Dongguan DALY Electronics Co., LTD

DL-B40-D

Master-slave integrated Bluetooth transmission transmission module user manual

Version: V1.6 Date of modification: 2021-11-25

catalogue

Chart index

Terology, noun interpretation

name	explanation
unvarnished transmission	Transparent transmission, forwarding data between Bluetooth and serial port
PDA	Bluetooth, A short-distance wireless communication technology
BLE	Bluetooth LowEnergy, Low power Bluetooth, a new Bluetooth technology specification, lower power consumption, farther transmission distance and communication distance
GATT	Low-power Bluetooth (BLE) connections are built on the GATT (Generic AttributeProfile) protocol, and are a general specification for sending and receiving data over Bluetooth connections
Bluetooth host	One of the device roles in the Bluetooth connection, the host scans the slave device and actively initiates the connection to the slave device, playing its leading role in the Bluetooth connection
Bluetooth from the machine	One of the device roles in the Bluetooth connection, from the machine to broadcast its own information, passively waiting for the connection
Bluetooth radio	The Bluetooth transmitting device sends a broadcast periodically, so that the surrounding host device can scan and recognize itself, and the host device can connect to the slave according to the scanned slave information
Broadcast interval	The interval when Bluetooth sends the broadcast from the device, the smaller the interval, the faster it is scanned, but the greater the power consumption, the smaller the power consumption
Connection interval	After the two Bluetooth devices are connected, the beat of the data transmission, the smaller the interval, the faster the transmission speed, the smaller the delay, but the greater the power consumption
Paired binding	A mechanism of communication security in Bluetooth technology realizes the security of Bluetooth link layer

OTA	Aerial upgrade, or the firmware of the wireless upgrade module via Bluetooth
Heavy connection interval	When the module is the host, when the Bluetooth connection is not connected or disconnected, the interval will automatically reconnect

Table 1 Interpretation table of term names

1 Introduction of product functions

DL-B40-D is a BLE 5.1 master-slave integrated Bluetooth-serial port through transmission module developed and produced by Lithium Electronics. Various devices with serial ports can easily and quickly use Bluetooth wireless data through this module.

The basic functions and features are described as follows:

●Main frequency is 48 MHz, with a 32-bit ARM Cortex M3 core

●Fast and stable Bluetooth-serial port transmission, serial port port rate up to 921600

● Master-slave all-in-one Bluetooth, can be set to host or slave mode, support binding encryption

●Bluetooth slave mode can be connected by up to 20 host devices at the same time, and supports custom broadcast data

●Based on BLE 5.1, the speed is faster, the transmission distance is farther, and it can reach 40~100m in the open environment

●Support low power mode, dormant current up to 6 μ A, custom connections and broadcast intervals

●The Bluetooth transmission power is adjustable, up to 10 dBm, and the reception sensitivity is up to-95 dBm

●Support OTA Bluetooth wireless upgrade module firmware, wireless configuration module parameters

●The default onboard high quality ceramic antenna, improve the transmission distance, can also choose external antenna

●Built-in Watchdog, long time and reliable operation

●Ultra-small size, only 14mm×9.5mm 2mm

●Wide operating voltage of 1.8~4.2V, with a typical value of 3.3V

●Rich output pins (UART, I2C, SPI, up to 15 GPIO, up to 4 ADC, up to 6 PWM), available

For flexible and in-depth hardware and software customization development services

2 Pound definition
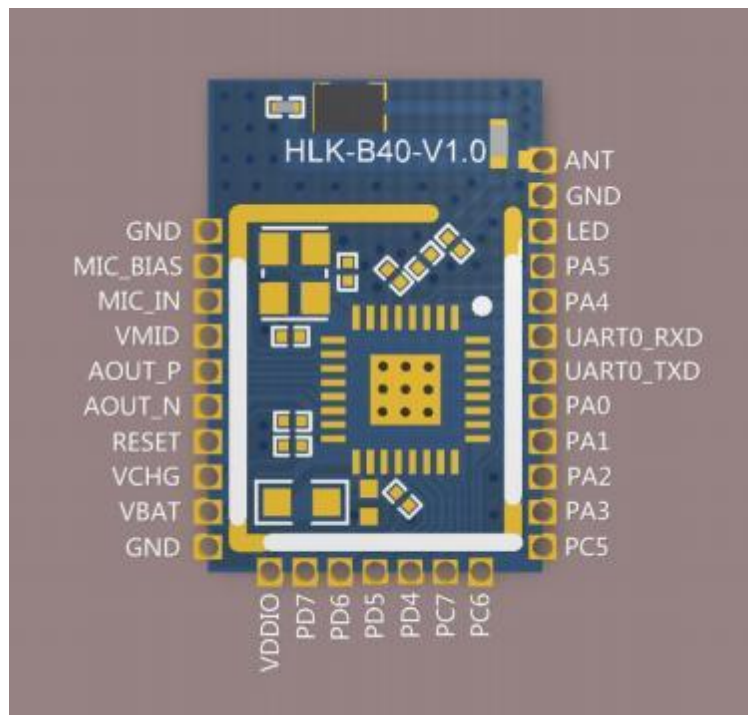
Figure 1. A Schematic diagram of the pin position

pin	symbol	IO class	function
1	GND	GND	Power to
2	MIC_BIAS	-	Keep function
3	MIC_ IN	-	Keep function
4	VMID	-	Keep function
5	AOUT_P	-	Keep function
6	AOUT_N	-	Keep function
7	RESET	I	Reset restart module, high level effective, not suspended, need external 10K pull-down resistance
8	VCHG	PWR	Charger input, no use without battery supply
9	VBAT	PWR	Power input DC3.3V, battery power supply
10	GND	GND	Power to
11	VDDIO	-	Keep function
12	PD 7	-	Keep function
13	PD 6	-	Keep function
14	PD 5	-	Keep function
15	PD 4	-	Keep function

