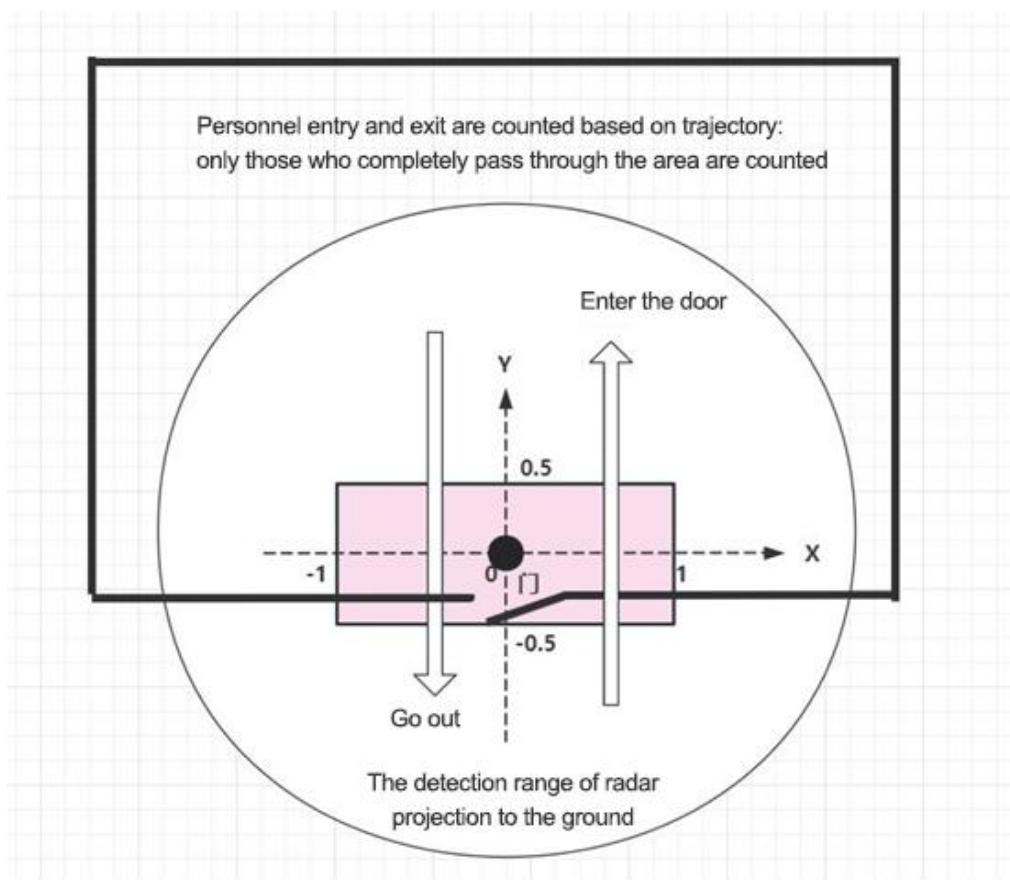# 60G Tripwire Counting Radar Module

LD6001C Instruction Manual

1. Product Features

As shown in the figure below, the radar module is installed on the top of the door entrance and exit, and the pink area is set as the ground projection range. The trajectory of people entering and leaving the pink area is used to determine whether the person is entering or leaving the door, thereby realizing entrance and exit counting.

Personnel entry and exit are counted based on trajectory: only those who completely pass through the area are counted

Enter the door

Y

0.5

-1   0   1   X

-0.5

Go out

The detection range of radar projection to the ground

Note: The unit of rectangular range is m, and the unit in the configuration command is cm
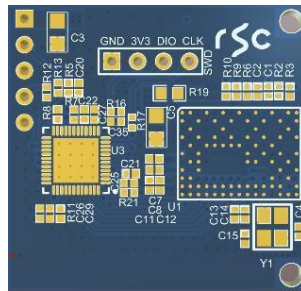
Note: The unit of the rectangular range is m , and the unit in the configuration command is cm
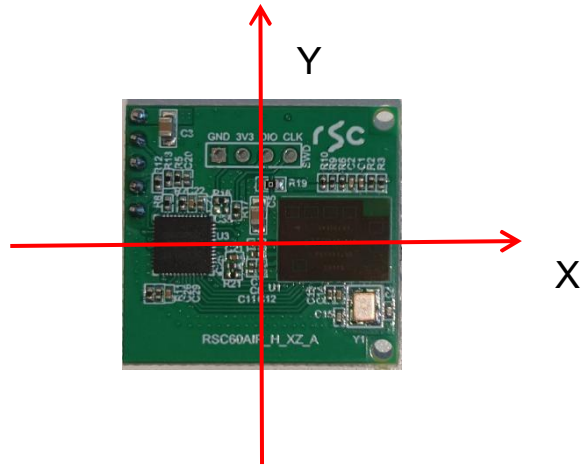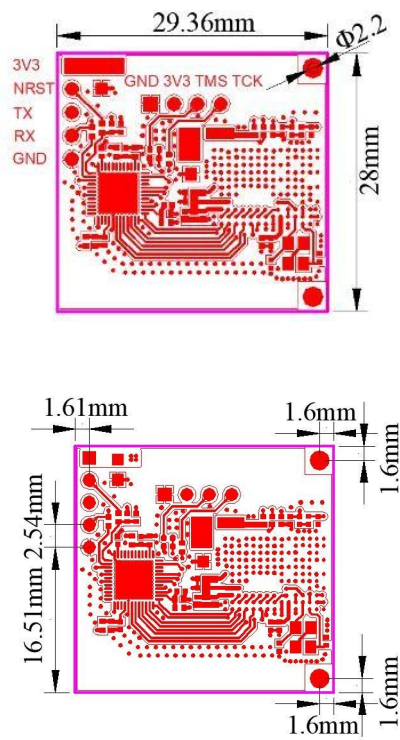
2. Parameter Introduction

