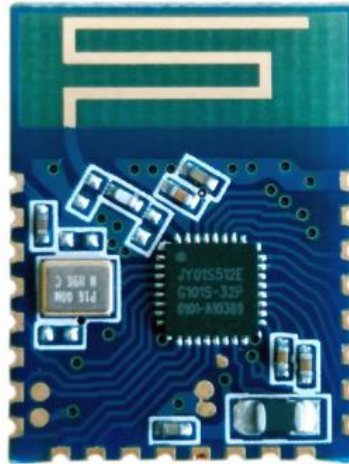


# Ultra-low Power Consumption Bluetooth 4.2 BLE Module

JDY-19 Bluetooth Module Usage Manual



## JDY-19 Ultra-low Power Consumption Bluetooth 4.2 Module

### **Version**

Version	Date	Description
V1.2	2018-03-03	Release version
V1.3	2018-05-20	The feature FFE2 function is cancelled

## Contents

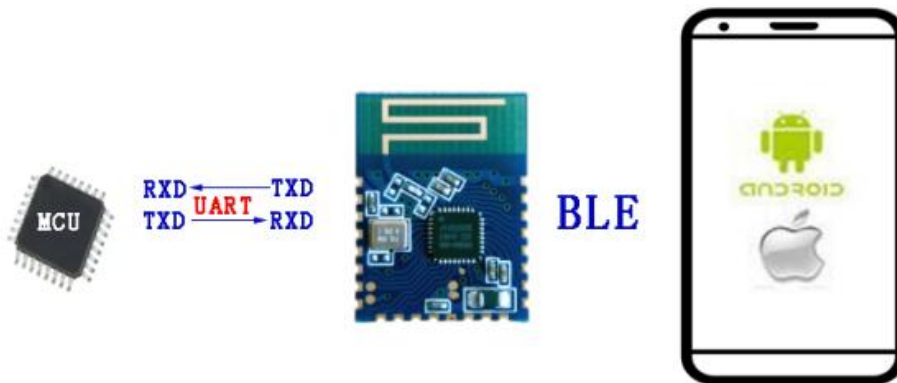
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## 1. Product introduction

JDY-19 transparent transmission module is based on the Bluetooth 4.2 protocol standard, the frequency range is 2.4GHZ, the modulation mode is GFSK, the maximum transmission power is 4dB, the maximum launch distance is 40 meters. The imported original chip is designed to support the user to modify the device name, baud rate and so on through the AT command, which is convenient, quick and flexible to use.

JDY-19 Bluetooth module can realize data transmission between module and cell phone, or module and module, and can quickly use BLE Bluetooth for product application through simple configuration.

Let BLE be more quick and convenient in product application



Module communication with mobile APP or WeChat small program



Module master-slave communication

## 2. Debug tool

2.1: APP tool (IOS and Android share one two-dimensional code)



Scan with WeChat and select in the upper right corner to open it in the browser

2.2 Serial port tool (Packet incidental)



## 3. Module parameter details

### 3.1 Module parameters

JDY-19 product parameters	
Model	JDY-19
Frequency Range	2.4G
Transmitting power	4db (MAX)
Communication interface	UART
Working voltage	<b>1.8V – 3.6V</b>
Working temperature	-40°C - 80°C
Antenna	Built-in PCB antenna
Reception sensitivity	-97dbm
Transmission distance	80 meters
Master-slave support	Slave machine
Module size	19.6 * 14.94 *1.8 mm (Length, width and height)
Bluetooth version	BLE 4.2 (compatible BLE4.0、BLE4.1)
Wake-up status current	500uA (Broadcast)
Shallow sleep status current	<50uA (Broadcast)
Deep sleep current	3uA (No broadcast)
Instruction parameter preservation	Parameter configuration of power down data is saved
STM welding temperature	<260°C

### 3.2 Working current

Working mode	Status	Average current	Remarks
Wake up serial port transparent transmission	Unconnected	<b>500uA</b>	General communication with APP, it is recommended that the broadcasting should not be set too long, for which will affect the connection time. It is generally recommended between 100 and 500mS. If it needs fast connection with no requirement of power consumption, you can set the broadcast interval to the shortest.
Deep sleep without broadcast	No broadcast	<b>3uA</b>	
Light sleep with broadcast	100mS Broadcast interval	<b>200uA</b>	
Average power consumption	200mS Broadcast interval	<b>80uA</b>	
	300mS Broadcast interval	<b>30uA</b>	
	400mS Broadcast interval	<b>The following current is lower</b>	
			In the connected state, you