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pin	symbol	IO class	function
16	PC 7	O	Module hibernation state output, high level: full speed work, low level: sleep
17	PC 6	I	Module hibernation control input High level: enter dormancy, low level: exit dormancy, suspended for high level
18	PC 5	I	Function key input, the low level is effective, suspended for the high level
19	PA 3	-	Keep function
20	PA 2	-	Keep function
21	PA 1	-	Keep function
22	PA 0	-	Keep function
23	UART0_ TXD	O	Block serial port output
24	UART0_ RXD	I	Module serial port input
25	PA 4	O	Bluetooth connection status output, high level: not connected, low level: connected
26	PA 5	O	Current working mode output, high level: host, low level: slave
27	LED	-	Keep function
28	GND	GND	Power to
29	ANT		External antenna output

Table 2 A pin definition table

3 Typical application circuit

The following is the basic application circuit reference for this module. For more functions, please refer to the module operation manual, or contact our engineer for assistance.
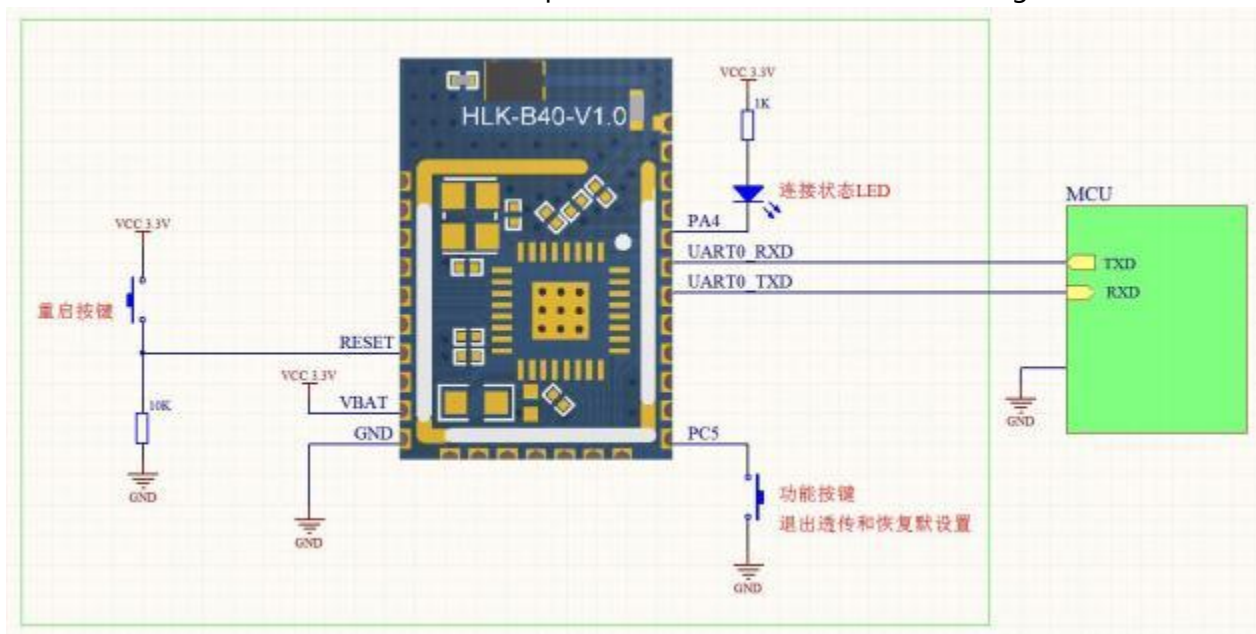
Figure 2 Basic minimum circuit (low able low function sleep function)

The enabling and disabling of the module can be set by AT command and is disabled by default.

If the low-power hibernation function is enabled, the module is controlled by the level of the hibernation control input pin, which can enter the hibernation or exit the hibernation, and the module will output the current hibernation state through the hibernation state output pin.
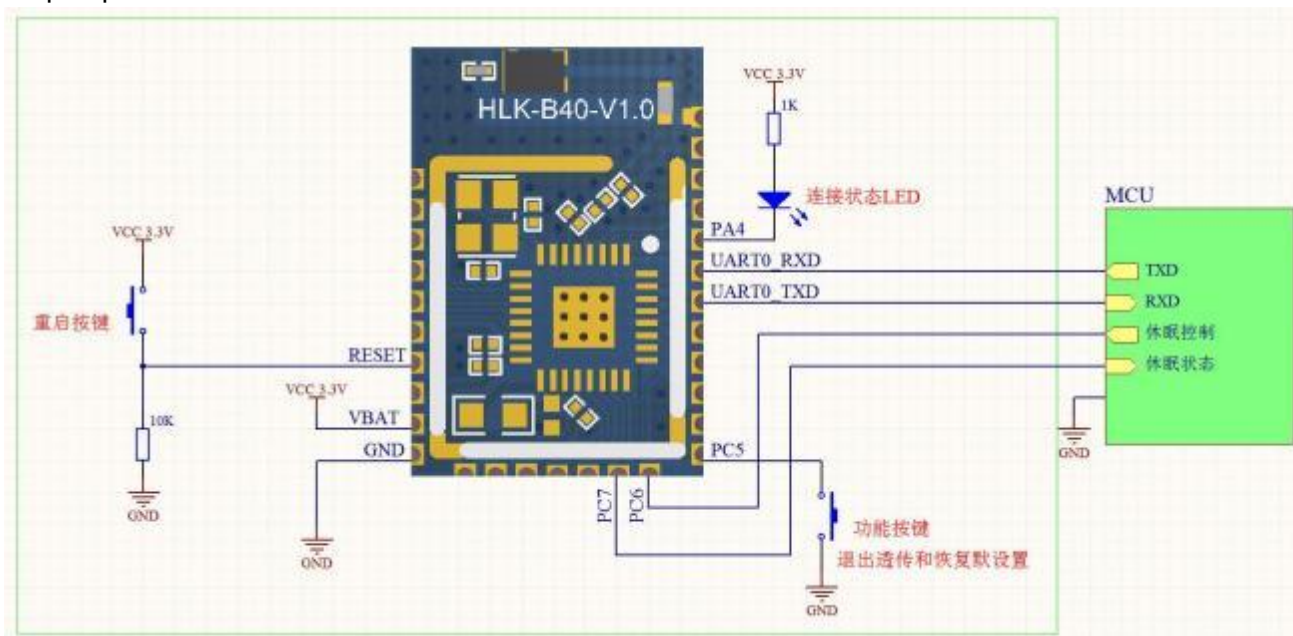
Figure 3 Basic minimum circuit (enabling low-power sleep function)

