PRODUCT SPECIFICATION

E11SN-G

Radar microwave module

Version: v1.0

Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

Office: 14th floor, Block B, phoenix zhigu, Xixiang Street, Baoan District, Shenzhen

Factory: NO.8, Litong RD., Liuyang Economic & Technical Development Zone, Changsha, CHINA

TEL:+86-755-2955-8186 Website:www.fn-link.com

E11SN-G Module Datasheet

Ordering Information	Part NO.	Description
	FGE11SNGXX-00	AT58MP1T1RS32A, 5.8GHz 雷达微波模组, GPIO, UART, 20x20mm

Contents

Revision History

Version	Date	Contents of Revision Change	Preparde	Checked	Approved
V1.0	2022/12/06	New version	FC	LSP	QJP

1. General Description

E11SN-G is a low power consumption of 5.8GHz radar sensor module, the overall power consumption of about 20mA, module size 20mm * 20mm, sensor using space technology radar sensor chip AT58MP1T1RS32A, fully integrated 5.8GHz microwave circuit, medium frequency amplification circuit, signal processing circuit and powerful MCU, high integration and good production consistency, with small plane antenna, ensure the sensor performance and greatly reduce the overall size. The sensor has been widely used in the field of intelligent lighting due to its low power consumption, high cost performance and compliance certification. This scheme is the first choice for the upgrading of traditional non-fixed frequency schemes, and it is also the preferred scheme for the upgrading of traditional 5.8G microwave induction products to improve the performance.

1.1 Description

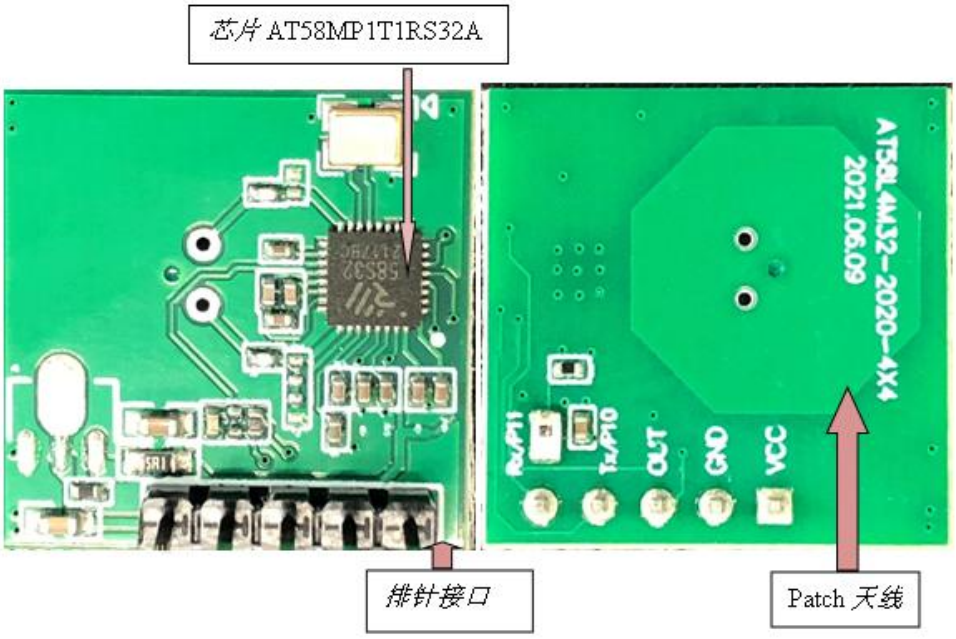
Model Name	E11SN-G
Product Description	5.8GHz Radar microwave module
Dimension	L x W: 20 x 20 mm
Wi-Fi Interface	UART
BT Interface	-30°C to 85°C
Operating temperature	-40°C to 85°C

2. Appearance and pins

Module onboard plane antenna is connected with the main control panel using the pin.

