High-speed dual-mode Bluetooth module

JDY-34 User manual of Bluetooth module



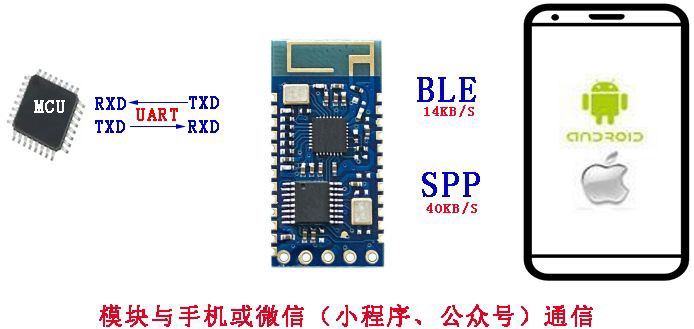
# Version No.

|  |  |  |
| --- | --- | --- |
| Version No. | DATE | Description |
| JDY-34-V1.2 | 2020-04-22 | Release version |
| JDY-34-V1.5 | 2020-06-10 | Updated Content  Printer function has supported mainstream takeaway platforms (Meituan takeaway, Baidu takeaway, hungry, and other platforms),  Printer application prompt  The default factory baud rate of JDY-34 is 9600. At present, the default baud rate in the industry is 115200. If it is a printer application, please configure the baud rate to 115200 or higher. When the STAT connection status pin of JDY-34 is connected to the input pin of MCU, it needs to add a secondary tube |
| JDY-34-V1.52 | 2020-09-01 | Customer requested the following features added  1: Host bound slave command (AT + BAND)  2: Clear binding command (AT + CLRBAND) |

I. Product introduction

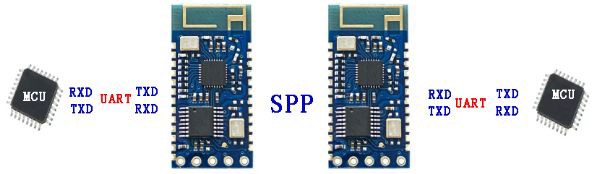
The JDY-34 transillumination module is based on the Bluetooth BLE4.2 protocol + 3.0 standard, which supports BLE to work simultaneously with SPP, and SPP supports multiple connections to work simultaneously with SPP master-slave, without the need for separate configuration as host or slave function. In the multiple connection mode, SPP supports 7 master-slave (Android or computer) to connect with 1 IOS mobile phone, BLE also supports Android or IOS connection. In the host mode, it supports communication with all SPP slave connections on the market, including JDY-30, JDY-31, JDY-32, JDY-33, printer, etc. The communication interface is standard UART, which can configure the operating mode, baud rate, BLE Bluetooth UUID, pairing password and other parameters through AT command. The main advantage is high-speed communication. After the SPP is connected with the mobile phone or computer, it supports the data transmission and multiple connection function of 40KByte/s per second.

# II. Product application

* 1. Module communicates with mobile phone APP or applet

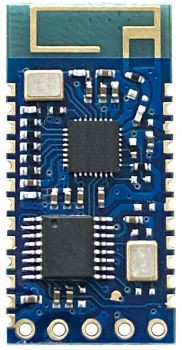
KB represents KByte

* 1. Module and module SPP master-slave communication



When JDY-34 is used as SPP host, it supports the connection of all SPP slave Bluetooth modules on the market, so JDY-30, JDY-31, JDY-32 and JDY-33 can be used as slave of JDY-34

* 1. , SPP multiple connection host, connect 7 SPP slave machines



SPP

From 1

SPP

From 2

SPP

From 3

SPP

From 4

SPP

From 5

SPP

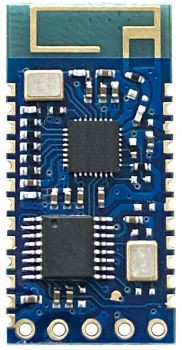
From 7

SPP

From 6

SPP Multilink Host

* 1. SPP slave multiple connection mode, supporting simultaneous connection of 8 hosts



SPP

Master 1

SPP

Main 2

SPP

Master 3

SPP

Master 4

SPP

Master 5

SPP

Master 6

Multiple slave

BLE

Master 1

SPP

Main 7

Multiple slave support 7 android phones connected to 1 IOS phone or 7 computers connected to 1 IOS phone

