

- 2 Professional bluetooth products suppliers.
- 2 Remote control module provider
- 2 data transmission module provider
- 2 PIO state acquisition module provider
- 2 Customizable bluetooth module and bluetooth solutions
- 2 Jinan high and new technology enterprise
- 2 SIG members

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**The most complete, most convenient, the most stable of  
Bluetooth data transmission, remote control, PIO  
acquisition module**

*---- Master and slave role in one*

*---- Remote control without other MCU*

*---- The PIO data acquisition without other MCU*

**13. Product parameters**

- Ø BT Version: Bluetooth Specification V4.0 BLE
- Ø Send and receive no bytes limit.
- Ø Working frequency: 2.4GHz ISM band
- Ø Modulation method: GFSK(Gaussian Frequency Shift Keying)
- Ø RF Power: -23dbm, -6dbm, 0dbm, 6dbm, can modify through AT Command AT+POWE.
- Ø Speed: Asynchronous: 6K Bytes  
Synchronous: 6K Bytes
- Ø Security: Authentication and encryption
- Ø Service: Central & Peripheral UUID FFE0,FFE1
- Ø Power: +3.3VDC 50mA
- Ø Long range: Open space have 100 Meters with iphone4s
- Ø Power: In sleep mode 400uA~1.5mA, Active mode 8.5mA.
- Ø Working temperature:-5 ~ +65 Centigrade
- Ø Size: HM-10 26.9mm x 13mm x 2.2 mm; HM-11 18\*13.5\*2.2mm

## 2. Product overview

Thanks for you choose our products. If you want to know more, [www.jnhuamao.cn](http://www.jnhuamao.cn) can help you (Videos, New version datasheet, Module work flow, project Codes, etc.)

HM Bluetooth module use CSR BlueCore or TI CC2540, Master and slave roles in one, transmission version and remote control version and PIO state acquisition functions in one, Support the AT command modify module parameters, Convenient and flexible.

Transmission version can be used to transmit data between two Bluetooth devices.

Remote Control version can be used to Control PIO ports output high or low level without any other MCU.

The PIO state acquisition version can be used to acquisition PIO ports state without any other MUC. (Only support Bluetooth V2.1)

HM-01, HM-02, HM-03, HM-04, HM-05, HM-06, HM-07, HM-08, HM-09 is Bluetooth V2.1 version. Use CSR Chip.

HM-10, HM-11, HM-12 is Bluetooth V4.0 BLE version. Use TI Chip.

HM-01, HM-02, HM-09, HM-10 have same size and same pins.

HM-05, HM-06, HM-07, HM-11 have same size and same pins.









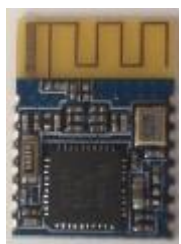



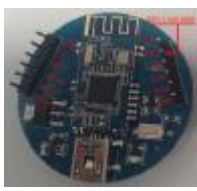

### 3. Product model

| Models | VDD      | Size(mm)      | Flash | Chip     | BT Version |
|--------|----------|---------------|-------|----------|------------|
| HM-01  | 3.3V     | 26.9*13*2.2   | 8M    | BC417143 | V2.1+EDR   |
| HM-02  | 2.5-3.7V | 26.9*13*2.2   | 6M    | BC3/BC4  | V2.1       |
| HM-03  | 2.5-3.7V | 27.4*12.5*4.3 | 6M    | BC3/BC4  | V2.1       |
| HM-04  | 3.3V     | Not for sale  |       |          |            |
| HM-05  | 2.5-3.7V | 13.5*18.5*2.3 | 6M    | BC3/BC4  | V2.1       |
| HM-06  | 2.5-3.7V | 13.5*18.5*2.3 | 6M    | BC3/BC4  | V2.1       |
| HM-07  | 2.5-3.7V | 13.5*18.5*2.3 | 8M    |          | V2.1+EDR   |
| HM-08  | 3.3V     | 26.9*13*2.5   | 8M    | Class 1  | V2.1+EDR   |
| HM-09  | 2.5-3.7V | 26.9*13*2.2   | 8M    |          | V2.1+EDR   |
| HM-10  | 2-3.7V   | 26.9*13*2.2   | 256Kb | CC2540/1 | V4.0 BLE   |
| HM-11  | 2.5-3.7V | 13.5*18.5*2.2 | 256Kb | CC2540/1 | V4.0 BLE   |
| HM-12  | 2.7~3.7V | 26.9*13*2.2   | 64KB  | CSR      | Dual mode  |
| HM-13  | 2.7~3.7V | 13.5*18.5*2.2 | 64KB  | CSR      | Dual mode  |
| HM-15  | 5V       | 65*32*16      | 256KB | CC2540   | V4.0 BLE   |

