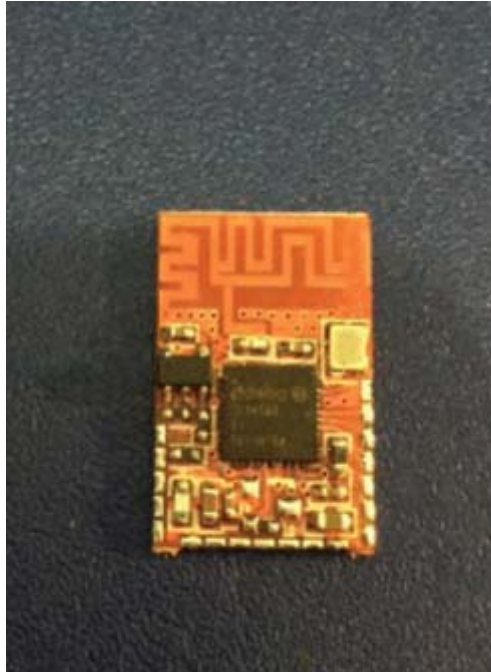


HJ-580B UserManual V1.0



HJ-580B is a master from one of the BLE serial transparent transmission module itself can be more than Android 4.3 system, Ipad2 or more above or Iphone 4S phone connection to communicate, but can also work in the host mode, the connection works from machine model HJ-580B to communicate point to point communication.

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Outline

HJ-580B to Hong Jia Electronics honor produced the world's lowest power consumption dialog program BLE transparent transmission module size is 11.59 * 18.03mm, BLE core selection of the world's lowest power DA14580, sleep current is only 2uA, 500mS Broadcast gap, the maximum current is about 80uA, when not broadcasting as 2uA, 10mS connection gap, maximum power consumption is only about 500uA. Exit sleep mode, after working at full speed, the average current is less than 1.5mA.

HJ-580B passthrough Edition module, to achieve the full sense of the pass-through serial port baud rate 19200bps less (including 19200bps) can be carried out without gaps large amount of data transparent transmission of data transmission (multi-byte data transmission without waiting, without subcontracting; for example, to transfer 10,000 bytes of data bytes sent to), that is, you can always give us serial transparent transmission module sends data, not like the other modules, like waiting, so from a strictly! the sense of true serial transparent transmission, the conventional transparent transmission module has a number of BLE byte limit, it can not be received send unlimited.

Our high-performance PCB antenna onboard: In indoors (with cover, penetrate 3-6 walls) condition, communication distances of about 30 meters, 50 meters outdoor far as you can;

The module also has a feature that is common Ibeacons broadcast radio and coexistence, the default setting for each broadcast two general broadcast on Radio 2 Ibeacons switched data, we are seamless handover, that is, when we do not switch will consume more power, you can do comparison, with or without Ibeacons no additional power consumption (when other vendors' need to consume a lot of electricity to switch)!

We offer as many as dozens of serial command, you can easily configure the functions of the various parameters, the management module. These parameters are saved and down, this is the difference between a small module.

~About HJ-580B serial port passthrough description

Strictly speaking, our BLE transparent transmission module is a real sense of serial wireless transparent transmission module.

First, we support the serial port baud rate from 4800bps to 256000bps, other parameters such as serial port stop bits, parity, etc. can be freely set.

Secondly, our serial port parameters can be changed dynamically, when you set a new serial port parameters, be sure to replace your MCU's serial port baud rate, or can not properly traffic.

Finally, the most important thing is: Our serial transparent transmission module supports unlimited data size, time interval function, (Note: This feature only supports the following baud rate 19200bps) That is, when you wake module after you send data to the HJ-580B transparent transmission module, regardless of how much the number of bytes you send, also do not have to consider each byte interval you sent, you can send thousands of consecutive bytes to be continuously sends tens of thousands or even hundreds of thousands of bytes bytes.

BLE most transparent transmission module on the market, there is a single limit on the number of bytes sent, bytes sent single largest general offer for 200 bytes or so, so if you send thousands of bytes, you must divided into several packets for transmission, and you have to consider the recipient group package, so we called our passthrough port is similar to a real serial port.

In host mode, HJ-580B becomes a BLE host, due to different manufacturers BLE transparent transmission module data channel UUID not set the same, so the HJ-580B as the host of the Company can only connect slave HJ-580B mode (L) module, a connection, master-slave module to transmit data through the operation, low power consumption!