# III. Details of module parameters

## Module Parameters

|  |  |
| --- | --- |
| Product parameters | |
| Model number | JDY-34 |
| Antenna type | PCB onboard antenna |
| Operating Frequency Band | 2.4G |
| Transmitting power | 4db (max) |
| Communication Interface | UART |
| Working voltage | 2.1V – 3.6V |
| Operating Temperature | - 40℃ - 80℃ |
| Receiving sensitivity | - 91dbm |
| Transmission distance | 40 meters |
| Module Dimensions | 27 \* 12.88 1.8 mm |
| Bluetooth Version | BLE 4.2 + SPP Dual Mode (Downwards Compatible with 4.2, 4.0, 3.0, 2.1, 2.0) |
| Transmission rate | BLE 14K Byte/s  **SPP 40KByte/s (Android or PC Bluetooth Measured 40K Byte/s Speed)** |
| Command parameter save | Parameter configuration power down data is saved |
| STM Weld Temperature | < 260℃ |
| Operating current | 15 mA |

Description of FAQ

|  |  |  |
| --- | --- | --- |
| Sequence | Problem | Questions and Answers |
| 1 | How does the MCU disconnect Bluetooth while connected  Connection | PWRC pin is pulled low in connection state, serial is sent  AT + DISC can be disconnected |
| 2 | How much data can be written at one time at the serial port | No byte restriction |
| 3 | What is the fastest communication rate | SPP vs. PC or Handpiece Measured at 40K Byte/s  BLE to IOS handpiece test communication speed 14K Byte/s |
| 4 | Configure SPP host commands not seen in manual | SPP works as a slave and does not need to be configured separately |
| 5 | How to get into deep sleep | Recommended power failure mode |
| 6 | Why not multiple in default mode | The default is AT + BTMOED1 mode, which is one after another  One mode, required multiple connection Please configure AT + BTMODE0 mode |
| 7 | SPP at High Speed 40K byte/S Verify String  Is the port baud rate or the default baud rate? | Please use 1M or 750000 or 600000 baud rate test |

Factory Common Default Parameter Configuration

|  |  |  |  |
| --- | --- | --- | --- |
| Sequence | Function | Factory Default Parameters | Directive |
| 1 | Serial Port Baud Rate | 9600 | AT + BAUD4 |
| 2 | SPP broadcast name | JDY-34-SPP | AT + NAMEJDY-34-SPP |
| 3 | BLE Broadcast Name | JDY-34-BLE | AT + NAMBJDY-34-IOS |
| 4 | Operating mode | SPP (Master Slave)  Or BLE two first | AT + BTMODE1 |
| 5 | Output Status | Output Status | AT + ENLOG1 |
| 6 | BLE 16-bit Service UUID | FFE0 | AT + SVR16UUIDFFE0 |
| 7 | BLE 16 Bit Feature UUID | FFE1 | AT + RX16UIDFFE1 |
| 8 | BLE 16 Bit Feature UUID | FFE2 | AT + TX16UIDFFE2 |
| 9 | BLE 128-bit Service UUID | E7810A7173AE499D  8C15FAA9AEF0C3F2 | AT + SVR128UUIDE7810A7173AE499D  8C15FAA9AEF0C3F2 |
| 10 | BLE 128-bit Feature UUID | BEF8D6C99C214998  C15FAA9AEF0C3F2 | AT + TRX128UUIDBEF8D6C99C214998  C15FAA9AEF0C3F2 |

Pin Definition

## Dimensional Specifications

Encapsulated in data PCB file, 99SE version

Pin Functional Description

|  |  |  |
| --- | --- | --- |
| Pin | Function | Description |
| 1 | TXD | Serial output pin (TTL level) |
| 2 | RXD | Serial Receive Pin (TTL level) |
| 3 | NULL |  |
| 4 | NULL |  |
| 5 | NULL |  |
| 6 | NULL |  |
| 7 | NULL |  |
| 8 | NULL |  |
| 9 | NULL |  |
| 10 | NULL |  |
| 11 | NULL |  |
| 12 | VCC | Power supply (2.1-3.6V) |
| 13 | GND | Power Ground |
| 14 | PWRC | When an AT command is required while connected, this pin can be held low to indicate AT  Command Mode, this pin in the unconnected state regardless of the high and low power average is AT command mode |
| 15 | NULL |  |
| 16 | STAT | Low level not connected, high level after connection, STAT pin needs to add secondary tube to MCU |
| 17 | NULL |  |
| 18 | NULL |  |
| 19 | NULL |  |
| 20 | NULL |  |
| 21 | NULL |  |
| 22 | NULL |  |
| 23 | NULL |  |
| 24 | NULL |  |
| 25 | NULL |  |