matters need attention:

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1. The RESET pin should not be suspended, and the 10K pull-down resistance should be connected.

2. Metal object occlusion will affect the Bluetooth signal sending and receiving, so the module should be kept away from the metal objects as possible when using. PCB design requires that the antenna part of the module should be hollowed out without copper.

4. Basic function description

4.1 Transmission principle

HL RK-B40 is a lithium electronic cost-effective from integrated low power Bluetooth-serial port through transmission module, is designed to make only serial users can quickly simple use bluetooth wireless transmission, with the help of serial through transmission, the users products need not care about complex bluetooth protocol stack and RF circuit, only simple serial send and receive, can transmit data directly on the bluetooth wireless connection.

Through transmission is short for transparent transmission, namely the role of the module is equivalent to between the serial and bluetooth connection to establish a transparent transmission pipeline, the user in the serial port data to the original to the bluetooth connection, via bluetooth data from the original to the serial, the whole process users do not need to care about how to achieve complex bluetooth connection, and HARK-B40 module is the original data handling forward and not to resolve and process the user transmission data, the user can safe and convenient use of the ability.

The schematic diagram of Bluetooth-serial port transtransmission function is as follows. See the <5 Quick Start Guide.

Figure 4 Schematic diagram of one-to-one Bluetooth connection transtransmission function

When acting as a Bluetooth slave machine, the module can be connected by multiple Bluetooth host devices, and also include other B40 modules as a host machine.

With the many-to-one connection, the data received from the serial port of the machine module will be forwarded to each connected host device via Bluetooth, and the data sent from each connected host device will also be forwarded to the serial port of the slave module.
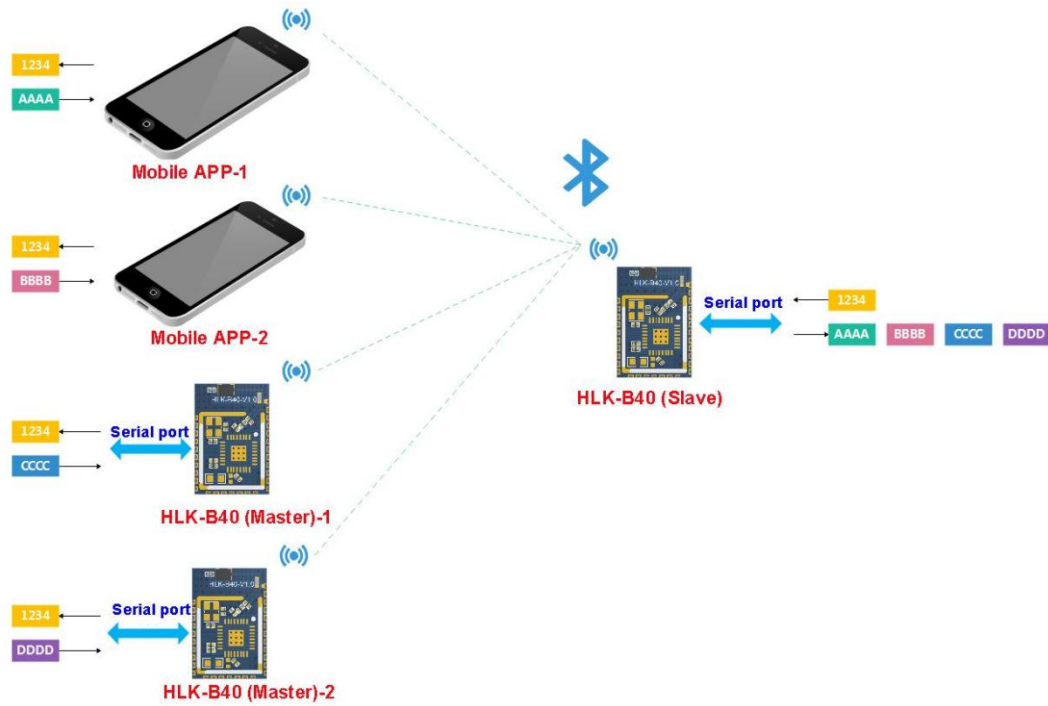
Figure 5 Schematic diagram of the multi-to-one Bluetooth connection through transmission function

4.2 Module operating mode (transmission and AT command mode)

The DL-B40-D module has two working states: through transmission mode and AT command mode.