#### **4. Product certificate**

Products have FCC-ID, CE, RoHS. You can download certification from [www.jnhuamao.cn](http://www.jnhuamao.cn) or [www.huamaosoft.com](http://www.huamaosoft.com)

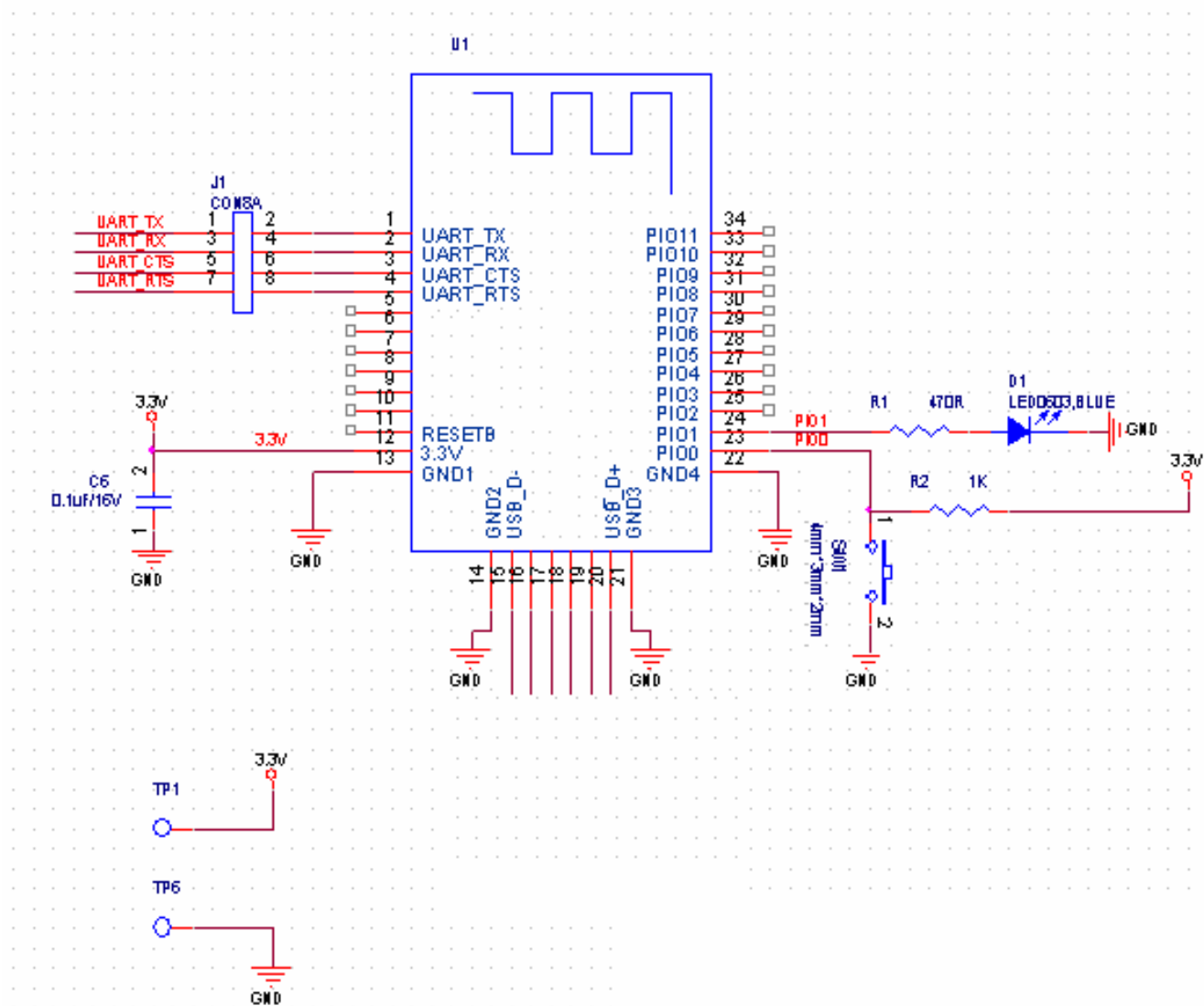
## 5. Product pictures

|   |   |   |  |   |
|---|---|---|--|---|
|    |    |    | Not for sale   |    |
| <b>HM-01</b><br><b>BT 2.1</b>   | <b>HM-02</b><br><b>BT 2.1</b>   | <b>HM-03</b><br><b>BT 2.1</b>   | <b>HM-04</b><br><b>BT 2.1</b>  | <b>HM-05</b><br><b>BT 2.1</b>   |
|    |    |    |    |    |
