User Manual

EWD104-BT57(xxx)

RS485/RS232 to BLE5.2 Bluetooth Wireless Converter

成都亿佰特电子科技有限公司

Chengdu Ebyte Electronic Technology Co.,Ltd.

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1. Overview

1.1 Introduction

EWD104-BT57 (xxx) is a RS485/RS232 to BLE Bluetooth converter based on Bluetooth protocol version 5.2 . It has small size, low power consumption, and works in the 2.4GHz frequency band. The module uses universal AT commands and is easy and quick to operate.

EWD104-BT57 (xxx) can be widely used in home automation, home security, personal health care, smart home appliances, accessories and remote controls, automobiles, lighting, industrial Internet, intelligent data acquisition, intelligent control and other fields.

EWD104-BT57(485)

EWD104-BT57(232)

1.2 Features

- Support Bluetooth BLE 5.2 protocol ;
- Standard RS485/RS232 interface;
- Easy to use, no Bluetooth protocol application experience required;
- Support BLE master role, slave role , master-slave integration and Beacon role;
- The default connection interval is 20ms, which allows fast connection and is compatible with other BLE modules of our company.
- Support RS485/RS232 or mobile phone APP to send AT commands;
- Support AT command software reset module ;
- Support AT command to set the connection interval to control different forwarding rates and adjust dynamic power consumption;
- Support AT commands to set transmission power, broadcast interval, broadcast name, etc. For details, please refer to 5 AT Commands;
- Support AT command to modify the slave role Service UUID;
- Support custom broadcast data from roles;
- Compatible with other models of modules of our company;
- Adopt flame-retardant plastic shell and guide rail installation structure, which is convenient and efficient to install;
- Multiple protection functions such as power reverse connection protection and antenna surge protection greatly increase the

reliability of the radio;

- The communication port and power interface adopt isolation and high protection;
- Working temperature range: -40℃～+85℃, adaptable to various harsh working environments, a true industrial-grade product;

1.3 Application Scenario

- Industrial automation;
- Security, monitoring applications;
- Intelligent building;
- Smart city;
- Intelligent robot;
- Internet of Things applications.

2 Specifications

2.1 Limit parameters

Main parameters	performance		Remark
	Minimum	Maximum	
Supply voltage (V)	0	28	Exceeding 28 V may permanently burn out the module
Blocking power (dBm)	-	10	The probability of burning is lower when used at close range
Operating temperature (℃)	-40	+ 85	Industrial Grade

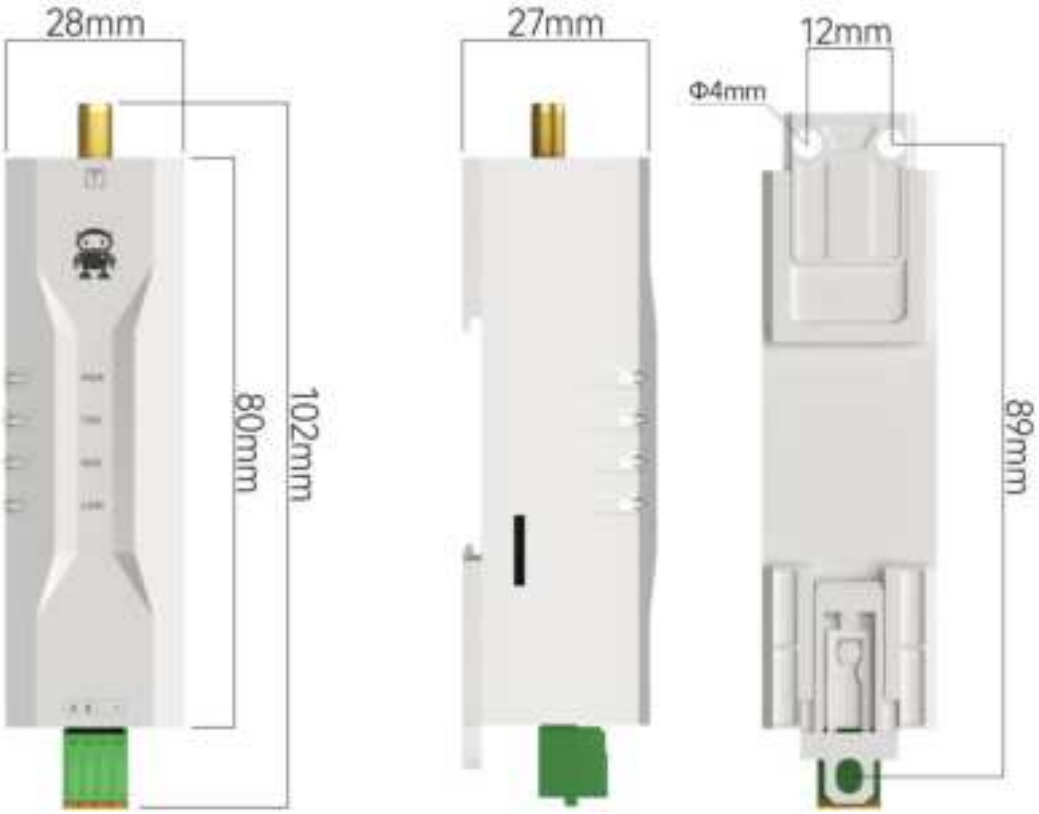
2.2 Working Parameters

Main parameters		Performance Description			Remark
		Minimum	Typical Value	Maximum	
Operating voltage (V)		5	12	28	≥ 5.0 V can guarantee output power , exceeding 28 V may permanently burn the module
Operating frequency band (MHz)		2400	-	2480	Support ISM band
Transmit power		-20	20	twenty three	-
Power consumption	Emission current (mA)	-	80	-	Peak transient current @ 23 dBm
	Receive current (mA)	-	5	-	-
Receiving sensitivity (dBm)		-	-95dBm	-	-
Operating temperature (℃)		-40	-	+ 85	Industrial-grade design

