

Vehicle Detection Sensor (Model: AX1-2)

anti-collision / trigger type

User Manual

please carefully read this manual before installation.

Copyright Notice

Thank you for choosing our vehicle detection sensor. This kind of sensor is mmWave technology radar sensor with unique dual working modes and is widely used in parking industry.

For anti-collision mode use,It is installed on parking barrier box and detect the area under the barrier arm, which ensures that if people or vehicle is detected within the detection area, the barrier arm will not close so that can avoid the damage to people or vehicle.

For triggering mode use, it' s suggested to install the sensor on separate pole, to trigger the barrier gate opening or trigger the camera to capture the vehicle license. also can be used with ticket dispenser and other kind of applications, such trigger function with excellent direction recognition feature.

To ensure the best performance of the sensor product, please carefully read this user manual before use ,and then install and config it strictly following the instructions provided in this manual.

****specifications &design may be changed without prior notice.*



NO BLOCKING

For Safety reason, DO NOT block sensor when working.

Content

1.Introduction 3

2.Technical Specifications 4

3.Features 5

4.Installation Instructions 6

5.Cable connection 8

6.Configuration Instructions 10

7.Remarks 20

8.FAQs 21

9.Packing List 22

CE certified

CERTIFICATE of CONFORMITY

No:MRT202003RSH15

1.Introduction

Vehicle detection sensor AX1-2 is designed for the entrance and exitmanagement of parking lot or underground garage.It can be used as barrier arm anti-collision sensor or trigger sensor which can precisely control the open&close of the barrier arm by cooper-ating with the gate main control board , the sensor detection area can be configured by mobile App via bluetooth, compared with traditional loop detectors, it 's much more convenient and smarter,meanwhile no need any saw cuts. which greatly improve customer experience with its excellent performance and competitive cost.

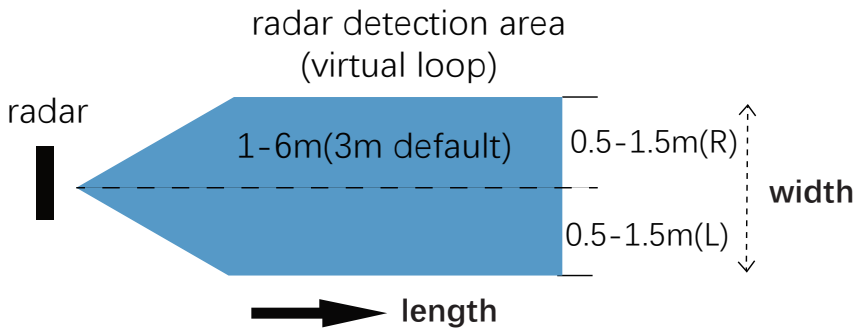
The sensor is millimeter wave technology radar sensor with the highly integrated RF chip SOC scheme, which has the characteristics of small size, low cost, all-weather working capability, high detection,sensitivity, high precision,easy debug&installation, very good stability and reliability. It is a new type detector which can be perfect alternative of loop detectors.

The sensor antenna is MIMO design that enables the sensor good angular resolution and high angle measuring accuracy. The signal processing and control unit apply DSP+ARM dual core architecture. Through the combined optimization design of software and hardware, this product can accurately identify and judge the targets passing through the barrier arm area, and avoid the accident of "vehicle or person hurt " and "barrier not closed".



2.Technical Specifications

Model:	AX1-2
Detection distance	1-6m （default 3m）
Detection width	0.5-1.5m （left） /0.5-1.5m(right)
Working frequency	79GHz
Supply voltage	9-24VDC/ (12VDC)/1A
Power	< 2.5W
Output	Relay: NO/NC
Interface	bluetooth/RS485
Dimension	107.9*73.6*17.2mm
Net weight	104g
Enclosure rating	IP66
Working T°	-40°C~85°C
Cable length	1m
Installation	barrier gate box install
Certification	CE.FCC.RoHS



(by App configuration， for anti-collison mode)

3.Features

Sensor appearance shown in Figure 1. The main features are:

● LED indicators：

Two LED indicators on the front of sensor.
Red LED is for power, it will stay on when power on.
Green LED is for signal, it will stay on when objects detected in the detect area and turns off when there is no objects.

● Detection area configuration:

anti collision mode sensor default detection length is 3m in front and 0.5m left & right side.
trigger mode sensor default detection length is 1.9m in front and 0.5m left & right side.

different detection areas can be configured via mobile APP or laptop debugging software.

● Configuration parameters saving and reload:

Configuration such as detection area can be automatically saved, and the latest configuration parameters will be loaded after sensor power off and restart.

● Firmware upgrade:

The firmware can be upgraded online through App or RS-485 ,no need to dismantle the sensor, and the new firmware will be effective just by restarting the sensor power.

● Stable performance:

millimeter wave technology is strong and work perfectly in harsh environments such as different light conditions, rain, fog, snow & dust.

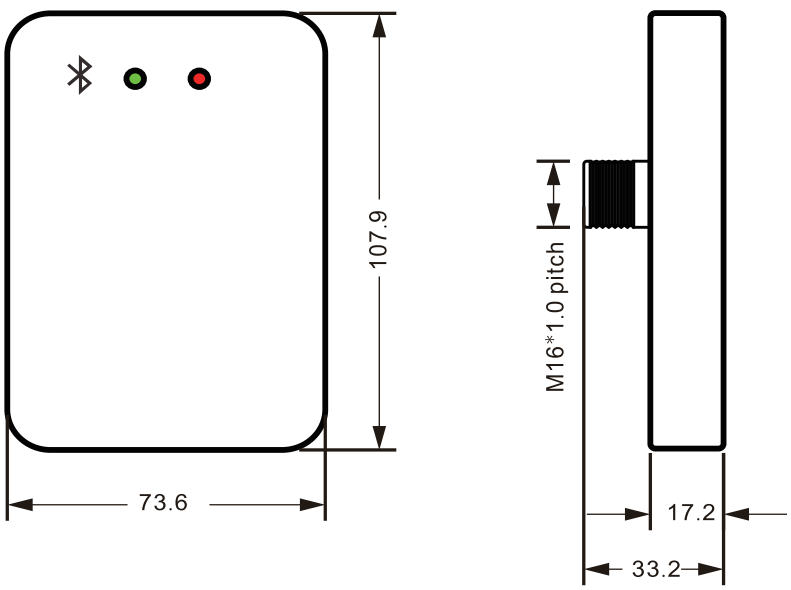
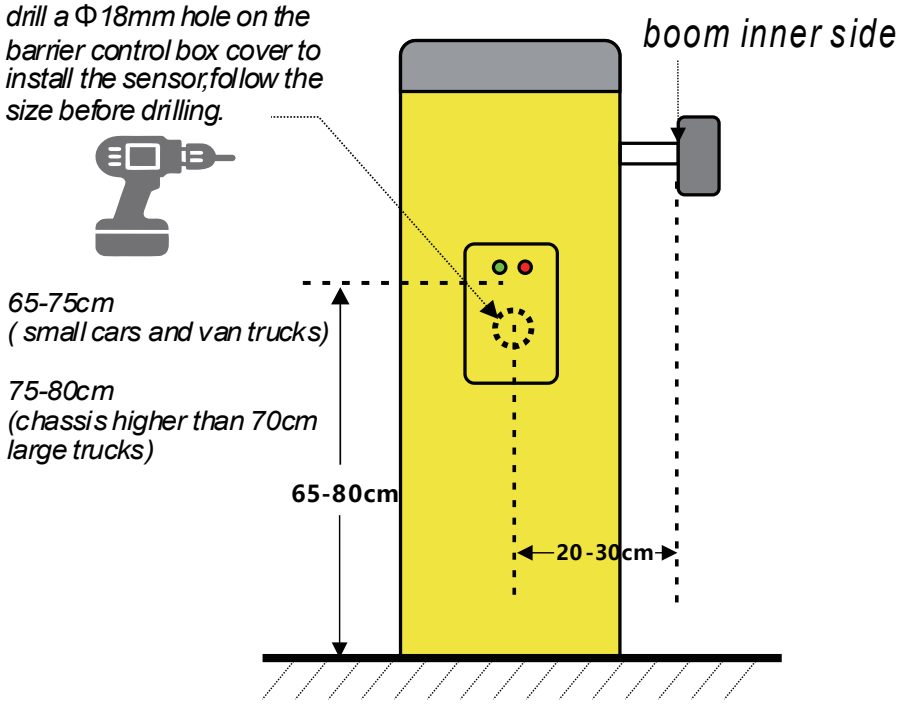


Figure 1. appearance（picture for reference only）

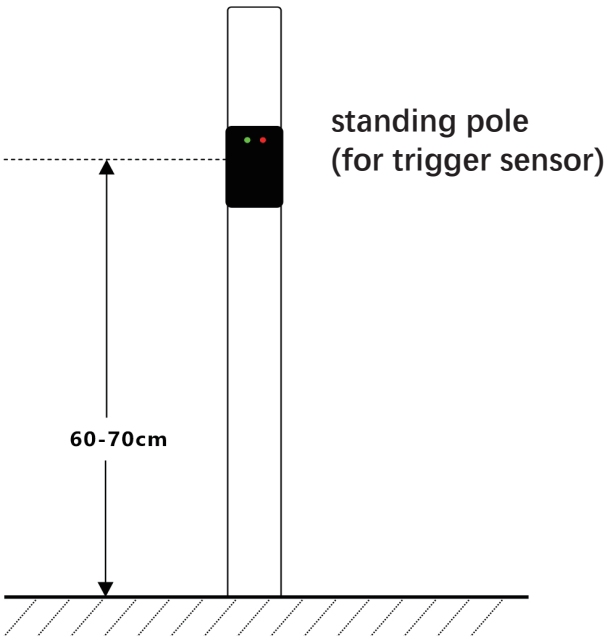
4.Installation Instructions

The sensor should be installed on the surface of barrier gate box and vertically to the ground. The installation must follow the below steps:

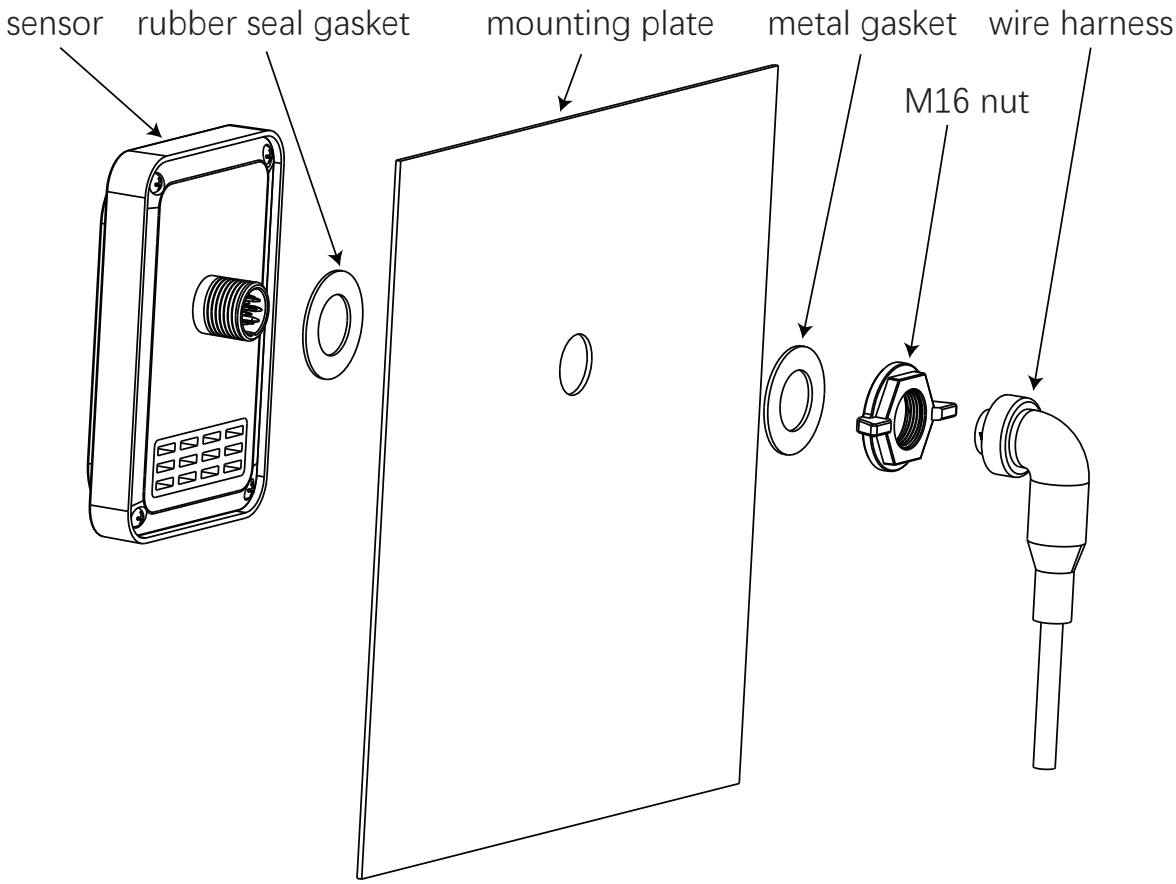
Step1. installation position(for anti-fall use)

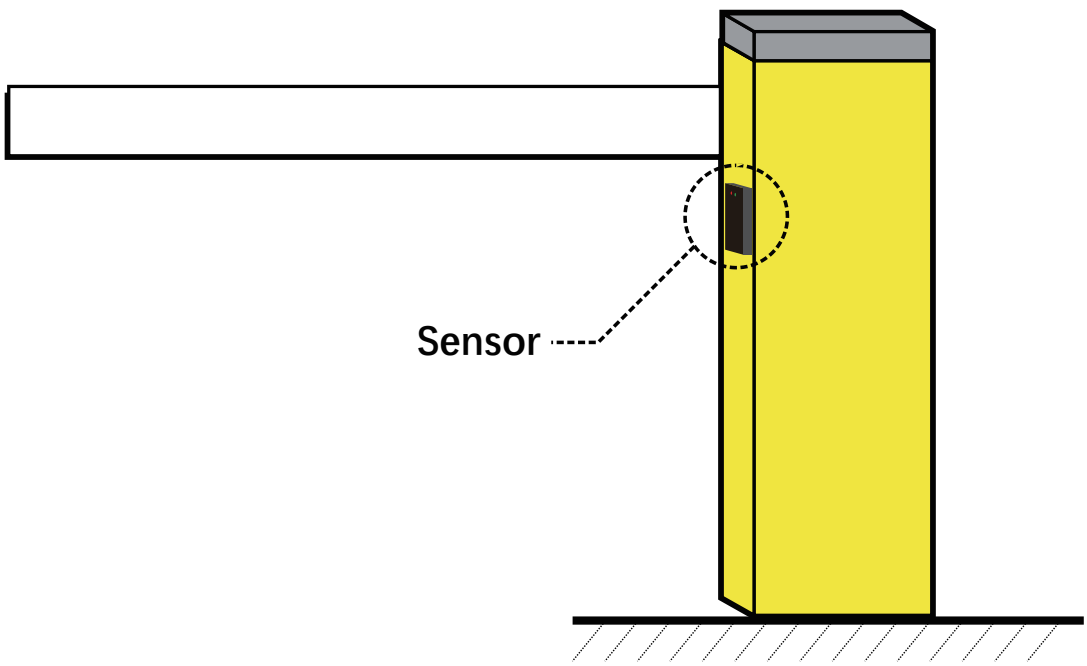


installation position(for trigger use)

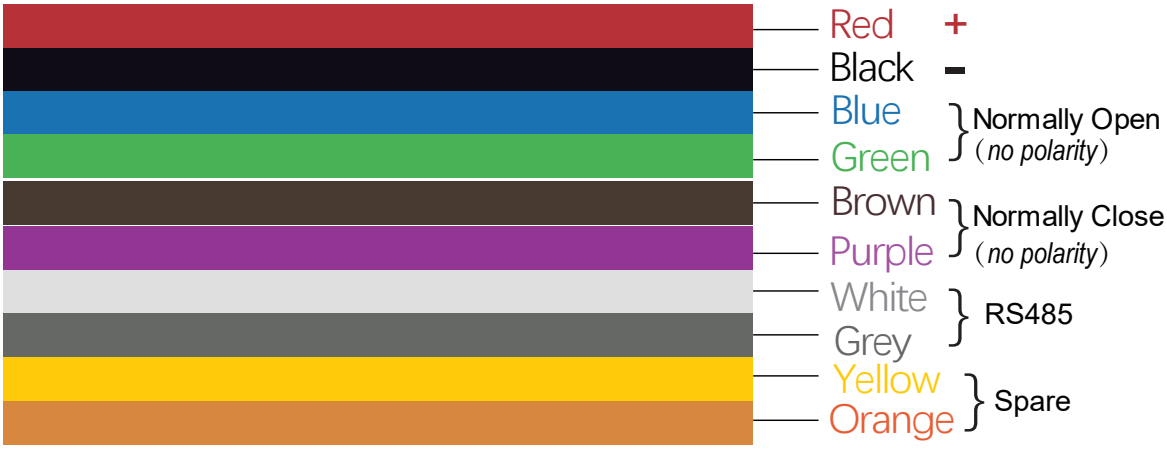


Step2. mounting process



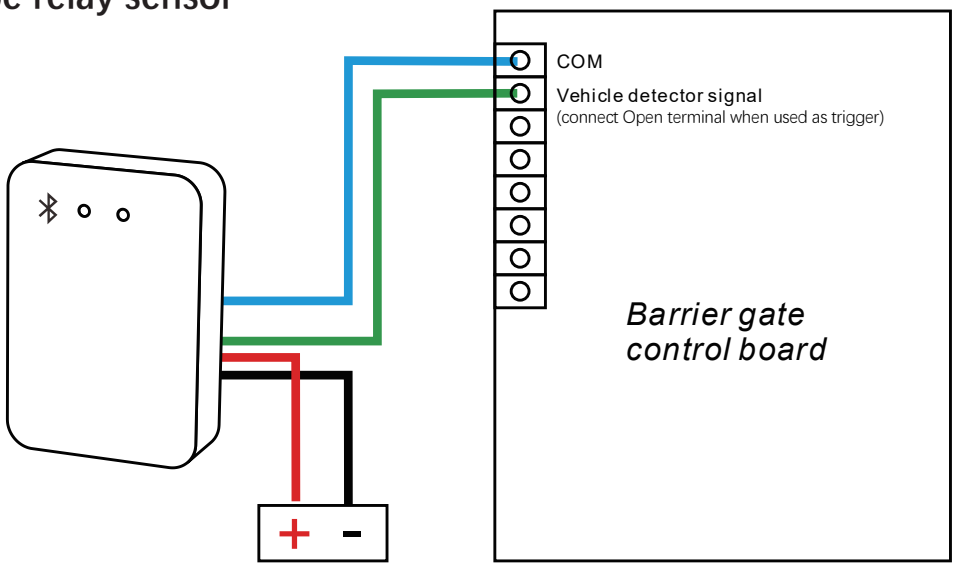


5.Cable Interface Definition



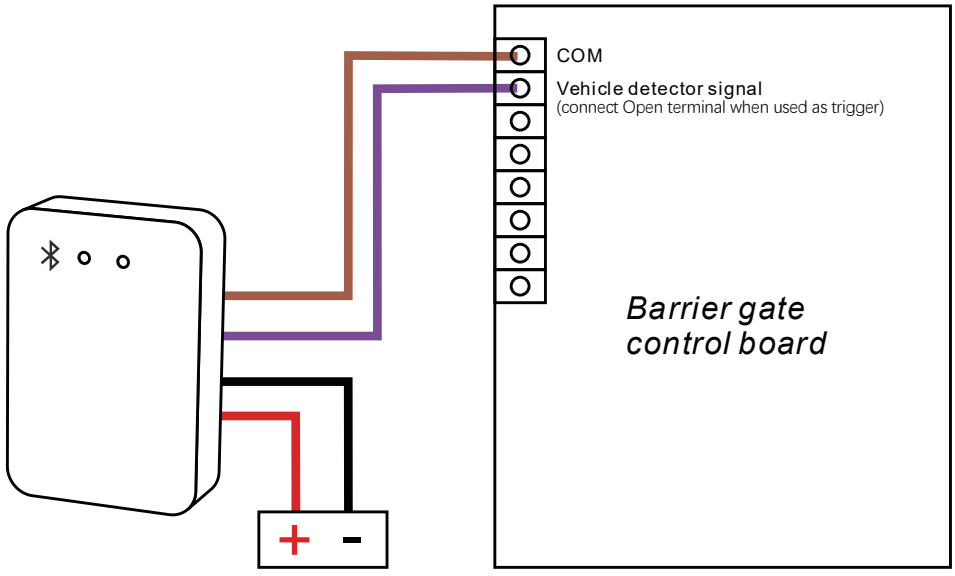
No.	Cable ID	Color	Description
1	9~24VDC	Red	Positive pole
2	GND	Black	Negative pole
3	NO1	Blue	Normally Open1
4	NO1	Green	Normally Open1
5	NC2	Brown	Normally Close2
6	NC2	Purple	Normally Close2
7	B-/RX	White	RS485 B-
8	A+/TX	Gray	RS485 A+
9	INPUT	Orange	Spare
10	GND	Yellow	

NO type relay sensor



power supply 9-24VDC (12V/1A preferred)

NC type relay sensor



power supply 9-24VDC (12V/1A preferred)

6.Configuration Instructions

The sensor can be configured by mobile App or the computer software.

Mobile App configuration:

1- download the App to the mobile phone, click the App icon and see the user interface as Figure 2. click Connect device button then shown in Figure 3, select the correct radar built-in bluetooth name and start bluetooh connect.

bluetooth name: "Radar···" or ” Mbit...”
user password: 88888888.

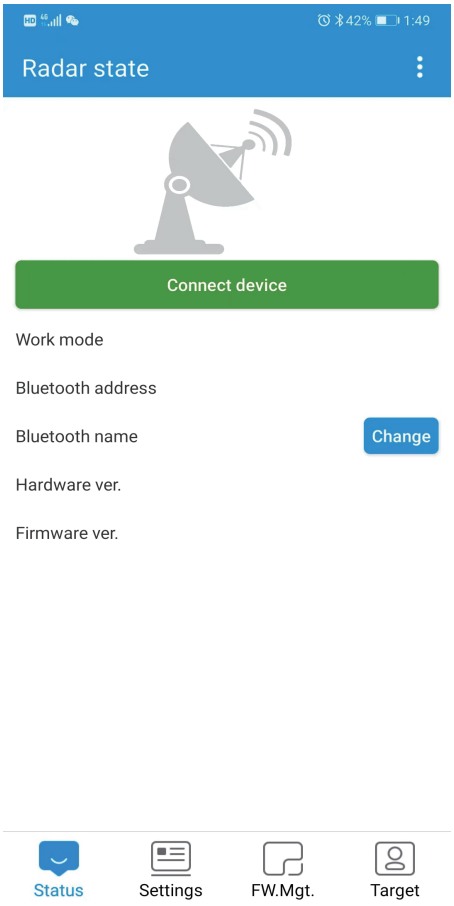


Figure 2

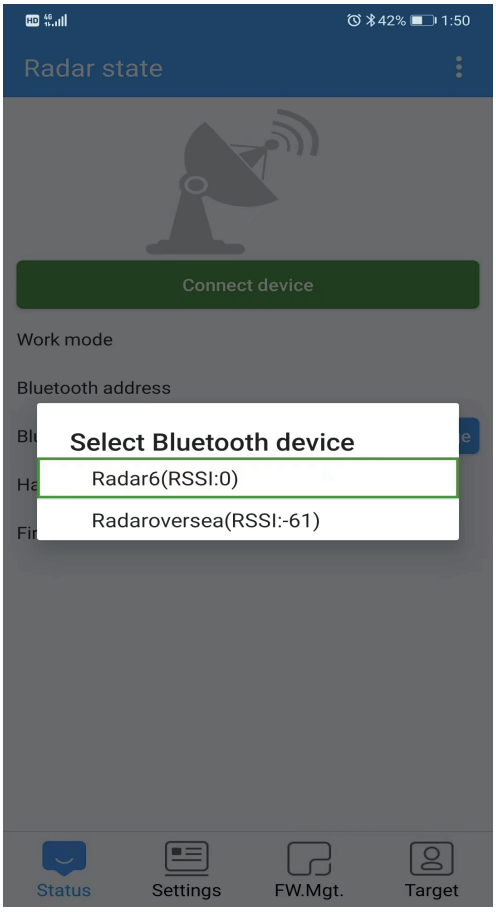


Figure 3

after successful connection, select sensor type, as shown in Figure 4, and enter App(App interface as Figure 5, 6,7,8,9).



Anti-collision mode

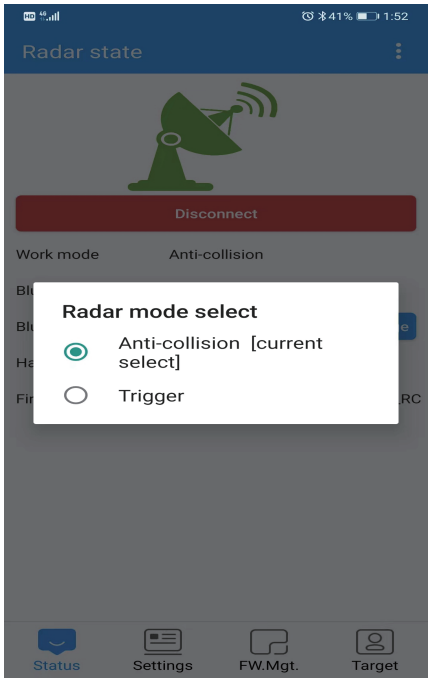


Figure 4

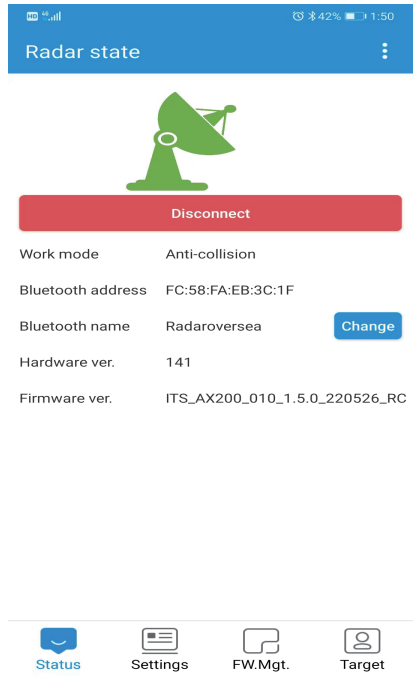


Figure 5

2-set or change the sensor parameters based on real situation, then click Save to background learining after setting.

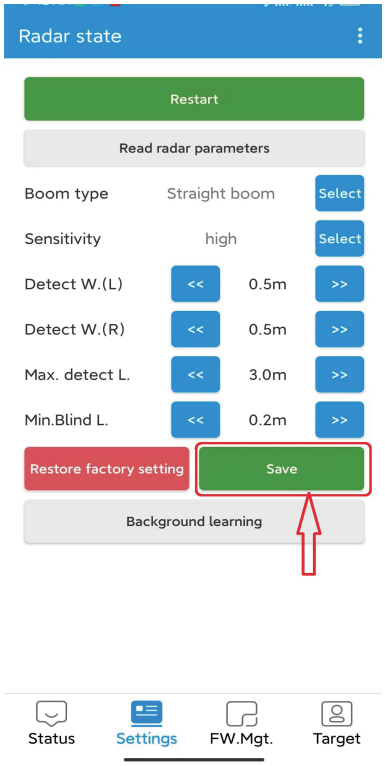


Figure 6

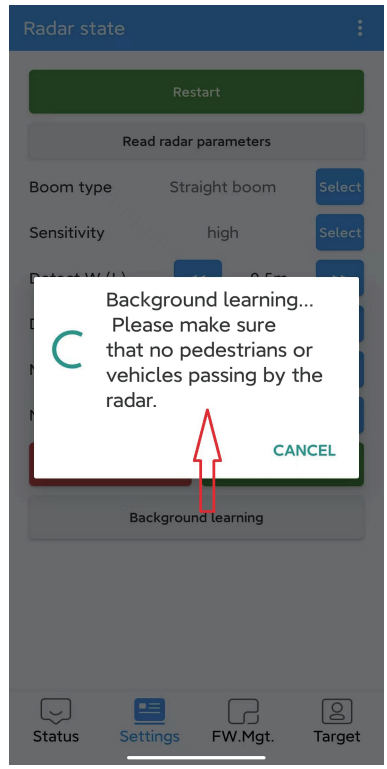
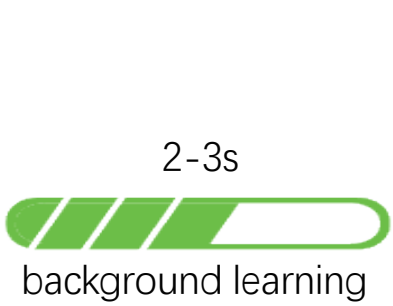


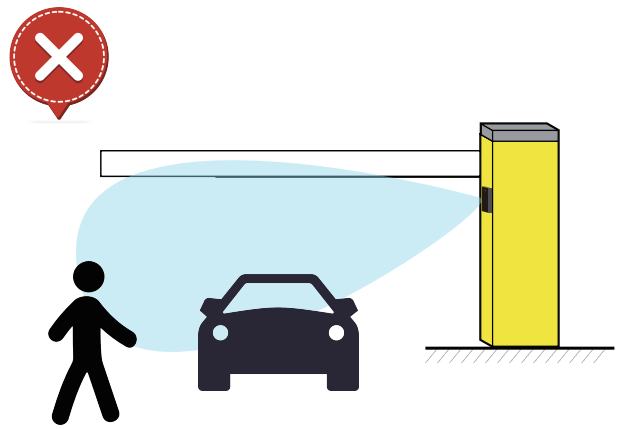
Figure 7

Background learning

The sensor will learn and record the environmental background, identify the active area of the barrier boom. By learning, the sensor will detect targets effectively in the setting area, and can avoid the detection of barrier boom which may cause the boom bounce.

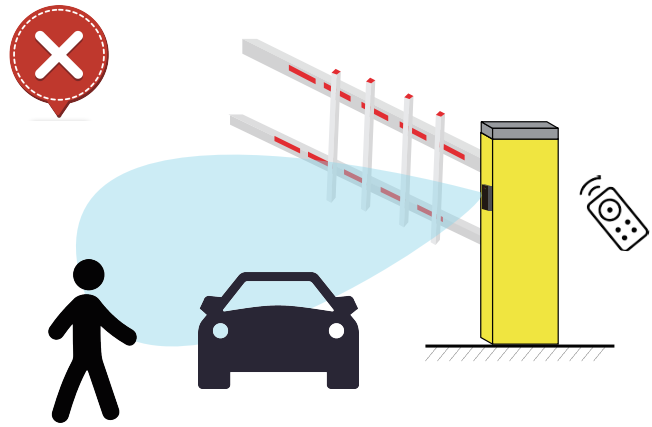
For straight type barrier, background learning process is quick and simple, only takes 2-3s, and make sure no pedestrians or vehicles passing by radar during learning.





For fence type barrier or advertising type barrier, background learning process is longer, will takes 30-60s, and make sure no pedestrians or vehicles passing by radar during learning. Also use the remote controller to open and close this kind of barrier continuously.





False alarm

This function only can be used when the green LED is always ON, and the barrier not close, usually green LED ON indicates that some targets are detected in the area, such targets is not normal, in such case, use false alarm function to eliminate the abnormal targets, to have a clean detection area.

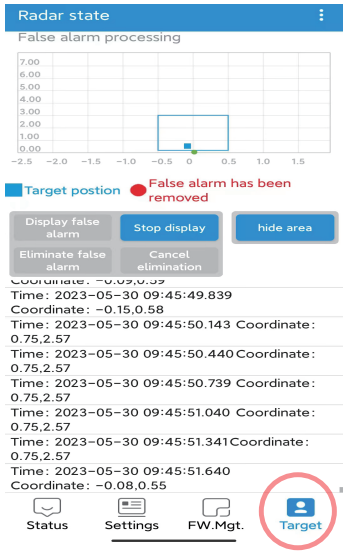


Figure 8

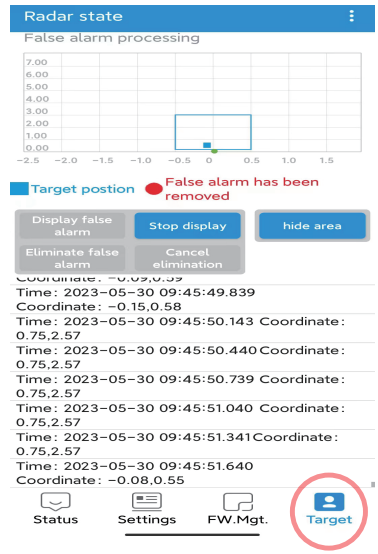


Figure 9

if firmware upgrade needed, select F.M.Mgt. button below, select the firmware for sensor firmware upgrade, dick upgrade firmware and wait for the completion.

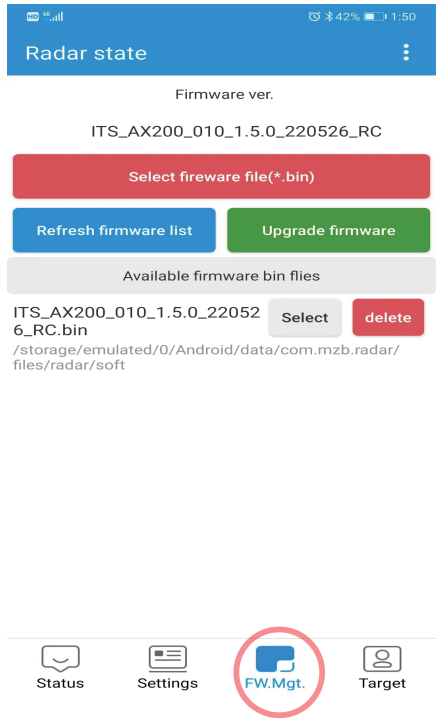


Figure 10

Error report

During the use of sensor, when any problems happened, select Error report as shown in Figure 11, the problems can be analyzed though such report by supplier.

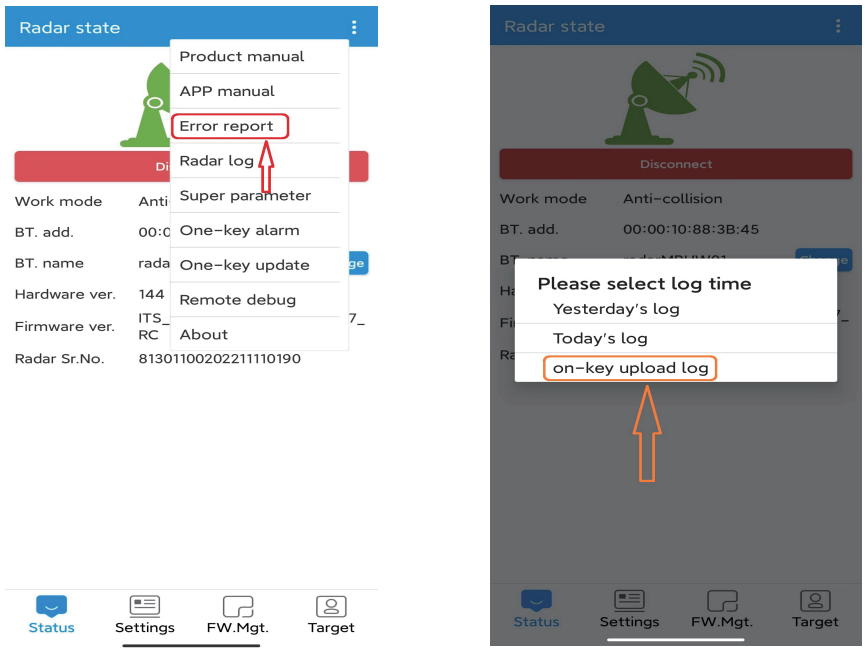
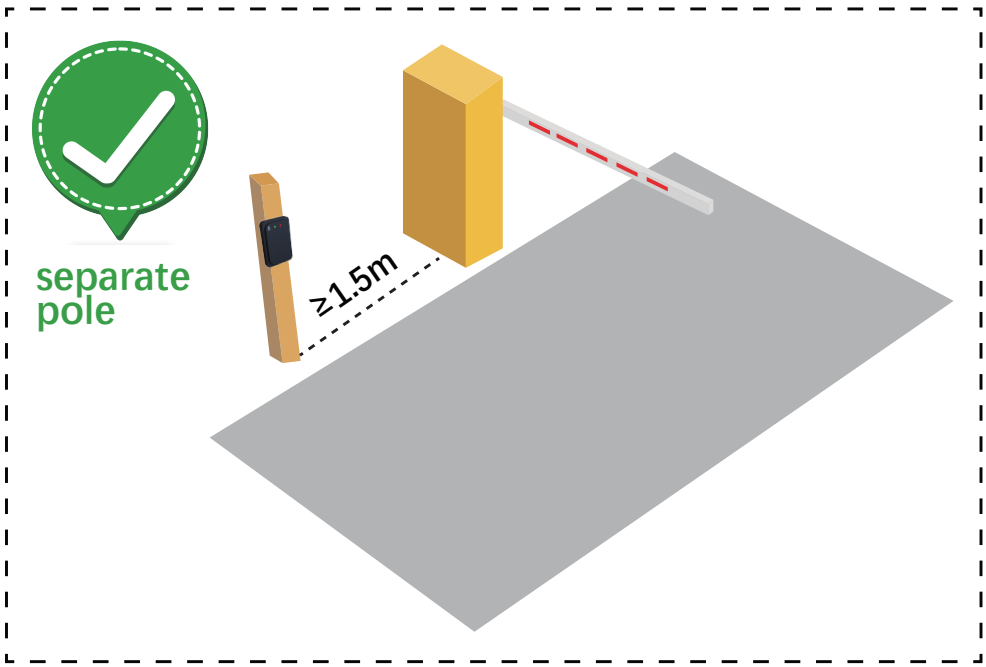


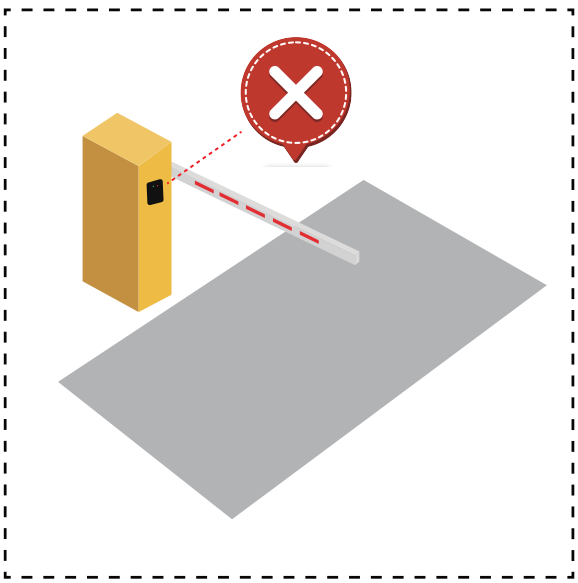
Figure 11

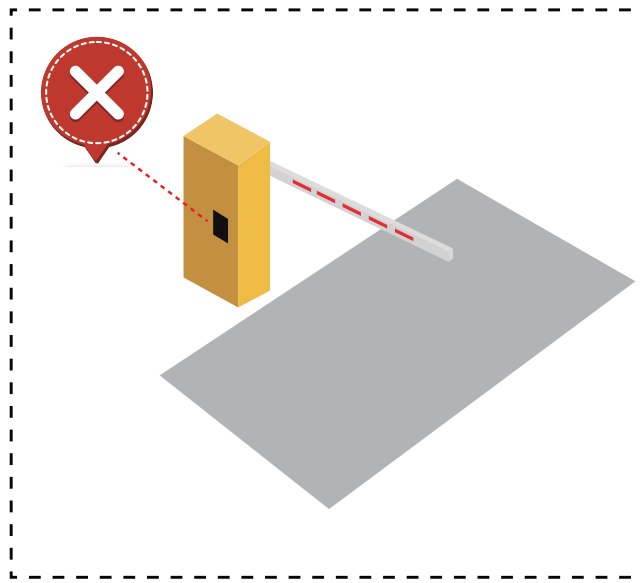
Trigger mode (with direction recognition feature)

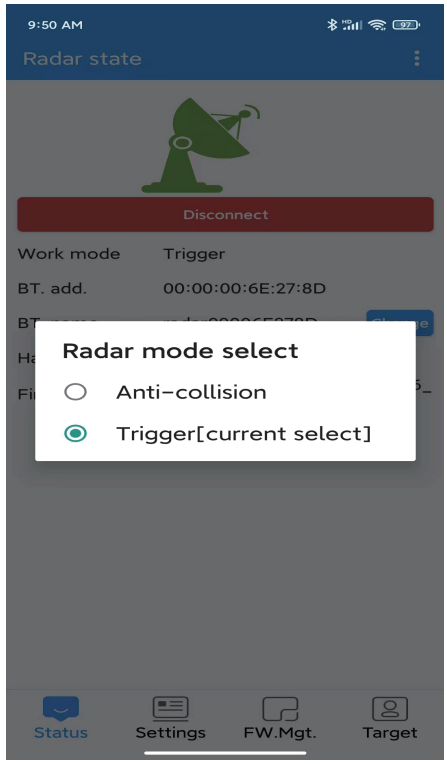
Installation Precautions:

to ensure normal performance,a separate pole is highly suggested for trigger mode use,

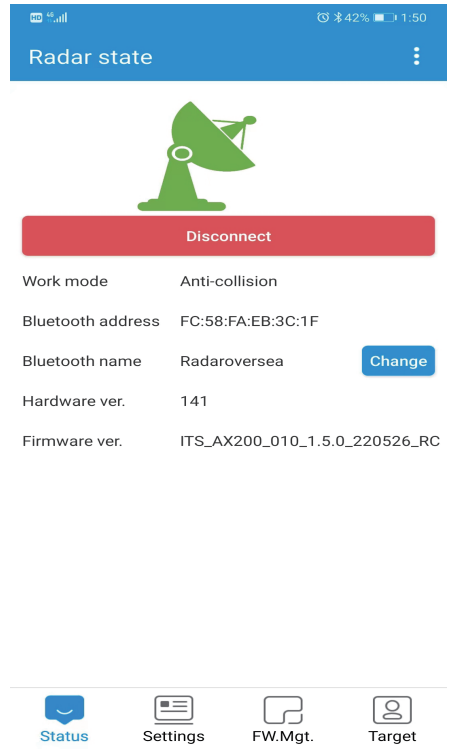




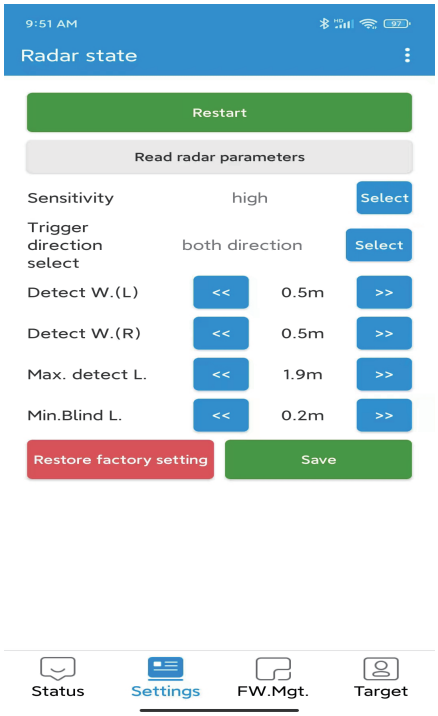




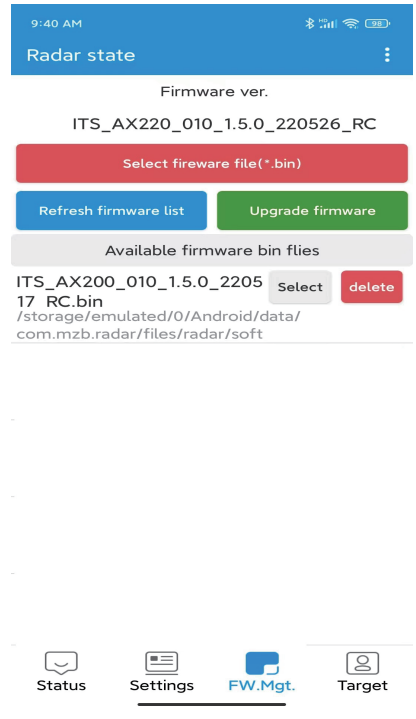
select trigger mode



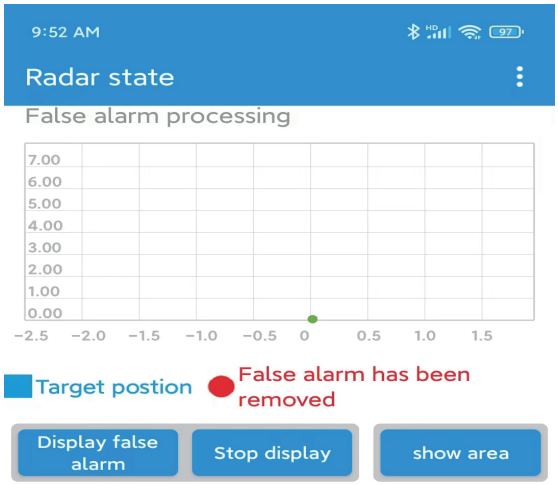
connect successful

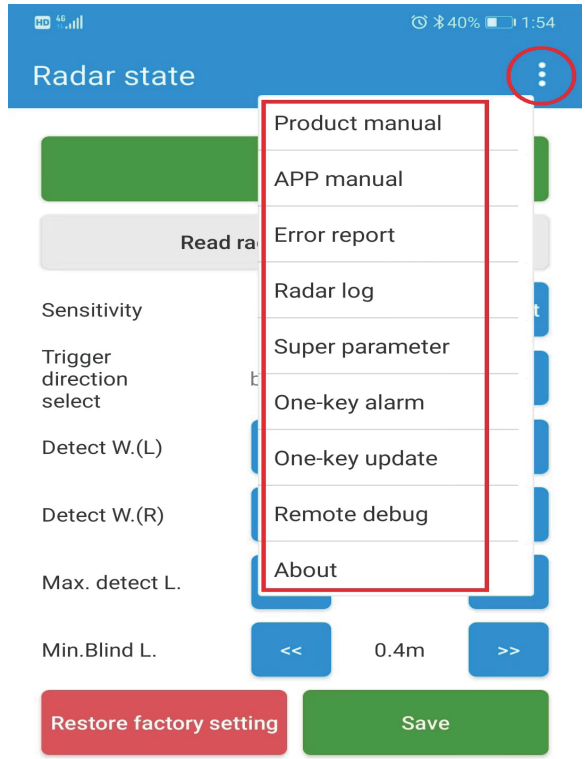


parameter setting



frmware management





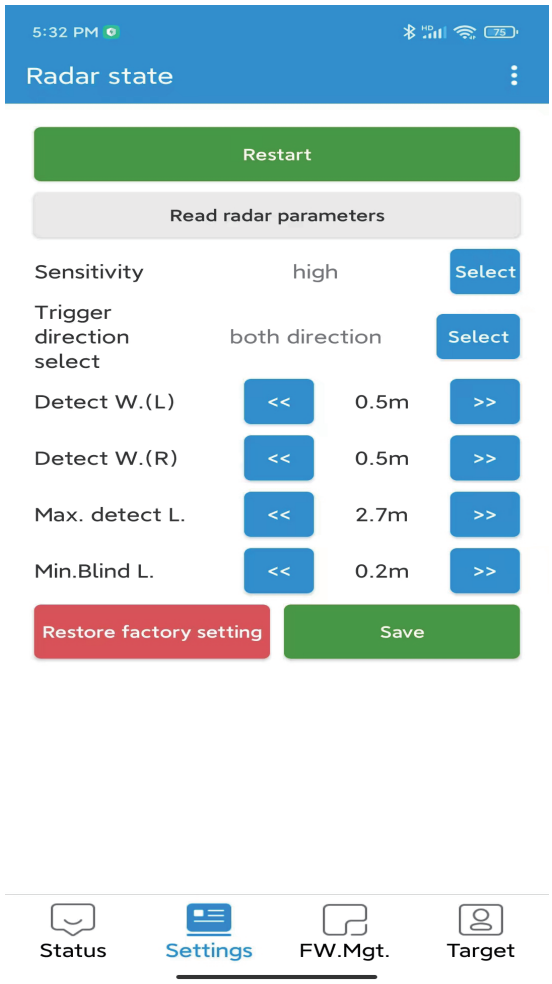


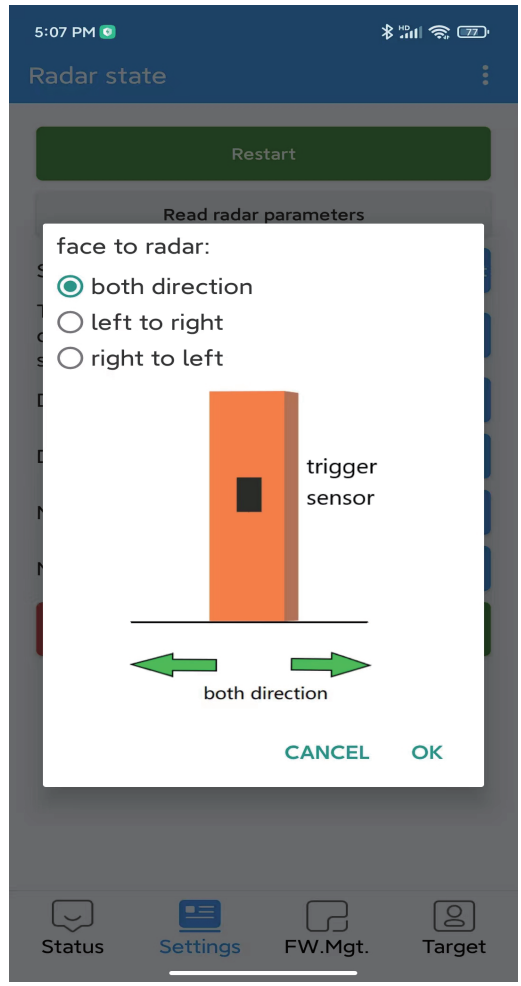
false alarm checking



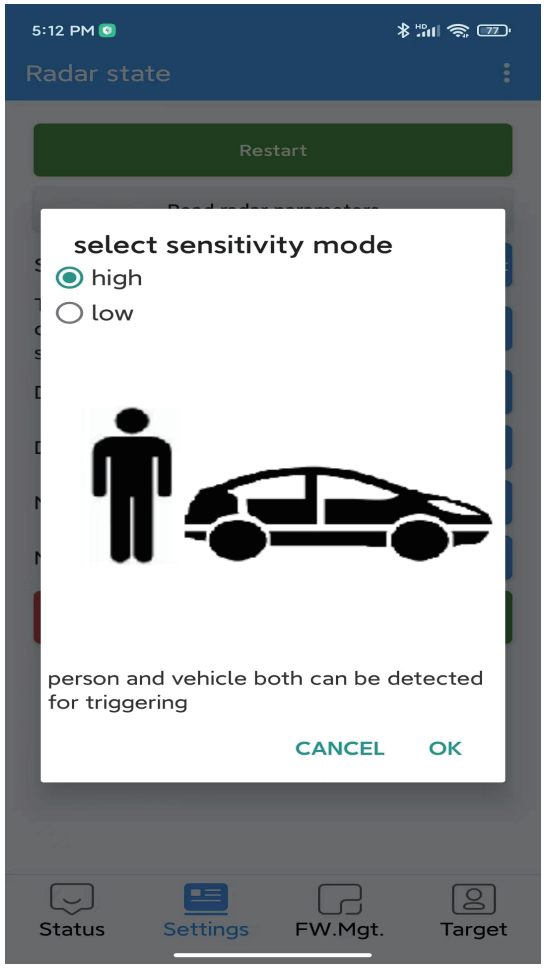
other functions

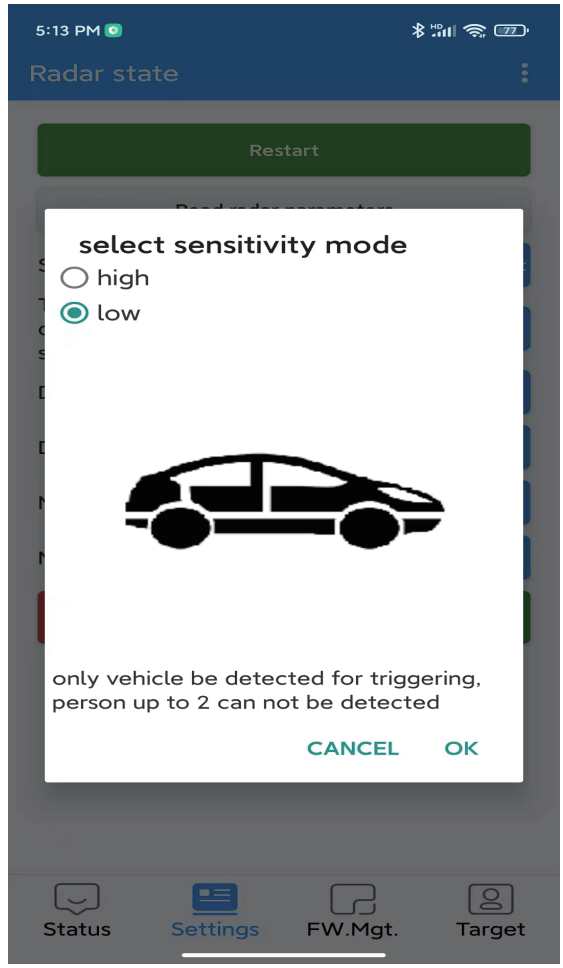
Other functions can be seen in up right corner, such as password change, updates check. etc





when in trigger mode,the sensor has the function of direction recognition. it can detect both direction movement, or from right to left, or from left to right,such function can be set in the App.





the sensor sensitivity can be set also in App. high sensitivity will detect all the targets in the detection area, and low sensitivity will only detect big target such as car, people less than 2 will not be detected also.

7.Remarks

Please read the following instructions carefully before using sensor:

- Ensure stable power supply to avoid affecting the sensor performance, It is recommended to use 12V /1A power adapter separately for power supply.
- Sensor antenna is integrated inside. if Dusts, heavy snow, muds etc on sensor surface may affect the sensor normal operation, shall be cleaned in time.
- If environment changes (such as installing the guide column, ice cream cone, etc.) in the detection area, please learn to record the environment again.
- There shall be no objects (such as metal fence, billboard, license plate recognition camera, wall, etc.) in the sensor detection field which will affect the normal operation.
- It is not recommended to use sensor in a single lane where different types of barriers installed.
- it is recommended to install 2 sensors or remote control barrier arm when for entry&exit of semi trailer, concrete mixer, and other vehicles which chassis higher than 1m.
- It is not recommended to install sensor on muddy roads &extreme weather (rainstorm, heavy snow) which may affect the sensor operation stability.
- Set the detection range based on the barrier arm length, normally this range is slightly less than or equal to the barrier arm length, so as to prevent people or objects from being detected by sensor when.passing beyond the gate arm.
- When environment record & learning, the fence / advertising type arm may shake when it falls to the ground. operation can be carried out after the arm falls completely.
- Relearn the background If there is arm rebound caused by the sensor.

- The installation height of the sensor should be 75-80cm in case of the metal strong scatterers like deceleration belt (for example iron plate) are directly in front of the sensor.

- Sensor applicable power supply : 9~24VDC. preferred 12V/1A power supply or connected to camera 12/24VDC power supply.

If radar working environment is special, please contact supplier first. then install according to the suggestions.

8.Common problems

1-Q:The sensor green light always on after installation and the barrier arm doesn’ t fall.

A: new enhanced reflectors within the sensor detection area need to be removed from sensor field of view or background learning should be carried out again.

2-Q: the person stand in front of the sensor, the green light is not on.

A: The sensor is activated pedestrian / vehicle classification function, when vehicles trigger the sensor and green light on,The sensor then can detect.

3-Q: The sensor red light flashes.

A: It is recommended to connect an extra 12V-1A power adapter.

9.Packing List

No	Parts	Q’ ty
1	Sensor	1
2	M16 nut	1
3	Gasket	2
4	Wire harness	1
5	Certificate	1
6	User Manual	1

Mobile debugging App download:(android & IOS)

Google play

App Store

Search “ISensor”

1 Outdoor use!

Please use outdoors. operation indoors can be problematic due to multi-path reflections.

2 Keep,on a regular base, sensor cover clean !

Clean the surface of the sensor AX1-2 on a regular basis with clean dry rag.

Be attention !! After a certain time, snow-rain-fog-mud-dirt-dust, that settles on the surface of the sensor AX1-2, can have a small influence to the functioni ng.