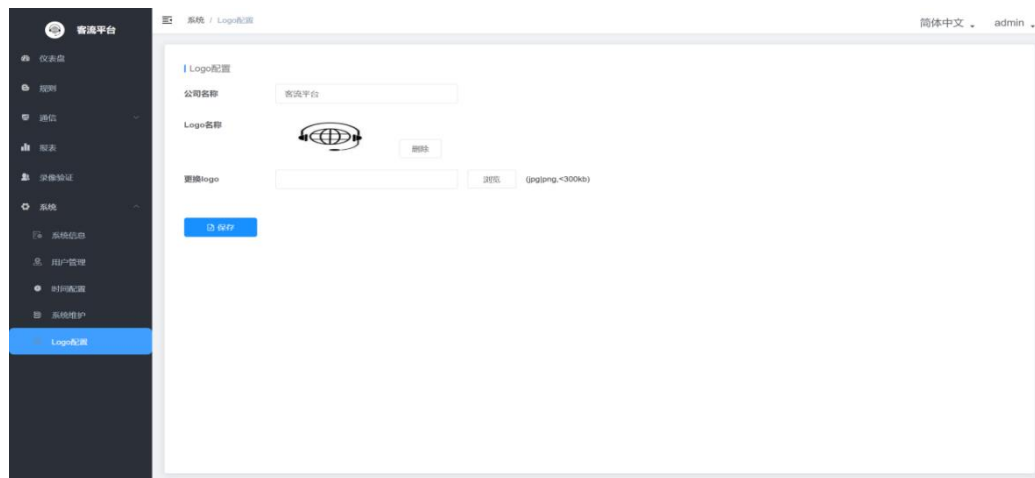
7.3.8.4. System maintenance

- (1) According to your own needs, you can realize functions such as "device parameter reset", "re-equipment", "version upgrade" and "configuration backup".



7.3.8.5. Logo Configuration

- (1) Upload the Logo image and click Save;



8. Maintenance, repair and disposal

Please follow the instructions below:

- Do not open the device as it does not contain any user-serviceable components. The device may only be repaired by the manufacturer
- Dispose of the device in accordance with national environmental regulations.

8.1. Cleaning

Before cleaning the camera, follow the instructions below:

- Use a soft, dry, dust-free cloth to avoid static electricity.
- If must remove stains, use a soft, dust-free cloth dipped in a small amount of pure water or alcohol to wipe, and then wipe the product dry;
- Make sure there is no residual material on the product housing;

If the instructions are not followed, scratches on the lens may cause measurement errors.

8.2. Update firmware

The camera's firmware can be updated through the web page. However, the firmware update will cause the parameters saved in the camera to be lost, so it is recommended to back up the parameters before updating the firmware.