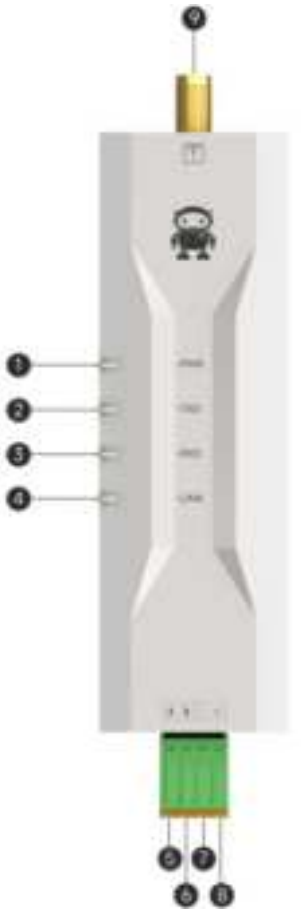
Main parameters	describe	Remark
Reference distance	600 m	Clear and open environment, height 2 meters, 23 dBm, airspeed 1Mbps
Bluetooth Protocol	BLE 5.2	-
EWD104-BT57(485) communication interface	RS485	-
EWD104-BT57(232) communication interface	RS232	-
Dimensions	102*28*27 mm	±0.2mm
RF Interface	SMA-K	Equivalent impedance is about 50Ω
Hardware Interface	Spring type terminal	4Pin 3.81mm pitch
Product Weight	31g	±2g

3 Mechanical dimensions and pin definition

size:

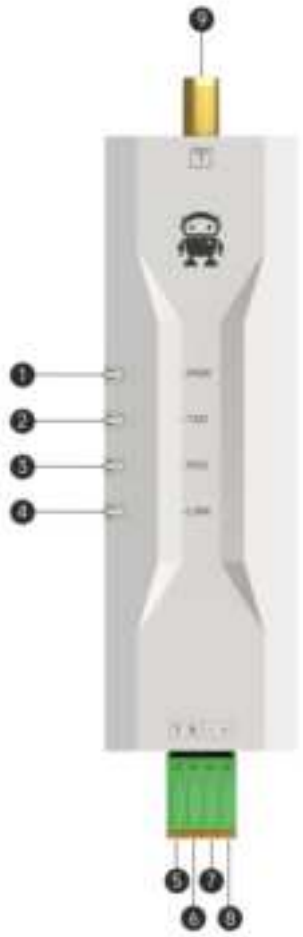


EWD104-BT57(485) pin definition:



Serial number	name	Function	Remark
1	PWR	Power indicator	Blue, always on after power on
2	TXD	Send indicator light	Red, data sending indicator
3	RXD	Receiving indicator	Yellow, data receiving indicator
4	LINK	Connection status indicator	Green, connection status indicator, always on after connection
5	A	RS485_A	RS485 Signal A
6	B	RS485_ B	RS485 signal B
7	-	GND	Negative pole of power supply
8	+	VCC	Power positive pole, supports DC 5~28V power supply
9	ANT	RF Interface	SMA-K, external threaded inner hole.

EWD104-BT57(232) pin definition:



Serial number	name	Function	Remark
1	PWR	Power indicator	Blue, always on after power on
2	TXD	Send indicator light	Red, data sending indicator
3	RXD	Receiving indicator	Yellow, data receiving indicator
4	LINK	Connection status indicator	Green, connection status indicator, always on after connection
5	T	TXD	RS232 Output
6	R	RxD	RS232 Input
7	-	GND	Negative pole of power supply
8	+	VCC	Power positive pole, supports DC 5~28V power supply
9	ANT	RF Interface	SMA-K, external threaded inner hole.

4 Functional Description

4.1 Role Description

The module supports the following 4 roles

1. Slave role;
2. Master role;
3. Slave and master roles;
4. Beacon role ;

The factory default is slave role. Switch the role through AT command "AT+ROLE". For details, see 4 **错误!未找到引用源。**

4.2 Default broadcast data

Raw data:

0x020106081B001BB12265112C0303F0FF0D094344
45425954455F42313142

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
8	0x1B	0x001BB12265112C
3	0x03	0xF0FF
13	0x09	0x434445425954455F42313142

As shown in the figure above, data with lengths of 2, 8, and 3 are broadcast data, which respectively represent the type of broadcast information, MAC address information, and UUID information; data with a length of 13 is the data of the scan response packet, which represents the broadcast name (the last 4 bytes are the last two bytes of the MAC address).

4.3 Beacon default configuration

1. Company ID:0x4C00
2. Major UUID:0x2775
3. Minor UUID:0x848F
4. RSSI: -48 dBm
5. UUID:0xFDA50693A4E24FB1AFCFC6EB07647825

4.4 The default configuration of the slave role

1. Device name: CDEBYTE_XXXX (XXXX is the last two bytes of the module MAC address);
2. Broadcast interval: 200ms;
3. Connection interval 20ms~40ms;
4. The broadcast type is connectable and scannable broadcast;
5. Connection timeout 1 second;
6. UUID defaults to 16 bits;

4.5 Module status

1. MODULE POWERUP: module startup;
2. XX:XX:XX:XX:XX:XX CONNECTD P*X: Connection to the slave succeeded;
3. XX:XX:XX:XX:XX:XX DISCONNECTED P: disconnected from the slave role;
4. XX:XX:XX:XX:XX:XX CONNECTED B: Beacon connected successfully;
5. XX:XX:XX:XX:XX:XX DISCONNECTED B: Beacon is disconnected;
6. XX:XX:XX:XX:XX:XX CONNECTD C*Y: The master role is connected successfully;
7. XX:XX:XX:XX:XX:XX DISCONNECTED C: The primary role is disconnected;
8. ALREADY CONNECTED: This device is already connected;
9. XX:XX:XX:XX:XX:XX CONNECT TIMEOUT: BLE host connection to slave device timed out;

The above status can be turned on or off through the AT command "AT+ LOGMSG", see 5 AT Commands for details.

