The 24 GH millimeter-wave parking detection radar

MS24-2525D58M4-PMS Application Manual

Version

V1. 22023. 09.

13

catalogue

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recommendations constitute any warranty, express or implied

1. Overview

MS24-2525D58M4-PMS is a low-power millimeter-wave ranging radar module based on SGR one-generation one-acquisition chip, which can output the distance of the target in real time. It can be applied to parking detection applications such as median video pile and tooth machine.

MS24-2525D58M4-PMS module supports low power working mode, static current is about 20 uA, the working average current can be as low as 500 uA, suitable for battery-powered road tooth machine equipment, but also suitable for the median video pile, module output distance information, users can according to the site parking space installation distance,

Set different trigger distances, but the passing vehicles outside the parking space will not trigger. Compared with traditional TOF and ultrasonic, it is not susceptible to the environment, and is not sensitive to the common climate effects used in outdoor application, and is not affected by rain, snow and dust. At the same time, the ambient light intensity and the body color will not affect the radar detection effect.

The UART interface of board-level communication has a default port rate of 9600. The 2mm general needle row can quickly integrate with the upper computer software or the customers MCU, saving configuration time and accurately output the static distance information of the target.
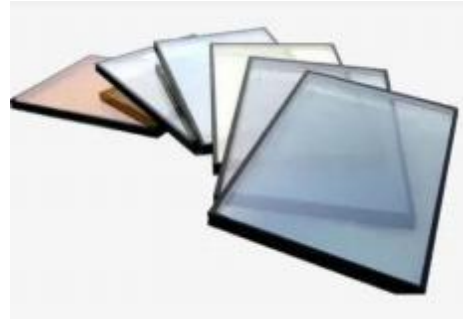

Median video pile road machine

The module can penetrate the non-metal housing without hole opening. Common materials include plastic, glass, acrylic, etc.

All kinds of acrylic   glass

2. module appearance and interface

The interface connector is recommended to use 2 mm spacing needl

pin	name	remarks
1	VO	Target high level, 3V (default injection does not lead)
2	UTX	Serial port communication TX, 3V
3	URX	Serial port communication RX, 3V
4	GND	the earth
5	VCC	3.1~5.5V
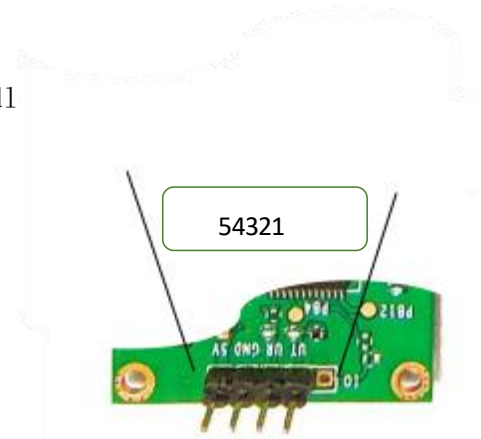
Outline structure and dimensions (in mm)
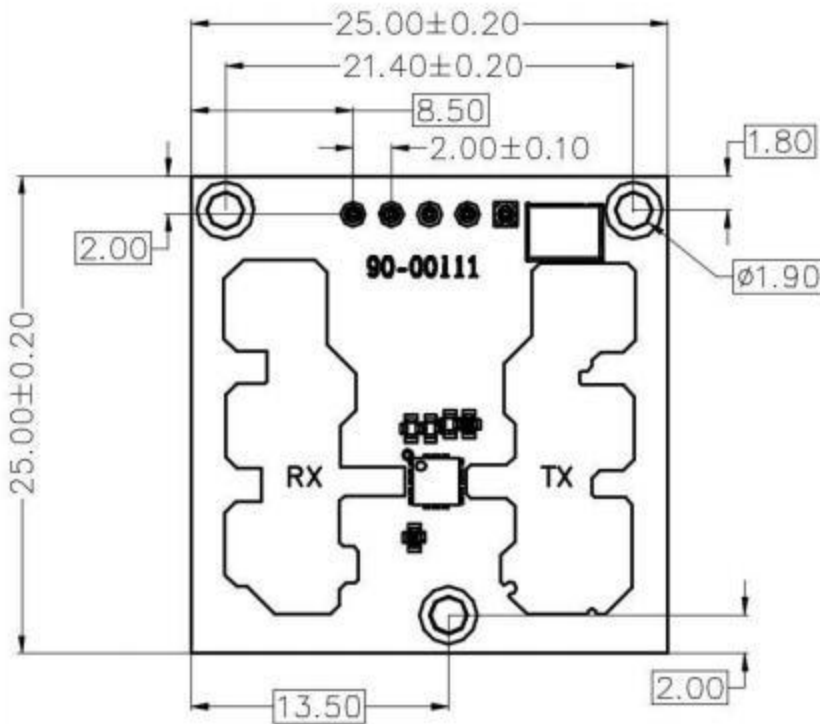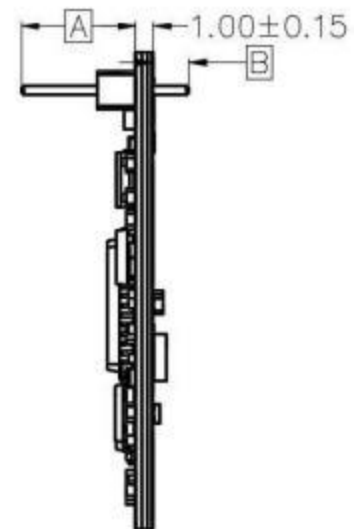
TOP VIEW   SIDE VIEW