| <b>HM-06</b><br><b>BT 2.1</b>   | <b>HM-07</b><br><b>BT 2.1</b>   | <b>HM-09</b><br><b>BT 2.1</b>   | <b>HM-10</b><br><b>BLE 4.0</b>   | <b>HM-11</b><br><b>BLE 4.0</b>  |
|  |  |  |  |  |
| <b>HM-12</b><br><b>Dual mode</b>  | <b>HM-13</b><br><b>Dual mode</b>  | <b>HM-15 BLE</b><br><b>USB Dongle</b>   | <b>HMSensor</b>  | <b>iBeacon</b>  |

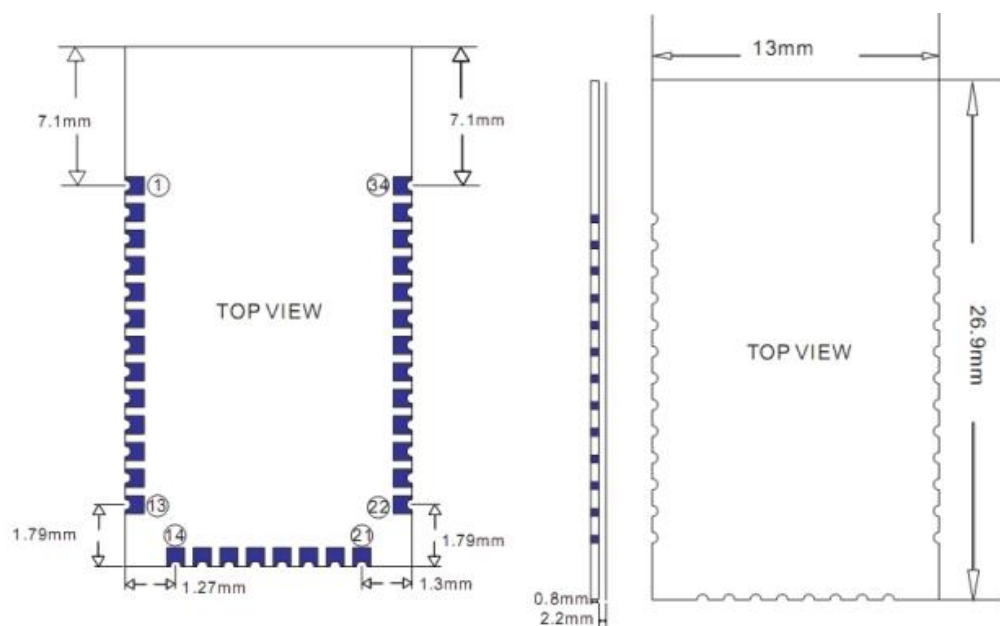
## 6. Product technical specifications

This document only include Bluetooth BLE 4.0 document, You can goto [http://www.jnhuamao.cn/bluetooth\\_en.rar](http://www.jnhuamao.cn/bluetooth_en.rar) get Bluetooth V2.1 version datasheet. That document include: HM-01, HM-02, HM-03, HM-04, HM-05, HM-06, HM-07, HM-08, HM-09.