4.6 Configuration

1．A slave device can be connected to at most one master device at the same time . A master device can be connected to at most one slave device at the same time. A master-slave device can be connected to at most one slave device at the same time, and can be connected to at most one master device as a slave device .

2．AT+CONNECT command failed to connect to the device prompt + ERR=3, please refer to the command description for the reason ;

3．Multi-connection specifies multiple devices to automatically reconnect. When a peer device abnormally disconnects, the module will start automatic reconnection. Please refer to the instruction description ;

4．CONNECTED P * X" or through the command AT+CONNECT_LIST ? Get) ;

5．If the user uses a command to actively disconnect from a device that has been set to automatically reconnect, the automatic reconnection will be invalid and will take effect after the next abnormal disconnection .

4.7 Configuration Mode

The module supports two configuration methods: serial port configuration and APP configuration. APP configuration, that is, using the BLE APP on the mobile phone to configure the module, must first pass the AT+AUTH verification password, some instructions do not support APP configuration completion, see 5.3 Instruction Table for details, only after verification is passed can other AT commands be used. The APP configuration authentication cycle is for this connection. If the device is disconnected and reconnected, re-authentication is required. In configuration mode, when the serial port sends an AT command, you should wait for the serial port to return before sending the next AT command.

4.8 MTU

MTU is the length of a single BLE packet. The default maximum value is 247, and the maximum length of the payload is 244.

4.9 Compatibility with other modules of our company

When other modules of our company are connected to E WM 104-BT5 7U/UP , please pay attention to the big and small end issues when entering the MAC address of E WM 104-BT5 7U/UP .

5 AT Commands

Note: Before sending operation instructions, first ensure that the module is in AT mode, otherwise it will not be able to receive configuration instructions.

5.1 Instruction Description

Instruction Type	Instruction Format	describe
Query command	AT+[X]?	This command is used to query the parameters of the setting command.
Setting Instructions	AT+[X]=<…>	This command is used to set user-defined parameters.
Execute Instructions	AT+[X]	Used for instructions without parameters, such as module reset.

Notice:

- Serial port configurations all end with a carriage return (\r) and a line feed (\n) (APP configurations do not have carriage returns and line feeds);
- The return results of the two configuration modes end with (\r) and (\n), which will not be explained later;
- The default serial port baud rate is 115200, 8 data bits, 1 stop bit, no parity;
- The command parameters are all in ASCII format;
- Command error response format +ERR:[NUM], [NUM] see **错误!未找到引用源。**
- In AT commands, <> indicates optional parameters, and [] indicates required parameters. If all parameters of an AT command are optional, any one parameter should be filled in, for example, AT+ADV=,,20.
- The command part is not case-sensitive (excluding the "APP configuration authentication" command);
- The module can be configured using the APP when it is in configuration mode or transparent transmission mode;
- Some commands do not support APP configuration completion, such as "Set extended broadcast", "AT command to send data", "Master role scanning", "Open observer" and other AT commands that require serial port cooperation;
- All AT commands cannot contain invisible characters such as spaces and tabs.

5.2 Error Code

NUM	illustrate	Cause	Workaround
1	Instruction does not exist	Input command error	Read **错误!未找到引用源。**6.3 command table, such as setting broadcast parameters, and comparing the command "AT+ADV" character by character to prevent incorrect characters from being entered due to typing or word spelling.
2	Parameter error	Input parameter error	Check **错误!未找到引用源。**.
3	Operation not allowed or operation failed	Failed to execute related functions (connection, parameter setting, etc.). If the module is powered on and the AT+SCAN command is not executed, execute AT+CONNECT=0.	The parameters may have been saved, please try again or check the "Description" of each instruction table in 3.3 Instruction Table
4	Operational Error	The current character does not support this command.	Check **错误!未找到引用源。**Instruction table

5.3 Instruction List

5.3.1 Test instructions

instruction	answer
AT	+OK
Description: Used to test whether the serial port communication is normal.	

5.3.2 Broadcast Name

instruction		answer
Query	AT+NAME?	+ NAME =[para]
set up	AT+NAME=[para]	+OK: Success +ERR=[NUM]: Error
parameter	Broadcast Name	
illustrate	immediately and restart to take effect ; The length of the broadcast name shall not exceed 16 bytes; The factory default broadcast name is CDEBYTE_XXXX, where XXXX is the last two bytes of the MAC address.	
Example	Query the broadcast name (MAC is 2C:11:65:22:B1:1B) Command: AT+NAME? Return: +NAME=CDEBYTE_B11B Set the broadcast name to MY_TEST Command: AT+NAME=MY_TEST	

	Return: +OK

5.3.3 MAC address

instruction		answer
Query	AT+MAC?	+ MAC =[para]
parameter	MAC Address	
illustrate	The returned MAC address is in hexadecimal format.	
Example	Assume the local MAC address is 2C:11:65:22:B1:1B Command: AT+MAC? Return: +MAC=2C:11:65:22:B1:1B	

5.3.4 Module roles

instruction		answer
Query	AT+ROLE?	+ROLE=[para]
parameter	AT+ROLE=[para]	+OK: Success +ERR=[NUM]: Error
parameter	para	Role
	0	slave, from (default)
	1	master
	2	slave and master
	3	Beacon
illustrate	immediately and restart to take effect ; Switching roles will clear the auto-reconnect device list;	
Example	Query module roles Command: AT+ROLE? Return: +ROLE=0 Set the module role to host Command: AT+ROLE=1 Return: +OK	