In AT command mode, you can send AT commands to the module through the serial port to query and set the parameters of the module. In transmission mode, the module will transmit the serial port data and Bluetooth connected data bidirectional.

When the module is started, by default. Entering the AT mode will not affect the Bluetooth connection status. The data transmission of the serial port-Bluetooth is suspended; the data received by the serial port is processed by the current AT command; the data transmission is continued after the transmission is restored.

In transmission mode, input the 18th pin PC5 for a short low level (0.5 ~3s), and the module will exit transmission and switch to AT command mode.

In AT command mode, send AT + TS=1 command to restore exit AT command mode to transmission mode. The conversion logic of transmission mode and AT command mode is shown below:

The module enters transparent transmission mode by default after power-on

Function button short press

Transparent transmission mode

AT command mode

Serial input command AT+TS=1
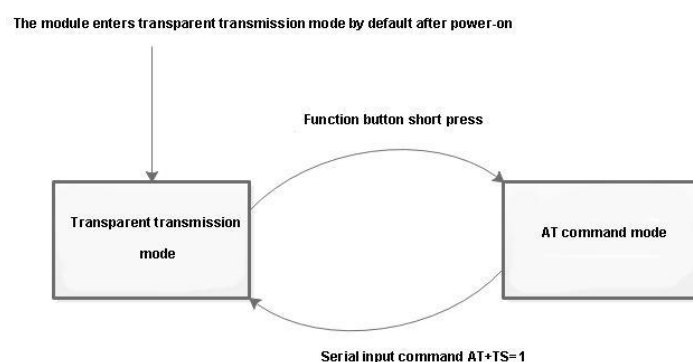
Figure 6. Schematic diagram of the conversion logic of the transmission mode and AT command mode

4.3 Description of the input and output pin function

name	Chip pin	explain
Reset key input	RESET	The high level is effective, and the external 10K pull-down resistance is input to the high level module restart module
Function button input	PC5	The interior has been pulled up, pull down the action Pull down 0.5~3 seconds: exit the transmission and switch to AT command mode; pull down 8~20 seconds: restore factory default settings

Module hibernation control input	PC6	The internal has been pulled up, suspended or input high level module automatically into the dormant state, input low level normal work at full speed; Effective only when the low-power sleep function is enabled
Module hibernation state output	PC7	High level = full speed work, low level = dormant
Bluetooth connection status output	PA4	High level = unconnected, low level = connected, and the transmission channel is established; when the pairing binding function is enabled, the pairing encryption is successful
Work mode output	PA5	High level = host, low level = slave

Table 3 Description of input and output pins

4.4 Bluetooth Device Role and Connections

Devices at both ends of the Bluetooth connection have fixed roles, always one is the host role and one is the slave role. The equipment of the different roles specifies the corresponding operations and responsibilities.

The host scans the slave device through the slave broadcast, and actively initiates and maintains a connection to the selected slave device (identified by the MAC address), playing a leading role in a Bluetooth connection.

The slave broadcasts its own information, such as the device name, the slave passively waits for the connection request initiated by the host, and accepts the request to make the Bluetooth connection successfully established. This module can be connected by multiple host devices at the same time.

The B40 module defaults to the slave mode and can be switched by the AT + ROLE command. After establishing Bluetooth connection, both devices can send data through Bluetooth (GATT).

The Bluetooth GATT service and feature UUID of this module can be modified by AT command, setting the read and write feature UUID value to the same, that is, sending and receiving on one feature simultaneously.

The default values are as follows:

Service UUID: 0000 fff 0-0000-1000-8000-00805f9b34 fb

feature UUID	Operation permissions	function definition
0000 fff1-0000-1000-8000-00805f9 b34 fb	Read/Notify	Module delivery, APP receiving
0000 fff2-0000-1000-8000-00805f9 b34 fb	Write Without Response	APP, module receive

Table 4 UUID

You can choose to open the pairing binding function of Bluetooth connection, which can increase the security, but the operation steps are increased accordingly. It is effective in both slave or host mode. The pairing mode is PASSKEY ENTRY, 6-digit PingCode. After the binding function is turned on, the Bluetooth data can be sent and received by pairing. The unpaired device cannot transmit data through Bluetooth and module.

In host mode, it is necessary to set the MAC address of the destination to be connected. When the module is started, the target is automatically connected without the connection is disconnected. The interval of automatic reconnection can be set by AT + RECONNI command. The default is 5s, which is to reconnect every 5 seconds until the connection.

5 A Quick Start Guide

5.1 Commissioning bottom plate for testing

In order to enable users to quickly start the verification and debugging of the module, our company has developed a special B40 test floor, which recommends you to choose this test floor when using this module for the first time.