3 Module performance

parameter	representative value
frequency	24GHz ISM
modulation mode	FMCW
Detection distance	6 Meters
supply electricity	3.1-5.5V
current	20 uA static current, 500 uA average current (detected once per second)
Output serial port level	3V
Detection cycle	adjustable
data format	Serial hex output or high level (configurable switch)
accuracy	+/-0.1m

4 Debugging wiring

MS24-2525D58M4-PMS uses the serial port output string format, so the user can quickly test the module on the serial port assistant.
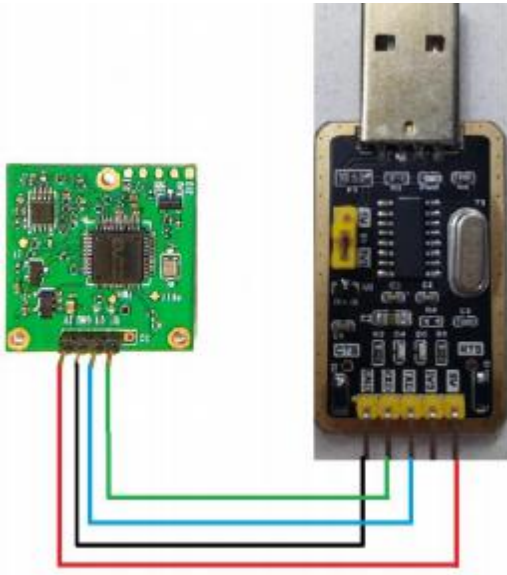
The module and the serial port plate can be connected according to the left picture: the module 5 pipe pin connects to the serial port plate 5V

Module 4 pin connects the serial plate GND

Module 3 pin connecting the serial port plate TX

Module 2 tube pin to serial port plate RX

5 Debugging configuration

The test MS24-2525D58M4-PMS can be tested on the computer via the serial port assistant.

Use any serial port debugging tool. Port rate 9600,8 bit data bit, 1 bit stop bit, check bit and flow control for None, receive setting HEX, send setting HEX.

The product supports the UART text protocol		
1	Baud rate	9600
2	The word wide	8bit
3	stop bit	1
4	even-odd check	None

●Communication format

The communication adopts the communication mode of 1 question and 1 answer, and the communication protocol is as follows:

D0: for the start code of communication, the host access radar is 0x53, the radar transmission host is 0x52;

D1: is the total data length x from D 0 to the end code;

D2: for the message ID;

D3~D (x-3): is the data bit;

D (x-2): D0 + D1 + D2 +... + D (x-3), take the last 8bit; add D0 to D (x-3) is 0x1623 take 0x23.

●Message ID definition

●Radar return host (3 sets of output mode using 0x20 command switch) mode 1: distance mode (one set of data),

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7	DATA8
0x52	0x09	0x01	0x00	0x00	0x00	0x00	0xxx	0x46

D3D4 is 8 higher and 8 lower distance, in centimeters, and D5D6 is 8 higher and 8 lower energy values.