5.3.5 Transmit power

instruction		answer
Query	AT+ PWR?	+ PWR =[para]
set up	AT+ PWR =[para]	+OK: Success +ERR=[NUM]: Error
parameter	The possible values are 3 , 8 , 12 , 14 , 17, 20 , 21 , 22 , 23	
illustrate	immediately and restart to take effect ; The actual power may differ slightly from the requested value; The maximum transmit power is 23 dBm , the default is 20 dBm	
Example	Query the transmit power Command: AT+PWR? Return: +PWR=0 Set the module transmit power to 3 dBm Command: AT+PWR= 3 Return: +OK	

5.3.6 Broadcast parameters

instruction		answer
Query	AT+ADV?	+ ADV =[para1],[para2],[para3]
set up	AT+ADV=<para1>,<para2>,<para3>	+OK: Success +ERR=[NUM]: Error
parameter	para1	Broadcast status: 0, off; 1, on;
	para2	Broadcast Type: 0, broadcast cannot be connected; 1, broadcast can be connected
	para3	Broadcast interval, range 20~10240, default 200ms
illustrate	immediately and restart to take effect ; This setting is only supported in slave roles (including slave, master-slave integration, and beacon). It is not supported in the master role.	
Example	Query broadcast parameters Command: AT+ADV? Return: +ADV=1,1,200 Set to enable unconnectable broadcast and broadcast at intervals of 500ms Command: AT+ADV=1,0,500 or AT+ADV=,0,500 (when broadcasting is turned on) Return: +OK Disable broadcasting (other two parameters remain unchanged) Command: AT+ADV=0,0,500 or AT+ADV=0 Return: +OK	

5.3.7 Customized broadcast data

instruction		answer
Query	AT+ADVDATA?	+ ADVDATA =[para1],[para2]
set up	AT+ADVDATA=[para], <para2>	+OK: Success +ERR=[NUM]: Error
set up (Not Saved)	AT+ADVDATA_CUR=[para], <para2>	
parameter	para1: data input format (0: ASCII; 1: HEX) para2: Custom broadcast data	
illustrate	Save immediately and restart to take effect; If no custom broadcast data has been set, NULL is returned; Only the slave role and the master-slave role support this command. The master role and the Beacon role do not support this command. This data is placed in the manufacturer's custom field, and users can customize up to 26 bytes; Use the command "AT+ADVDATA=0" or "AT+ADVDATA=1" to restore the broadcast data to the default broadcast data; The APP configuration completion setting function is not supported.	
Example	Set the broadcast data to: ebyte Command:AT+ADVDATA=ebyte Return:+OK Set the broadcast data to: 0x55 0x66 0x77 0x88 0x99 Command:AT+ADVDATA=1,5566778899 Return:+OK	

5.3.8 Beacon parameters

instruction		answer
Query	AT+BEACON?	+ BEACON =[para1], [para2], [para3], [para4], [para5]
set up	AT+ BEACON =<para1>, <para2>, <para3>, <para4>, <para5>	+OK: Success +ERR=[NUM]: Error
parameter	para1: company ID, default 0x4C00 para2: Major UUID, default 0x2775 Para3: Minor UUID, default 0x848F Para4: 1 meter distance reference rssi, default -48, range -90~-10 Para5: Custom UUID, default is 0XFDA50693A4E24FB1AFCFC6EB07647825	
illustrate	Save immediately and restart to take effect;	
Example	Query Beacon Parameters Command:AT+BEACON? Return: +BEACON=4C00,2775,848F,-48,FDA50693A4E24FB1AFCFC6EB07647825 Setting Beacon Parameters Command: AT+BEACON=4C00,0102,0304,-48,FDA50693A4E24FB1AFCFC6EB07647825 Return:+OK	

5.3.9 From Role Services

instruction		answer
Query	AT+SERVICE?	+ SERVICE =<para1>, <para2>, <para3>, <para4>, <para5>, <para6>
set up	AT+ SERVICE=<para1>, <para2>, <para3>, <para4>, <para5>, <para6>	+OK: Success +ERR=[NUM]: Error
parameter	para1: UUID number of bits (0: 16 bits; 1: 128 bits) para2: module server UUID (3rd and 4th bytes), length 4 Para3: module receiving channel UUID (3rd and 4th bytes of 128-bit UUID), length 4 Para4: module sending channel UUID (3rd and 4th bytes of 128-bit UUID), length 4 Para5: Wireless AT command channel UUID (3rd and 4th bytes of 128-bit UUID), length 4 Para6: 128-bit basic UUID (the 3rd and 4th bytes of the basic UUID are replaced with the actual 128-bit UUID of the UUID module of the above parameters), length 32	
illustrate	Save immediately and restart to take effect; This command is only effective for slave roles (single slave, master-slave and Beacon); The base UUID of 0000xxxx-0000-1000-8000-00805F9B34FB is not usable.	
Example	Query the default 16-bit slave role service Command:AT+SERVICE? Return: +SERVICE=0,FFF0,FFF1,FFF2,FFF3 Set up 128-bit slave role service Command: AT+SERVICE=1,0001,0002,0003,0004,9ECADC240EE5A9E093F3A3B50000406E Return:+OK Query the settings of the 128-bit slave role service Command:AT+SERVICE? Return: +SERVICE=1,0001,0002,0003,0004,9ECADC240EE5A9E093F3A3B50000406E	

5.3.10 Main Role Scan

instruction		answer
Query	AT+SCAN?	+ SCAN=[para1], [para2], [para3]
set up	AT+ SCAN =[para1], <para2>, <para3>	+OK: Success 0 02:83:E1:66:C2:D0 -89 1 9C:19:C2:39:7D:35 -75 … +ERR=[NUM]: Error
parameter	para1: Current scanning status, 0: Stop; 1: Scanning para2: Scan timeout, in seconds, value range 1-65535 Para3: Whether to display the Bluetooth name, 0: not display 1: display (default)	
illustrate	immediately and starts scanning, but the parameters are not saved; This command is only effective for the master role (master, master-slave integration); The scan will automatically stop when the number of devices reaches 20 or the scan timeout period is	

	reached;
Example	Query the master role scanning parameters Command: AT+SCAN? Return: +SCAN=0,20,1 Set the main role scanning parameters (start scanning, do not display Bluetooth name, scan time 20 seconds) Command: AT+SCAN=1,20,0 Return: +OK