The test floor is directly powered by USB, with USB serial port function. After connecting to the computer through USB cable, you can connect the serial port of the module on the module through USB serial port, without additional serial connection, which is easy to use.
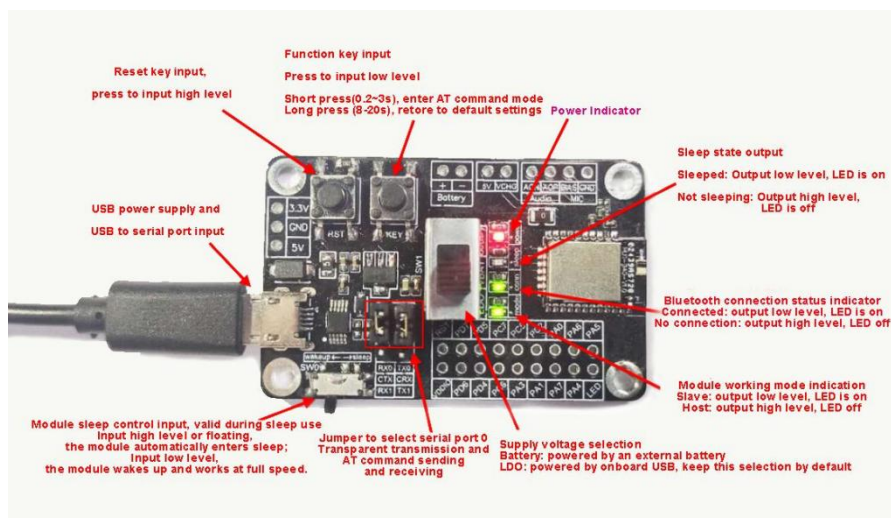
Figure 7 Schematic diagram of the appearance and function of the module test floor plate

5.2 Quick verify of Bluetooth serial port transmission function

Our company has developed a special mobile phone Bluetooth transtransmission test APP for this module for users to use. Please refer to the DL-B40-D Bluetooth Transmission module APP.

Using the module test floor and the mobile phone Bluetooth transtransmission test APP, you can immediately test the serial port-Bluetooth transtransmission function of the verification module.

The specific test operation procedure is as follows:

Correct the module to the test base and connect the test base to the computer via USB cable. Open the corresponding serial port on the computer with the serial port debugging tool.

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- - Open the transmission test APP on the phone, the APP will automatically search the surrounding Bluetooth devices and display the list.

Click the Bluetooth device name corresponding to the module in the device list to connect. The default name of the B40 module is HLK _ B 40 _ * * * *, and the suffix is the last four digits of the MAC address.
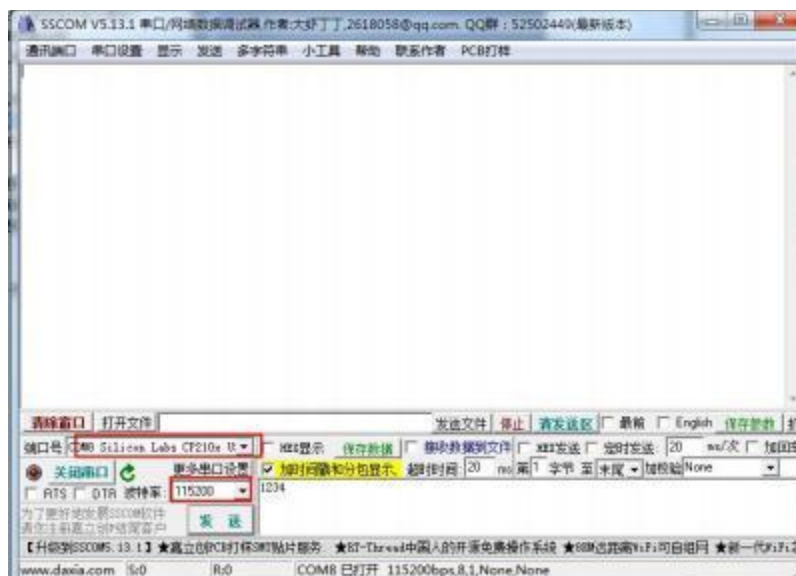
Figure 8 Figure of the measured tool of transmission test

After the APP is successfully connected to the module, the connection state LED on the test floor will brighten, which is the connected state.

At this time, data can be sent to the module serial port in the serial port debugging tool on the computer, and the sent content will be received and displayed by the mobile phone APP intact;

Send data to the module from the transtransmission test APP on the mobile phone, and the sent content will be received by the module and output to the module serial port. The received data can be seen in the serial port debugging tool on the computer. The effect is as follows:

Module serial port mobile phone APP terminal

Figure 9 Data measurement of serial port and APP

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6 Low-power sleep function is used

This module is developed based on BLE 5.1 technology, supports low power consumption, and can be flexibly configured in many ways to further reduce power consumption.

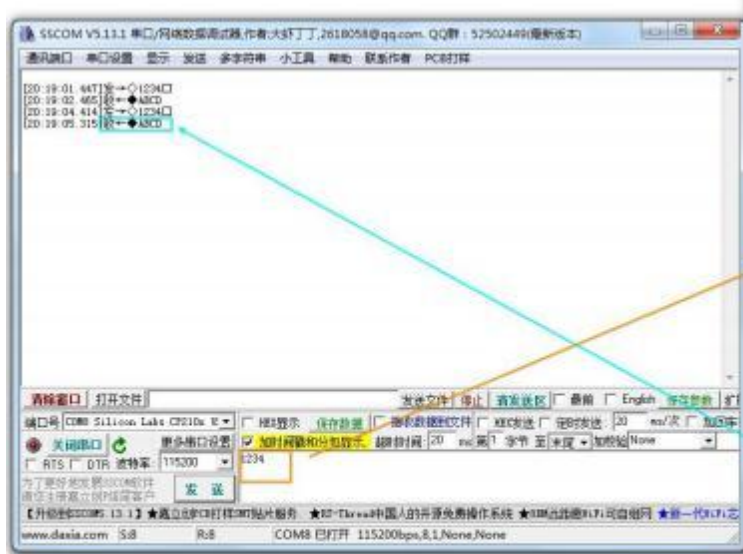| Configurable items	explain
Adjust the emission power	The lower the transmission power, the lower the power consumption, but the shorter the transmission distance
Adjust the broadcast intervals and the connection intervals	The larger the interval, the lower the power consumption, but the greater the delay
Turn on automatic dormancy	After the automatic hibernation function is turned on, the module can be controlled by the input level of the input pin of the external hibernation control. High level: the main chip automatically hibernation, low level: wake up at full speed; The lowest operating current during dormancy can be as low as 6 μ A

Table 5 List of configuration items to reduce power consumption

All of the above can be modified by AT commands, and users can be flexibly set according to the actual application scenarios and requirements, to achieve a balance between power consumption and performance.

