

# Operating Instructions



1080P Intelligent Pedestrian Detection Camera

Please read this manual thoroughly before operating the device,  
and keep it for future reference.

V1.3, 220928



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# 1. Precautions

## 1.1 Storage and Keeping

- 1) Storage temperature: -30~+80°C, operating temperature: -20~+70°C
- 2) Avoid dropping or striking this device
- 3) Never puncture, scratch or use abrasive cleaning materials on this device
- 4) Do not place cables where they may be pinched or stepped on

## 1.2 Operating Precautions

- 1) Working voltage: 10-32V. It stops working below 7V and power supply of improper voltage may cause the device damaged permanently
- 2) Make sure all cables are connected properly. Observe polarity. Improper cable connections may damage the device. Remove the power cable connections when you don't intend to use the unit
- 3) This product is a safe driving auxiliary equipment, not a substitution for driver's any operating actions in the process of vehicle driving. Also, it cannot guarantee a 100% recognition rate
- 4) No obstacles are allowed within the end of lens, which has an impact on the product use
- 5) After the installed device is manually adjusted again, it needs to be recalibrated to show the normal detection effect



### Warning!

1. High voltage is present within the device. The opening of the case should be by professionals.
2. Do not rely too much on this device while driving



### Special Notice

Never try to repair this device by yourself. In case of any problems, please turn off the device at once and notify our company or authorized dealer. The device is a complex device. Any disassembly or modification may lead to damage and void the warrantee.

## 1.3 Maintenance

- 1) Remove all the cable connections from the device before cleaning the device.
- 2) Use a mild household detergent and clean the unit with a slightly damp, soft cloth.
- 3) Never use strong solvents such as thinner, as they might damage the finish of the device.

	Caution	
	Risk of electric shock Do not open	
<p>Caution: to reduce the risk of electric shock, Do not remove cover (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.</p>		



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



This symbol is intended to alert the user not to dispose of electrical and electronic equipment.

### **CAUTION**

You are cautioned that any changes or modifications not expressly approved in this manual could void your warranty and necessitate expensive repairs.

## 2. Product Features



Vertical side-view camera



Small Angle horizontal camera



Large Angle horizontal camera

### 2.1 Pedestrian Detection Module

- 1) Pedestrians can be detected in the Detection Zone (region of interest), and a "ding" alarm will be issued.
- 2) The closer the pedestrian is to the vehicle, the more rapid the alarm sounds.

### 2.2 Artificial Intelligence Algorithm Blessing

- 1) The pedestrian detection and identification camera adopts deep learning technology, which can realize intelligent and high-precision pedestrian detection.
- 2) Deep Learning (DL) + Machine Learning (ML) + Artificial Intelligence (AI).

### 2.3 External Wi-Fi Communication and LAN Communication

- 1) Users can connect mobile phone with the device through an external Wi-Fi module to calibrate and set the device.
- 2) Users can also connect the device with an external USB—LAN cable to check RTSP.

### 3. Technical Specifications

According to the different parameters of the camera is divided into vertical side- camera, horizontal camera.

Vertical side-view camera is used for installation on the side of the car.

Horizontal cameras are mounted in the front and rear of the car and have a choice of angles.

Item	Parameter	Vertical side-view camera	Small Angle horizontal camera	Large Angle horizontal camera
Difference	Focal Length/ Viewing Angle(H)	6mm/52°	6mm/52°	2.3mm/140°
	Detection Distance(m)	0.5~20	0.5~20	0.5~12
	Dimension(mm)	97.5×67.3×66.5	97.5×75.3×72	97.5×75.3×72
	Weight(g)	355	470	470
Same	Resolution / Frame	HD 1920 x1080 / 25 fps or 1920 x1080/30 fps		
	Video Output	AHD(1.0Vp-p,75Ohm)		
	Audio Output	Warning acoustical signal Output		
	Communication Interface	USB 2.0(For Software upgrading)		
	Input Power	DC 10~32V		
	Power Dissipation (12V IN)	320mA		
	Wire Length	0.5m		
	Operation Temperature	-20~70°C		
	Storage Temperature	-30~80°C		
	Waterproof Rating	IP69K		
Shell Colour	Black			

## 4. Components and Accessories

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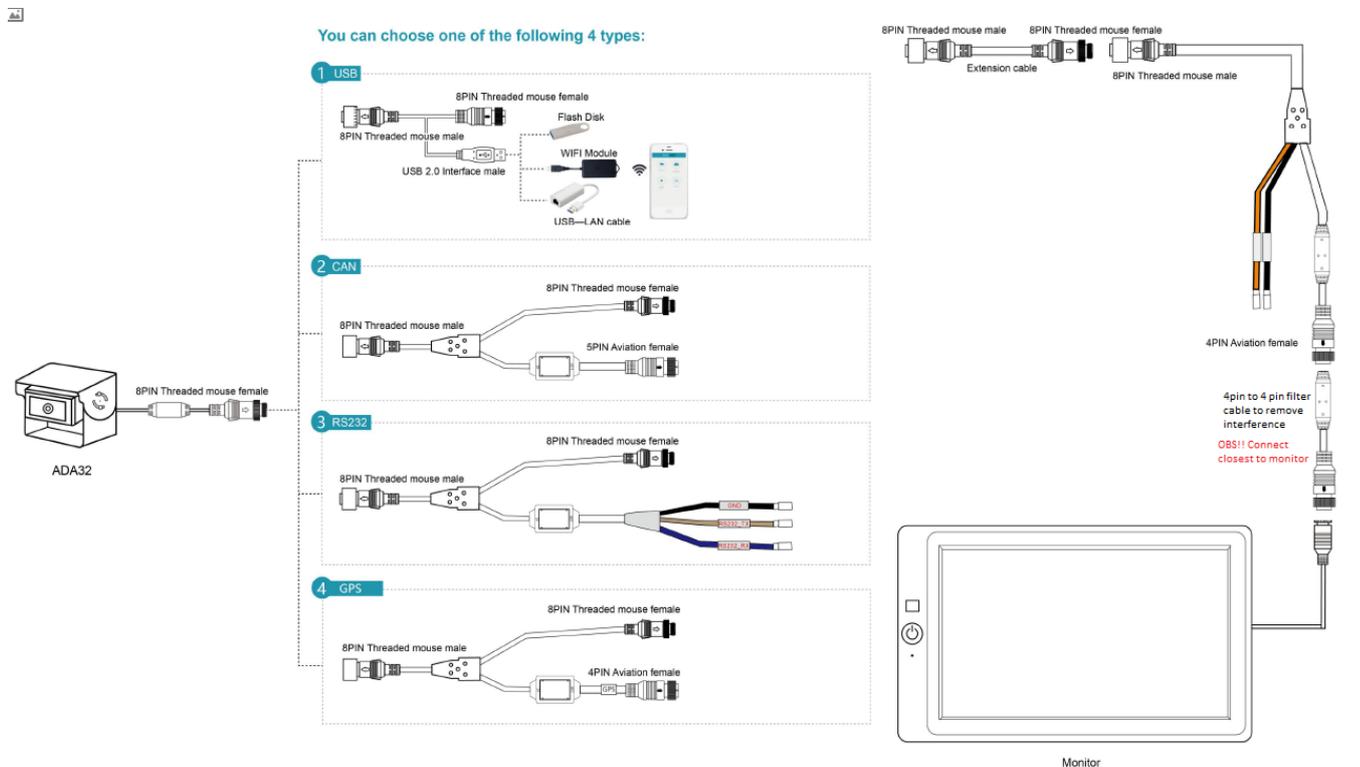
Components or ccessories	Quantity (piece)	Description
	1	Pedestrian Detection Camera
	1(Optional)	Extension cable (8 Pin threaded mouse male connector to 8 Pin threaded mouse female connector)
	1	Video output cable (with trigger signal)
	1(Optional)	External Wi-Fi module (reusable) Note: Wi-Fi module comes with USB converter cable 398-22#
	1	Hexagon wrench (for camera Angle adjustment)
	1	Filtercable 4 pin to 4 pin
	1(Optional)	Monitor (Supports AHD input)

#### Special Notice

The camera diagram is shown with a Vertical side-view camera as an example. Accessory supply may be different for different application. Multiple devices can share one Wi-Fi module.

## 5. System Connection

Connection of pedestrian detection system is shown as figure below. Monitor can power the camera and display its real-time videos.



- 1) USB cable: The USB interface can connect with Wi-Fi module (for calibration and setting), USB disk (for device upgrading) or USB-LAN converter (to get access to webpage setting and RTSP stream by network cable).
- 2) CAN cable: Support CAN communication protocol.
- 3) RS232 Cable: Support RS232 communication protocol and can connect with external buzzer.
- 4) GPS cable: Support external GPS module.

## 6. Installation

Move the camera to the position of the vehicle, and then install the camera after the display can show the field of view required by the driver (the supporting base of the camera has strong adhesion to magnetic materials, so it can be installed successfully by fitting the base to the vehicle. The camera installation height is recommended to be within the range of 1.0-1.6m).

This process suggests having a manager adjust the position of the device in the car, with the driver in the driver's seat looking at the monitor to determine whether the device's visual range has covered the car's blind area.

### 1) Vertical side-view camera

As shown below, the side-view camera can be installed on the side of the car. Both sides can be installed. The horizontal viewing Angle of the camera is  $52^\circ$  and the detection distance is up to 20 meters.