5.3.11 Master role connection

instruction		**answer**
set up	AT+ CONNECT=<para1>, <para2>	+OK: Success +ERR=[NUM]: Error
parameter	para1: Connect to the specified slave device according to the serial number or MAC address in the list returned by the "AT+SCAN" command; para2: MAC address.	
illustrate	Take effect immediately; Connect to the slave device with the specified MAC address. Parameter 1 is omitted and only the MAC address to be connected is filled in; the connection may time out when connecting to the device, resulting in a connection failure. The connection timeout is 10 seconds. After the timeout, the prompt is: "C1:02:03:04:05 CONNECT TIMEOUT". After the connection is successful, the last number of the status print prompt string is the handle of the newly established connection, and the current transparent transmission also points to this handle; A single master role can connect to at most one slave role device; When the maximum number of connections is reached, using this command again will return +ERR=3, and you need to disconnect a connected device before connecting a new device; 3 seconds after printing the connection information , because it takes some time for the host to discover the service) before initiating the next connection, otherwise it will return +ERR=3. If the master role exceeds the maximum number of connections or the remote Bluetooth has established a connection with this module, using this command will directly return +ERR=3.	
Example	Connect to the slave device with sequence number 5 in the parameter list returned by the AT+SCAN command Command: AT+CONNECT =5 return: +OK C1:02:03:04:05 CONNECTD C*1 The connection specifies the MAC address C1:02:03:04:05 Command: AT+ CONNECT=, C1:02:03:04:05 return: +OK C1:02:03:04:05 CONNECTD C*1	

5.3.12 Command to send data

instruction		answer
set up	AT+SEND=[para1],[para2], <para3>	+OK: Success +ERR=[NUM]: Error
parameter	para1: connection handle value, range 1~ 4 para2: data length, range 1- 243 bytes para3: Send data input timeout (range 1~5000, unit ms, the default value is 500ms when the parameter is not set)	
illustrate	Effective immediately; In the following example, if the specified length of data is input within the set timeout period, +OK is returned. If the timeout period expires and the specified input length is not reached, RECEIVE TIMEOUT is returned. In AT command mode, if BLE data is received, the prefix "+RECEIVED:" will be printed, followed by the first parameter of the connection handle value, the second parameter of the received data length, and "1234567890" is the received data. If it is in transparent transmission mode, the data will be printed directly; The APP configuration completes the setup function. The APP configuration completes the setup function.	
Example	The connection handle is 1, the sent data (ASCII) is ABCED, and the input timeout is 5000ms. Command: AT+SEND=1,5,5000 return: +OK INPUT BLE DATA:10 The module receives BLE data in AT command mode +RECEIVED:1,10 BLE DATA 1234567890	

5.3.14 Display connected devices

instruction		answer
Query	AT+CONNECT_LIST?	+ CONNECT_LIST=[para1],[para2]
parameter	para1: connection handle para2: MAC address of the remote device	
illustrate	Effective immediately; Valid in slave, master, and master-slave roles ; This command is used together with AT+TRM_HANDLE. For example, AT+TRM_HANDLE=1 means that the master role transparently transmits data to the device with handle value 1 and MAC address 2C:11:65:22:B0:F1. The handle value followed by the letter "P" indicates that the connection is a master device (mobile phone or master role module) in the slave role.	
Example	Show connected devices Command: AT+CONNECT_LIST?	

	return: +CNT_LIST= 1P,2C:11:65:22:B0:F1 2,2C:11:65:22:AD:59

5.3.15 Disconnect

instruction		answer
set up	AT+DISCON=[para1],[para2]	+OK: Success +ERR=[NUM]: Error
parameter	para1: Current role, 0: single slave role, 1: single master role, 2: master-slave integration para2: handle value to be disconnected, you can use AT command "AT+CONNECT_LIST" to query	
illustrate	Effective immediately; Note: Parameter 2 must be used in the correct role (that is, parameter 1 must be the role of the current device). If the device is in the master role and has connected two slave role devices, "AT+DISCONNECT=1,1" means disconnecting the slave role device whose handle is 1 from the master role. AT+DISCON disconnects all connections.	
Example	Disconnect the specified connection Command: AT+DISCON=1,1 return: +OK 2C:11:65:22:B0:F1 DISCONNECTD C Disconnect all current connections of the master role Command: AT+DISCON return: +OK 2C:11:65:22:B0:F1 DISCONNECTD C 7D:C2:A0:35:4C:21 DISCONNECTD P	

5.3.16 Automatic reconnection

instruction		answer
Query	AT+AUTO_CNT?	+ AUTO_CNT =[para1],[para2]
set up	AT+ AUTO_CNT =[para1], <para2>	+OK: Success +ERR=[NUM]: Error
parameter	Para1: 0: turn off automatic reconnection, 1: turn on automatic reconnection; Para2 (optional parameter): Add device MAC to the automatic reconnection list. If this parameter is included, the automatic reconnection function will be turned off or on according to the setting value of parameter 1. At the same time, other devices in the automatic reconnection list are not affected by this command. The default value is NULL.	
illustrate	Save immediately and restart to take effect; The slave device disconnected by the "AT+DISCON" command will not automatically reconnect this time. The automatic reconnection function can be restored under the following conditions: Use the command again to connect to the slave device Restart module	
Example	Query the reconnect device list Command: AT+AUTO_CNT? Return: +OK=NULL Enable automatic reconnection and set the reconnection device MAC C2:01:02:03:04:05 Command: AT+AUTO_CNT=1,C2:01:02:03:04:05 Return: +OK Enable the automatic reconnection function for all devices in the automatic reconnection list Command: AT+AUTO_CNT=1 Return: +OK Disable the automatic reconnection function for the device with MAC C2:01:02:03:04:05 Command: AT+AUTO_CNT=0,C2:01:02:03:04:05 Return: +OK	