While the HJ-580B the latest firmware, we have increased the master and slave binding function, that is to say, once master and slave commanded the MAC address from the machine or the host connected to it, then they can only MAC set with corresponding connection devices can not be connected with other devices!

~Master Slave Select

HJ-580B from one of the BLE based transparent transmission module, we have to choose the mode BLE module by P14.

Only at power-on reset phase, we will go to the level of detection of P14. When the P14 input level is high, then we will HJ-580B is set to slave mode; when P14 input level is low, then we will HJ-580B is set to host mode.

After setting from the machine mode, the module waits for the host connection of external broadcasting; After the host mode, the module will scan the sky to find the matching connection from the machine!

~Wake and Sleep Control

The default module is working under a dormant state, we provide a IO is used as a switching control sleep and wake up, the IO for the module P06, the name for the Wake Up & Sleep Select, we provide as follows:

Select from going to sleep

No matter in what state module, currently in what mode (if the serial data transfer in progress, then the port will be immediately deactivated, any data you send to the serial port will be invalid, but the data is sent to the module APP or host are not dormant the impact will continue to send out!), as long as the P06 is high, the module will immediately enter sleep mode if the sleep serial print notification is turned on, the serial print <SLEEP>.

Sleep, BLE will be broadcast period you set periodically broadcast and Ibeacons broadcast, in this mode, the current consumption of only the lowest 2uA, maximum only about 80uA. (At TI and Nordic programs, the same parameters, they need to power nearly 10 times!)

WAKE running at full speed

Only the case when the module is in sleep, as long as the P06 is low, the module will immediately run full speed into the wake-up mode, if the wake-port print notification is turned on, the serial print <WAKEUP>.

When P06 is pulled low, the module will wake up and run at full speed in

50us, the average operating current consumption at this time is about 1.5mA, this time the external 16MHz crystal oscillator working at full speed, BLE all peripherals are enabled peripherals up and running at full speed.

Only after wake-up, you can pass our passthrough module serial port to the APP or BLE host sends data, the sleep state, unable APP or BLE host sends data via the serial port to connect.

Only after wake-up, you can the BLE instruction module for serial configuration.

Of course, there are exceptions, and that is when the connected state, APP or Bluetooth BLE module sends data to the host computer, the serial port will be automatically enabled and sends out the data, only this one exception!

~ Work mode control

HJ-580B has two operating modes: a serial data transparent transmission mode; one for the configuration mode; the two work mode control is controlled by an IO, the IO is the P00, the name for the Config Mode.

Note: The mode selection module only valid in the wake of the state, in the sleep state, regardless of what level state P00, the module will remain transparent transmission mode serial data.

Serial data transparent mode

A, when the module is in hibernation, the module will remain serial transparent transmission mode, when the module is connected to the phone APP or BLE host, if there is to send data to the module, the module immediately P03 pin low, and delay 40mS (Now this time will be sent out enough so that the external MCU to wake up.) After the serial data, MCU module is connected to receive the data sent from the host computer.

B, when the module is in the awake state, when the P00 pin high, the module will remain transparent transmission mode serial port, serial port module itself can receive serial data from the outside, but can also sum up the A, cell phone BLE APP or data sent by the host, will also be issued through the normal serial port!

C, again explain, APP or the host serial data sent to the module will not be affected by sleep and wake, will transfer from the serial port TX pin out. Therefore, the downlink data is automatically sent, but the uplink data must only be effectively transmitted in the wake mode.

D, before transmitting data, it must notify the BLE DATA BUFF data channels enable open, otherwise the APP or the host can not receive the BLE module uplink data.

Serial configuration mode command

A, when the module is in hibernation, regardless of why the state P00, the module will operate in serial transparent transmission mode.

B, when the module is in the awake state, when the P00 pin is low, the module will immediately enter the serial command configuration mode, and you can use the following instruction set of the serial number of the modules column parameter settings.

~Busy status indication Configuration Mode

When in configuration mode, the module can still be connected by APP or BLE host, but in this mode, connect the APP or later BLE host is unable to serial and HJ-580B for data transfer, because at this time serial configuration mode is occupied.