IV. Serial AT instruction set

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sequence  Columns | Directive | Action | Master/Slave | Default |
| 1 | AT | Test | M/S | - |
| 2 | AT + BTMODE | Set the Bluetooth working mode | M/S | 1 |
| 3 | AT + VERSION | Version number of query | M/S | - |
| 4 | AT + RESET | Soft Reduction | M/S | - |
| 5 | AT + DEFAULT | Restore Factory Configuration | M/S | - |
| 6 | AT + ENLOG | Serial output information shielding switch | M/S | 1 (ON) |
| 7 | AT + BAUD | Serial Port Baud Rate Settings | M/S | 4 (9600) |
| 8 | AT + PARITY | Serial port parity bit setting | M/S | 0 (no calibration) |
| 9 | AT + PIN | SPP Connection Password Settings | M/S | 1234 |
| 10 | AT + TYPE | Connect Password Switch | M/S | 0 (off) |
| 11 | AT + NAMB | BLE Broadcast Name Settings | S | JDY-34-BLE |
| 12 | AT + NAME | SPP Broadcast Name Settings | S | JDY-34-SPP |
| 13 | AT + INQ | SPP Host Search Slave | M | - |
| 14 | AT + SINQ | SPP Host stops searching | M | - |
| 15 | AT + CONA | SPP Host Connection Slave MAC Address | M | - |
| 16 | AT + LADDR | Query or set module MAC address | M/S | - |
| 17 | AT + DISC | Disconnect SPP or BLE | M/S | - |
| 18 | AT + STAT | Query Connection Status | M/S | - |
| 19 | AT + MTU | SPP compatible low speed channel switch | M/S | 0 |
| 20 | AT + AUTEN | Open automatic promise when multiple times | S | 0 |
| 21 | AT + SENDID | Setup of multiple transmission channels |  | 0 |
| 22 | AT + CIDEN | Points to the first device when multiple connections are made | S | 0 |
| 23 | AT + DATA | AT command specifies device send data | M/S | - |
| 24 | AT + SVR16UUID | Set 16-bit Service UUID Parameter | S | FFE0 |
| 25 | AT + RX16UUID | Set 16-bit feature UUID parameter | S | FFE1 |
| 26 | AT + TX16UUID | Set 16-bit feature UUID parameter | S | FFE2 |
| 27 | AT + SVR128UUID | Set 128-bit Service UID Parameter | S | E7810A7173AE499D  8C15FAA9AEF0C3F2 |
| 28 | AT + TRX128UUID | Set 128 bit feature UUID parameter | S | BEF8D6C99C21499D  8C15FAA9AEF0C3F2 |
| 29 | AT + BATT | Set BLE service battery capacity | S | 100 |
| 30 | Host binding slave | Host Binding Slave Settings and Queries | M | 000000000000 |
| 31 | Host Clear Binding | Clear Binding | M | - |

V. Functional description of AT command

Special note: It is necessary to add a terminator rn for AT command issued by MCU; it is not necessary to add rn at the end of command for AT command issued by serial port tool; for serial port tool, please check "Send Enter"

Test instruction

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT | + OK | None |

Setup/Query – Operating Mode Configuration

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + BTMODE < Param > | + OK | Param (0-4)  0: SPP (multiple slave) and BLE slave  1. Either SPP (master-slave) or BLE  2, SPP (multiple hosts) has no BLE function  3, SPP (master-slave SPP one after another) has no BLE function  4. Single BLE from the machine, without SPP function Default: 1 |
| AT + BTMODE | + BTMODE = < Param > |

Special note: The factory is AT + BTMODE1 mode, and the printer is connected from the machine. Please select AT + BTMODE0 mode

Query - Version No.

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + VERSION | + JDY-34-V1.2 | None |

## Setup - Soft Reset

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + RESET | OK | None |

Restore Factory Configuration (to factory default configuration parameters)

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + DEFAULT | + OK | None |

Setup/Query – Serial Status Output Enablement

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + ENLOG < Param > | + OK | Param: 1 or 0  1: Open serial port status output  0: Output default value of closed serial port state: 1 |
| AT + ENLOG | + ENLOG = < Param > |

Special remark: AT + ENLOG when power-on is needed without printing the information of + START = OK, + CONNECTED-ID = 0, + DISCONNECTED-ID = 0