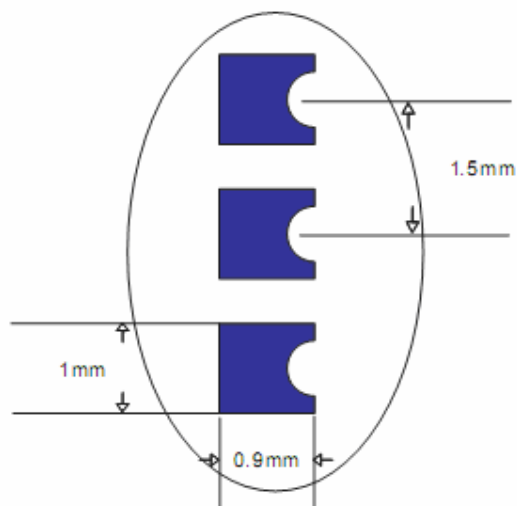
## 6.1 HM-10 Schematic



## 6.2 HM-10 Size



### 6.3 HM-10 package information



### 6.4 HM-10 Device Terminal Functions

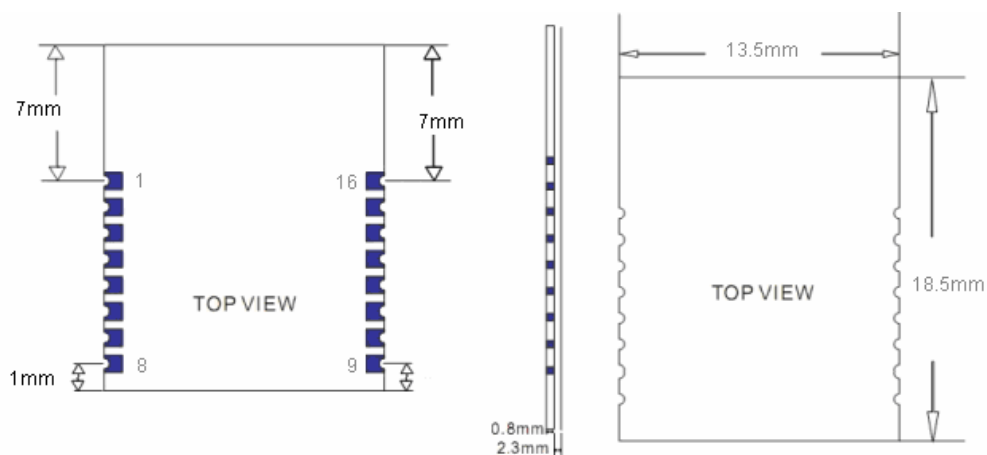
| No | Name     | Description    | CC254X |
|----|----------|----------------|--------|
| 1  | UART_TX  | UART interface | P1_6   |
| 2  | UART_RX  | UART interface | P1_7   |
| 3  | UART_CTS | UART interface | P1_4   |



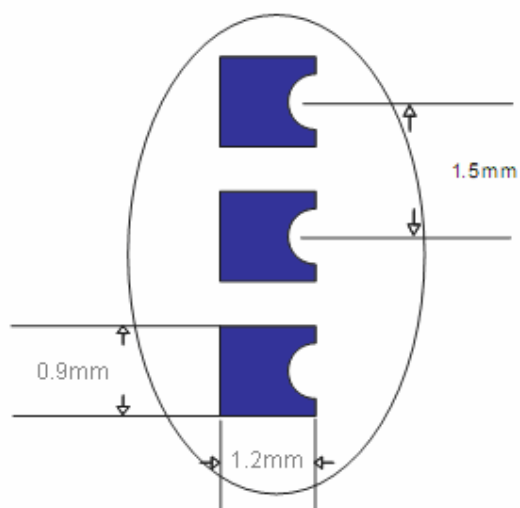
|    |          |                              |         |
|----|----------|------------------------------|---------|
| 4  | UART_RTS | UART interface               | P1_5    |
| 5  | NC       | NC                           |         |
| 6  | NC       | NC                           |         |
| 7  | NC       | NC                           | P2_2    |
| 8  | NC       | NC                           | P2_1    |
| 9  | NC       | NC                           | P2_0    |
| 10 | NC       | NC                           |         |
| 11 | RESETB   | Reset if low >100ms.         | RESET_N |
| 12 | VCC      | 3.3V                         |         |
| 13 | GND      | Ground                       |         |
| 14 | GND      | Ground                       |         |
| 15 | USB_D-   | USB interface                | PIN3    |
| 16 | NC       | NC                           |         |
| 17 | NC       | NC                           |         |
| 18 | NC       | NC                           |         |
| 19 | NC       | NC                           |         |
| 20 | UB_D+    | USB interface                | PIN2    |
| 21 | GND      | Ground                       | GND     |
| 22 | GND      | Ground                       | GND     |
| 23 | PIO0     | System Key                   | P1_3    |
| 24 | PIO1     | System LED                   | P1_2    |
| 25 | PIO2     | input/output pin. PWM output | P1_1    |
| 26 | PIO3     | input/output pin/ADC         | P1_0    |
| 27 | PIO4     | input/output pin/ADC         | P0_7    |
| 28 | PIO5     | input/output pin/ADC         | P0_6    |
| 29 | PIO6     | input/output pin/ADC         | P0_5    |
| 30 | PIO7     | input/output pin/ADC         | P0_4    |
| 31 | PIO8     | input/output pin/ADC         | P0_3    |
| 32 | PIO9     | input/output pin/ADC         | P0_2    |