After the automatic sleep function is enabled, the dormant state output pin output different levels to indicate whether the module is currently in dormant state or awake state: high level: wake up, full speed working state; low level: dormant state
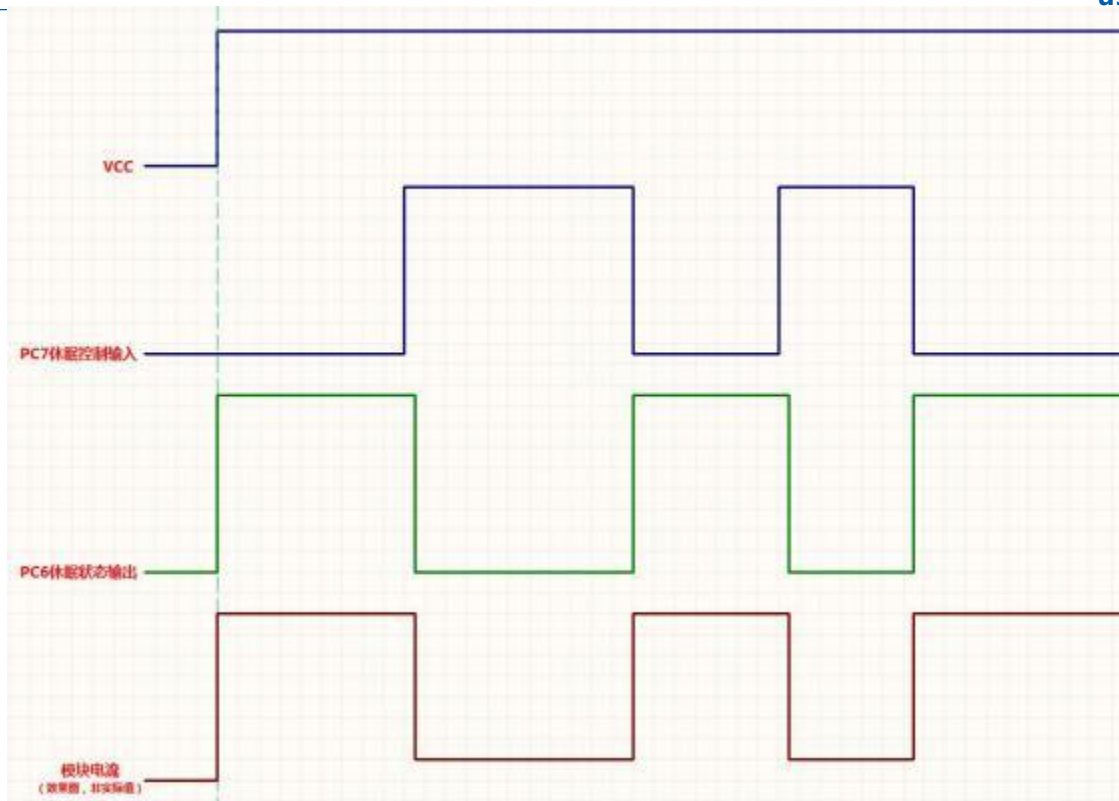
Figure 10 Control and state timing after the low-power consumption function is turned on

7 AT command

7.1AT instruction format description

All AT instructions are in ASCII code string format, and the instructions end with a return line character. No power loss after setting, all settings will take effect after the restart.

Query class instruction:

transmit by radio	reply
AT+< CMD>=?\r\n	Query success: AT+< CMD>=< val>\r\n OK\r\n Or if the query fails: AT+< CMD>=< val>\r\n ERROR\r\n

Set class instructions:

transmit by radio	reply
AT+< CMD>=< val>\r\n	Setup success: AT+< CMD>=< val>\r\n OK\r\n Or if the setting fails: AT+< CMD>=< val>\r\n ERROR\r\n

\ r \ n represents the ASCII code: 0x0D 0x0A

7.2AT instruction list and description

num ber	command name	explain	Example of parameter range		
1	VER	Software version number	read only	transmit by radio AT+ VER=?	reply AT+ VER=1.03(20092421) OK
2	MAC	MAC address	read	transmit by radio AT+ MAC=?	reply AT+ MAC=112233445501 OK
3	DEFAULT	Restore the default configuration	1	transmit by radio AT+ DEFAULT=1	reply AT+ DEFAULT=1 OK
4	REBOOT	Restart module	1	transmit by radio AT+ REBOOT=1	reply AT+ REBOOT=1 OK
5	TS	Recovery through transmission mode	1	transmit by radio AT+ TS=1	reply AT+ TS=1 OK
6	NAME	module Bluetooth name	Up to 25 characters each Default value: HLK _ B 40 _ ****	transmit by radio AT+ NAME=? transmit by radio AT+ NAME= ble_1234	reply AT+ NAME= HLK_B40 OK reply AT+ NAME= ble_1234 OK
7	BAND	Serial port port rate	1200,2400,4800,9600,14400,19200,38400,57600, 115200,230400,460800,921600 Default value: 115200	transmit by radio AT+ BAND=? transmit by radio AT+ BAND=230400	reply AT+ BAND=115200 OK reply AT+ BAND=230400 OK
8	RFPOWER	PDA transmitting power	1 ~18,18 grades Default: 8 The smaller the transmission distance, the lower the power consumption; the larger the transmission distance Far away, the greater the power consumption	transmit by radio AT+ RFPOWER=? transmit by radio AT+ RFPOWER=10	reply AT+ RFPOWER=8 OK reply AT+ RFPOWER=10 OK