5.3.17 Delete automatic reconnection

instruction		answer
set up	AT+ DEV_DEL=[para]	+OK: Success +ERR=[NUM]: Error
parameter	para: MAC address, such as C2:01:02:03:04:05	
illustrate	Save immediately and restart to take effect; AT+DEV_DEL=ALL deletes all reconnected devices; Deleting the reconnected device does not affect the current connection status; The entered MAC address does not exist in the automatic reconnection list, and error code 3 is returned.	
Example	Delete the device with MAC address C2:01:02:03:04:05 Command: AT+DEV_DEL=C2:01:02:03:04:05 Return: +OK Delete all reconnected devices Command: AT+DEV_DEL=ALL Return: +OK	

5.3.18 Specifying the transmission device

instruction		answer
Query	AT+TRM_HANDLE?	+OK=[para]
set up	AT+ TRM_HANDLE =[para]	+OK: Success +ERR=[NUM]: Error
parameter	The assigned handle value ranges from 1 to 4	
illustrate	It takes effect immediately and will not be saved if the power is off. After answering +OK, it will directly enter the data transparent transmission mode If you need to exit the data transparent transmission mode, enter the "+++ " command to re-enter the AT command mode. The slave, master, and master-slave roles support this command. If the handle corresponding to the input parameter does not exist, error code 4 is returned.	
Example	Query the current data transparent transmission handle (when there is no connection) Command: AT+TRM_HANDLE? Return: +OK=NULL Set the device handle to 1 to transmit data (use the AT+CONNECT_LIST command to obtain the device handle value for data transparent transmission) Command: AT+TRM_HANDLE=1 Return: +OK	

5.3.19 Connection Interval

instruction		answer
Query	AT+CONN_INTERVAL?	+ CONN_INTERVAL =[para]
set up	AT+ CONN_INTERVAL = [para]	+OK: Success +ERR=[NUM]: Error
parameter	para: connection interval, parameter value range is 6~3200, connection interval = parameter * 1.25, unit is ms. The default value is 20ms.	
illustrate	Takes effect immediately and is saved after power failure; When connecting to a mobile phone, the recommended connection interval is no less than 20ms; The longer the connection interval, the longer the update time; The larger the connection interval, the slower the data forwarding and the lower the dynamic power consumption.	
Example	Query connection interval Command: AT+CONN_INTERVAL? Return: +OK=16 Set the connection interval to 100ms, 100 divided by 1.25 = 80 Command: AT+CONN_INTERVAL=80 Return: +OK	

5.3.20 APP configuration authentication

instruction		answer
set up	AT+AUTH =[para]	+OK: Success +ERR=[NUM]: Error
parameter	The length must be 6 characters, 0 to 9, the default is 123456	
illustrate	The single connection is valid and re-authentication is required after reconnection. After a mobile phone or other device is connected to the module, this command can be sent through the configuration channel. After a successful return, all AT commands can be used through the configuration channel. This command is only supported by mobile APP; this command must be capitalized.	
Example	APP configuration authentication Command: AT+AUTH=123456 Return: +0K	

5.3.21 APP configuration authentication password

instruction		answer
Query	AT+UP_AUTH?	+ UP_AUTH =[para]
set up	AT+UP_AUTH =[para]	+OK: Success +ERR=[NUM]: Error
parameter	The length is fixed at 6, and the default value is 123456.	
illustrate	Take effect immediately and save after power off; Only supports serial port configuration.	
Example	Query air configuration authentication Command: AT+UP_AUTH? Return: +0K=123456 Change the air configuration authentication password Command: AT+UP_AUTH=392578 Return: +OK	

5.3.22 Status Output

instruction		answer
Query	AT+LOGMSG?	+ OK =[para]
set up	AT+LOGMSG =[para]	+OK: Success +ERR=[NUM]: Error
parameter	0: Status display off 1: Status display is on (default)	
illustrate	It takes effect immediately and is saved after power failure.	
Example	Query the current status output function Command: AT+LOGMSG? Return: +OK=1 Set to off state output Command: AT+LOGMSG=0 Return: +OK	

5.3.23 Module soft reset

instruction		answer
instruction	AT+RESET	+OK
illustrate	The module software is reset after a delay of 100ms.	

5.3.24 Restore factory settings

instruction		answer
instruction	AT+RESTORE	+OK
illustrate	After the setting is completed, the module will reset the software after a delay of 100ms; During the factory reset process, any form of reset is prohibited, and power off before the operation is completed is prohibited;	

5.3.25 Firmware Version

instruction		answer
Query	AT+VERSION?	+VERSION=[para]
parameter	para: Firmware version number	
illustrate	The last two digits of the firmware version indicate the version number.	
Example	Command: AT+VERSION? Return: +OK=7 508 -0-10	

5.3.26 Serial port Baud rate

instruction		answer
Query	AT+BAUD?	+BAUD =[para]
set up	AT+BAUD=[para]	+OK：成功 +ERR=[NUM]：错误
parameter	para: Serial port Baud rate. Possible values: 1200,2400,4800,9600,14400,19200,38400,57600,115200,230400,460800,921600。默认值 115200。	
illustrate	Restart effective, power down save.	
Example	Query the current serial port baud rate Instruction: AT+BAUD? Return: +BAUD=115200 The serial port baud rate is set to 9600 Instruction: AT+BAUD=9600 Return: +OK	