Mode 2: Spectrum mode (default) (it actively sends a set of data each time the radar is powered on),

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7	***	0xxx-1
0x52	0xxx	0x03	0xxx	0xxx	0xxx	0xxx	0xxx	***	0x46

Where DATA3 DATA4 is the spectrum energy of a distance of 10cm, DATA5 DATA6 is the spectrum energy of 20cm, every two bytes form a spectrum, but the third and fourth positions are the spectrum energy of the maximum distance position.

Mode 3: Distance + spectrum mode (0x20 command switch when radar is distance mode)

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7	DATA8	**	**	**	**	DATA3-2	DATA3-1
0x52	0x09	0x04	0x00	0x00	0x00	0x00	0x00	0x00	**	**	**	**	0xxx	0x46

D3 D4 is the high 8 bits and low 8 bits, in centimeters, D5 D6 is 8 bits and low 8 bits corresponding to D3 D4, and D7 D8 is the start distance of the energy value to be output, and the following will be every 10cm data on the next two 8 bits, for example, you want to output 100cm-200cm spectrum data, 100cm data on D7 D8,110cm data on D9 D10,120CM data on D11D12, until the maximum spectrum set.

Host to radar command (polling mode enabled when 0x14 time set to 0, requiring this command for data)

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x01	0x00	0x00	0x00	0x5C	0x46

●Set the detection minimum

distance command 0x11 host to

radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x11	0x01	0x00	0x64	0xD1	0x46

Where: DATA 3 is set to query or write parameter, 0x00 is for query only, 0x01 is for set and write parameter.

DATA4 DATA5 For the high and low 8 bits to write, set in cm, such as 100cm conversion 16 system is 0x00 0x64.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x11	0x01	0x00	0x64	0xD0	0x46

Where: DATA 3 sets or query parameters.

DATA4DATA5 Parameters for the query and the set parameter.

●Set the maximum distance

parameter command 0x12 host

to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x12	0x01	0x00	0xC8	0x36	0x46

Where: DATA 3 is set to query or write parameter, 0x00 is for query only, 0x01 is for set and write parameter.

DATA4 DATA5 Set the high and low 8 bits to write as cm, if 200cm converted 16, to 0x00 0xC8.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x12	0x01	0x00	0xC8	0x35	0x46

Where: DATA 3 sets or query parameters.

DATA4DATA5 Parameters for the query and the set parameter.

●Get the radar detection

data command 0x13 host to the

radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x13	0x00	0x00	0x00	0x6E	0x46

Where: DATA 3 is set to query or write parameter, 0x00 is query only, 0x01
is set and write parameter. DATA4 The parameter 0x01 is 115200

0x02 is 57,600

0x03 is for 38,400

0x04 for 28800

0x05 for 19200

0x06 for 14400

0x07 for 9600

0x08 for 4800

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0x0A is the
1200 radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x13	0x00	0x07	0x00	0x74	0x46

Where: DATA 3 sets or query parameters for return.

DATA 4 for the set parameters.

●Set the module timing output

interval 0x14 host to radar

command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x14	0x00	0x00	0x00	0x6F	0x46

Where DATA 3 sets commands for the software and 0x01 sets parameters for requirements.

DATA4DATA5 Set the high 8 bits and low 8 bits of the software parameters, set 0x000x01 to 1ms, when set to 0x000x00, the serial port is the inquiry mode, at that time, actively send the distance or spectrum data according to the set time for other times. Set the range from 50 ms to 16,000 ms.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x13	0x00	0x07	0x00	0x74	0x46

Where: DATA 3 sets or query parameters.

DATA4DATA5 Is the set parameter.

●Set the module data

transmission mode 0x20 host

to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x20	0x00	0x00	0x00	0x7B	0x46

DATA 3 sets command for software, 0x01 sets parameters, and 0x00 for query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software, set 0x000x01 to send all the spectrum energy in mode 2,0x000x00 is the maximum energy maximum target distance and energy value in mode 1,0x00 0x02 is mode 3, send the maximum target distance and energy value and send the selected spectrum segment.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x20	0x00	0x00	0x00	0x7B	0x46

Where: DATA 3 sets or query parameters.

DATA4DATA5 Is the set parameter.

●Set the module algorithm mode send mode 0x21

(RKB1125FD only) host to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x21	0x00	0x00	0x00	0x7C	0x46

DATA 3 sets command for software, 0x01 sets parameters, and 0x00 for query.