|    |       |  |      |
|----|-------|--|------|
| 33 | PIO10 | input/output pin/ADC                   | P0_1 |
| 34 | PIO11 | input/output pin/<br>ADC/DS18B20/DHT11 | P0_0 |

## 6.5 HM-11 Size



## 6.6 HM-11 Package information



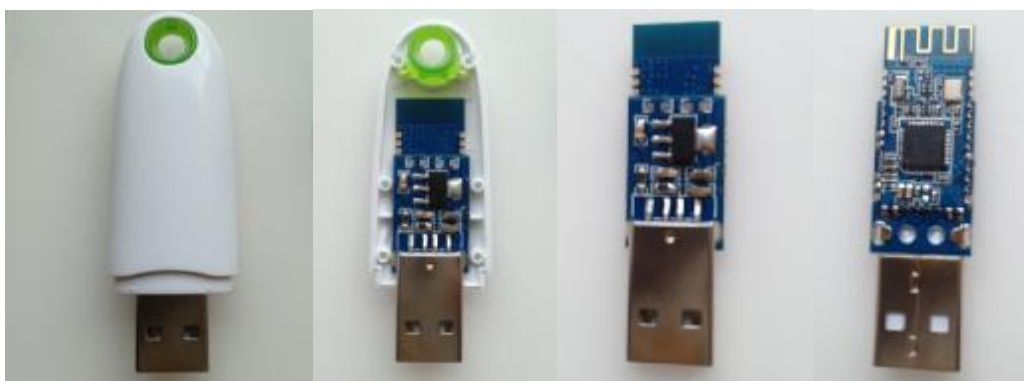
## 6.7 HM-11 Device Terminal Functions

| No | Name     | Description    | CC254X |
|----|----------|----------------|--------|
| 1  | UART_RTS | UART interface | P1_5   |