9	**SLEEPEN**	Automa tic dorma ncy enabli ng	0 disables sleep 1 enables sleep Default: 0 The enabling module automatically enters the dormant state according to the control of the SleepEn input pin level	transmit by radio	reply
				AT+ SLEEPEN=?	AT+ SLEEPEN=0 OK
				transmit by radio	reply
				AT+ SLEEPEN=1	AT+ SLEEPEN=1 OK

				transmit by radio	reply	
10	**CONNI**	PDA Connection interval	6～3200, Unit of 1.25ms, namely 7.5~ 4000ms, the default value: 12 The smaller the send and receive, the faster the power consumption Large; the larger the slower, the greater the delay, the lower the power consumption;	AT+ CONNI=?	AT+ CONNI=24 OK	
				transmit by radio	reply	
				AT+ CONNI=8	AT+ CONNI=8 OK	
11	**ADVI**	PDA Broadcast interval	Unit 625us recommended value: 80,160,320,800, 1600,3200 Default value: 800	transmit by radio	reply	
				AT+ ADVI=?	AT+ ADVI=800 OK	
				transmit by radio	reply	
				AT+ ADVI=1600	AT+ ADVI=1600 OK	
12	**ADVDATA**	Custom broadcast data	16 bases, the number of characters is a multiple of 2, up to 5216 bases Default: No	transmit by radio	reply	
				AT+ADVDATA=?	AT+ADVDATA=03FF1A1B OK	
				transmit by radio	reply	
				AT+ADVDATA=68696C696E6B	AT+ADVDATA=68696C696E6B OK	
13	**ROLE**	The BLE role of the module	1 From the machine 2 Host Default: 1	transmit by radio	reply	
				AT+ ROLE=?	AT+ ROLE=1 OK	
				transmit by radio	reply	
				AT+ ROLE=2	AT+ ROLE=2 OK	
14	**ENCRYPT**	Paired binding enables	0 No pairing binding is required 1 requires paired binding Default: 0	transmit by radio	reply	
				AT+ ENCRYPT=?	AT+ ENCRYPT=0 OK	
				transmit by radio	reply	
				AT+ ENCRYPT=1	AT+ ENCRYPT=1 OK	
15		Paired	Six-digit integers	transmit by radio	reply	
				AT+ PINCODE=?	AT+ PINCODE=000000 OK	
				transmit by radio	reply	

				transmit by radio	reply	
	PINCODE	code	Default value: 000000	AT+ PINCODE=123456	AT+ PINCODE=123456 OK	
16	**SCANMODE**	Connect to the scan mode in the host mode	0 Connect via the MAC address 1 Connect via a Bluetooth name Default: 0	transmit by radio	reply	
				AT+ SCANMODE=?	AT+ SCANMODE=0 OK	
				transmit by radio	reply	
				AT+ SCANMODE=1	AT+ SCANMODE=1 OK	

				transmit by radio	reply	
17	**PEERMAC**	Module as host When, automatic go to connect Receive from the machine MAC address	MAC address, 1216 bases	AT+PEERMAC=?	AT+ PEERMAC= AABBCC 000001 OK	
				transmit by radio	reply	
				AT+ PEERMAC= AABBCC 000001	AT+ PEERMAC= AABBCC 000001 OK	
18	**PEERNAME**	Module as host When, automatic go to connect The blue of the machine The tooth name	Up to 25 characters each	transmit by radio	reply	
				AT+ PEERNAME=?	AT+ PEERNAME= HLK_B40 OK	
				transmit by radio	reply	
				AT+ PEERNAME= ble_1 234	AT+ PEERNAME= ble_1234 OK	
19	**AUTHPWG**	OTA and air-configured access passwords	Up to 8 characters Default value: Hi Link	transmit by radio	reply	
				AT+AUTHPWG=?	AT+AUTHPWG=HiLink OK	
				transmit by radio	reply	
				AT+ AUTHPWG=68686868	AT+ AUTHPWG=68686868 OK	
20	**CONNSTATE**	Query current Bluetooth Connected device letter breath	Read only Responses will include: The number of devices currently connected Role, MAC for each device	transmit by radio	reply	
				AT+ CONNSTATE=?	AT+ CONNSTATE=2 M,4E21 FB 831492 M,539 FD 7108A6D OK	
21	**RECONNI**	Module as host When, the Bluetooth is automatically Heavy connection interval	Integer, in a unit of s 0: Try to connect once on startup only, and do not reconnect 1~60: Automatic reconnect after specified seconds after the connection is disconnected Default: 5	transmit by radio	reply	
				AT+RECONNI=?	AT+RECONNI=0 OK	
				transmit by radio	reply	
				AT+ RECONNI=10	AT+ RECONNI=10 OK	
22	**UUIDS**	Bluetooth transmis sion	3216 decimal numbers Windows default: 0000 fff 00000100080	transmit by radio	reply	
				AT+ UUIDS=?	AT+ UUIDS=0000 fff 00000100080 0000805f9b34 fb OK	
				transmit by radio	reply	
				AT+ UUIDS=0000 fff 000001000 800000805f9b34 fb	AT+ UUIDS=0000 fff 00000100080 0000805f9b34 fb OK	