Configure as 0

Setup/Query – Baud Rate

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
|  |  | Param (0-F) |
| AT + BAUD < Param > | + OK | 1:1200 |
|  |  | 2:2400 |
|  |  | 3:4800 |
|  |  | 4:9600 |
|  |  | 5:19200 |
|  |  | 6:38400 |
|  |  | 7:57600 |
| AT + BAUD | + BAUD = < Param > | 8:115200 |
|  |  | 9:128000 |
|  |  | A: 230400 |
|  |  | B: 256000 |
|  |  | C: 460800 |
|  |  | D: 600000 |
|  |  | E: 750000 |
|  |  | F: 1000000 |
|  |  | Default Baud Rate: 4 |

Note: High speed baud rates are required for high speed communications

Setup/Query – Serial Parity Bit

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + PARITY < Param > | + OK | Param (0-2)  0. No check digit  1. Odd check digit (ODD)  2. EVEN default: 0 |
| AT + PARITY | + PARITY = < Param > |

Setup/Query – SPP Connection Password

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + PIN < Param > | + OK | Param (0000-9999)  Default: 1234 |
| AT + PIN | + PIN = < Param > |

Setup/Inquiry – SPP Connect Password Switch

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + TYPE < Param > | + OK | Param (0-1)  0. No password for SPP connection  1. SPP connection has password default: 0 |
| AT + TYPE | + TYPE = < Param > |

Note: No password by default, password pairing is required, please configure to 1

Setup/Query – BLE Broadcast Name

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + NAMB < Param > | + OK | Param (maximum length 18 bytes)  Default: JDY-34-IOS |
| AT + NAMB | + NAMB = < Param > |

Setup/Query – SPP Broadcast Name

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + NAME < Param > | + OK | Param (maximum length 18 bytes)  Default: JDY-34-SPP |
| AT + NAME | + NAME = < Param > |

Setup - SPP Host Scan SPP Slave

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + INQ < Param > | OK | None |
| AT + INQ | OK |

Serial port sends: after AT + INQ, print the searched device information

+ DEV: 1 = 200427201431, JDY-34-SPP

+ DEV: 2 = 0D8888332211, JDY-33-SPP

+ DEV: 3 = 591019770006, JDY-34-SPP

+ SINQ

Settings-SPP Host Active Stop Search

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + SINQ | OK | None |

Setup - SPP Host Specifies MAC Address Connection

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + CONA | OK | Param: (MAC hexadecimal string) |

Example: AT + CONA200427201431

Output on connection: + CONNECTED > > 0 x 200427201431, 1

Description on the format of output information after connection, 0 x 200427201431 represents the slave MAC address of connection, 1 represents the device ID number of current connection

Query - SPP Bluetooth MAC Address

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + LADDR | + LADDR = < Param > | Param: MAC address hex string |

Example of modified MAC address: AT + LADDR112233445566

Setup - Disconnect

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + DISC | + OK | Param: (0-7) Equipment ID |
| AT + DISC < Param > |

Note: AT + DISC is sent from the serial port to disconnect all connected devices, AT + DISC followed by device ID number indicates disconnected only the specified device

Query - Connection Status

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + STAT | + STAT = < Param1 >, < Param2 > | Param1 (0-7) Device ID No. Param2 (0-1) Connection Status  1: Connected  0: Not connected |
| AT + STAT < Param > |

Note: AT + STAT is to query the status of all devices, AT + STAT is followed by the device ID to indicate only the specified device connection status is queried

Query -- Query the SPP device MAC address by device ID

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + SPPADDR < Param > | + SPPADDR = < Param > | Param (1-7) Device ID Number |

Note: PWRC pin is pulled low upon connection, the currently connected SPP device MAC address can be queried by device ID number

Setup/Inquiry - SPP Compatible Low Speed Communication Switch

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + MTU < Param > | + OK | Param (0-1)  0: High speed  1: Compatible Low Speed SPP Slave Default: 0 |
| AT + MTU | + MTU = < Param > |

Note: When JDY-34 as host is connected with JDY-34 slave, or JDY34 as slave is connected with computer or mobile phone, MTU does not need to be set. When JDY-34 as host is required to be connected with JDY-31, JDY-32 and JDY-33, it is necessary to set the MTU of JDY-34 as low speed, otherwise the slave will not receive the big package of data sent by the host

Setup/Inquiry -- Automatic reply transceiver for slave multi-link communication

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + AUTEN < Param > | + OK | Param (0-1)  0: Switch off automatic response in multiple connection mode  1: Open multiple connection mode automatic response Default: 0 |
| AT + AUTEN | + AUTEN = < Param > |