DATA4DATA5 Set high 8 and low 8 bits for the software, set 0x00 0x01 as mode 2 and 0x00 0x00 as mode 1.

Radar return to the host engine

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x20	0x00	0x00	0x00	0x7B	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set mode 1 less than 50cm

judgment threshold host to radar

command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x31	0x00	0x00	0x00	0x8C	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x31	0x00	0x00	0x00	0x8D	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set mode judgment threshold of 1

50cm~100cm host to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x32	0x00	0x00	0x00	0x8C	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x32	0x00	0x00	0x00	0x8D	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set mode 1100cm~150cm judgment

threshold host to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x33	0x00	0x00	0x00	0x8C	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x33	0x00	0x00	0x00	0x8D	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set mode 1150cm~200cm judgment

threshold host to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x34	0x00	0x00	0x00	0x8C	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x34	0x00	0x00	0x00	0x8D	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set mode judgment threshold of

1200cm~250cm host to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x35	0x00	0x00	0x00	0x8C	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x35	0x00	0x00	0x00	0x8D	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set mode 1 greater than 250cm

judgment threshold host to radar

command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x36	0x00	0x00	0x00	0x8C	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x36	0x00	0x00	0x00	0x8D	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Sets whether the trigger mode is turned on

Host to the radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x22	0x00	0x00	0x00	0x7D	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set high 8 bits and low 8 bits for the software, set 0x0000 as the shutdown trigger mode, 0x0001 for the total energy difference, and 0x0002 for the energy difference of each spectrum segment

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x22	0x00	0x00	0x00	0x8D	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

Note: You need to use this function to change the output data to active output data, and output the result only after the trigger condition is triggered.

●Set the judgment threshold host to

radar command where the spectrum

segment difference is less than 50cm

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x37	0x00	0x00	0x00	0xxx	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x37	0x00	0x00	0x00	0x8xx	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set the judgment threshold of 50cm~100cm

host to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x38	0x00	0x00	0x00	0xxx	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x38	0x00	0x00	0x00	0xxx	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set the judgment threshold of 100cm~150cm

host to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x39	0x00	0x00	0x00	0xxx	0x46

DATA 3 sets command for software, 0x01 sets parameters, and 0x00 for query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x39	0x00	0x00	0x00	0xxx	0x46

Where: DATA 3 sets or query parameters.

DATA4DATA5 Is the set parameter.

●Set the judgment threshold of spectrum

segment difference of 150cm~200cm host to

radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x3A	0x00	0x00	0x00	0xxx	0x46

DATA 3 sets command for software, 0x01 sets parameters, and 0x00 for query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x3A	0x00	0x00	0x00	0xxx	0x46

Where: DATA 3 sets or query parameters.

DATA4DATA5 Is the set parameter.

●Set the judgment threshold of 200cm~250cm

host to radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7

0x53	0x08	0x3B	0x00	0x00	0x00	0xxxx	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x3B	0x00	0x00	0x00	0xxxx	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set the judgment threshold host to

radar command with the spectrum range

difference greater than 250cm

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x3C	0x00	0x00	0x00	0xxxx	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set the high 8 bits and low 8 bits for the software parameters, and set the 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x3C	0x00	0x00	0x00	0xxxx	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set the judgment threshold

of the total energy segment

difference the host to radar

command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x3D	0x00	0x00	0x00	0xxxx	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set high 8 bits and low 8 bits for the software parameters, and set 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x3D	0x00	0x00	0x00	0xxxx	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set the number of data

sent from host to radar

command after triggering

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0x3F	0x00	0x00	0x00	0xxxx	0x46

Where: DATA 3 sets the commands for the software, 0x01 sets the required parameters, and 0x00 is the query.

DATA4DATA5 Set high 8 bits and low 8 bits for the software parameters, and set 0x02 0x56 to 100.

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0x3F	0x00	0x00	0x00	0xxx	0x46

Where: DATA 3 sets or query parameters for return.

DATA4DATA5 Is the set parameter.

●Set parameter

initialize set host to

radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0xAC	0x00	0x00	0x00	0xxx	0x46

Where: sending this command restores the parameters to factory settings

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0xAC	0x00	0x00	0x00	0xxx	0x46

●Gets all parameter

command host to

radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0xAD	0x00	0x00	0x00	0xxx	0x46

Where: after sending this command, all the set parameters will be sent to the host one by one.

