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FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

#### FCC RF Exposure Statement

The modular is comply with any applicable RF exposure requirements.

RF exposure restriction: 20cm

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An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded. This device complies with part 15.203.

# **The user manual for the series of SZ05 Zigbee embedded module**

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## **1. Overviews of the SZ05 zigbee modules**

Shuncom the series of SZ05 zigbee embedded wireless serial communication module, using the zigbee wireless technology, is compliance with the industrial standards. It has advantages of long communication distance, strong anti-jamming, flexible network to make sure transparent data transmission among many devices with

self-organizing star, line and mesh network topology.

Shuncom SZ05 zigbee wireless module had been widely applied in industrial wireless monitoring communication, such as wireless sensor data acquisition, smart home, internet of things, wireless streetlight control, smart grid, wireless automatic meter reading, wireless automatic traffic.

### 1.1 Appearance



### 1.2 Key features

Strong wireless features: support Multi hop

Long distance: 2000m at sight

Strong anti-jamming: ISM (Industrial, Scientific & Medical) 2.4G DSSS

Flexible serial port application: transparent format or instruction format transmission, maximal baud rate can be 115200

Transmit mode: broadcast or destination address transmission to send data can be selected

Node type: coordinator node, router node or end device can be set

Strong self-organizing network: star, tree, line or mesh

Channels: 16 Direct Sequence Channels. 65535 PAN ID to be selected

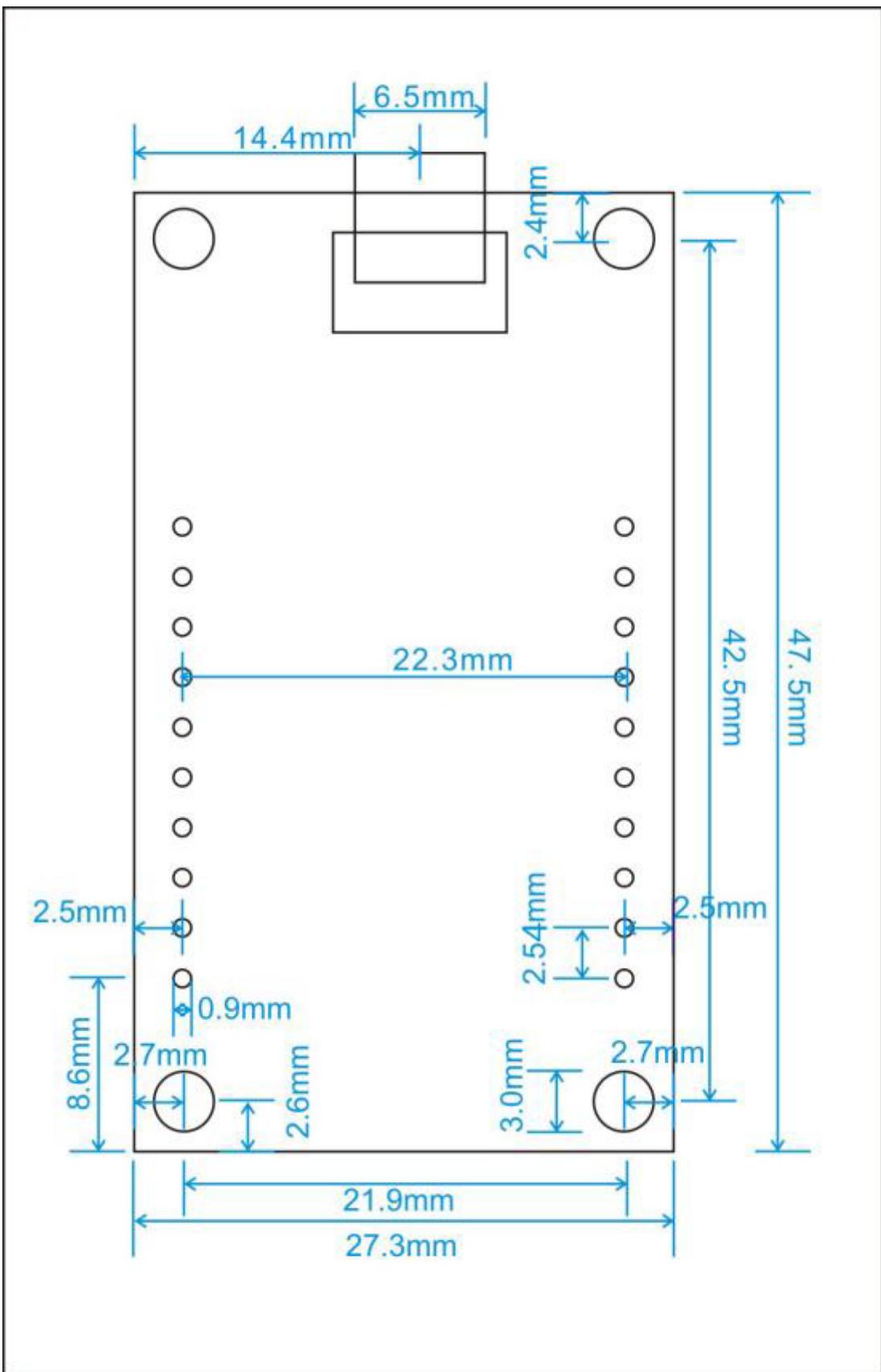
### 1.2 Technical parameters

Name	Notes	SZ05 Zigbee Module
Wireless network	Distance(at sight range)	SZ05-ADC(2000meters)
	Network topology	Star, tree, link and mesh
	Addressing option	IEEE802.15.4/ZIGBEE standard address
	Net ID	00-FF
	The maximal data packet	100 bytes
	Serial Signal	TxD , RxD, GND

Data interface	baud rate	1200~115200bps (optional)
	Serial parity	None, Even, Odd
	Data bit	7, 8
	Parity bit	1
Transceiver	Modulation model	DSSS      Direct      Spread Spectrum
	Frequency range	2.405GHz~2.480GHz
	Wireless channels	16
	Receiver sensitivity	-105dBm (SZ05-ADV)
	Transmit power output	13dBm
	Antenna	SMA(antispindirection antenna)
	Channel detection	CSMA-CA and CSMA-CA of GTS
Power	Supply voltage	DC 5V
	The peak current	250mA (SZ05-ADV)
Working environment	working temperature	-10°C-55°C
	Storage temperature	-15°C-65°C

## 1.5 Dimensions

(1) SZ05 standard module dimensions:



The Size of SZ05 Standard Module

## 2. Interfaces

### 2.1 Module mechanical diagram

Shuncom SZ05 zigbee module has interfaces of RS232, RS485 and TTL which are very convenience for equipment connection. Pin connection as follows:

Sleep control (low level effective)

RS485 receiver control

Reserve IO

Reserve IO

Configuration control

GND

The anode of power, 5V

TTL level, connecting to TX of user

TTL level, connecting to RX of user

The GND of RS232

RS232/485, connecting to RX of user

RS232/485, connecting to TX of user

Reserve

Reset (low level effective)

### The Pins of SZ05 Zigbee Module

#### 2.2 Left pin

Pin number	Pin name	Functions	Notes
5	AD4		
6	RUN	Run	LED
7	NET	Net	LED
8	ALM	Alarm	LED
9	SLP	Sleep	Low level effective
A			
B	I08	Reserved for IO	
C	I09	Reserved for IO	
D	CFG	Configuration control	Low level effective

#### 2.3 Right pin

Pin number	Pin name	Functions	Notes
15	GND	The anode of power	
16	VCC	The cathode of power	5V
17	RX1	TTL	Links to the TX of user
18	TX1	TTL	Links to the RX of user

19	SGND	The GND of RS232	
1A	TX2	RS232/RS485	Connects RX/A of user
1B	RX2	RS232/RS485	Connects RX/B of user
1C		Reserved	Reserved
1D	RST	Reset	Low level effective

Normally, the required pin connections are VCC, GND, TTL, RS232 or RS485. All unused pins should be left disconnected

## 2.4 Data interface

SZ05-ZBEE wireless module has standard interface of RS232, RS485 or TTL in the hardware. Serial RS232 includes TX2, RX2 and GND. RS485 contains TX2 (A+), RX2 (B-). TTL interface is TX1 and RX1, and the level of TTL is 3.3V.

Notes: RS232 and RS485 cannot be used at the same time. It is required to be sure that which one interface you want to use when you make the buying

## 3. Accessories

### 3.1 Antenna

Operating frequency baud: ISM 2.4GHz, 2405M—2480M

Interface type: Reverse SMA male

Antenna type: Glue stick antenna (reverse antenna)

## Channel

Frequency	Channels	Notes
0-F	0 : 2.405GHz 1 : 2.410GHz 2 : 2.415GHz 3 : 2.420GHz 4 : 2.425GHz 5 : 2.430GHz 6 : 2.435GHz 7 : 2.440GHz 8 : 2.445GHz 9 : 2.450GHz A : 2.455GHz B : 2.460GHz C : 2.465GHz D : 2.470GHz E : 2.475GHz F : 2.480GHz	Recommend to use channel 4, 9, E or F to avoid WIFI interference. The channel should be set the same in the same network,

## 4. Usage Guidelines for FCC Compliance

### 4.1 Antenna Selection

In order to maintain compliance with FCC regulations, an antenna with no more than 3dBi gain must be used. This module has been tested with the following antennas:

<b>Radiotronics Part Number</b>	<b>Antenna Type</b>	<b>Antenna Gain</b>	<b>DTS Mode</b>
ANT-915-04A	RP 1/4 Wave Helical	2dBi	Approved
ANT-915-02A	RP 1/4 Wave Whip	3dBi	Approved
ANT-915-06A	RP 1/2 Wave Dipole	3dBi	Approved

The module, when used in DTS mode, may be used with any of the above three antennas and maintain the requirements of the FCC grant.

An approved antenna must be directly attached to the module's reverse-polarity SMA connector in the final application to inherit the FCC modular certification.

#### 4.2 Additional FCC Testing Requirements

While the module's FCC certification can be inherited (presuming the guidelines are met), additional testing will be required to achieve full FCC compliance for your end-product. The integrator is required to perform unintentional radiator testing on the final product per FCC sections 15.107 and 15.109.

Additional, product-specific testing might be required. Please contact the FCC regarding regulatory requirements for your application.

## FCC Statements of Compliance

### Statement and Conditions of Modular Compliance

#### FCC NOTICE (FCC ID: N2PSZ05-ADV)

This device complies with the rules set forth in Part 15 by the Federal Communications Commission. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference
- 2) This device must accept any interference received, including interference that may cause undesired operation.

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The FCC- SZ05-ADV module is provided with an Limited FCC Modular Certification. This certification may be install in an end-user product, negating the need for FCC part 15 intentional radiator testing on this module, provided that the following guidelines are met:

1. An approved antenna must be directly coupled to the module's RP-SMA connector.
2. The module must not be modified in any way. Coupling of external circuitry must not bypass the provided connectors.
3. End product must be externally labeled with "Contains FCC ID: N2PSZ05-ADV"
4. The end product's user's manual must contain an FCC statement equivalent to that listed in section 9.2 of this manual.
5. The antenna used for this transceiver must not be co-located or operating in conjunction with any other antenna or transmitter.
6. The integrator must not provide any information to the end-user on how to install or remove the module from the end-product.

The integrator is required to perform unintentional radiator testing on the final product per FCC sections 15.107 and 15.109.

The following exposure warning must be observed in the OEM design. Additionally, the statement must be placed in the user's manual of the end product.



To satisfy FCC RF exposure requirements for mobile and base station transmitting devices, persons should maintain a distance of at least 20cm from the antenna of this device during operation.