Note: This command is only valid in the AT + BTMOE0 slave multi-connection mode. When the automatic reply is turned on, after multiple hosts are connected to JDY-34, as long as the host sends data to JDY-34, the channel on the serial port points to the host sending data

Example: After A, B, C, D and E mobile phones are connected to JDY-34, when sending data from A to JDY-34, the serial port sending channel points to A host, and the transmitted data sent from the serial port sends to A host; when E device sends data to JDY-34, the serial port pointing channel points to E host, and the data sent from the serial port sends to E host

Setup/Query - Multi Pass Channel Setup

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + SENDID < Param > | + OK | Param (0-7)  0: BLE transmission channel  1 to 7: SPP transmission channel |
| AT + SENDID | + SENDID = < Param > |

Note: In the multi-connection state, the user can pull down the PWRC pin, send the AT + SENDID command to open the serial port to send the data to the specified channel of APP, for example, after the A (ID = 1), B (ID = 2) and C (ID = 3) mobile phones are connected to the JDY-34 module, the upward channel of the serial port points to 1, so the serial port can only send the data to A at this time. If the data needs to be sent to B, the AT + SENDID2 needs to be sent from the serial port. At this time, the serial port will transmit the data to the B mobile phone

Setup/Inquiry - Command Specifies ID Send Data

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + DATA < P1 > < P2 > | + OK | P1 (0-7) Device ID Number  P2 (data content to be sent) |
| AT + DATA | + DATA = < Param > |

Multiple series example: Send the 1122334455 data command to the 5 device IDs: AT + DATA511223344

Set/Query --BLE 16-bit Service UUID

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + SVR16UUID < Param > | + OK | Param: UUID String  Default: FFE0 |
| AT + SVR16UUID | + SVR16UUID = < Param > |

Set/Query --BLE 16-bit Feature UUID (Property Notify, write without response)

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + RX16UUID < Param > | + OK | Param: UUID String  Default: FFE1 |
| AT + RX16UUID | + RX16UUID = < Param > |

Set/Query --BLE 16-bit feature UUID (attribute write without response)

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + TX16UUID < Param > | + OK | Param: UUID String  Default: FFE2 |
| AT + TX16UUID | + TX16UUID = < Param > |

Set/Query --BLE 128-bit Service UUID

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + SVR128UUID < Param > | + OK | Par: UUID string default:  E7810A7173AE499D8C15FAA9AEF0C3F2 |
| AT + SVR128UUID | + SVR128UUID = < Par > |

Set/Query --BLE 128-bit feature UUID (property Notify, write without response)

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + TRX128UUID < Param > | + OK | Par: UUID string default:  BEF8D6C99C21499D8C15FAA9AEF0C3F2 |
| AT + TRX128UUID | + TRX128UUID = < Par > |

Setup/Inquiry - Battery Service Capacity

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + BATT < Param > | + OK | Param: (0-100)  Default value: 100 |
| AT + BATT | + BATT = < Param > |

Setup/Query - SPP Host Binding Slave

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + BAND < Param > | + OK | Par: MAC address hex string  Default value: 000000000000 |
| AT + BAND | + BAND = < Par > |

Example: The SPP slave MAC address to be bound is: 112233445566, command AT + BAND112233445566

Setup - SPP Host Clear Binding Slave

|  |  |  |
| --- | --- | --- |
| Directive | Response | Parameter |
| AT + CLRBAND | OK | None |

Note: When the SPP host has bound the slave address, it will always be connected to the bound slave. If you need to connect another slave, clear the binding first, clear the binding and then restart (generally, clear the binding without restarting)

VI. Details of BLE UUID Property

**BLE 16-bit UUID list**

Service UUID: FFE0 (service UUID default ffe0 user can change) Feature UID: FFE1 (for transitive default ffe1 user can change) Feature UID: FFE2 (for module functional configuration)

**List of BLE 128-bit UUIDs**

Service UUID: E7810A71-73AE-499D-8C15-FAA9AEF0C3F2 Feature UID: BEF8D6C9-9C21-499D-8C15-FAA9AEF0C3F2

Feature attribute Notify, write without response

VII. Basic Application Connection Diagram of JDY-34

## Connection diagram of serial communication mode

Special Instructions:

JDY-34 STAT Pin to MCU Input Pin Connect Please Add Secondary Tube