●Query the software

version (0 xAA) host to the

radar command

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0xAA	0x00	0x00	0x00	0xxx	0x46

Radar return host

DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x53	0x08	0xAA	0x00	0x00	0x00	0xxx	0x46

Where D3-D6 needs to convert the corresponding ASCII characters, as above corresponds to V1.8
D7 is the corresponding year, D8 corresponds to the month, D9 corresponds to the date, as above corresponds to 03 April 23.

●OTA firmware command (0 xBB)

●Host to the radar command

| DATA0	DATA1	DATA2	DATA3	DATA4	DATA5	DATA6	DATA7
0x52	0x08	0xBB	0x00	0x00	0x00	0xxxx	0x46

The change command module enters the OTA state and the OTA communication protocol is the standard Ymodem.

●Used on the computer

We provide the matching upper machine available for users to evaluate. Different from the direct observation of the module output by the serial port, the upper computer computer can do some delay processing of the upper layer after receiving the serial port signal output by the module.

1. After connecting the module, click the serial port-serial port selection-select port rate-open the serial port and set the query

Then, the greater the query time, the lower the average power consumption, the minimum supported query time is 35ms, the point query will send the inquiry command, when the mode green area shows the distance and energy value, the mode two point frequency spectrum (mode 2) debugging, the red box area is the signal distribution of all distance ends in the spectrum mode.
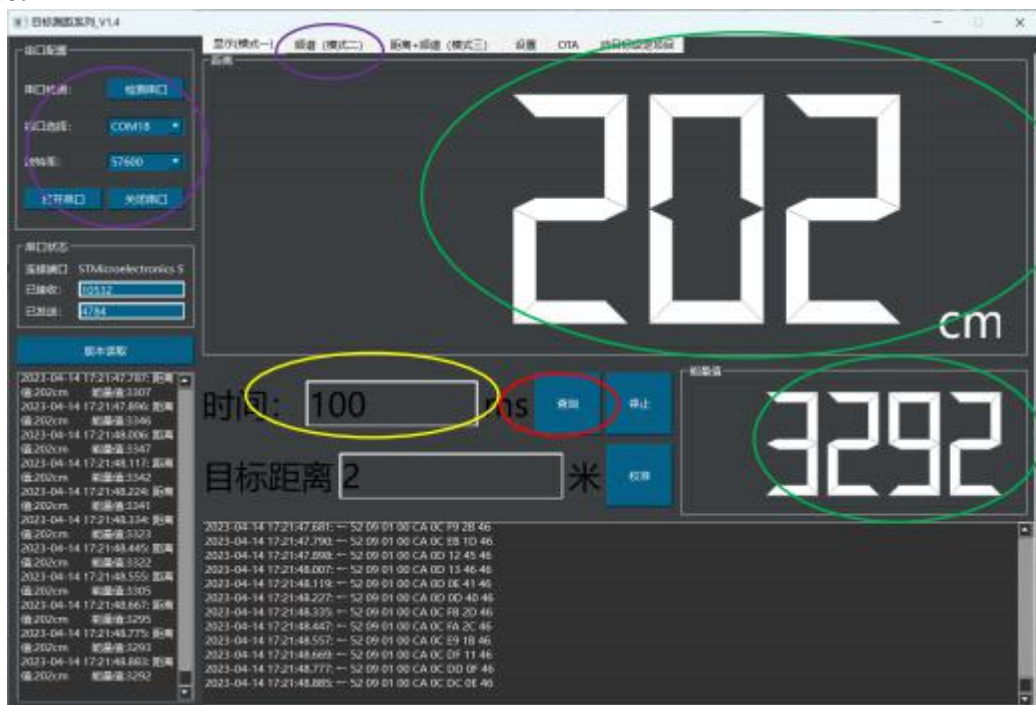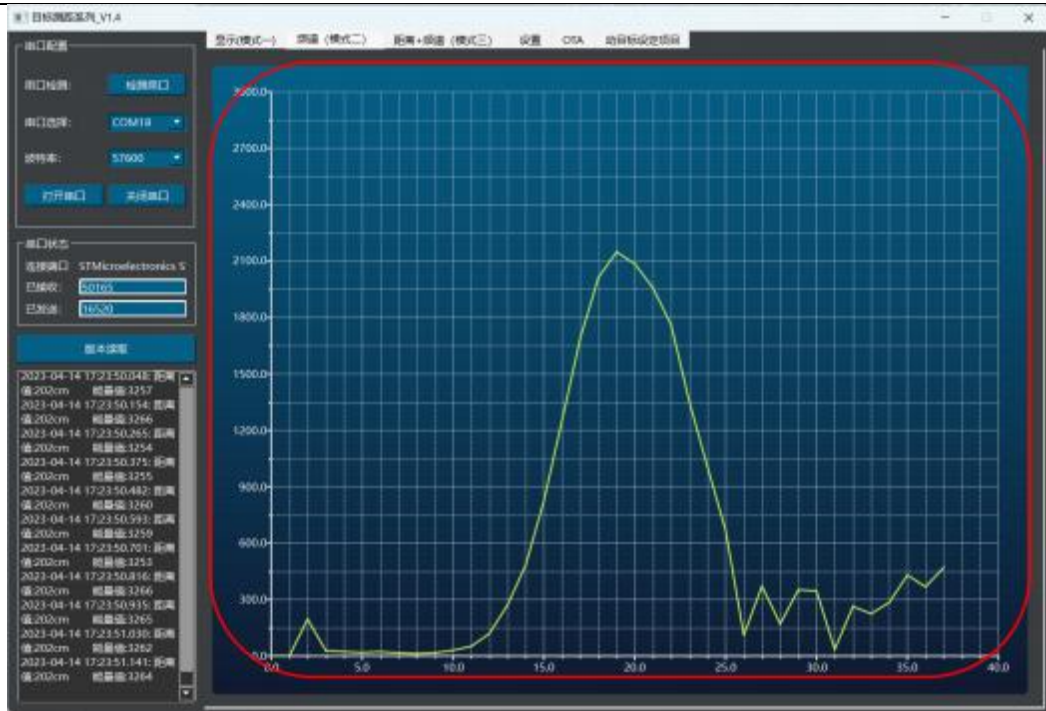
When switching to mode 3 interface is displayed as follows, when switching to mode 3, the red area below the point needs to switch to mode 3, the red area shows the detected distance and energy value, and the green area is the set energy value information set 0-100cm.
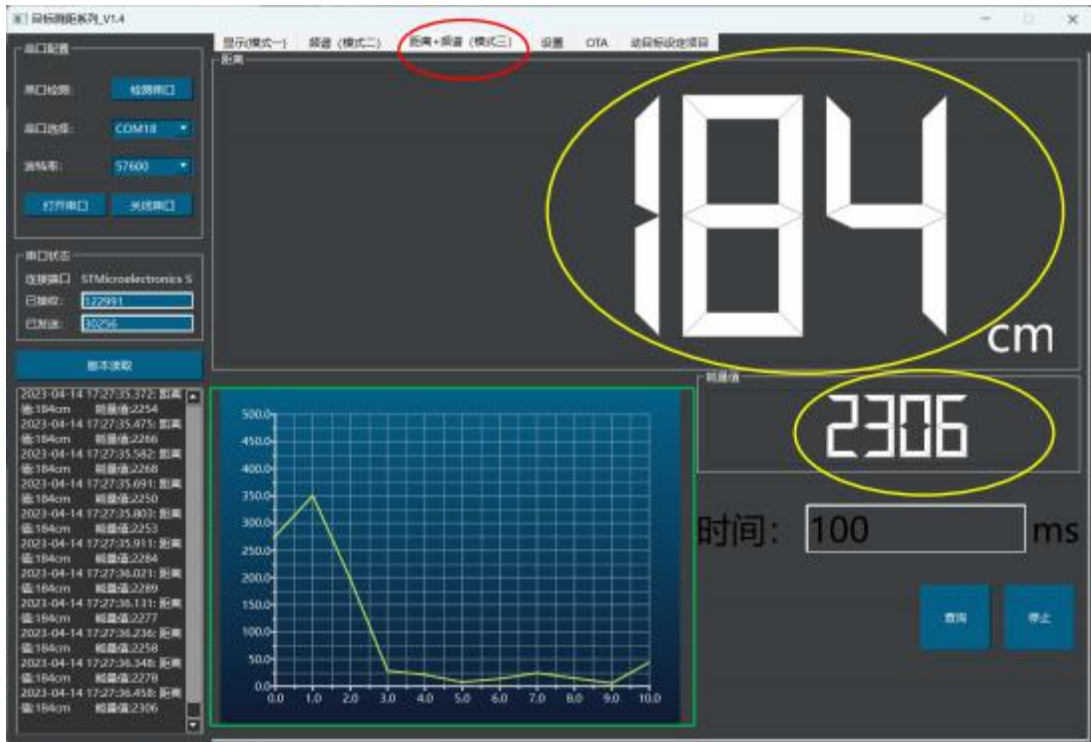
2. Radar module setting: the red box is set the maximum and minimum detection distance of the module, the yellow area is set the serial port rate of the module, the green box area is set the output distance mode, the blue area is set the radar in each distance