6 Mobile APP Test, Transparent Transmission

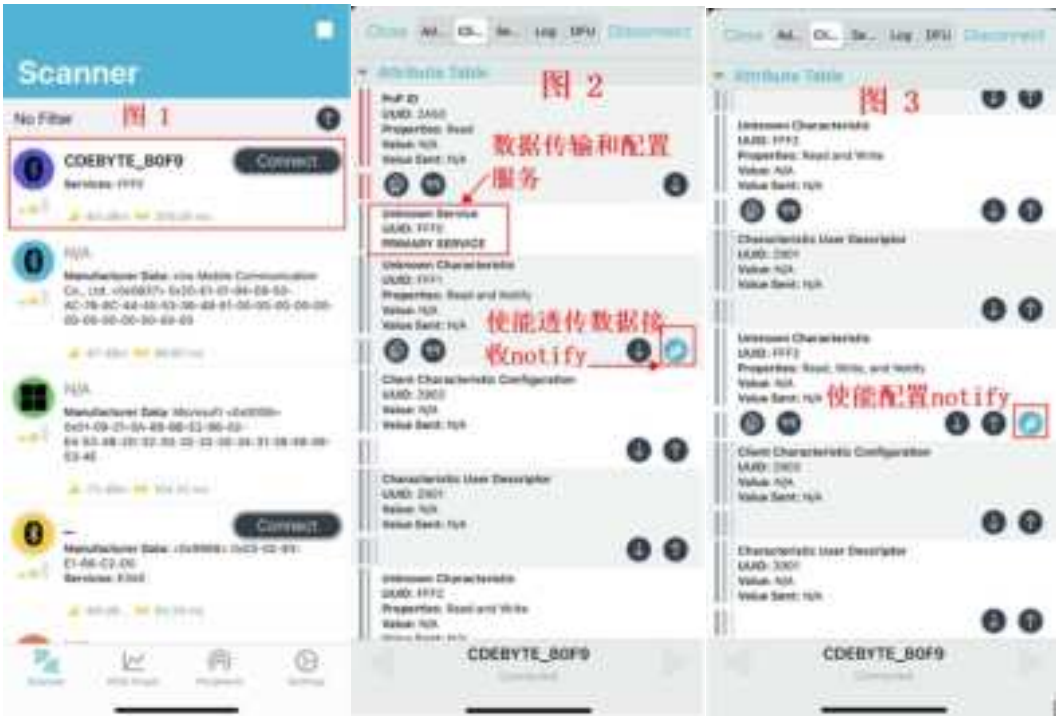
The mobile BLE APP can be downloaded from the App Store and the application market. Open the App Store or the application market, search for nRF Connect, download and install it, and then test it. This document takes the iOS version of nRF Connect as an example.

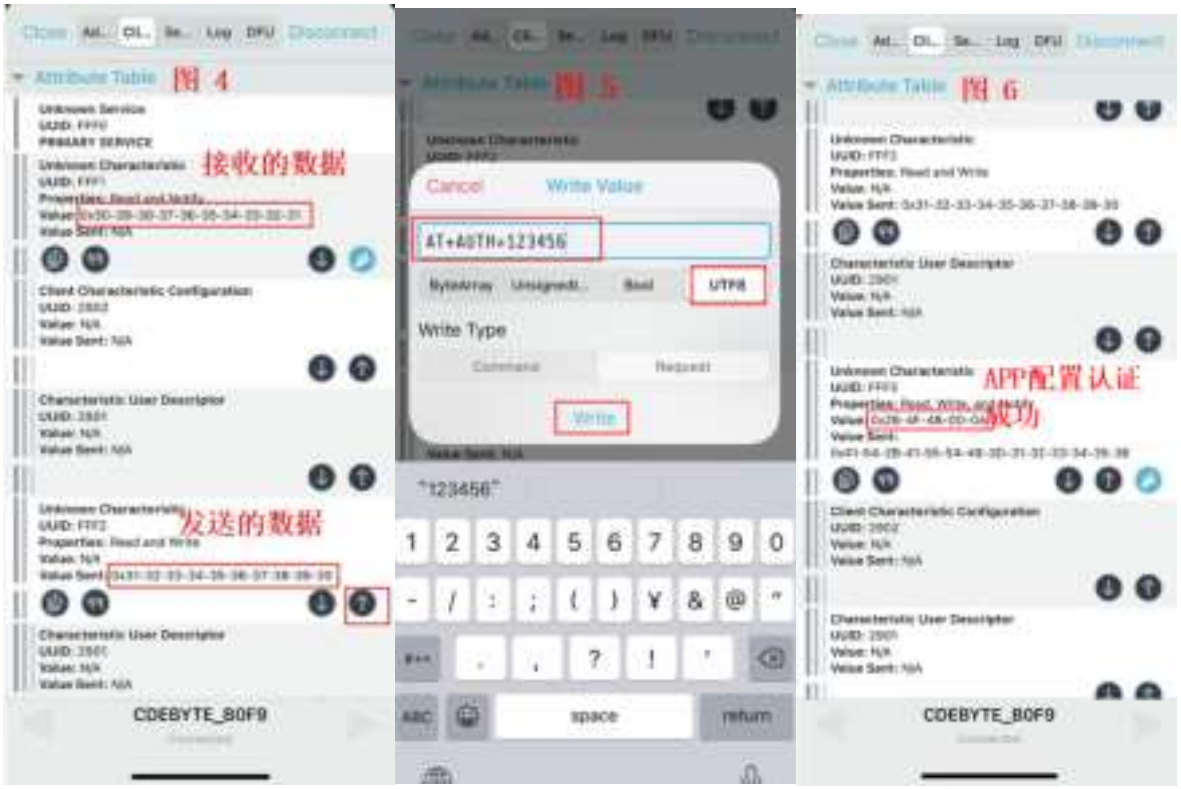
The module is connected to the computer through the USB to serial port tool. If it is equipped with a baseboard, it is directly connected to the computer and the computer port number used is checked (steps: right-click Start->Device Manager->Port in the lower left corner of the win10 desktop).

Open the serial port debugging tool and set the correct port number and baud rate. The factory default serial port parameters of the module are baud rate 115200bps, data bit 8, parity bit none, and stop bit 1.