		service UUID	0000805f9b34 fb	
23	**UUIDR**	Through the transmission service Read feature UUID(module Send, APP receiving)	3216 decimal numbers Windows default: 0000 fff 10000100080 0000805f9b34 fb	

| 24	**UUIDW**	Through the transmission service Write feature UUID（APP Issue, module receiving)	32 in 16 decimal points Windows default: 0000 fff 20000100080 0000805f9b34 fb		
25	**DISCONN**	Proactively disconnect the current And all of the modules bluetooth connection	1	transmit by radio AT+ DISCONN=1	reply AT+ DISCONN=1 OK
26	**ADVEN**	Module Bluetooth broadcast is enabled	0 Disable the Bluetooth broadcasting of the module 1 The Bluetooth broadcast of the enabling module Default: 1 When disabled, the module cannot be scanned by the phone or other Bluetooth host	transmit by radio AT+ ADVEN=? transmit by radio AT+ ADVEN=1	reply AT+ ADVEN=0 OK reply AT+ ADVEN=1 OK
27	**MAXCONN**	From machine mode When, allow the most Large Bluetooth connection Number, or the most available How many at the same time Host connection	Default value 10	transmit by radio AT+MAXCONN=? transmit by radio AT+MAXCONN=2	reply AT+MAXCONN=20 OK reply AT+MAXCONN=2 OK

Table 6 List and description of AT commands

8 Wireless setup and queries via Bluetooth

In the mobile phone APP, the parameters of the module can be checked and set through Bluetooth wireless. For specific operation, please refer to DL-B40-D Bluetooth Transmission Module Mobile Phone APP Use Instructions.

9 The OTA function

In the mobile phone APP, the firmware of the module can be upgraded through Bluetooth. For specific operation, please refer to DL-B40-D Bluetooth Transmission Module APP Use Instructions.

10 Introduction of the finished products

蓝牙模块
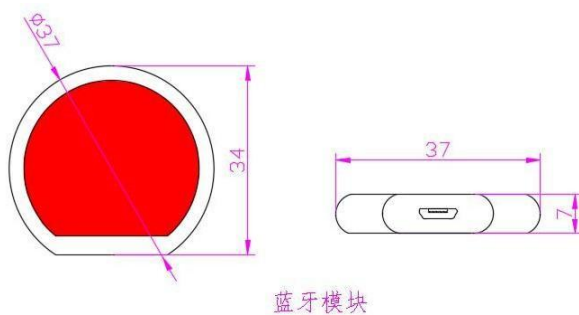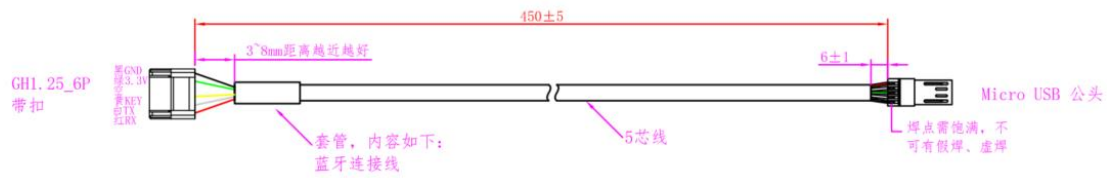
Description of the Bluetooth cable interface definition

	Wire harness color	grade	The pin definition	PiN foot
GH 1.25 color and definition	black	GND	GND	1
	hispid arthraxon	3.3V	Power supply is 3.3V	2
	empty	/	/	3
	yellow	/	/	4
	white	TX	Communication sending end	5
	red	RX	Communication receiver	6
Micro USB Colors and definitions	red			1
	white			2
	hispid arthraxon			3
	yellow			4
	black			5

1 Revision record

date	edition	revise content
2020-10-12	1.0	The initial version
2020-10-20	1.1	Correct part of the data, add the reconnection interval description reconnection interval default value to 5
2020-10-31	1.2	Support for BLE 5.1
2020-11-5	1.3	Improve some text
2021-1-13	1.4	Add scan connection mode in host mode through MAC address or Bluetooth name
2021-7-26	1.5	Add active disconnect, Bluetooth broadcast enable, and maximum Bluetooth connections in slave mode; Correct the length of the Bluetooth name and the length range of the custom broadcast data;
2021-11-25	1.6	Correct the length limit of Bluetooth name; improve some text description; Modify the default connection interval;

FCC Statement

1. 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.
(2)This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
Note:This equipment has been tested and found to comply with the limits for a class B digital device,pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates uses and can radiate radio frequency energy and,if not installed and used in accordance with the instructions,may cause harmful interference to radio communications.However,there is no guarantee that interference will not occur in a particular installation.if this equipment does cause harmful interference to radio or television reception,which can be determined by turning the equipment off and on,the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.
•
Increase the separation between the equipment and receiver.
•
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.
The device has been evaluated to meet general RF exposure requirement,This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body

ISED Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply
with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).
Operation is subject to the following two conditions:
1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.
This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.
L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'innovation, sciences et Développement économique Canada applicables aux appareils radio exempts de licence, L'exploitation est autorisee auxdeux conditions suiva ntes:
1. Lappareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouilage radioélectrique subi, méme si le brouillage est s usceptible d'en compromettre lefonctionnement.
Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.