2.1 Module diagram

The module shape is shown in Figure 1 below



Module reverse Module front

Figure 1 Physical diagram of the module

2.2 Inputoutput interface

The module reserves 5 pinholes, with five signals PIN: VCC, GND, OUT, TX and RX. The PIN distance is 2.54mm. If parameters such as tuning distance and delay time are required, the internal parameters can be rewritten with the chip through UART communication. The following table is the definition description of each PIN foot:

PIN	function	remarks
VIN	module power supply	The LDO is not attached by default. If the power supply voltage exceeds 5.5V, the LDO needs to be added, and the power supply VCC is 5~12V
GND	landing pin	to refer to
OUT	output signal	High-and low-level output, with a high-level voltage of 5V
TX	UART transmit by radio	It can be used for software upgrade or performance parameter adjustment, with a high level voltage of 3.3V
RX	UART receive	It can be used for software upgrade or performance parameter adjustment, with a high level voltage of 3.3V

2.2 Module size and pin position

The following figure is the schematic diagram of the size and needle position of the module. The length and width of the module is 20mm * 20mm. By default, the needle is unmatched and the overall thickness is 2.5mm. If the needle is needed, the default height of the needle is 12mm. The pin spacing is 2.54mm.

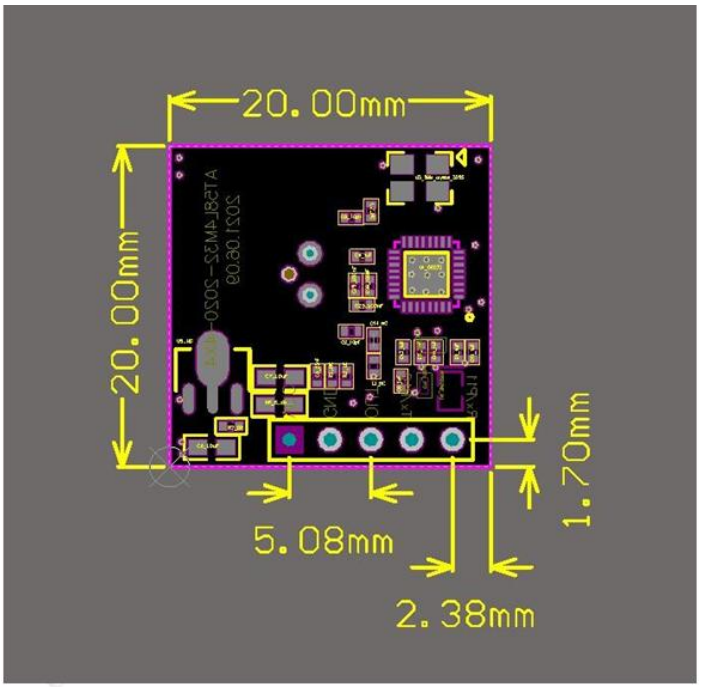


Figure 2 Module dimensions schematic diagram (top view)

3. Electrical parameters

3.1 Electrical specifications

parameter	Min	Type	Max	unit	remarks
emission frequency	5725		5875	MHz	It can be adjusted according to the specific requirements
transmitting power		-5		dBm	It can be adjusted according to the specific requirements
input voltage	4.5	5	5.5	V	Default is unlabeled LDO, enter 5V
Output high level（Out）		5		V	Default 5V
Output high level（UART）		3.3			
output low level		0		V	
working current		20	28	mA	Average working current
sensing distance		6	10	m	Hang 3 meters high
Time delay time		15		s	It can be adjusted according to the specific requirements
luminous sensitivity threshold		10		Lux	It can be adjusted according to the specific requirements
working temperature	-30		85	C°	

3.2 Module power-on timing diagram

The module has the power-on self-check function, that is, after the module is powered on, the OUT foot first outputs the high level, after the delay 2S, output the low level, and after the low level delay 0.5S into the normal induction mode. The following is the timing diagram of the control signal after the module is powered on:

4. Module application and debugging

4.1 Induction time and induction distance adjustment

By default, the module requires three pins, namely VCC, GND and OUT. At this time, the induction delay and induction distance are fixed values. If relevant parameters such as induction delay and induction distance are adjusted, two PIN of RX and TX shown in Figure 3 need to be added on the hardware. The RX and TX interfaces in the red box in the figure can be used as UART ports to tune the module parameters. When used as serial ports, see Airtouch Radar Setting Tool Instructions for detailed instructions. When the induction is triggered again in the delay time, the timing starts again.

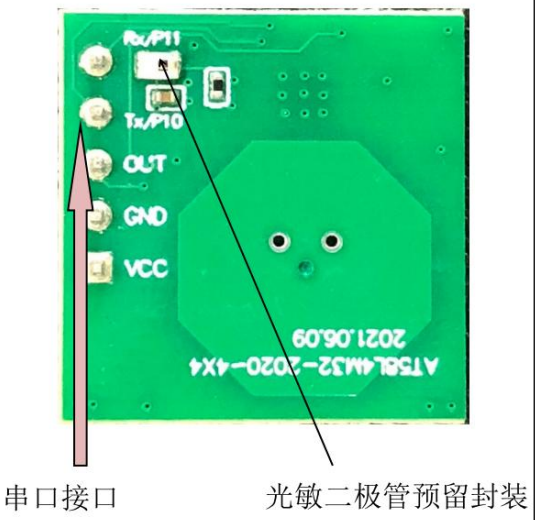


Figure 3 Photosensitive tuning position and serial port position

4.2 Photosensitivity detection

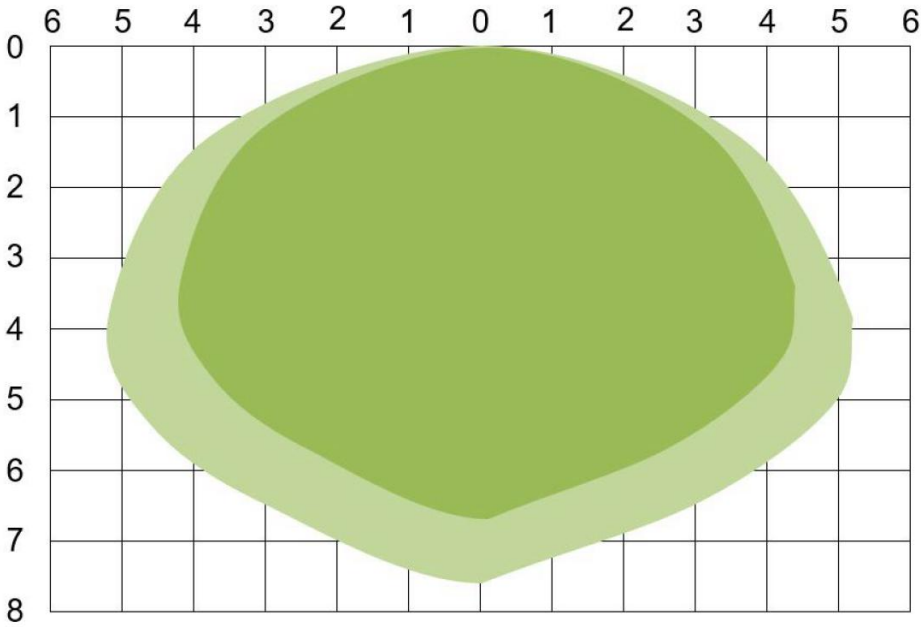
The module supports photosensitive detection, and the sample module does not turn on the photosensitive detection function by default. The position shown in Figure 3 is the photosensitive diode. The photosensitivity threshold can be adjusted by changing the photosensitivity judgment threshold or tuning the photoresistor. In the version of the photosensitive function, the radar induction will be activated only when the ambient light is lower than the set illumination. If the light is too bright, the module will not start the induction function.

4.3 A Schematic representation of the probe range

The induction sensitivity of the radar sensor can be configured by modifying the software induction threshold. The forward limit induction distance is about 20 meters, and the actual induction distance can be adjusted appropriately according to the need. A schematic diagram of the radar detection range of the following typical scenario, if the sensitivity is set higher, the detection range will be correspondingly larger.

The dark area in the figure is the high sensitivity area, which can be fully detected, and the light area is the low sensitivity detection area, and objects can be basically detected in this area.

Figure 4 Schematic diagram of the module detection range (in unit: meters)



4.3 Matters need attention

- During installation, the front of the antenna should avoid metal shell or components, so as not to avoid shielding signals, allowing plastic or glass and other shielding, but the shielding should not be close to the front of the antenna;
- Try to avoid the radar antenna direction is facing the large metal equipment or pipelines;
- When multiple radar modules are installed, the antennas of each radar module are parallel to each other to avoid the positive irradiation and mode between each antenna Keep the spacing between blocks and modules above 1m;
- The radar sensor should avoid the AC drive power supply and try as far away from the rectifier bridge as to avoid the power frequency interference.

5. Statement

The contents of this Specification may be changed due to design improvements or other needs, and OTCCO reserves the right to modify this specification without prior notice.