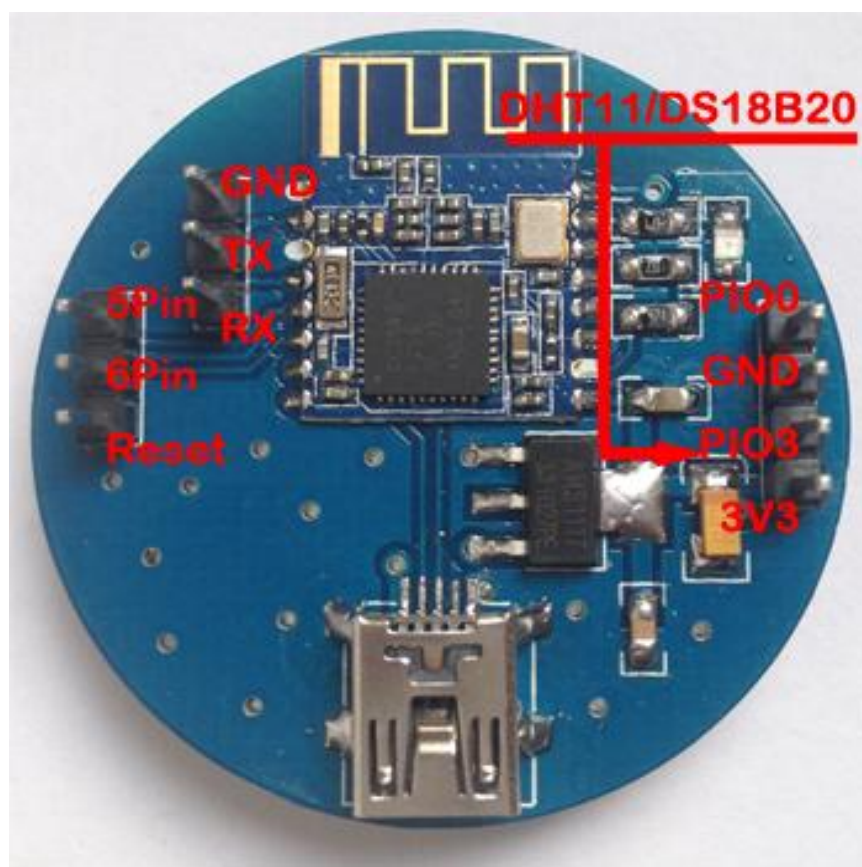
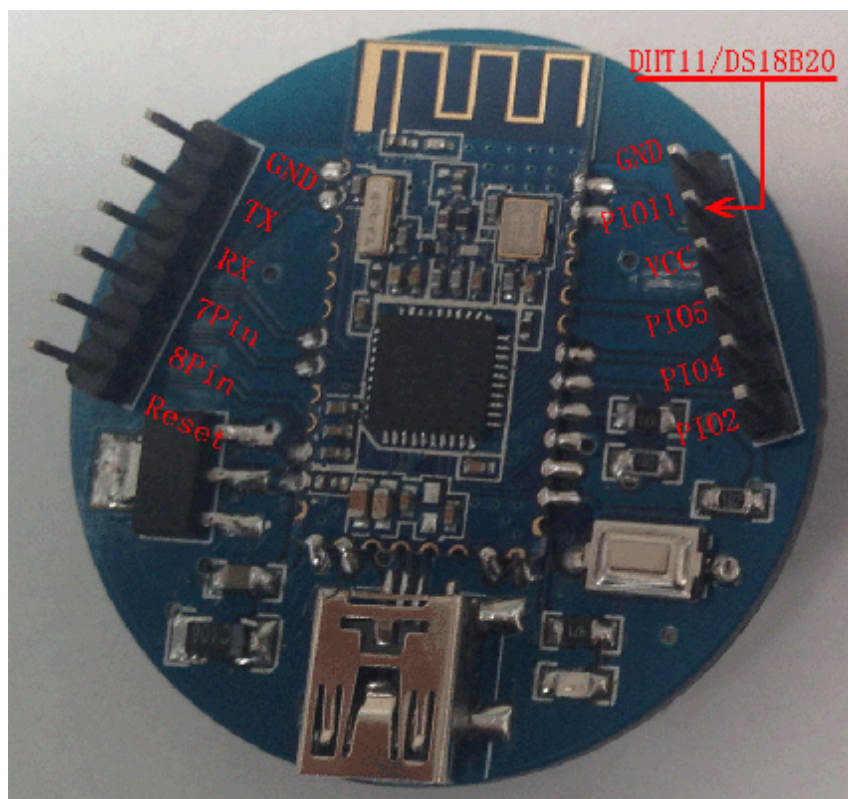
|    |          |                      |         |
|----|----------|----------------------|---------|
| 2  | UART_TX  | UART interface       | P1_6    |
| 3  | UART_CTS | UART interface       | P1_4    |
| 4  | UART_RX  | UART interface       | P1_7    |
| 5  | NC       | NC                   | P2_1    |
| 6  | NC       | NC                   | P2_2    |
| 7  | NC       | NC                   | PIN2    |
| 8  | NC       | NC                   | PIN3    |
| 9  | VCC      | V3.3                 | VCC     |
| 10 | NC       | NC or VCC            |         |
| 11 | RESETB   | Reset if low <100ms  | RESET_N |
| 12 | GND      | Ground               | GND     |
| 13 | PIO3     | input/output pin     | P1_1    |
| 14 | PIO2     | input/output pin/PWM | P1_0    |
| 15 | PIO1     | System LED           | P0_7    |
| 16 | PIO0     | System KEY           | P0_6    |

