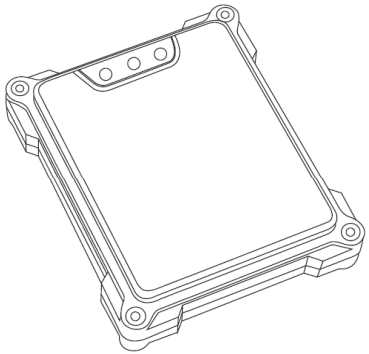
Dual-beam Barrier Sensor Detector

User Manual



1. Introduction

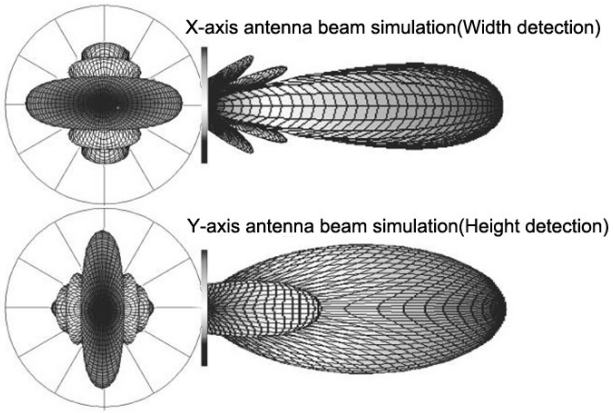
It is a dual-beam millimeter detector that can simultaneously detect X-axis (width), Y-axis (height) and Z-axis (distance).

Since the X-axis and Y-axis adopt independent transmitting and receiving units, the vertical detection angle of Y-axis can reach about 60° through the special antenna structure, which greatly enhances the detection ability of the detector at the vertical angle, and truly realizes that there is no blind zone in the channel.

Therefore, the dual-beam detector can effectively solve the problem of missed detection caused by the neutral position of large vehicles. At the same time, due to the increase of the electromagnetic radiation area, the detection reliability of vehicles passing at a large angle is also effectively improved.

2. Application

1) Regional detection and triggering in various climatic environments.
2) Anti-hitting and trigger applications for all types of barriers gates.
3) For mixed channels of personnel and electric vehicles.
4) For vehicle access detection for fast rolling doors(only vehicles can be detected).



3. Technical Parameters

1) Input Voltage: 9-24VDC
2) Rated Current: <200mA
3) Working Frequency: 24-24.25GHz
4) Modulation Mode: FMCW
5) X-axis Antenna Transmission Power: 10-15dBm
6) X-axis Horizontal Beam: ＜30°
7) X-axis Vertical Beam: ＜17°
8) Y-axis Antenna Transmission Power: 10-15dBm
9) Y-axis Horizontal Beam: ＜15°
10) Y-axis Vertical Beam: ＜60°
11) Z-axis Detection Distance: 1 – 6 meters, ±0.1 meters
12) Working Temperature: -40℃~+85℃
13) Protection Level: IP67
14) Dimension: 117*97*16mm

4. Installation

1) Please use power adapter 9-24VDC 1A or above for independent power supply.
2) When use the gate controller to supply power, please ensure that the output current should be more than 200mA.
3) When applied to lanes, the best height from the detector center and the road surface is 50-60cm.
4) The distance between the detector center and fence pole: octagonal fence not less

than 25cm, right angle fence not less than 30cm.

5) The detector installation surface should be perpendicular to the horizontal level, and fix firmly.

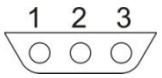
6) The ground within the detection distance should be flat without any obstacles. When the angle between the passing vehicle and the detector is more than 30 degrees, please use roadblocks to guide the vehicles.

5. Wiring Definition

Color	Definition
Red	Power Input +12VDC
Black	Power Input GND
Purple	Program Button Input
Brown	Program Button Input Ground
Blue	RS232(RX)
Green	RS232(RX)
White	Relay Output COM
Yellow	Relay Output NO

6. How to read Menu No. (Red LED)

As shown in the below picture: the indicator No. is 1, 2, 3 from left to right.



Menu 1: The red LED 1 is on.

Menu 2: The red LED 2 is on.

Menu 3: The red LED 3 is on.

Menu 4: Red LED 1 and 3 are on. (1+3=4)

Menu 5: Red LED 2 and 3 are on. (2+3=5)

Menu 6: Red LED 1, 2 and 3 are on. (1+2+3=6)

7. How to Read Parameter (Blue LED)

1) The method of reading the parameters is same as above. The blue LED blinks and the reading No. is added by 0.5. Take the detection distance setting as an example: the blue LED 3 is on for 3 meters, and the blue LED 3 blinks for 3.5 meters.

Blue LED Status and Detection Distance

Blue LED No.	Detection Distance(m)	Blue LED No.	Detection Distance(m)
Blue LED 1 on	1 meter	Blue LED 1 blinks	1.5 meters
Blue LED 2 on	2 meters	Blue LED 2 blinks	2.5 meters
Blue LED 3 on	3 meters	Blue LED 3 blinks	3.5 meters
Blue LED 1 and 3 on(1+3)	4 meters	Blue LED 1 and 3 blink(1+3)	4.5 meters
Blue LED 2 and 3 on(2+3)	5 meters	Blue LED 2 and 3 blink(2+3)	5.5 meters
Blue LED 1,2 and 3 on(1+2+3)	6 meters	When the barrier arm is 3 meters, we set the detection distance to 2.5 meters. LED 2 blinks.	

2) The gate closing speed parameter*2 is the actual setting parameter. For example, the blue LED 3 is on for 3*2=6 seconds, and the blue LED 3 blinks for (3+0.5)*2=7 seconds.

8. Detector Parameter Setting and Saving

1) Enter the menu: press and hold the setting button until the menu No. to be set is selected. Then release the button, and the corresponding parameter blue LED is on.

2) Change parameters: change the current parameters by tapping the setting button.

3) Save parameters: press and hold the setting button until red LED 1, 2 and 3 blinks at the same time. Release the button, and the parameters are changed and saved.

Menu Setting Comparison Table

Menu No.	Setting Function	Default
1	Detection distance: The reading distance from 1 to 6m.	3m
2	Sensitivity: reading 1 is low, 2 is medium, and 3 is high.	2
3	Gate closing speed: the reading time is from 2 to 12 seconds	6s
1+3=4	Distinguish between people and vehicles: 1 is not distinguishing, 2 is distinguishing	2
2+3=5	Relay output delay: the corresponding delay of reading is 0 to 6s	0s
1+2+3=6	Scene settings: reading 1 for straight pole mode, 2 for fence mode, 3 for trigger mode	1

9. Quick Setting (Required Setting Items)

1) Straight pole lane application settings (Only 2 steps required)

Step 1: Set the application scene to straight pole mode.

Step 2: Set the detection distance.

2) Fence lane application setting (Only 3 steps required)

Step 1: Set the application scene to fence mode.

Step 2: Set the detection distance.

Step 3: Set the gate closing speed (accurate to 1 second)

3) Trigger Mode Setting (Only 3 steps required)

Step 1: Set the application scene to trigger mode.

Step 2: Set the detection distance.

Step 3: Set the relay output mode.

10. Multi-function Setting (Optional)

1) Sensitivity Setting: It is recommended to set the electric vehicle lane to medium or low, and the pedestrian lane to medium or high. On the occasion of face-to-face installation, one can be set to medium and the other one is set to high or low.

2) Pedestrian and Vehicle Distinction Setting (In non-necessary situations, it is recommended to set distinction between pedestrians and vehicles):

In electric vehicle lane or pedestrian lane, it should be set to “non-distinction between pedestrians and vehicles”. Otherwise, please set to “distinction between pedestrians and vehicles” to prevent accidents caused by non-vehicle passing.

3) Relay Output Delay: In trigger mode when the delay is set to 0 second, it is the vehicle presence output. Otherwise, it is pulse output. The pulse output time is from 1 to 6 seconds.

11. On-site Debugging

1) Straight Pole Mode: Raise the gate pole and put the hand in front of the detector to trigger it. The gate automatically closes when take hand away. The pole rebounds when the human body approaches the pole within the detection distance. The pole automatically closes in place when the human body leaves the detection distance. (Please change the closing speed parameter for high-speed gates and can adjust the response speed of the detector).

2) Fence Mode: Use remote control to open and close the gate several times and the fence will not trigger the detector. Then use the same method to test the detector as above-mentioned for straight pole mode (If in any steps of the above testing the detector is triggered by the fence itself, please follow the first part in section 12 “**General Troubleshooting**” to check).

3) Trigger Mode: Refer to the debugging method in straight pole mode.

12. General Troubleshooting

12.1 The radar is triggered by the fence itself during the opening or closing process.

1) Check if the center distance between the detector and fence is installed as required and if the detector installation surface is perpendicular to the fence. Please adjust the installation position or add 2-4 mm spacer to the side of the detector near the fence.

2) Check if the set closing speed is greater than the actual closing speed.

3) Check if set non-distinction between pedestrians and vehicles. If it is really necessary to set “non-distinction between pedestrians and vehicles”, the sensitivity can be reduced one level.

12.2 The detector outputs and does not reset all the time.

The set distance is greater than the lane, a foreign object on the ground is detected or the detector is not installed vertically. If you cannot solve it after troubleshooting, please enter menu 2 and select until three blue LED blinks at the same, then press and hold the setting button to execute “detector initialization”.

12.3 The three red LED are always on after detector is powered on.

If the detector initialization is unsuccessful and cannot start normally after repeated restarts, please return to factory for inspection.

12.4 Blue LED 1 and 3 blink.

The detector is triggered when the gate is closed, or there is a reflection signal at the edge of the X beam, and the detector cannot distinguish whether it is a fence or a vehicle. There is a delay to close the gate when no vehicle passes after the gate is opened or the signal disappears. It is a safety mechanism to prevent hitting the rear of the vehicle and there is no need to deal with.