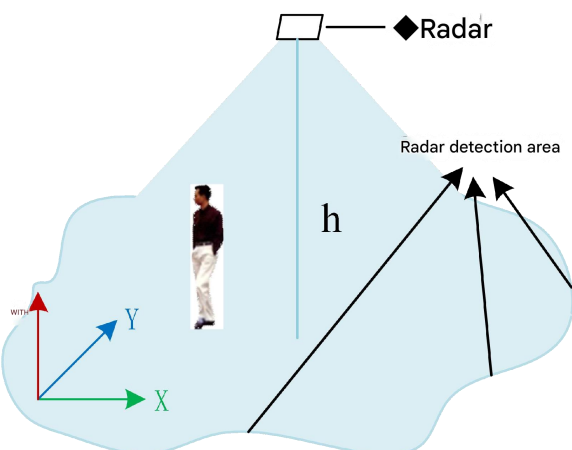| No.	Parameter	No.	Parameter
1	Installation method: ceiling installation	6	Peak power consumption: 1.7w
2	Detection distance: 0.5~8m (The effective projection ground is a circle with a radius of 3.5m and an installation height of 2.7m)	7	Communication method: TTL serial port
3	Azimuth and elevation coverage: ±60°	8	Operating frequency: 60-64GHz
4	Power supply: 3.3V	9	Processing cycle: ≤30ms
5	Average power consumption: 0.3w	10	Size: 29.36*28mm

2.1 Product appearance

2.2 Product size

3. Product Features

No.	Characteristic	Detailed Introduction
1	Installation Scenario	 ◆Radar Radar detection area h Y X Detection distance: 0.5~8m
		Note: The detection distance is related to factors such as the installation environment, human body volume, relative angle, and movement range. The above parameters are the test results of our company. Different test conditions Under certain conditions, the actual test results shall prevail.
2	Not affected by the environment	Not affected by temperature, humidity, dust, light, noise, etc.
3	Flexible parameter configuration	The detection range, function mode, etc. can be configured through the serial port.

4.Electrical Characteristics

4.1. Pin Description

Pin	Description
3V3	Module power input

NRST	Module reset
TX	Serial port sending
RX	Serial port receiving
GND	Ground

4.2. Limit Rating Parameters

Pin	Min	Max	Unit
3V3	- 0.5	3.6	V
I/O (TX/RX/NRST)	- 0.5	3.6	V

4.3. Typical operating parameters

Pin	Typical Value	Unit
3V3	3.0 ~ 3.3	V
I/O (TX/RX/NRST)	-0.5 ~ VDD+0.3	V

Note: VDD in the above table refers to the power supply input

4.4. Module power consumption

The radar module contains RF components. When the RF transceiver is turned on, the current is about 530mA. When the RF transceiver is turned off , the current is about 80mA . The average power consumption of the module is related to the frame period of the radar detection processing. If the radar working frame period is too long, the current will be about 530mA.
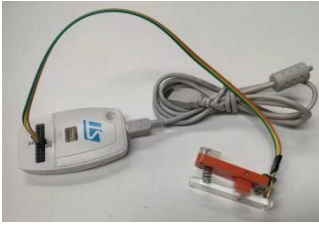
The period is 100ms , and the average current is about 110mA .

For the power supply input of the module, a power supply with large

driving capability is required, and the output current no less than 1A.

5. Environment Construction

5.1. Hardware Composition

No.	Name	Picture	Description
1	Radar module	/	Model: LD6001C
2	USB toTTL Module		USB toTTL module, can realize serial port command configuration, Antenna calibration and other functions.
3	USB extension cable		USB extension cable for connecting Connect the cable between PC and USB to TTL module .

| 4	ST-LINK Downloader		ST-LINK downloader, used for radar module firmware upgrade, secondary development simulation debugging try.