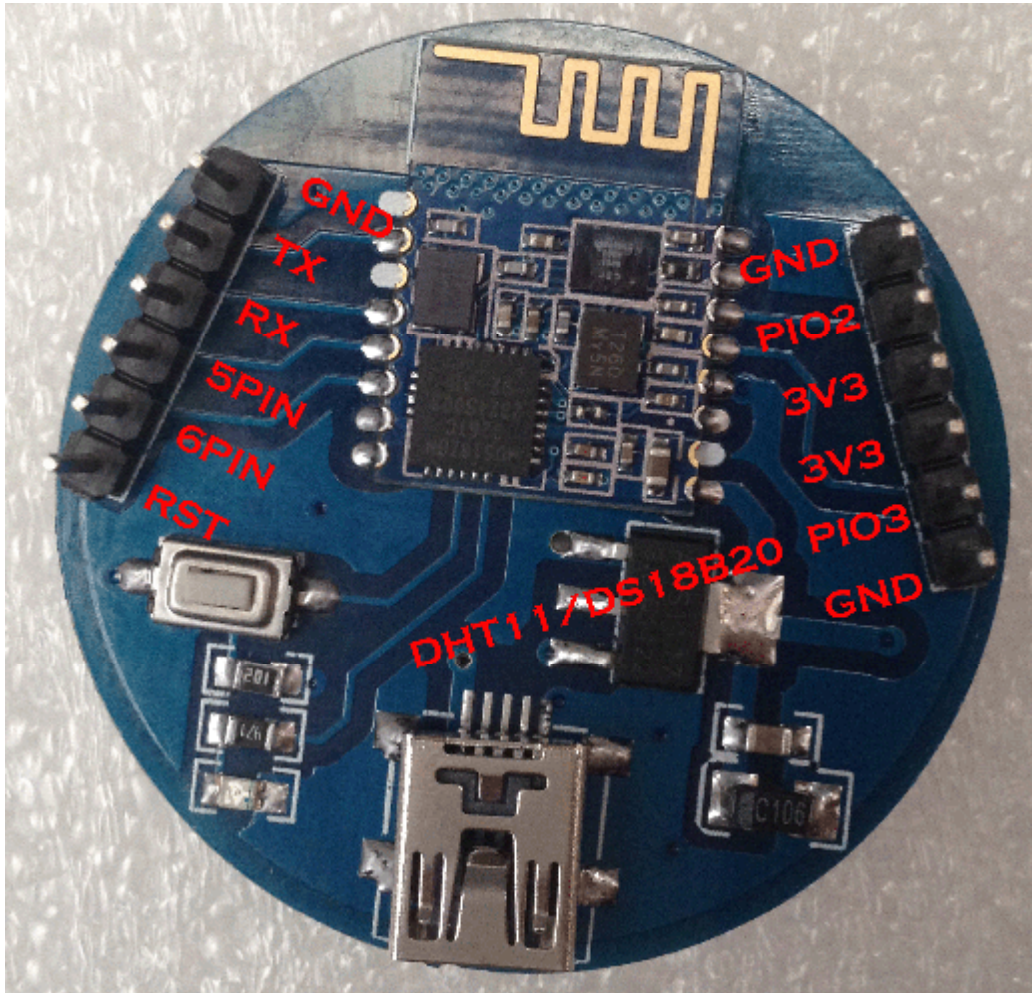
## 6.8 HM-15

HM-15 is based HM-10, a real USB interface.



## 6.9 HM-Sensor





## 7. System function

### How to wake up module from sleep mode?

There are two ways to wake up module from sleep mode.

7.1 Send "I am iron man, I am iron man, I am iron man I am iron....." string.

Yes, that is a joke, in sleep mode, you can send a long string (Length > 80 or more), that string can make module wake up, and you will receive "OK+WAKE" string through UART. That string can't include any AT commands.