## JDY-19 Ultra-low Power Consumption Bluetooth 4.2 Module

<b>Wake up transparent transmission status</b>	Connected	900uA	can lower the PWRC pin to send the AT instruction or set the working mode directly. See the AT+STARTEN instruction for details.
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**All working mode currents are not more than 1mA (including the current at the time of transparent transmission through the serial port).**

### 3.3 JDY-19 sleep mode introduction

Sleep mode	Instructions	Function introduction
Start wake-up	AT+STARTEN1	Mode 1: Start wake-up, users need sleep can be controlled by AT+SLEEP command, wake up can be awakened by PWRC pin low level.
Start sleep	AT+STARTEN0	Mode 0: Under this mode, the power consumption is very low, the connection wake-up transparent transmission current is 900uA, and the disconnect current is below 200uA (the broadcast interval current can be set to 30uA). After the PWRC pin wake-up under this mode, if the serial port does not send data in 10 seconds or not to be connected, it will turn into sleep again automatically.

### 3.4 Frequently asked questions

Questions	Answers
1 : How MCU disconnects the Bluetooth connection in the connection state?	In the connection state, lower the PWRC pin, and the serial port sends AT+DISC to disconnect.
<b>2: How much is the current when the module wakes up?</b>	<b>All modes' working current is not more than 1mA.</b>
3: How many data can be written to the serial port once?	No byte limit at 9600 baud rate
4: After the serial port is configured, is it need to restart to take effect?	<b>It is recommended to restart the module when the parameters are set</b>
5: How to test the deep sleep current of the test module?	VCC and GND pins are recommended for testing current.

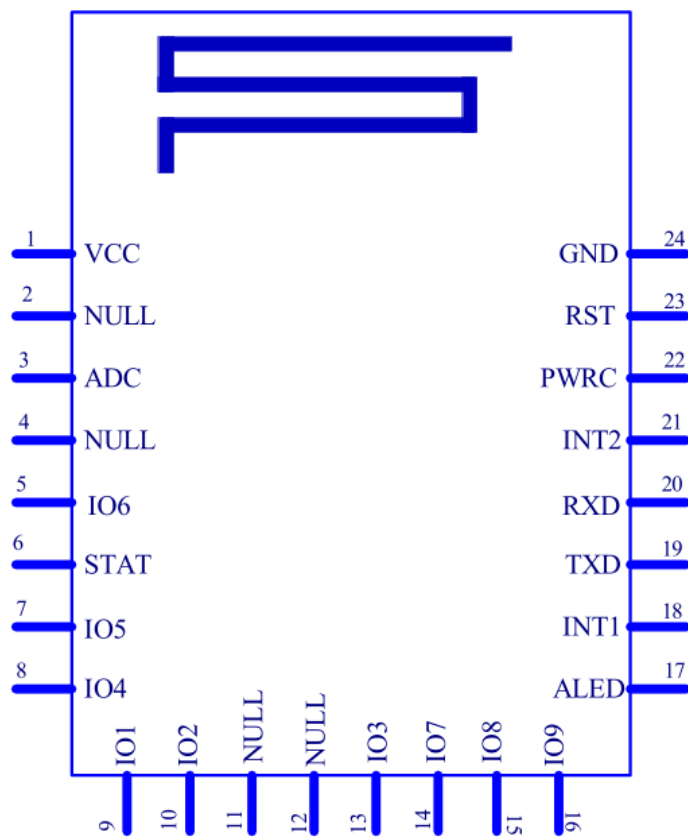
# JDY-19 Ultra-low Power Consumption Bluetooth 4.2 Module

## 3.5 Factory commonly used default parameter configuration

Sequence	Function	Factory default parameters	Instructions
1	Serial port baud rate	9600	<b>AT+BAUD4</b>
2	Sleep mode	Start wake-up	<b>AT+STARTEN1</b>
3	Broadcast name	JDY-19	<b>AT+NAMEJDY-19</b>
4	Broadcast interval	200MS	<b>AT+ADVINT1</b>

The above is a serial port transparent transmission communication function. If you need special functions, you can contact JDY to technique support. QQ:3411947569

## 3.6 Pin definition





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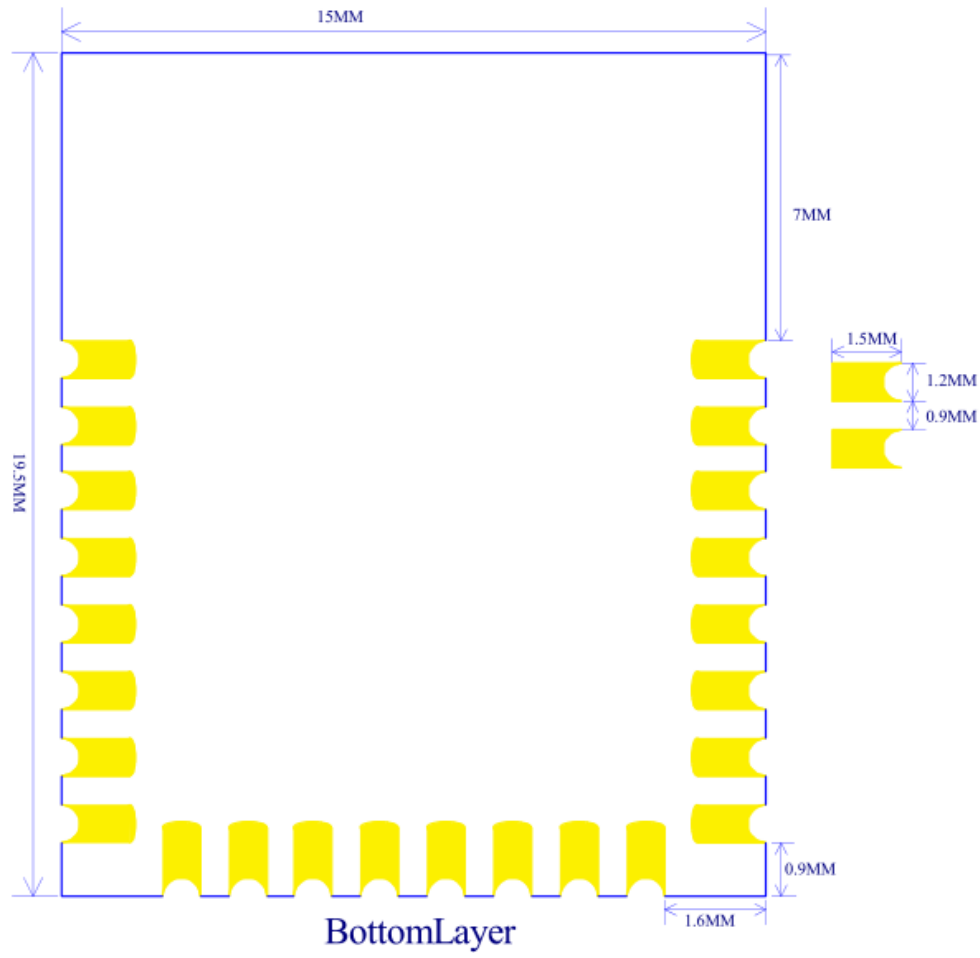
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### 3.7 Pin function introduction

Pins	Function	Introduction
1	VCC	Power supply (1.8-3.6V)
2	NULL	None
3	ADC	ADC pin
4	NULL	None
5	IO6	GPIO or PWM1
6	STAT	Connect status pin, which has been connected to high level, unconnected to low level
7	IO5	GPIO or PWM2
8	IO4	GPIO or PWM3
9	IO1	GPIO or PWM4
10	IO2	GPIO
11	NULL	None
12	NULL	None
13	IO3	GPIO
14	IO7	GPIO
15	IO8	GPIO
16	IO9	GPIO
17	ALED	Broadcast indicator pin
18	INT1	Button interrupts the input pin (key value is uploaded to APP)
19	TXD	Serial port output pin (TTL level)
20	RXD	Serial port input pin (TTL level)
21	INT2	Button interrupts the input pin (key value is uploaded to APP)
22	PWRC	Sleep wake-up pin, low level effective Under connection state, the AT instruction can be sent through lower the PWRC pin, such as AT+DISC disconnect.
23	RST	Soft reset pin, low level effective
24	GND	Power ground

### 3.8 PCB package size

# JDY-19 Ultra-low Power Consumption Bluetooth 4.2 Module



## 4. Serial port AT instruction set

JDY-19 module sends the AT instruction must end with the \r\n

Sequence	Instructions	Function	Master / slave	Working mode	Default
1	AT+VER	Version number			JDY-19-V1.2
2	AT+RST	soft reset			
3	AT+DISC	AT instruction disconnect			
4	AT+MAC	MAC address			
5	AT+BAUD	baud rate			9600
6	AT+BOUD	baud rate			9600
7	AT+SLEEP	sleep			
8	AT+NAME	broadcast name			JDY-19
9	AT+STARTEN	Start sleep or wake up			0 (start wake up
10	AT+ADVINT	broadcast interval			1 (200mS
11	AT+HOSTEN	slave mode or IBEACON working mode			0 (slave
12	AT+IBUID	IBEACON 的 UUID			FDA50693A4E24FB 1AFCFC6EB076478 25
13	AT+MAJOR	IBEACON 的 MAJOR			10
14	AT+MINOR	IBEACON 的 MINOR			7
15	AT+IBPWR	The SING value of IBEACON			50
16	AT+DEFAULT	Restore factory settings			

Introduction: Green text indicates new functions, The red bold part needs special attention.

## 5. AT instruction introductions

Special description: JDY-19 module serial AT instructions need to end with \r\n

### Query - version number

Instruction	Response	Parameter
AT+VER	+VER:JDY-19-V1.2	None

### Setup - soft reset

Instruction	Response	Parameter
AT+RST	OK	None

### Setup - disconnect

Instruction	Response	Parameter
AT+DISC	OK	None

Note: Under connection state, the PWRC pin needs to be pulled down to send AT instructions in the connection state.

### Setup/query - MAC addresses

Instruction	Response	Parameter
AT+MAC	+MAC=<Param>	

### Setup/query - baud rate

Instruction	Response	Parameter
AT+BAUD<Param>	OK	Param: (1-9)
AT+BAUD	+BAUD=<Param>	0—11520 1—57600 2—38400 3—19200 4—9600 5—4800 6—2400 Default value: 4

### Setup/query - sleep instruction

Instruction	Response	Parameter
AT+SLEEP<Param>	+SLEEP:OK	Param: (1-2)
AT+SLEEP		1: Light sleep ( <b>Broadcast</b> ) 2: Deep sleep ( <b>No broadcast</b> )

AT+STARTEN0 state does not need to send AT+SLEEP instructions, modules automatically enter sleep. After the mobile phone is connected, it will wake up automatically, if disconnecting the connection it will automatically turn into sleep. PWRC pin low level wake-up, it will automatically go to sleep if the serial port has no data transmission, or no connection after wake up 10 seconds later.

## JDY-19 Ultra-low Power Consumption Bluetooth 4.2 Module

### Setup/query –broadcast name

Instruction	Response	Parameter
AT+NAME<Param>	OK	Param: Module Bluetooth name The longest: 18 bytes Default name: JDY-19
AT+NAME	+NAME=<Param>	

### Setup/query - start sleep and wake-up read & write

Instruction	Response	Parameter
AT+STARTEN<Param>	OK	Param: (0-2)
AT+STARTEN	+STARTEN=<Param>	1: Start wake up, sleep can be controlled by AT+SLEEP 0 : Start sleep, connect to wake-up, disconnect to connect sleep

### Setup/query - broadcast interval

Instruction	Response	Parameter
AT+ADVINT<Param>	OK	Param: (0-9) 0—100ms 1—200ms 2—300ms 3—500ms 4—500ms 5—600ms 6—700ms 7—800ms 8—900ms 9—1000ms Default value: 0

### Setup/query - Module working mode

Instruction	Response	Parameter
AT+HOSTEN<Param>	OK	Param: (0-3) 0—Slave (APP、WeChat small program) transparent transmission 3—Slave (iBeacon) mode Default value: 0
AT+HOSTEN	+HOSTEN=<Param>	

### Setup/query - iBeacon UUID

Instruction	Response	Parameter
AT+IBUUID<Param>	OK	Param: Hexadecimal UUID
AT+IBUUID	+IBUUID=<Param>	Default value: FDA50693A4E24FB1AFCFC6EB07647825

Example: AT+IBUUID FDA50693A4E24FB1AFCFC6EB07647825

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### Setup/query - iBeacon Major

Instruction	Response	Parameter
AT+MAJOR<Param>	OK	Param: (0000-FFFF)
AT+MAJOR	+MAJOR=<Param>	Default: 000A

If the Major value is 10008, the AT instruction is: AT+MAJOR2718 2718 is 10008 hexadecimal data.

### Setup/query - iBeacon Minor

Instruction	Response	Parameter
AT+MINOR<Param>	OK	Param: (0000-FFFF)
AT+MINOR	+MINOR=<Param>	Default: 0007

If the Minor value is 10180, the AT instruction is: AT+MINOR27C4 27C4 is 10180 hexadecimal data.

### Setup/query - iBeacon IBSING

Instruction	Response	Parameter
AT+IBSING<Param>	OK	Param: (00-FF)
AT+IBSING	+IBSING =<Param>	Default: 40

This parameter is applied to the 1 meter iBeacon signal check value

### Restore factory configuration (revert to factory default configuration parameters)

Instruction	Response	Parameter
AT+DEFAULT	+OK	None

## 6. Mobile phone end instruction

### 6.1 APP UUID list

Service UUID: FFE0 (Service UUID Default ffe0)

Feature UUID: FFE1 (Use for transparent transmission Default ffe1)

## 7. JDY-19 Basic application wiring diagram

### 7.1 Serial port communication mode wiring diagram