If under these conditions, APP or BLE host CENTER DATA BUFF (0XFFF2) channel downlink send data, BLE DATA BUFF channel (0XFFF1) will automatically notify the uplink <CONFIG MODE BUSY> Flag to APP or BLE hosts to give them feedback HJ -580B (L) is in configuration mode, and then later send and receive data!

~Connection status indicator

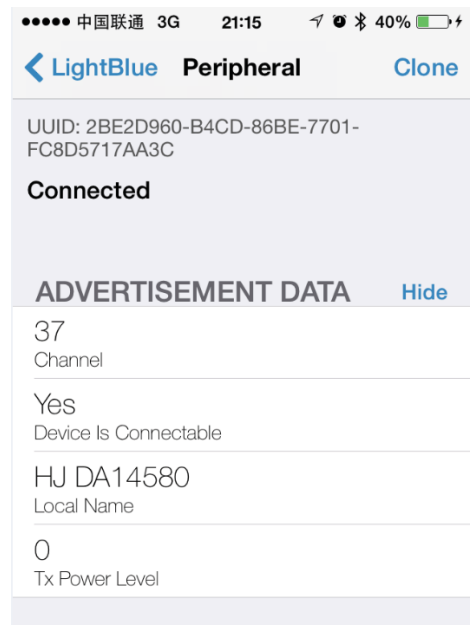
When the module is disconnected from the phone APP or host, P11 name Connect State pin will remain high;

When the module is properly connected to the phone APP or host, P11 pin output low, indicating the module is normally connected hard;

~About HJ-580B of the UUID definitions and instructions APP

(一) Mobile APP or BLE host and HJ-580B transparent transmission module connected communication

When you connect with a mobile phone on HJ-580B after (here we use LightBlue IOS software environment connected), you can see the following interface:





The first image of the scan data, including the name of the device, as well as the broadcast channel information transmission power information;

The second image is the device information, including hardware and software version, device name, manufacturer name, device ID, device MAC addresses and PnP ID code. (This information, we have provided an interface change, Note: These are not saved after a restart, will revert to the default value)

The third image data channel device, the main service UUID as 0XFFF0, the main service following a total of three sub-services, respectively BLE data channel

0XFFF1, APP or host data channel 0XFFF2 and configuration data channel 0XFFF3 (the channel is not yet used) .

Channel	UUID	HANDLE value	Service Properties	Remark
BLE DATA BUFF	0XFFF1	0X21	Read,notification	Description 1
	0XFFF1	0X22	WR	BLE data channel control enabled
CENTER DATA BUFF	0XFFF2	0X25	WR	Description 2
BLE DATA CONFIG	0XFFF3	0X28	WR	Description 3

Description 1:

BLE DATA BUFF to BLE module is HJ-580B transparent transmission of serial data channels, that is, the way received through HJ-580B external serial data, all will be notified (if notification to open) returns to the APP or the host, that is, to return to the UUID 0XFFF1 data channel, the number of bytes up to 20 bytes; if there are more than 20 bytes of data notification, the HJ-580B will automatically sent to the sub-channel!

Red part of the notification so that the UUID and the corresponding HANDLE value can be, if you're IPHONE or Android phone as a host, then you only need to enter into the system UUID 0XFFF1 notice specified function is enabled, you can open notifications, open notification is received HJ-580B serial data uploaded premise!

Description 2:

CENTER DATA BUFF BLE phone APP client or host sends data channel, that is, the phone APP or host sends data to the HJ-580B module through the channel, a single send the maximum number of bytes 20 bytes , if the need to send more than 20 bytes of data, divided into multiple packets, HJ-580B receives the data, it will continue to send out through its serial port TX, for an external device to receive!

Description 3:

This channel is temporarily not in use, without any function!

(二) APPIstructions

HJ-580B BLE 4.0 passthrough module, supports Android 4.3 (Android 4.4 system is best) or more systems, Apple IPHONE 4s over the phone or with Ipad BLE function.

Update log: NO.

FCC Warning:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2AGPMHJ-580B or Contains FCC ID: 2AGPMHJ-580B"

when the module is installed inside another device, the user manual of this device must contain below warning statements;

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.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with limit modular approval should perform the test of radiated emission and spurious emission according to FCC part 15C : 15.247 and 15.209 requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 requirement, then the host can be sold legally.