threshold, the white area is the distance spectrum when setting mode 3, the green area is set for trigger mode, the dark blue area is set working mode and restore factory setting project, the black area set trigger time and time options.
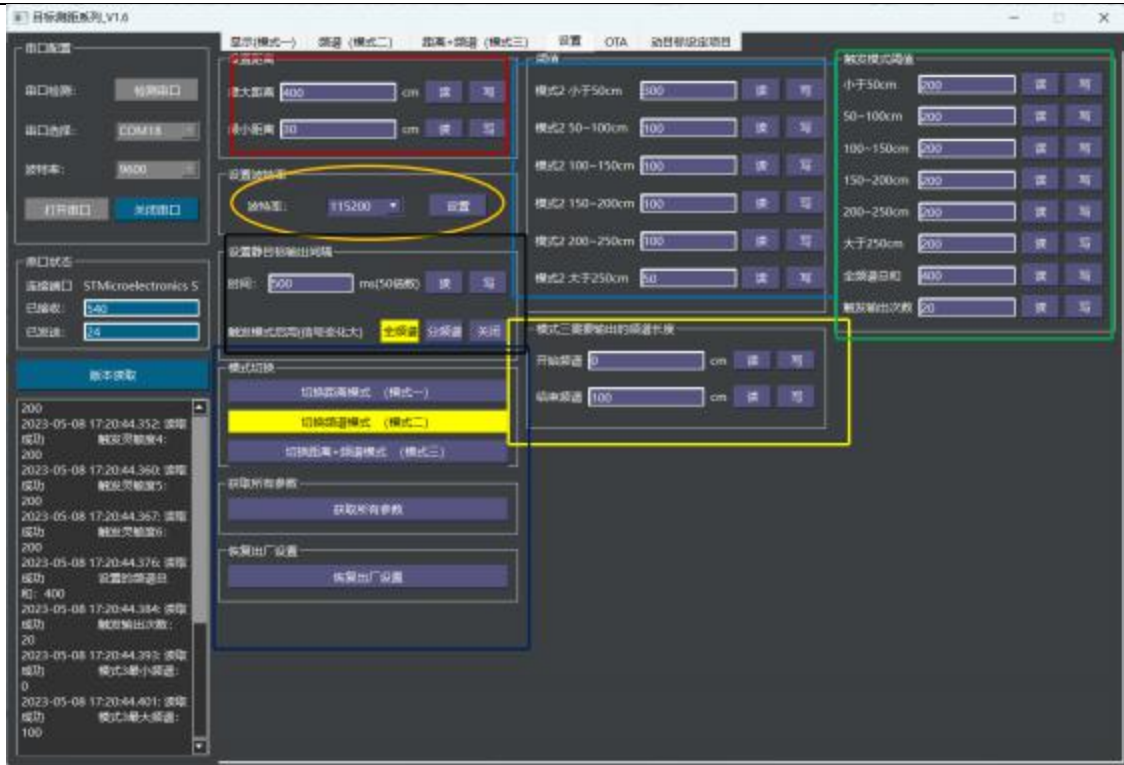
3. Setting method of the threshold value, Can affect the distance judgment of the distance patterns, When the threshold can be ignored using spectrum mode, Adjustment method: First, you need to put the module into the existing touch tool and put it in your actual scene, Use the upper bit computer to switch to mode 2 first, Then read all the thresholds, Add a green threshold curve at the spectrum, What you need to adjust when you put the shell to the sky and make sure all the yellow points are under the threshold curve, If optimize signal quality (adjust the housing, etc.) to keep the detection signal below the set threshold, If the signal cannot be adjusted under the threshold curve, you need to adjust the raised threshold curve.
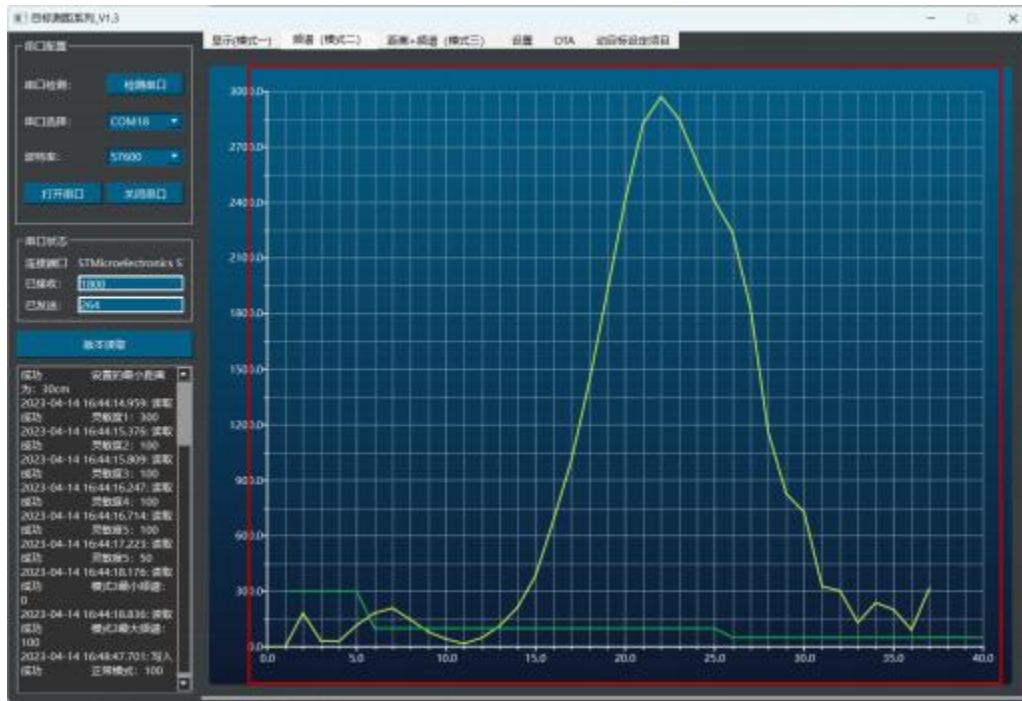
6. Radar installation and application