7.2 Long press system KEY  $\geq 1000$  ms.

After wake up module, you can send and receive AT commands.

### How to let module into sleep mode?

In discoverable mode, send "AT+SLEEP" string through UART, if all is okay, module will return "OK+SLEEP" string and into sleep mode.

### **System KEY function (PIO0)**

Press if Low > 1000ms:

#### **7.3.1 If Module is in sleep mode**

Module will wake up immediately, if AT+NOTI value is "1", module will send "OK+WAKE" string through UART.

#### **7.3.2 If Module has already connected to remote device**

Module will disconnect from remote device.

#### **7.3.3 If Module is standby mode**

Module will reset to default configuration. Then restart.

### **System LED function (PIO1)**

In sleep mode, LED has turned off.

If AT+PIO10 is setup

Unconnected status: Output High 500 ms, Low 500 ms

Connected status: Output High

If AT+PIO11 is setup

Unconnected status: Output Low.

Connected status: Output High.

### **System work Mode**

#### **A) Mode 0(Transmission mode):**

When not connected, through the AT command configuration module, connection, only for serial data transmission.

#### **B) Mode 1(PIO acquisition mode):**

When not connected, through the AT command configuration module, connection, a) serial data transmission. b) Control of the PIO2,3 output state(HM-11 has none). c) The acquisition of PIO4 ~ 11 input state(HM-11 only PIO2,3).

#### **C) Mode 2(Remote control mode):**

When not connected, through the AT command configuration module, connection, a) serial data transmission. b) Control of the PIO2~11 output state(HM-11 only PIO2,3).



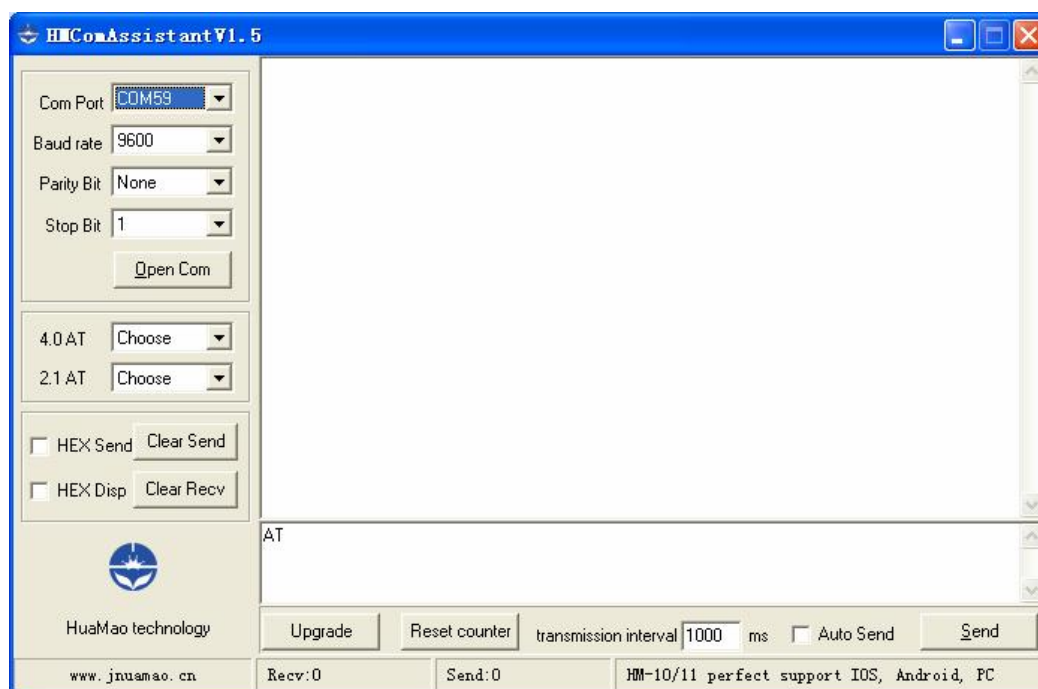
## 8 AT Commands

Factory default setting:

Name: HMSoft; Baud: 9600, N, 8, 1; