Radar Sensor User Manual V3.0

(For Straight Boom Barrier)

1. Introduction

This manual is for the radar sensor installed on barrier gate with straight arm. It introduces the radar sensor's installation, parameter setting, debugging and precautions to guide users to install and use the sensor properly. Please read this manual carefully before use.

1.1 Product Features

The radar sensor adopts 24GHz monolithic transceiver chip from Germany and multi-layer composite PCB antenna. Due to its high integration, high bandwidth and low noise, its working spectrum and measurement accuracy are stable and it can be used for barrier with straight arm to avoid any hitting.

1.2 Application

1) Regional detection and triggering in various climate environments.

2) Trigger and anti-smash applications for all straight pole barriers gates.

2. Technical Parameters

1) Input Voltage: DC9-24V 200mA

2) Working Frequency: 24GHz

3) Modulation Mode: FMCW

4) Sending Power: 10-12dBm

5) Horizontal Beam: ＜30°

6) Vertical Beam: ＜17°

7) Detection Distance: 1 – 6 meters, ±0.1 meters

8) Human Detection Width: about 1.5 meters (center area)

9) Working Temperature: -40℃~+85℃

10) Protection Level: IP67

3. Installation

1) When use independent power supply 9-24VDC 1A or above, please connect sensor's GND to barrier's controller GND with separate wiring.

2) When use the barrier's controller to supply power, please ensure the output current should be more than 200mA.

3) The best height from road surface to sensor's center is 55-60cm. The distance between sensor's center and barrier's arm is 15-20cm

4) sensor installation surface should be perpendicular to horizontal level, and be fixed firmly.

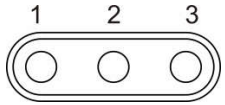
5) The ground within the detection distance should be flat without any obstacles. When the angle between the passing vehicle and the sensor is more than 30 degrees, please use roadblocks to guide the vehicles.

4. Wiring Definition

Color	Definition
Red	Power Input +12VDC
Black	Power Input GND
Purple	Program Button Input
Brown	Program Button Input GND
Green	Not in Use
Blue	Relay Output NC
White	Relay Output COM
Yellow	Relay Output NO

5. How to get Menu No. (Red LED)

As shown in the following picture: the indicator numbers are 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: The red LED 1 and 3 are on. (1+3=4)

6. How to get Parameter (Blue LED)

1) The method of getting 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.

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.

Blue LED Status and Detection Distance

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

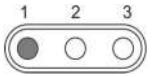
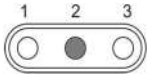
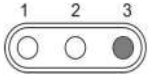
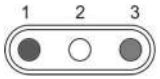
7. Sensor Parameter Setting and Saving

1) Enter the menu: press and hold the program 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 program button.

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

Menu Function Setting Comparison Table

Menu No. (Red LED)	Setting Function (Blue LED)	Default
Menu 1 	**Set detection** distance from 1m to 6m: the sum of blue LED serial No. is the detection distance (Blue LED blinks plus 0.5s).	3m
Menu 2 	**Set sensitivity**: blue LED 1 on for low (only detect vehicles); blue LED 2 on for medium and blue LED 3 on for high (detect both pedestrians and vehicles).	1
Menu 3 	**Set gate closing speed** from 2 to 12s: double the sum of blue LED serial No. is the current closing time (Blue LED blinks plus 0.5s). *(The closing speed parameter in the straight arm mode is the sensitivity increase time during the closing process. It is the anti-hitting holding time. Properly setting this parameter to be less than the actual closing speed will help prevent car following.)*	6s
Menu4 	**Set output delay** from 1 to 6s: the sum of blue LED serial No. is the current delay time.	1s

8. On-site Debugging

Raise the gate pole and put the hand in front of the sensor to trigger it. The gate automatically closes when take hand away. The pole rebounds when the pedestrian approaches the pole within the detection distance. The pole automatically closes in place when pedestrian leaves the detection distance. (For high-speed gates, the closing speed can be changed to adjust the response speed of the sensor).

9. Warranty

9.1 The warranty time is one year.

9.2 Product failure caused by the following conditions is not in the warranty.

1) Improper use environment or conditions, such as unqualified power supply.

2) Failure or damage caused by accident, misoperation, or manual disassembly, etc..