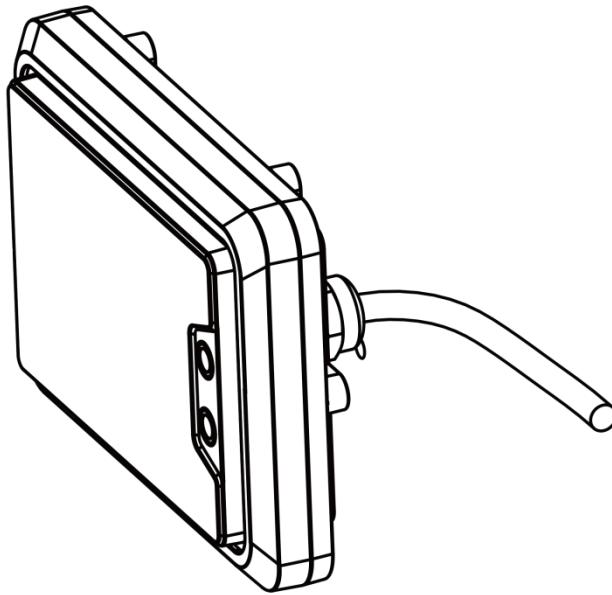


Barrier Gate Sensor Installation Instructions



Thank you for purchasing our radar products. This user manual is for your reference when using our radar sensor. Please read the following protective measures and warnings carefully before use, and please properly keep this user manual.

Safety circuit

- Installation and use shall be in accordance with local power safety codes.
- The power supply shall meet the safety [ultra-low] voltage (SELV) standard, and the 12V DC power supply shall meet the IEC60950-1. Please pay attention to the power requirements on the device label.
- Please ensure the safety of electricity before operating the device.
- Building installation wiring should have easy to remove the disconnect device
- Be careful that the power cord is not crushed or trampled, especially plugs, power outlets and outlet connections
- Proper installation and use of this product will not cause any fire or electric shock

Environment

- Ensure that no vegetation, trees, buildings or vehicles obstruct detection.
- Ensure that there is no electromagnetic interference in the radar installation area and radar detection area. Electromagnetic interference includes external air conditioning units, high voltage transformers, etc.
- Please transport, use and store the equipment within the allowed humidity and temperature range.
- Do not store the equipment in damp or dirty environment, especially in the environment with too high or too low temperature, strong electromagnetic interference or strong light.
- Transportation equipment should be packaged with standard or similar materials.

Protective measures

- Ensure that the radar detection surface is clean
- Do not tear down secretly, otherwise may cause leakage or affect the product performance.
- Use a dry, soft cloth to clean the equipment. If the stain on the equipment is difficult to remove, you can use a wet cloth with a mild detergent to wipe and then use a dry cloth to clean. To avoid damage to the surface coating of the equipment or deterioration of equipment performance, do not use similar alcohol, benzene, diluents, or corrosive cleaners.

Warnings

- Please use the standard components supplied by the manufacturer to ensure that the equipment is installed and fixed by professional engineers
- To avoid damage to the equipment, do not use two or more components

Disclaimer

- This manual is for reference only. Please refer to the specific equipment manual for more information
- The management software and user manual of the equipment will be updated synchronously on the official website. Please download without prior notice.
- In case of damage or damage caused by wrong use, the company shall not bear the corresponding loss or liability
- If you have any questions or objections, please refer to our final explanation.

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1. Trigger Radar

1.1 Installation

1.1.1 Install on bracket

The bracket of the trigger radar should be installed in the side road of the camera captured position(which is far away from camera straight line 4meters, and the vertical distance 0.5~0.7meters from the lane lines.)

Compare the mounting holes of the radar support column, drill 3 holes 50mm deep on the ground with the M6 drill bit, and then fix the support column on the ground with 3pcs M6 expansion screws, as shown in figure 1.

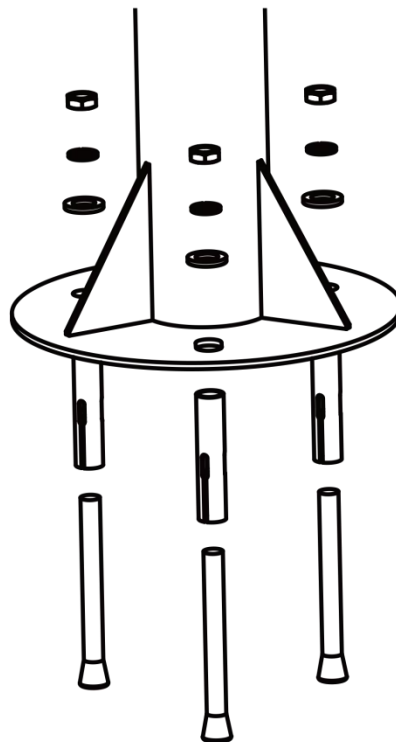


Figure1 Bracket Installation

At a height of 600mm ~ 800mm from the road surface (not guard room table), fix the radar backside on the support column with 4pcs flange screws, and then fix the radar backside with 4pcs M4 screws. The radar wire harness and the protective wire sleeve are threaded into the column through the nearest round hole, as shown in figure 2.

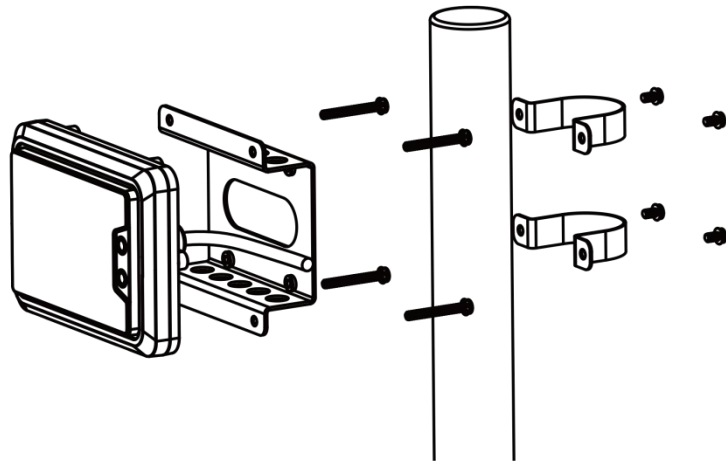


Figure 2 Radar Installation

Final installation like figure 3,

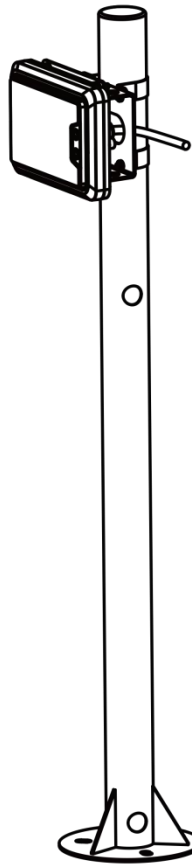


Figure 3 bracket installation picture

1.1.2 Install on gate box

Slotting a hole with a diameter of 13mm at a position 600 ~ 800mm above the ground on the barrier gate box (the center line of the same direction as the gate arm). show as picture 8.

Notice: It is recommended to apply glass glue around the contact surface between the radar shell and the barrier gate box to prevent rainwater from infiltrating into the box.

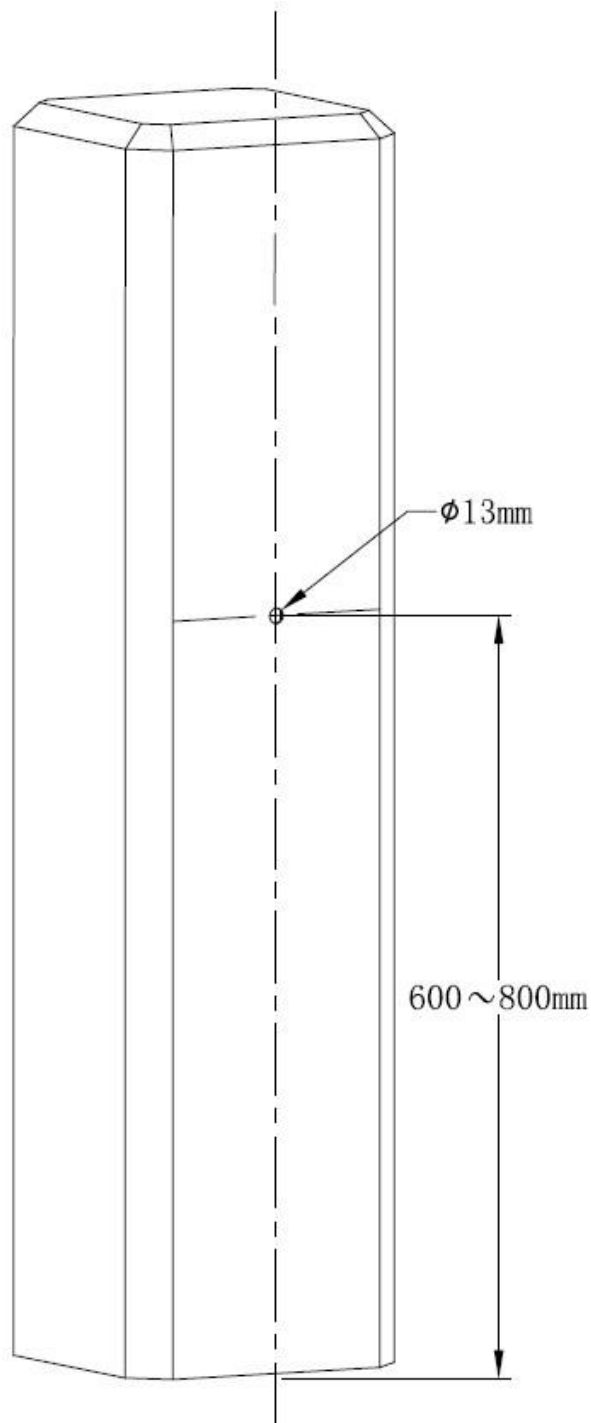


Figure 4 hole size

Put the communication cable through the round hole into the barrier gate box, and then use the PG connector nut to lock it. See figure 5.