Open nRF Connect, search for Bluetooth devices with a name starting with CDEBYTE_ and connect. After the connection is successful, Disconnect is displayed in the upper right corner of the phone, indicating that it is connected. Slide the phone interface left and right to see the service list and log information. The computer serial port debugging assistant will print connection information, such as XX:XX:XX:XX:XX:XX CONNECTD P*1. Find the data transmission and configuration Service in the service list, turn on the notify enable of the receiving and configuration commands, and then you can perform data transmission and AT commands with

the module.





7 Hardware Design

- It is recommended to use a DC regulated power supply to power the module. The power supply ripple coefficient should be as small as possible and the module should be reliably grounded.
- Please pay attention to the correct connection of the positive and negative poles of the power supply. Reverse connection may cause permanent damage to the module.
- Please check the power supply to ensure that it is within the recommended power supply voltage. If it exceeds the maximum value, the module will be permanently damaged.
- Please check the stability of the power supply. The voltage should not fluctuate greatly or frequently.
- When designing the power supply circuit for the module, it is often recommended to retain more than 30% margin, which is conducive to long-term stable operation of the whole machine;
- The module should be kept as far away as possible from parts with large electromagnetic interference, such as power supplies, transformers, and high-frequency wiring;
- If there are devices with large electromagnetic interference around the module, it will also greatly affect the performance of the module. It is recommended to keep them away from the module according to the intensity of the interference. If possible, appropriate isolation and shielding can be performed.
- If there are traces with large electromagnetic interference around the module (high-frequency digital, high-frequency analog, power traces), it will also greatly affect the performance of the module. It is recommended to keep them away from the module according to the intensity of the interference. If possible, appropriate isolation and shielding can be performed.
- Try to stay away from some TTL protocols whose physical layer is also 2.4GHz, such as USB3.0;
- The antenna installation structure has a great impact on the performance of the module. Make sure the antenna is exposed and preferably vertically upward. When the module is installed inside the housing, use a high-quality antenna extension cable to extend the antenna to the outside of the housing;
- The antenna must not be installed inside a metal shell, as this will greatly reduce the transmission distance.

8 Frequently Asked Questions

8.1 The transmission distance is not ideal

- When there is a straight-line communication obstacle, the communication distance will be attenuated accordingly ;
- Temperature, humidity, and co-channel interference can increase the communication packet loss rate ;
- The ground absorbs and reflects radio waves, so the test results are poor when close to the ground ;
- Seawater has a strong ability to absorb radio waves, so the test effect at the seaside is poor ;
- If there are metal objects near the antenna, or the antenna is placed in a metal shell, the signal attenuation will be very serious ;
- The power register is set incorrectly, or the air rate is set too high (the higher the air rate, the closer the distance) ;
- The power supply voltage is lower than the recommended value at room temperature. The lower the voltage, the lower the power output .
- The antenna used does not match the module well or the antenna itself has quality issues.

8.2 Modules are vulnerable to damage

- Please check the power supply to ensure that it is within the recommended power supply voltage. If it exceeds the maximum value, the module will be permanently damaged .
- Please check the stability of the power supply. The voltage should not fluctuate greatly or frequently .
- Please ensure anti-static operation during installation and use, as high-frequency components are sensitive to static electricity ;
- Please ensure that the humidity is not too high during installation and use, as some components are humidity sensitive devices ;
- If there is no special requirement, it is not recommended to use it at too high or too low temperature.

8.3 The bit error rate is too high

- There is interference from the same frequency signal nearby. Stay away from the interference source or change the frequency or channel to avoid interference.
- An unsatisfactory power supply may also cause garbled characters, so the reliability of the power supply must be ensured;
- Extension cables or feeder cables that are of poor quality or are too long can also cause a high bit error rate.

9 Ebyte Bluetooth Models

Model	Chip	Frequency Hz	TX power dBm	Communication interface	BLE version	Size mm	Antenna type	Features
E73-2G4M04S1A	nRF52810	2.4G	4	I/O	4.2/5.0	1 7.5 * 28.7	PCB/IPX	Hardware Resources Secondary Development
E73-2G4M04S1B	nRF52832	2.4G	4	I/O	4.2/5.0	1 7.5 * 28.7	PCB/IPX	Hardware Resources Secondary Development
E73-2G4M08S1C	nRF52840	2.4G	8	I/O	4.2/5.0	1 3 * 18	PCB/IPX	Hardware Resources Secondary Development
E104-BT01	CC2541	2.4G	0	I/O	4.0	14*22	PCB	Hardware Resources Secondary Development
E104-BT02	DA14580	2.4G	0	TTL	4.2	14*22	PCB	Industry's lowest power consumption High-speed continuous transmission sniffing
E72-2G4M04S2B	C C2640	2.4G	2	TTL	4.2	14*2 3	PCB/IPX	Built-in A RM dual core Multi-role mode
E104-2G4U04A	C C2540	2.4G	0	USB	4.0	1 8 * 59	PCB	Dongle Protocol Analyzer
E104-BT5010A	nRF52810	2.4G	0	UART	5.0	1 1.5 * 16	Ceramic Antenna	Low power consumption, transparent transmission

Revision History

Version	Revision Date	Revision Notes	Maintainer
1.0	2025-01-17	Initial release	Bin
1.1	2025-02-06	Content revision	Bin
1.2	2025-03-21	Added serial port Baud rate A instruction	Bin

Contact Us

Hot line:4000 330 990
Technical support: support@cdebyte.com
Documents and RF Setting download link: https://www.ru-ebyte.com
Thank you for using Ebyte products! Please contact us with any questions or suggestions: info@cdebyte.com
Address: B2 Mould Industrial Park, 199# Xiqu Ave, High tech Zone, Chengdu, Sichuan

Chengdu Ebyte Electronic Technology Co.,Ltd.