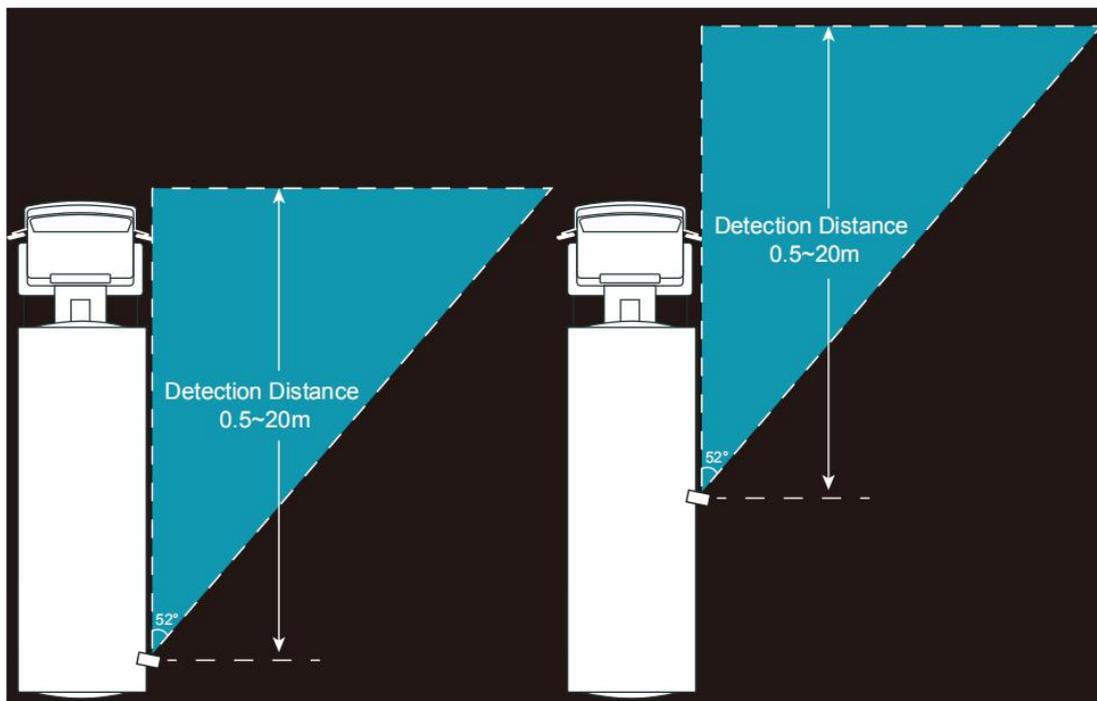


Figure 5

### 2) Horizontal camera

Horizontal cameras are mounted in the front and rear of the car and have a choice of angles.

The horizontal viewing Angle of the Small Angle horizontal camera is  $52^\circ$ , and the detection distance can be up to 20 meters, as shown in Figure 6.

The horizontal viewing Angle of the Large Angle horizontal camera is  $140^\circ$ , and the detection distance is up to 12 meters, as shown in Figure 7.

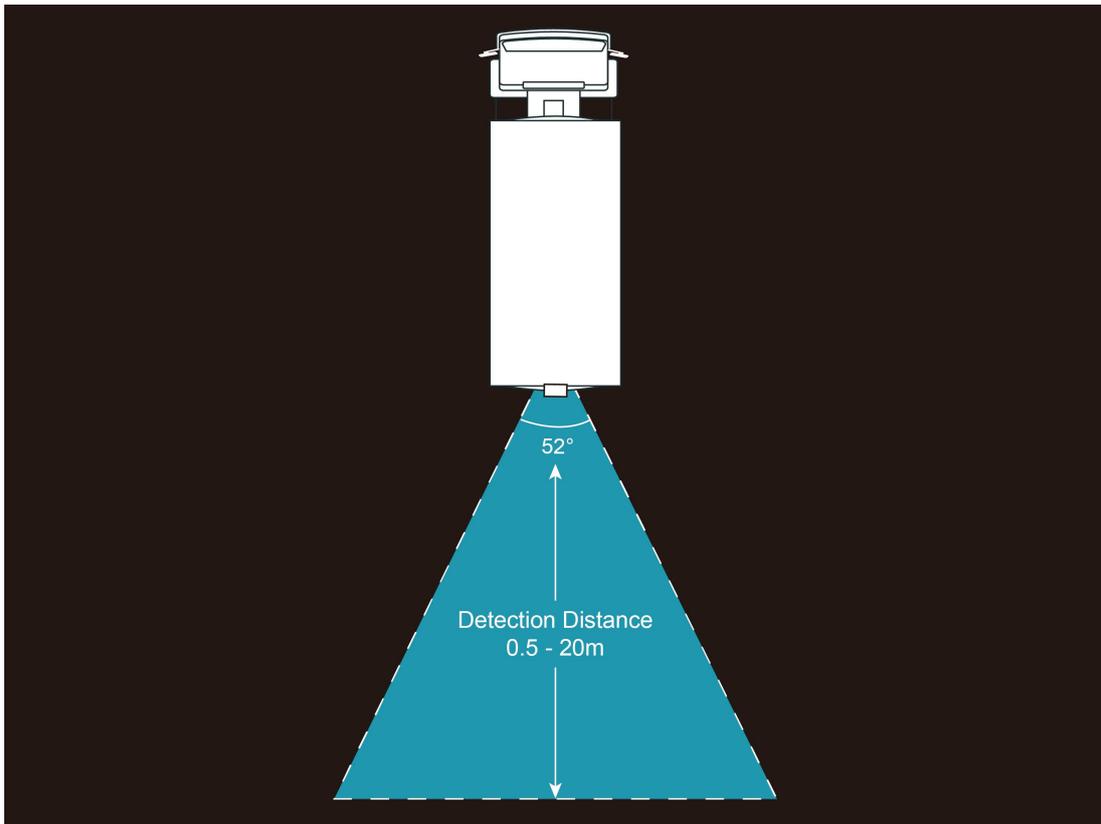


Figure 6

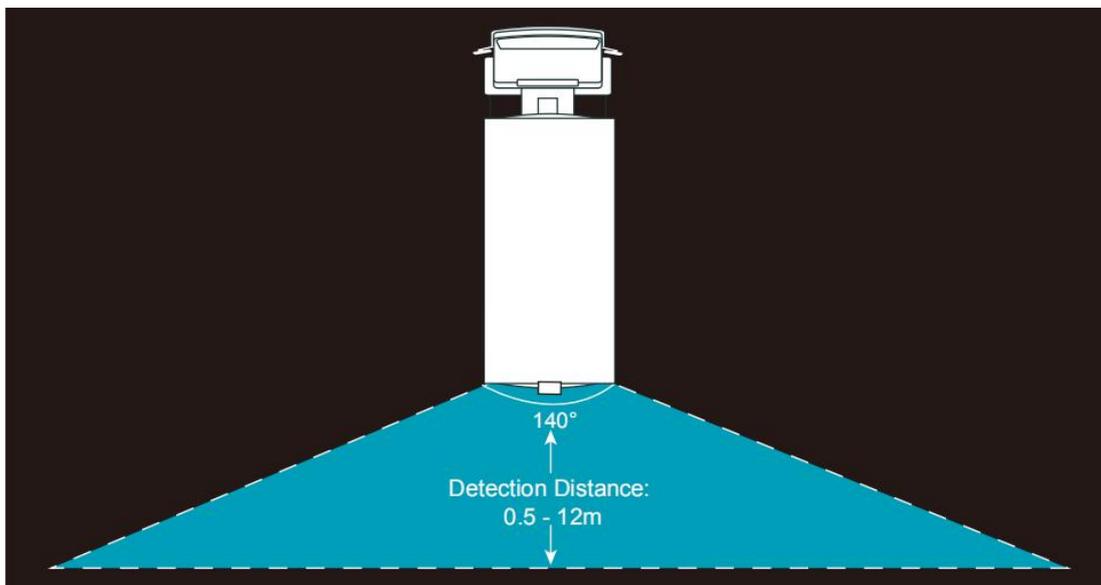


Figure 7

# 7. Calibration

## 7.1 Boot Screen Description

### 1) Vertical side-view camera

After starting up, the display screen of the device appears as shown in Figure 8. The red, yellow and green areas in the picture constitute "Detection Zone", which detects and alarms pedestrians.



Figure 8

### 2) Horizontal camera

The boot screen of the camera with small angle horizontal and large angle horizontal is the same. Different from the screen of the vertical side-view camera, the "Detection Zone" has changed from vertical division to horizontal division, as shown in Figure 9.



Figure 9

Note: 1. The Wi-Fi name and version number displayed in blue font after booting are in the lower left area of the screen. After about 10 seconds, the version number of the blue font disappears, while the Wi-Fi name of the blue font stays on when it turns green. If no Wi-Fi module is connected, the green Wi-Fi SSID will also disappear.

2. Detection Zone, Target Frame and Confidence Display can be turned on or off through web Settings. Specific reference 9.3.

## 7.2 Building the Wi-Fi Connection

- 1) Find the Wi-Fi SSID corresponding to the device through the mobile phone (confirm that the Wi-Fi module has been connected, and see the green Wi-Fi SSID in the lower left corner of the monitor), then connect, and the initial password of Wi-Fi is "88888888". As shown in Figure 10.

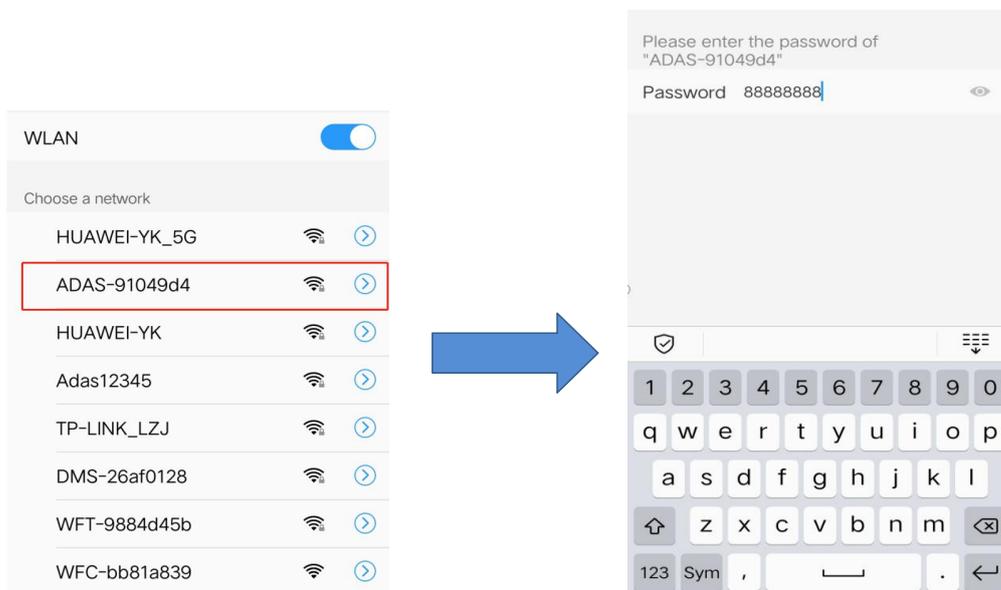


Figure 10

- 2) If it is the first time to connect with the Wi-Fi hot spot, it may prompt the message as followings. If so, choose the "connect" button to remain the valid connection.

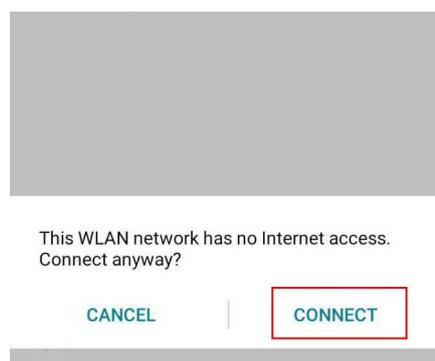


Figure 11

- 3) Enter the URL "http://192.168.60.1" in the web browser of the mobile phone,(or scan the QR code below).The browser will enter the main menu as follows, and you could enter into preview screen after clicking "login", displaying the current video synchronously. And the effective communication distance of Wi-Fi is about 7m, please keep in this range.



Figure 12

After finishing Wi-Fi connection, we can calibrate the pedestrian detection alarm system or operate some other settings about the device according to web page.

## 7.3 Operations of Detection Zone Calibrating

### 7.3.1 Calibration of Normal Mode

Click the  Calibration button on the web page, and choose "normal mode". The area on the phone screen corresponds to the "Detection Zone" on the monitor. "pdRoiStyle" has four types of ROI to choose, which are horizontal trapezoid, vertical (red frame on the left), vertical (red frame on the right), and semicircle.

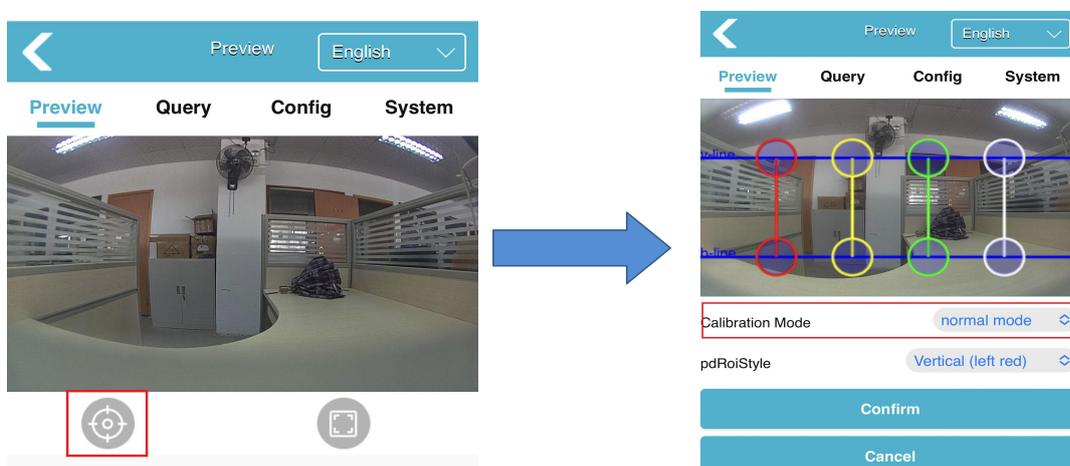


Figure 13

Choose the corresponding ROI type and drag the corresponding line segment or point to manually modify the ROI area. Click "Confirm" button for calibration. The calibration will take effect immediately and the "Detection Zone" displayed on the monitor will be updated immediately.

1) Vertical ROI

"pdRoiStyle" is "Vertical(left red)" or "Vertical(right red)".

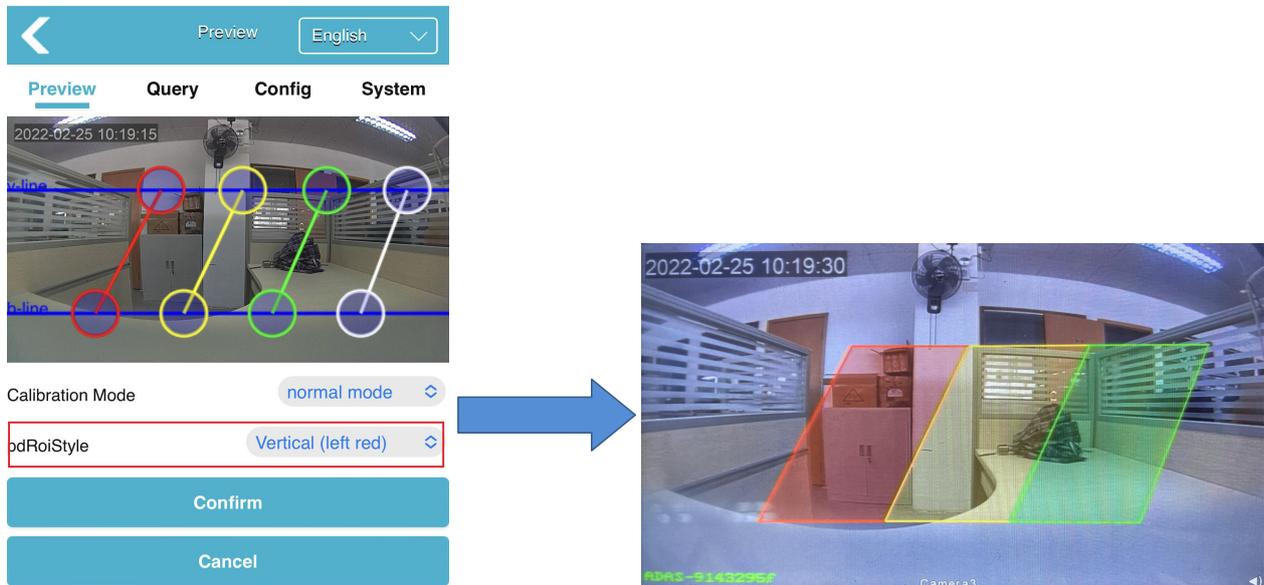


Figure 14

2) Horizontal trapezoid ROI

"pdRoiStyle" is "Horizontal trapezoid".

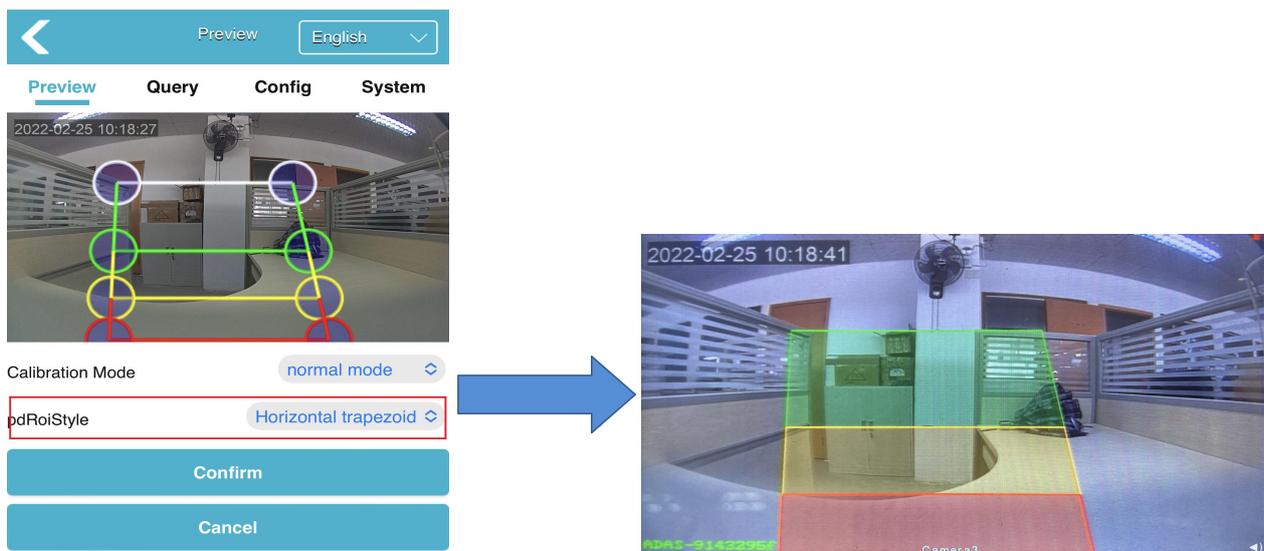


Figure 15

### 3) Semicircle ROI

"pdRoiStyle" is "Semicircle".

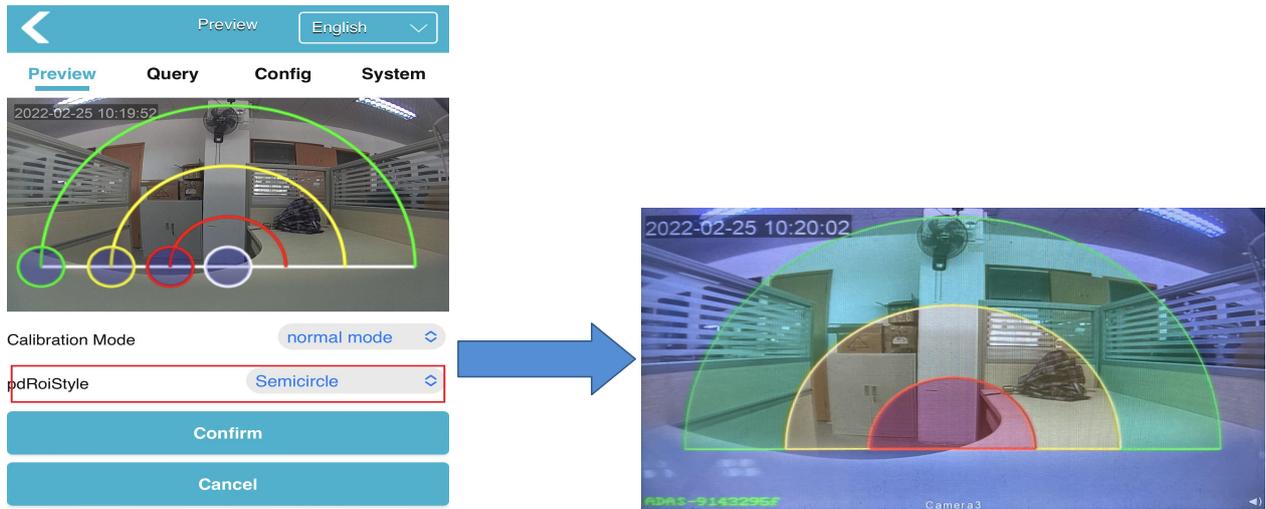


Figure 16

## 7.3.2 Calibration of Ranging Model

### 1) Two-dimensional code placement

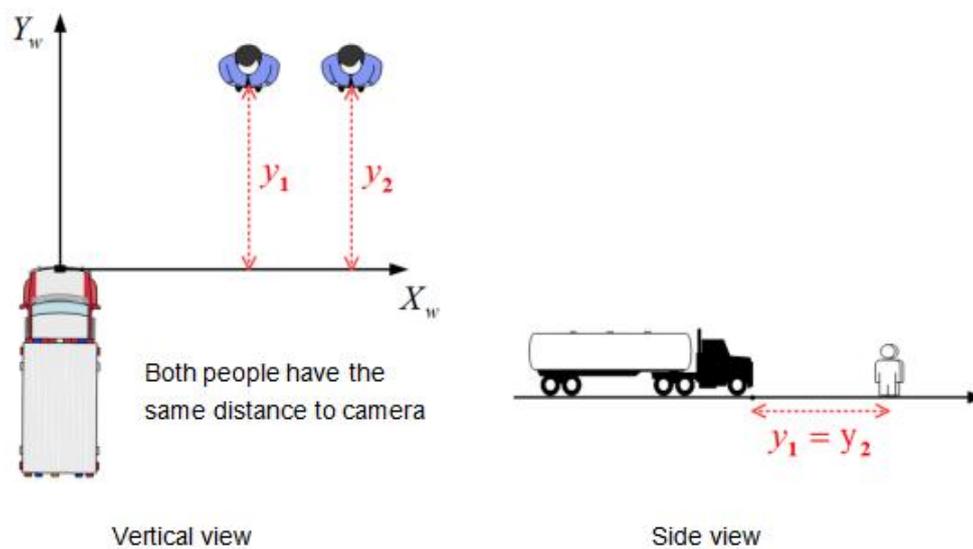
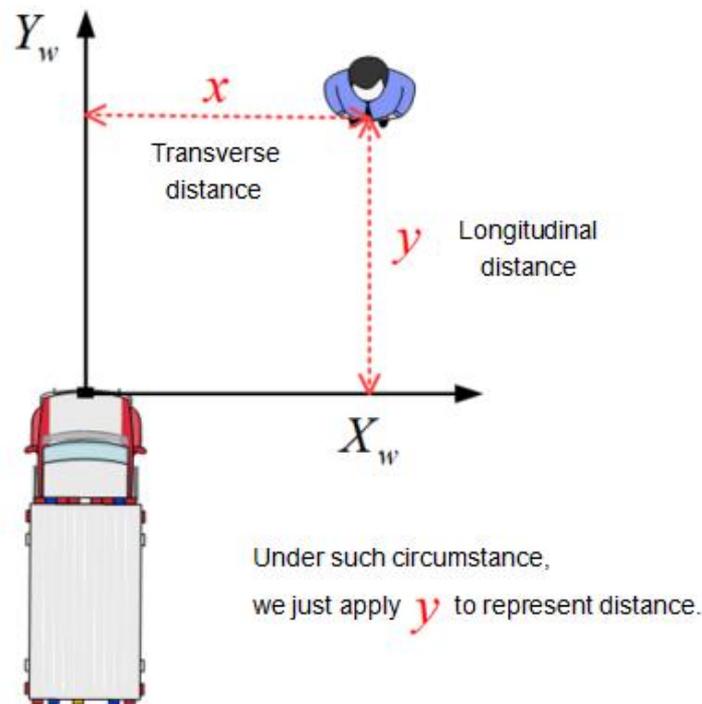
Put one in the left bottom and the other one in the right bottom. It works better as shown in Figure 17



Figure 17

## 2) Distance measurement

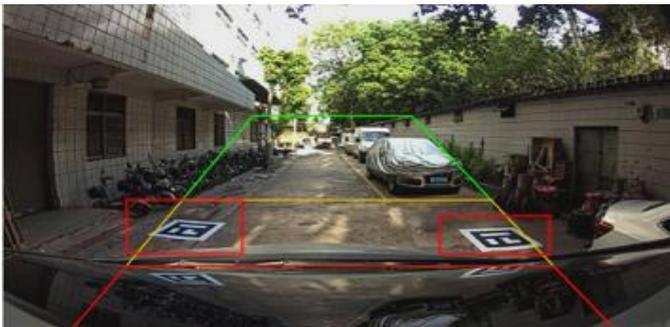
We set up a Cartesian coordinate system on the ground, which represents the position of the person by coordinates, and  $y$  represents the ranging results.



## 3) Operating procedures

- Click the  Calibration button on the web page, and choose "normal mode". The ROI type only has horizontal trapezoid.
- If the camera has not calibrated the two-dimensional code before, a prompt box will pop up to remind it to calibrate the code.

- c. When calibrating the two-dimensional code, two two-dimensional code calibration plates should be placed to ensure that the camera can fully see them.
- d. Drag two rectangular frames on the WEBUI with mouse manually to completely cover the two QR codes and click "Submit Calibration Board". After QR code is calibrated successfully, the ROI area will be reconfigured to the default value and the distance will be automatically filled to the red, yellow and green areas below.
- e. Modify the values of the red, yellow and green areas and press Enter/Confirm to change the corresponding ROI areas. (Red, yellow and green areas instruction: In the vertical direction, green area shows the distance between the front green edge and the camera (mm), yellow area shows the distance between the front yellow edge and the camera (mm), and red area shows the distance between the front red edge and the camera (mm).The horizontal region distance represents the distance (mm) from the left and right edges of each color ROI region to the camera.
- f. Click "Confirm" to save and exit the calibration setting.
- g. In measure mode, the pedestrian detection frame will overlay distance between camera position and X/Y wheelbase, and CAN data transmission will be converted into XY wheelbase distance (M) of the detected pedestrian.



Rectangle frame dragging diagram  
Figure 18



Red-yellow-green areas diagram  
Figure 19

## 8. Pedestrian Detection Functions

After the device power up or reboot, real-time video will appear on the display automatically. Then, the device will enter and keep in pedestrian detection mode. To make sure the normal operation of the system, please install and calibrate the pedestrian detection alarm system carefully according to the guide of Charter 6 and Charter 7.

Function description: When pedestrians appear in Detection Zone, the display will frame them with the

corresponding color, and a "ding" alarm with different urgency will be issued. The alarm continues until pedestrians leave the Detection Zone area

Note: The Vertical side-view camera and horizontal camera have the same function. The following is the difference in the graphical way.

1) The red box alarm

When the pedestrian is detected and the red box is generated, it means that the pedestrian enters the red Detection Zone area. The output alarm sound is "ding ding ding", and the alarm sound frequency is relatively short.

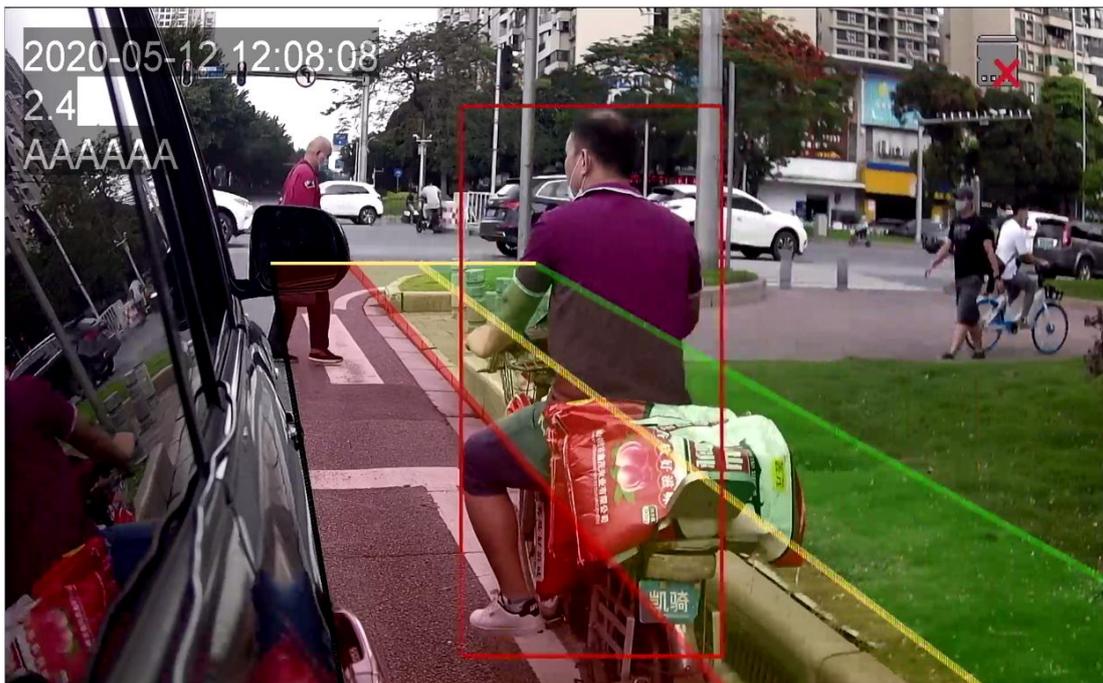


Figure 20



Figure 21  
16

2) The yellow box alarm

When the pedestrian is detected and the yellow box is generated, the output alarm sound is "ding ding".

The alarm sound frequency is moderate.

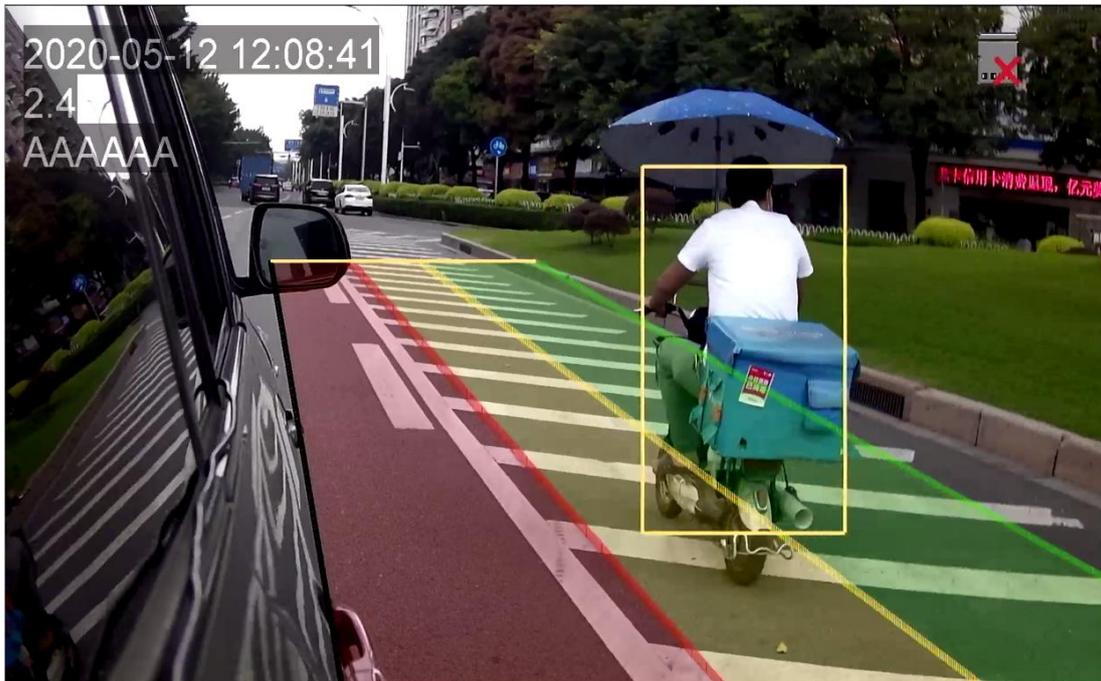


Figure 22



Figure 23

### 3) The green box alarm

When the pedestrian is detected and the green box is generated, the output alarm sound is "ding", and the alarm sound frequency is flat.



Figure 24



Figure 25

Note: when there are multiple boxes for pedestrian detection, the priority of alarm sound is: red box (highest) yellow box (second) green box (lowest). For example, when there are three boxes of red, yellow and green, the default alarm sound is the alarm sound of red box.

## 9. Functions of the Web Page & System Upgrade

### 9.1 Calibration

For calibration, please refer to "Charter 7".

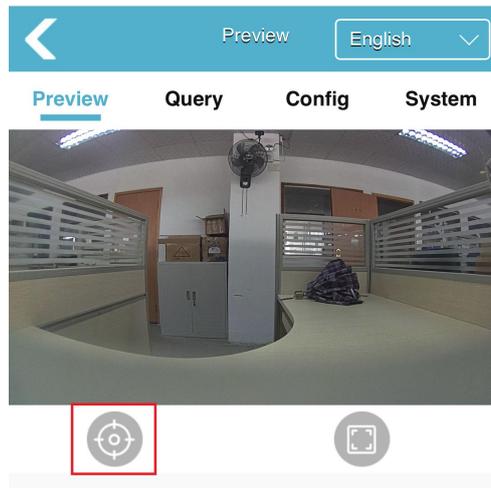


Figure 26

### 9.2 Query

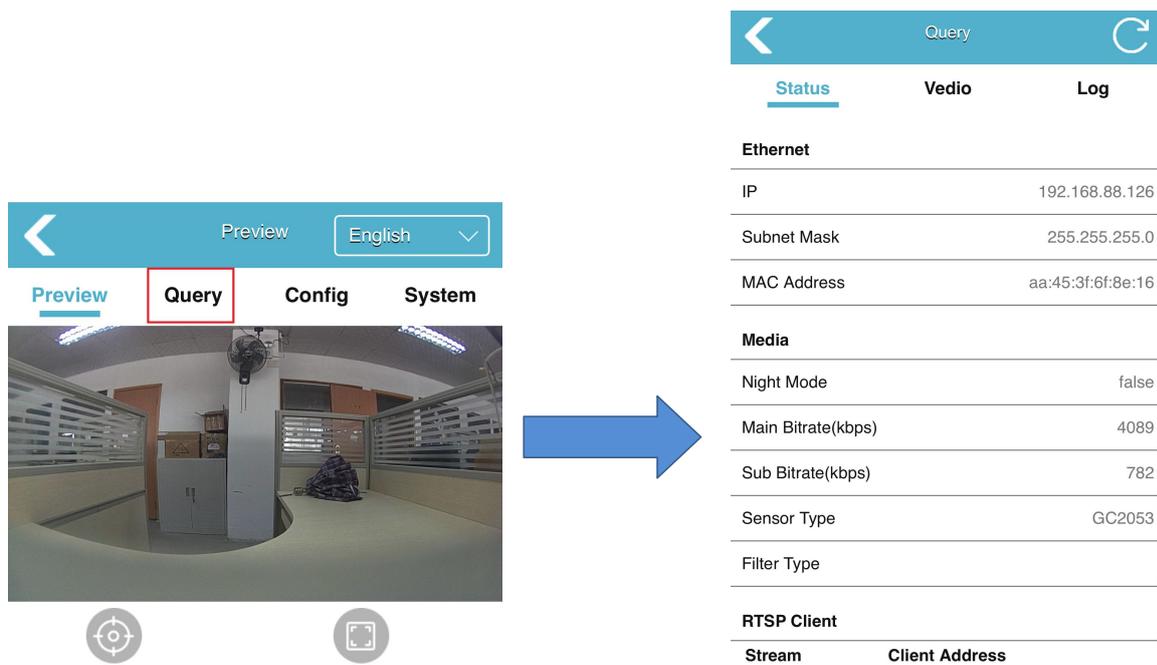


Figure 27

Click "Query" and enter the query page.

- 1) "Status" displays basic device information and the SD card status. If the SD Card is in the mounted state, click "Format SD Card" to format it.
- 2) When SD card is mounted, you can view currently recorded video lists. Click the video, and you can watch it directly; Click the download button on the right to download them to the local; Click the refresh button on the top right corner to refresh the current video list.
- 3) "Log" displays device logs. Click "Search" to display all logs of this type.

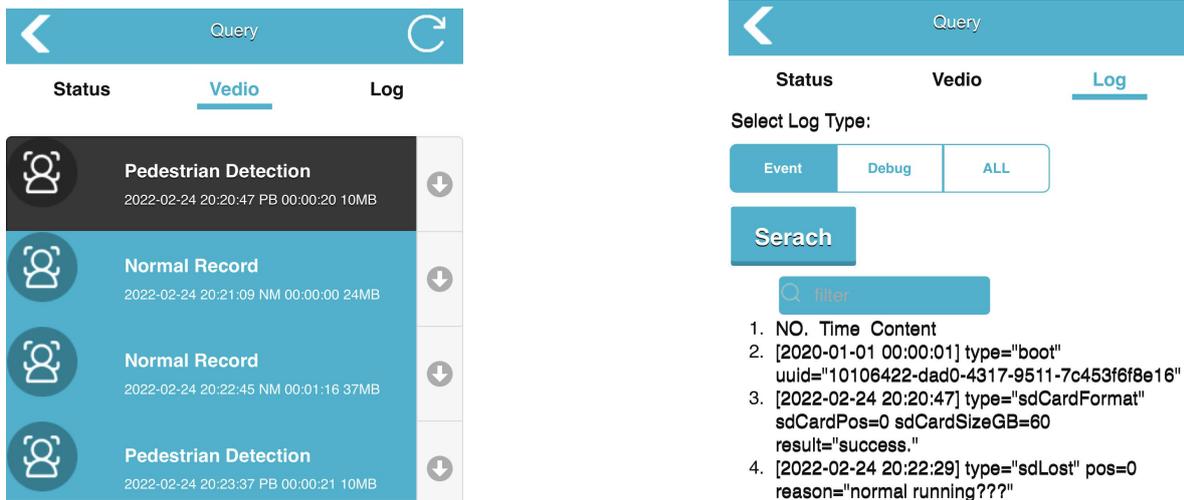


Figure 28

### 9.3 System Setting

Click "Config" button to enter the parameter setup interface, as shown in Figure 29.

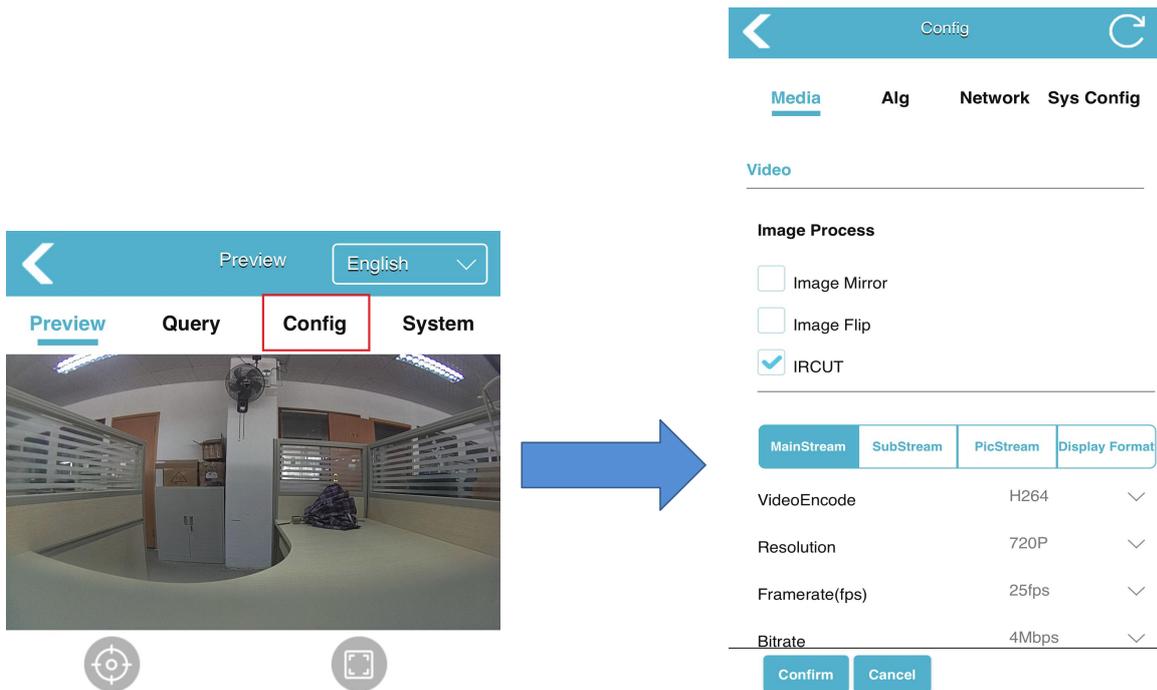


Figure 29

## 1) Media Config

- Image Mirror: Switches control whether image mirror is enabled.
- Image Flip: Switches control whether image flip is enabled.
- Set the parameters of mainstream/sub-stream/pic-stream/display format.
- OSD switch controls whether pic-stream is enabled or time/passage is displayed.
- Time Format: Set the display style of time.

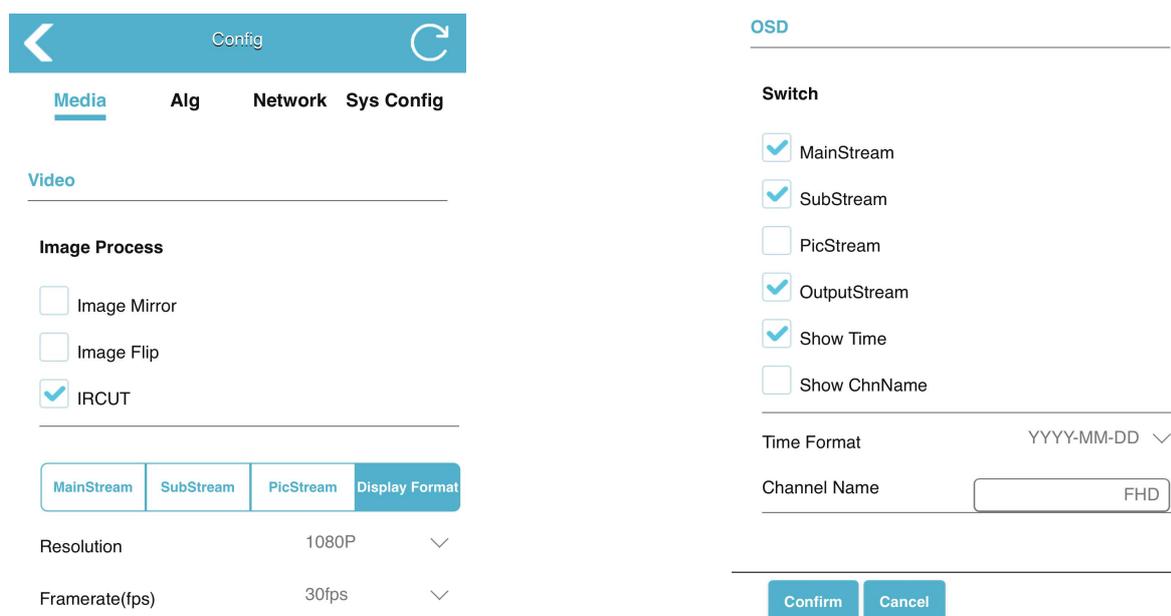


Figure 30

## 2) Algorithm Config

- PD Sensitivity: the higher you set, the more false detection you will have; the lower you set, the more missing detection you will have.
- OSD Font size: Turn off the confidence and adjust the font size of the confidence.
- Audio: Switch alarm sound type/Set alarm sound size/Set audible and visual alarm volume
- Zone Interval: Set the lowest pedestrian interval between each ROI area alarm, alarm does not bell during the interval.
- Alarm Out: Set the duration of high level output of the trigger line after pedestrians are detected in the detection area. The default value is 2s. That is, after pedestrian is detected, the trigger line outputs a high level. When no pedestrian is detected, the high level lasts for 2s and then drops to a low level.
- PdRoi Enable Red/Yellow/Green: Switches control whether the detection areas corresponding to Red/Yellow/Green are displayed. When you click to turn off, the detection area will not be

displayed and pedestrian detection will not be performed. It takes effect immediately once setting.

- PdRoiGui Style: Set the detection area color fill display/line display/hide. It takes effect immediately once setting.

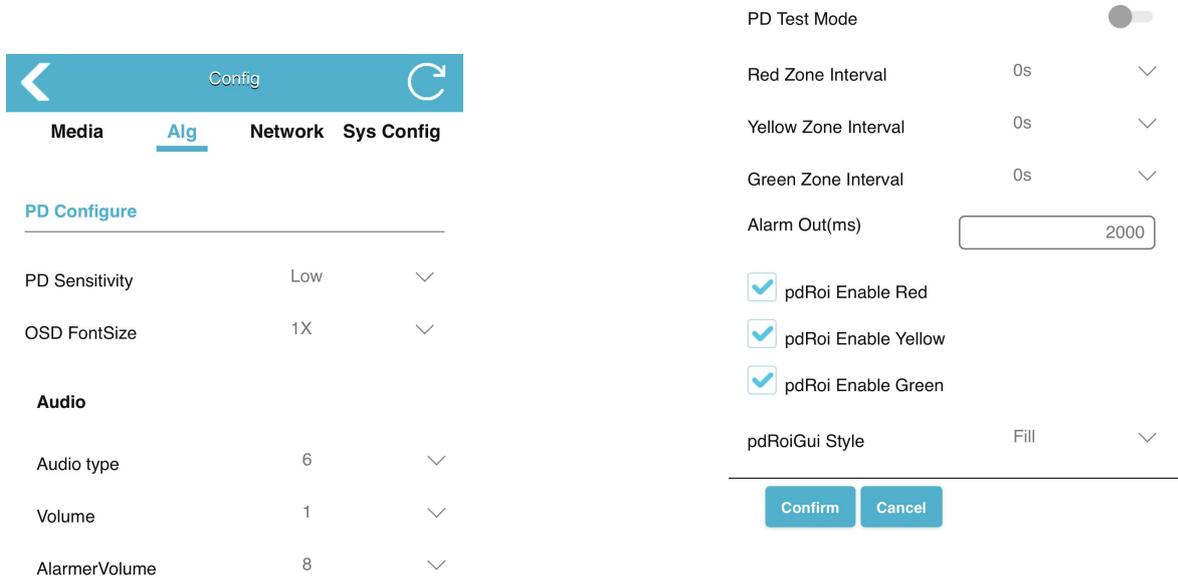


Figure 31

### 3) Network Config

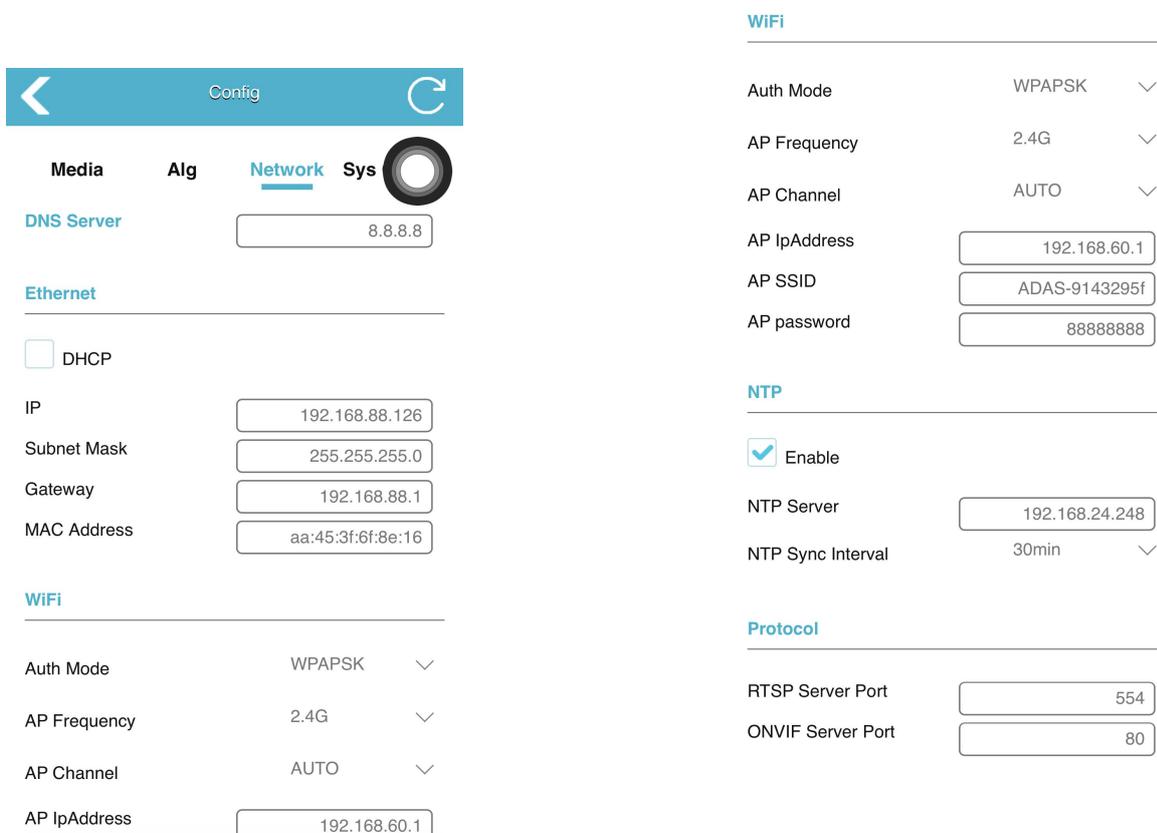


Figure 32

- Ethernet: Support to set device IP, mask, gateway and other parameters manually. When connected to the device through a network cable, you could input http://IP to access the web page. It is equivalent to section 7.2. You can also connect RTSP streams over IP.
- WiFi: Set the Wi-Fi name and password, which takes effect immediately once setting.
- NTP: Switches control whether the server time is periodically synchronized.
- RTSP Server Port: Set RTSP port. The default value is 554.
- ONVIF Server Port : Set the ONVIF Port. The default value is 80.

#### 4) System Config

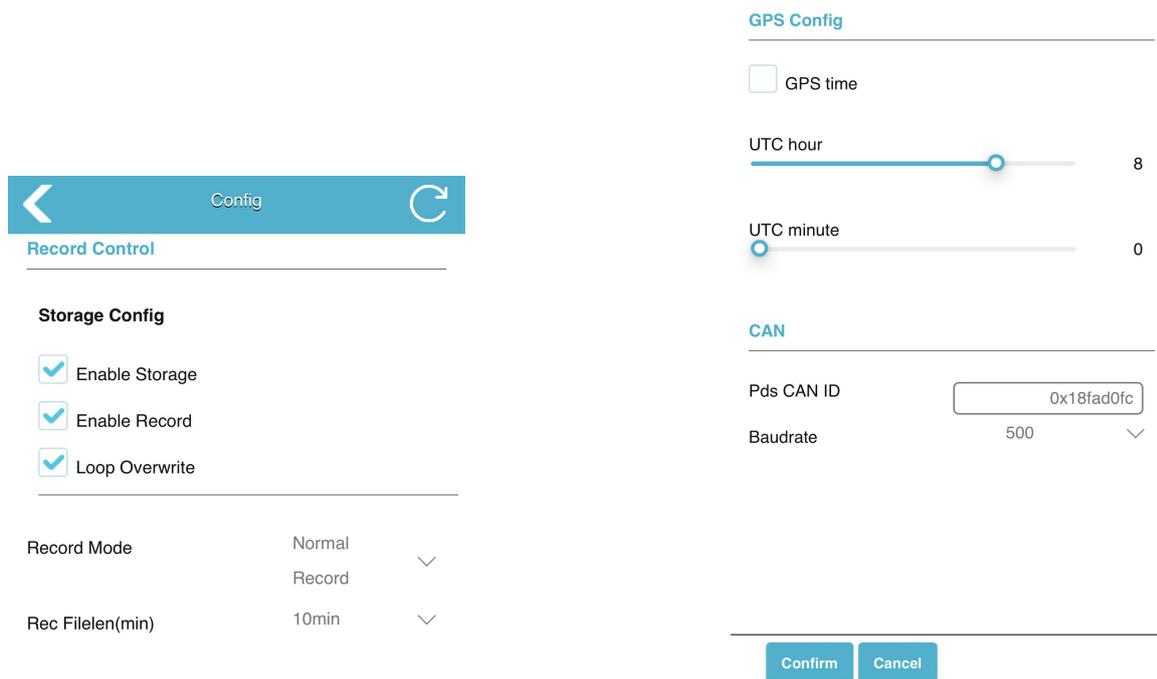


Figure 33

- Storage Config: Control whether the SD card, video recording function, and circular recording are enabled.
- Record Mode: Set record mode. Alarm video and normal video mode are both available. Alarm video can record in the form of video when detecting pedestrians and will pre-record the first 10 seconds and 10 seconds after the alarm video; The default duration of normal video recording is 10 minutes. Recording one by one, and keep recording regardless of alarm behavior.
- Record Filelength(minute): Set the time of one normal video.
- CAN: Set CANID and CAN baud rate. CAN data can be obtained by applying special wire. Data contain the number of pedestrians in each area of red, yellow, and green. In ranging mode, it also contains the coordinate value of the pedestrian.

## 9.4 System Function

Click "System" button and enter into system page, in which series number, software version, hardware version, and UUID are shown. As shown in Figure 34

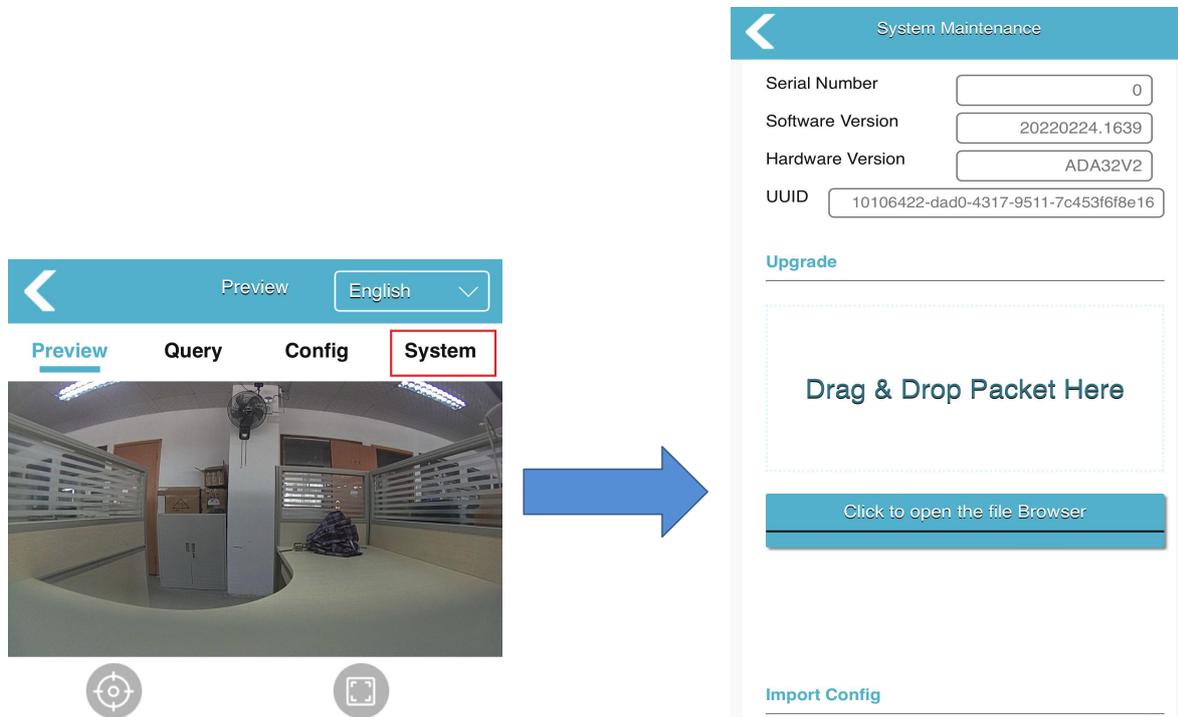


Figure 34

- Upgrade: By upgrade, you could choose a local upgrade file to upgrade the device.
- Import Config: Import configuration files. The imported configuration file must be a compressed package containing (config.xml, config\_bak1.xml, config\_bak2.xml).
- Export Config: Export the device configuration file.
- Export Log: Export device log files.
- Restore Factory: Restore the device to factory settings and all parameters are restored to default values.
- Reboot: Restart the device.
- Change Password: Modify the device login Password.
- Device Time: Manually synchronize device time.



## 9.5 Protocol

The current device supports two types of protocol, RTSP and ONVIF.

Note: When using the network cable, the computer needs to be configured with the same network segment as the device.

### (1) RTSP

Use video software to open RTSP steam. Take VLC as an example, connect network cable, open VLC, click Media->Open Network Streaming->rtsp://IP/live/mainstream (rtsp://192.168.60.1/live/mainstream if connect with device's Wi-Fi) ->click play.

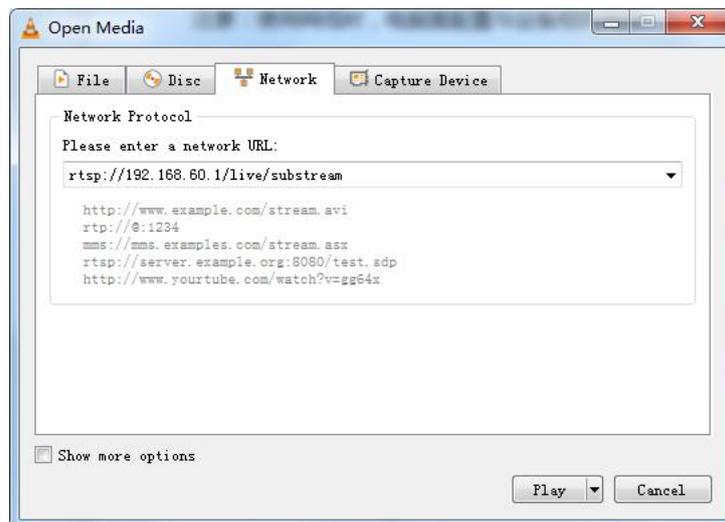


Figure 35

## (2) ONVIF

Use IP camera Viewer or other software that supports ONVIF protocol. Followings are demonstrated by IP camera Viewer.

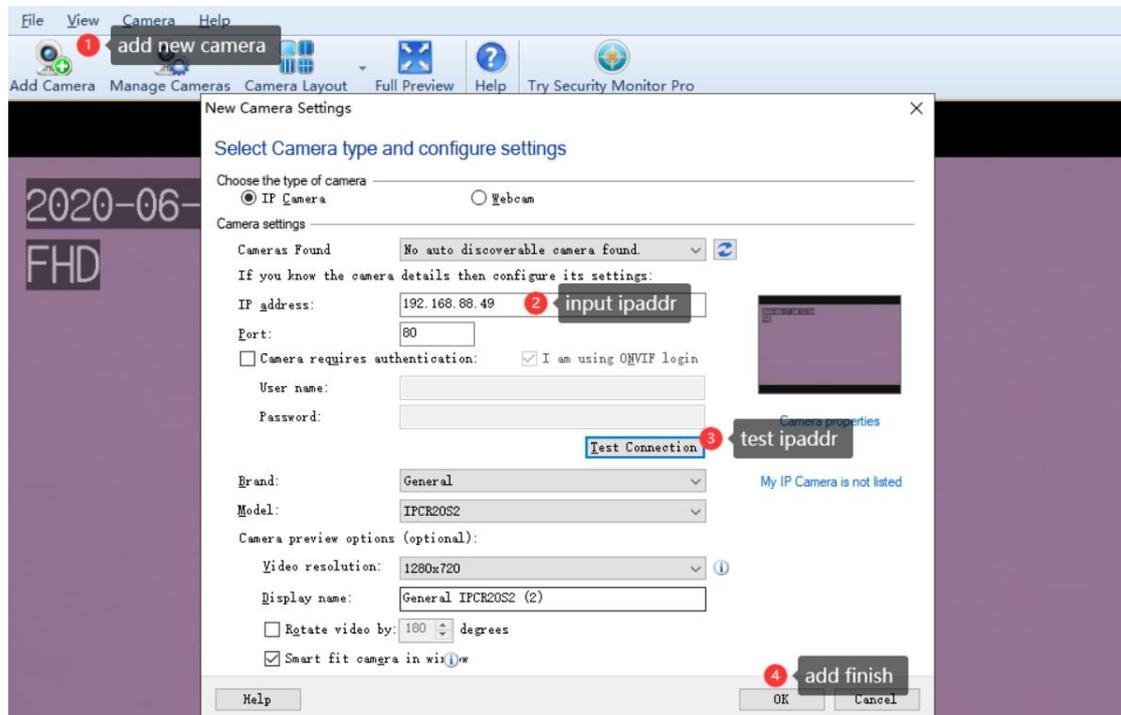


Figure 36

Make sure network is connected and then follow steps in figure 36: add new camera->input ipaddr->test ipaddr->ok.

Note: the port number defaults to 80.

## 9.6 System Upgrade

The device can be upgraded with a flash disk. Specific methods:

- (1) Format the flash disk as Fat32 file system.
- (2) Place the upgrade package named "ADA32V2\_upgrade\_XXXXXXXX.XXXX.bin" on the flash disk, connect the flash disk to the device, restart the device, and wait for a few minutes to complete the upgrade. If you want to realize batch upgrade without automatically deleting the upgrade package after upgrade, you can rename the update report as "ADA32V2\_upgrade\_fixed\_XXXXXXXX.XXXX\_bin".
- (3) After the upgrade, the software version number of the device will also change synchronously. Check the version number in the lower left corner of the monitor when the device is turned on. Or view the version number in the "System"->"Software Version" on the web page.

## 10. Troubleshooting

The symptoms described below do not necessarily mean a failure within the display. Please check the following items before you initiate request for repair.

Symptoms	Possible Causes/Solutions
No picture, no sound	Improper connection of automobile adapter; The power supply of the device is wrong, check whether the power indicator is normal; The volume is set "0 " by mobile phone.
Can not login the web page	Confirm that the external Wi-Fi module is connected to the USB interface; Choose "CONNECT" when popping out dialog box of confirming the current Wi-Fi is unavailable; Confirm whether it is connected to the Wi-Fi successfully.
Upgrade failed	Remove the extension cable connection and upgrade again.