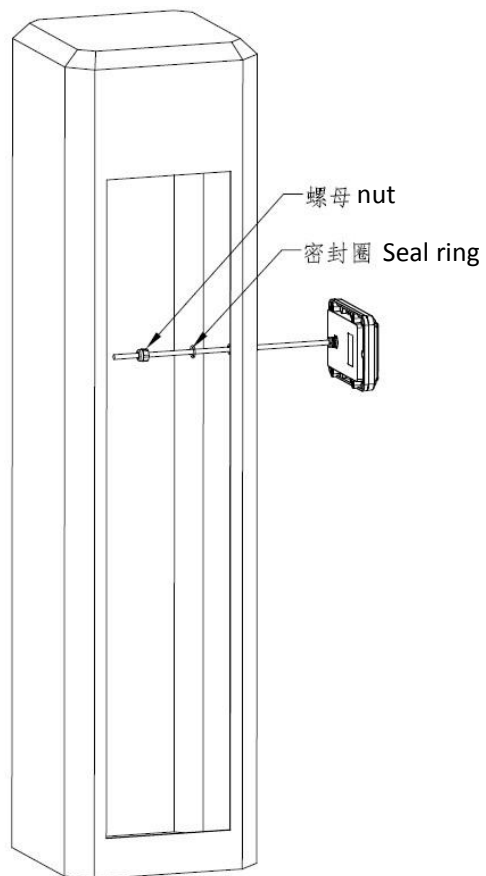


Figure 5 fixed radar

Final installation like figure 6,

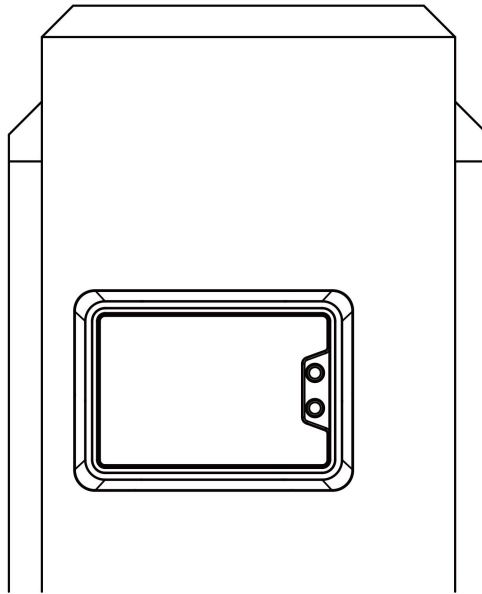


Figure 6 final installation picture

Notice:

- 1、 Make sure the barrier gate box and radar sensor is install fastness, otherwise, it will influence radar detection accuracy if the barrier gate box and radar sensor is shaking.
- 2、 Don't put any objects in the radar detection area.
- 3、 Install the fence out of the radar detection area, try not move around as much as possible.
- 4、 Please calibrate radar sensor soon after situation is changed.
- 5、 Don't calibrate radar sensor in rain and snow condition.
- 6、 When the vehicle passes through the anti-hit area, the greater the angle between the vehicle and the road, the worse the radar detection performance will be. We suggest use the radar in a situation which the angle is less than 30 degree when driving.

1.2 Cable connection

Color	definition	Remark
red	DDC (+)	external DC12V positive
black	GND (-)	external DC12V negative
brown	digital output	default with object close, without object open
white		
blue	automatic collect threshold	Short-circuiting automatic collect

orange		
yellow	RS485 T/R+	RS485 A port
green	RS485 T/R-	RS485 B port

Table 1 cable definition and cable connection description

1.3 Radar sensor indicator light description

Indicator	Definition	Remark
red	Power supply	The red light is always on when power-on
green	Work statue	Flashing and then light goes off when power power-on, shows radar self-check is normal
		Flashing when update the background
		Always lighting when there is an object be detected
		Light goes off when there is no object be detected(or object left)

Table 2 Indicator light definition and description

1.4 Automatic calibration

Press the button of the end line of the radar cable with 1 second and then loosen, radar will automatically update the background threshold, the green light will flash 4 seconds during the recording period, when the light stops lighting means update the background threshold succeed. Please assure there is no object pass by within the radar detection range for 4 seconds.

1.5 Parameter setting

The radar sensor's default detection range(meter) and gate arm fall time(second) is show as figure 3.

Radar types	Parameter	Default value
Trigger radar	Detection range (meter)	3

Table 3 The default parameter table of the trigger radar sensor

1.6 Check the statue of Radar Sensor

First of all, human enter into the radar detection area, the radar green light OFF, the barrier gate camera doesn't snap, the gate arm not up.

Second, vehicle enter into the radar detection area, the radar green light ON, the barrier gate camera is snapping, the gate arm up.

Third, vehicle enter into the radar detection area with the speed of <10km/h, the radar green light always ON, the camera doesn't shoot continuously.

Finally, vehicle enter into the radar detection area with different speed of 0~30km/h, contrast the camera's snap position, it will be <0.5meters difference.

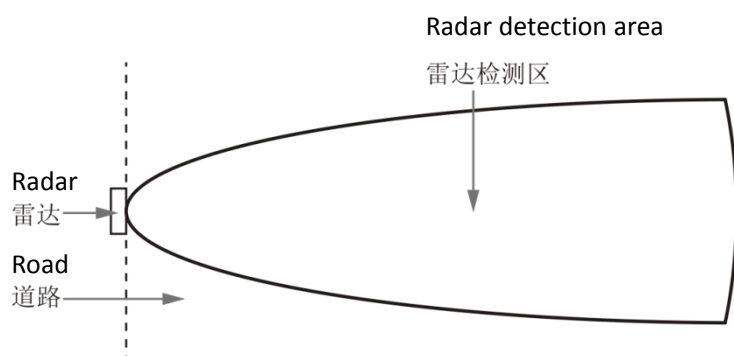


Figure 7 radar detection area

Radar detection range (meters)	Gate arm length (meters)
2.5	2.8~3.0
3.0	3.2~3.5
3.5	3.7~4.0
4.0	4.2~4.5
4.5	4.7~5.0
5.0	5.2~5.5

5.5	5.7~6.0
6.0	6.2~6.5

Figure 4 The relationship between radar detection range and gate arm length

2. Anti-hit Radar Sensor

2.1 Installation

Slotting a hole with a diameter of 13mm at a position 600 ~ 800mm above the ground on the barrier gate box (the center line of the same direction as the gate arm). show as picture 8.

Notice: It is recommended to apply glass glue around the contact surface between the radar shell and the barrier gate box to prevent rainwater from infiltrating into the box.

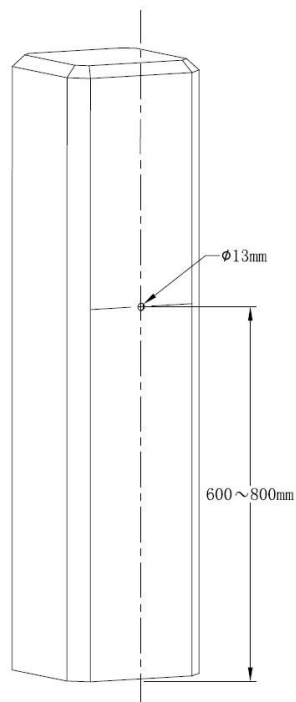


Figure 8 hole size

Put the communication cable through the round hole into the barrier gate box, and then use the PG connector nut to lock it. See figure 9.

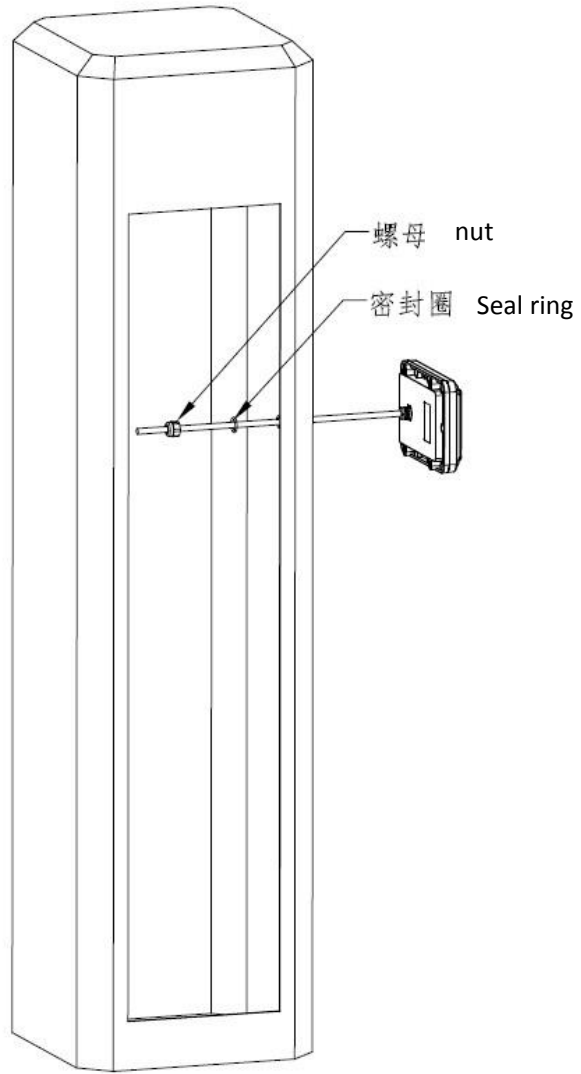


Figure 9 fix radar

Final installation like picture 10 and picture 11:

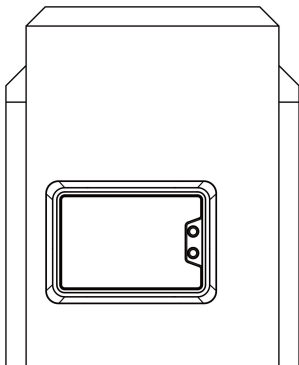


Figure 10 horizontal mounting (narrow anti-hit area)

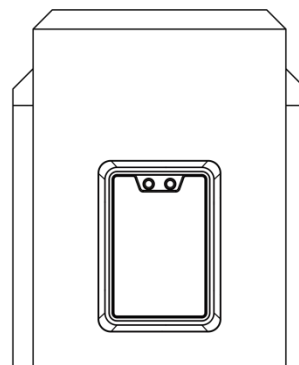


Figure 11 vertical mounting (wide anti-hit area)

Notice:

-
1. Make sure the barrier gate box and radar sensor is install fastness, otherwise, it will influence radar detection accuracy if the barrier gate box and radar sensor is shaking.
 2. Don't put any objects in the radar detection area.
 3. Install the fence out of the radar detection area, try not move around as much as possible.
 4. Please calibrate radar sensor soon after situation is changed.
 5. Don't calibrate radar sensor in rain and snow condition.
 6. When the vehicle passes through the anti-hit area, the greater the angle between the vehicle and the road, the worse the radar detection performance will be. We suggest use the radar in a situation which the angle is less than 30 degree when driving.

2.2 Cable connection

Color	Definition	Remarks
Red	DDC (+)	external DC12V positive
Black	GND (-)	external DC12V negative
Brown	digital output	default with object close, without object open
White		
Blue	automatic collect threshold value	Short-circuiting automatic collect threshold value
Orange		
Yellow	RS485 T/R+	RS485 A Port
Green	RS485 T/R-	RS485 B Port

Figure 5 cable definition and cable connection description

2.3 Radar sensor indicator light description

Indicator	Definition	Remark
Red	Power supply	The red light is always on when power-on
Green	Work statue	Flashing and then light goes off when power-on, shows radar self-check is normal
		Flashing when update the background threshold
		Always lighting when there is object detected
		Light goes off when there is no object detected(or object left)

Figure 6 Indicator light definition and description

2.4 Automatic calibration

Press the button of the end line of the radar cable with 1 second and then loosen, radar will automatically update the background threshold, the green light will flash 4 seconds during the recording period, when the light stops lighting means update the background threshold succeed. Please assure there is no object pass by within the radar detection range for 4 seconds.

2.5 Parameter setting

The radar sensor's default detection range(meter) and gate arm fall time(second) is show as figure 7.

Radar types	Parameter	Default value
Anti-hit Radar Sensor	Detection range (m)	3
	The width of the anti-hit area	narrow
	Fall time (s)	3
	Distinguish human and vehicle	no

Figure 7 The default parameter table of the anti hit radar sensor

2.6 Check the statue of Radar Sensor

(1) Function test for human and vehicle distinction:

First of all, raise the barrier gate arm, human enter into the radar detection area, the green light of the radar sensor is OFF, after human is left the radar detection area, the barrier gate arm is not down;

Then, raise the barrier gate arm, vehicle enter into the radar detection area, the green light of the radar sensor is ON, after vehicle is left the radar detection area, the barrier gate arm is down.

(2) Function test for vehicle anti-hit:

First of all, raise the barrier gate arm, the vehicle pass under the barrier gate arm at the speed of 10km/h, the radar sensor light is always ON when vehicle is under the gate arm, and the gate arm don't shake and don't hit the vehicle.

(3) Function test for human anti-hit:

First of all, after the vehicle is gone, human is passing by under the gate arm during the gate arm down period. At this time, the radar sensor light is ON, the barrier gate arm up and don't hit human;

Then, human is moving forward and backward in the horizontal direction of the gate arm, the radar sensor light is always ON, the gate arm is not down and don't hit human.

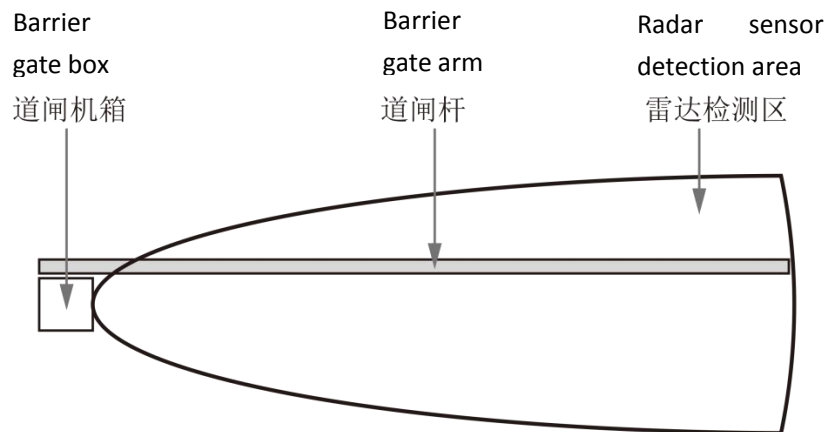


Figure 12 Radar detection area

Detection distance (meters)	Gate arm length (meters)
2.5	2.8~3.0
3.0	3.2~3.5
3.5	3.7~4.0
4.0	4.2~4.5
4.5	4.7~5.0
5.0	5.2~5.5
5.5	5.7~6.0
6.0	6.2~6.5

Figure 8 The relationship between radar detection range and gate arm length

3 Maintenance and common failure predication

Radar has the characteristics of high technical content and strong professionalism. Please read the product operation manual and relevant documents carefully before use.

1 Caution

- 1) The power supply voltage should be appropriate, not too high or too low, so as not to affect the radar performance;
- 2) Don't cover the radar front;
- 3) Don't plug the serial port;
- 4) Avoid impact and drop, so as not to damage the product.

2 Common failure predication

1) The test management software can't be connected

Check whether the power supply is connected properly, whether the serial port is connected securely, and whether the line sequence is correct. Check whether the serial cable and converter is damage.

2) Can't detect the object

Open the test management software to read the configuration information and check whether the parameters are read correctly: if there is no change, there is a problem with the serial connection. Please make sure the serial connection is normal and the serial parameters are

configured correctly.

If the detection state remains unchanged, the radar needs to be re-calibrated and please ensure that there are no targets within the radar detection area.

3) Radar unresponsive when human passes

Open the test management software to read the radar configuration information and check whether the human and vehicles distinction function is on, if YES, change it to NO and save the parameters.

4) The barrier gate arm can't down after the vehicle is pass

Open the test management software to read the radar configuration information and check whether the detection distance setting exceeds the actual lane width. If so, it is required to change according to the detection distance setting table and save the parameters(Notice: the detection distance has to be set less than the actual lane width)

5) Radar sensor green light always ON

Check whether there is any change in the surrounding environment background. For example, if the position of the surrounding lane fence changes, if yes, the background threshold should be renewed (Notice: don't update background threshold in snow and rain condition).

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.