5.2. Installation location

The module is installed on the ceiling with the antenna facing downwards, at a height of 2.5-3.0m. Keep the module fixed as much as possible during installation to avoid module shaking, keep the surrounding environment as open as possible, and fix the USB extension cable as much as possible to avoid interference caused by the cable.

radar module

6. Parameter configuration
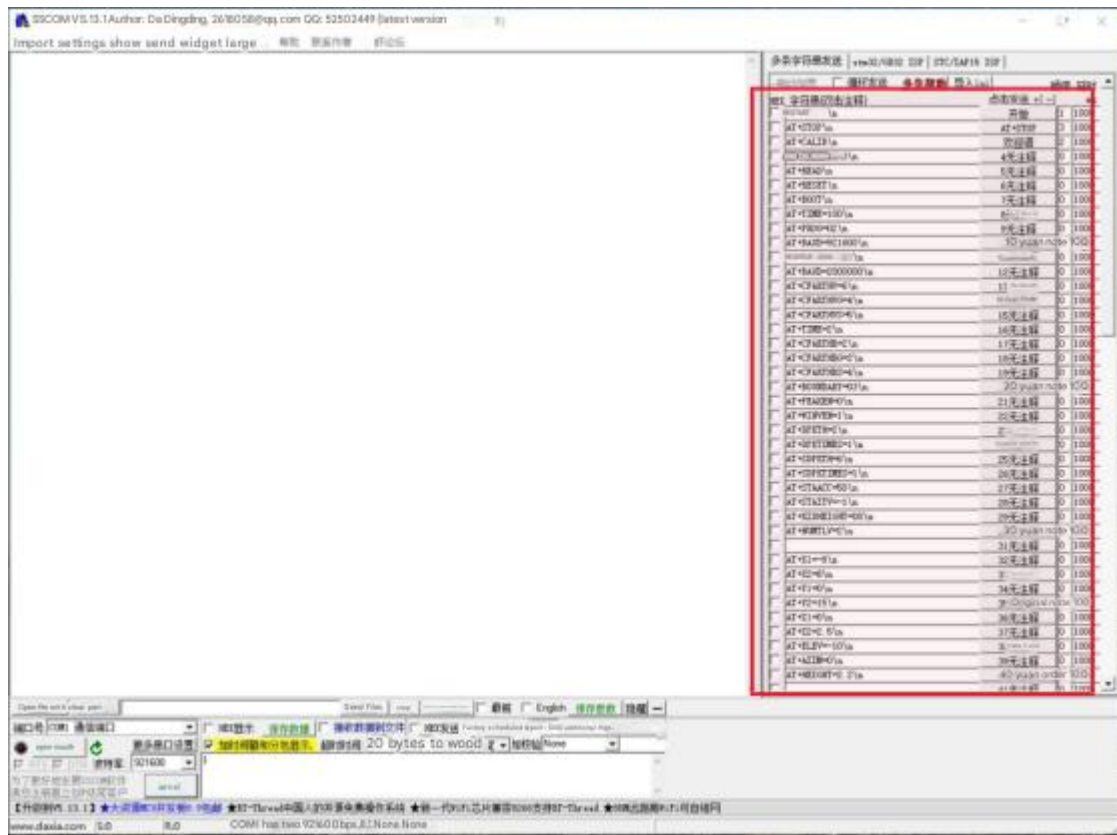
Adjust the corresponding parameters as needed.

Note: After modifying the parameters, click the button behind the parameters to complete the parameter modification.

Common parameter settings are as follows:

Order	Meaning
AT+START\n	Start working
AT+STOP\n	Stop working
AT+READ\n	Reading parameters
AT+SENS=XX\n	Configure sensitivity (range 1-19 , default value is 2, the smaller the value, the more sensitive)
AT+TIME=XX\n	Configure the scan interval (unit: ms , range: 100-10000 , default value: 100)

AT+HEATIME=XX \n	Configure the protocol output heartbeat interval (units , range 10-999 , default value 60)
AT+RANGE=XX\n	Configure the radius of the radar detection circle projected onto the ground (unit: cm , range: 10-1000 , Default value: 300)
AT+DEBUG=X\n	0: Protocol mode (default) 1 : Output string 2/3: Debug mode (used by host computer)
AT+XPosi=XXX\n	Configure X positive range (unit: cm , range: 20 ~ 300 , default value 100)
AT+XNega=-XXX\n	Configure the negative X range (unit: cm, range: -300 ~ - 20, default - 100)
AT+YPosi=XXX\n	Configure the Y positive range (unit: cm, range: 20~300 , default value: 50)
AT+YNega=-XXX\n	Configure the negative Y range (unit: cm, range: -300~-20, default value: -50)
AT+HEIGHT=XXX \n	Set vertical distance (unit: cm, setting range: 50~500, default value: 270)

Note: If the configuration is successful, AT+OK will be returned ; if the configuration fails, Save will be returned. Para Fail , you need to resend the command.

7. Protocol Description

Example of a complete data package:

55 AA 09 03 00 00 03 00 09

55 AA : Frame header

09 : Number of bytes

03: type=0x03 passenger flow statistics data package

00 00 : Number of entries

03 00 : Number of times you go out

09: XOR check (09 03 00 00 03 00 XOR)