●**Application scenario 1: median video pile**

●Reference application

The antenna installed in the video pile needs to be against the part of the metal part of the car, and the detection Angle when the antenna is placed horizontally

Degree is larger than vertical detection Angle, can tool customer video pile actual installation position to adjust, antenna in front of the best not to see a metal will affect the close detection effect and high noise, radar on the back need to leave an area to stick the silver label to shield metal structure caused by strong transmission signal.

- **Application scenario 2: road dental machine**

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Reference application

Installed in the tooth machine antenna best up Angle irradiation car metal parts, antenna best horizontal placement to reduce the influence on the signal, the antenna in front of the proximal a few centimeters best not to see a metal will affect the close detection effect and high noise, radar on the back need to leave a area to stick the silver label to shield metal structure caused by strong transmission signal.

7 Precautions

■When the radar works, there should be no metal and other blocking electromagnetic wave transmission medium shielding antenna;

■Different shell materials, and the distance between the module and the inner surface of the shell, the returned spectrum energy and parameter setting will be different, which need to be fine-tuned according to the actual conditions. It is generally recommended that the module is 4-6mm away from the shell, which can be adjusted according to the measured situation.

■ We recommend that users first test the shell structure according to the default setting of the module. If the effect is not as expected, they can send the shell structure to the original factory, and the original factory will test and adjust a reference setting.

■When the radar is installed in a fully enclosed metal cavity, the shielding material should be affixed behind the module, and the original factory will provide technical support.
■If you need more technical support, please contact the sales force.

appendix

not have

Appendix: Related to power supply

■ Isolation power supply must be used. At the same time, the AC rectifier bridge and transformer should avoid direct contact with the module, and try not to make the transformer and rectifier directly on the module. The shield layer can be staggered or added.

■ Power supply power ripple should be less than 100 mV to avoid peak burr in the power supply.

■ Do not add anti-directional diode and other devices to the DC power supply link. Adding any device to the DC power supply link will raise the power supply noise and cause false alarm.

■ The power supply drive current shall not be less than the normal operating current of the module.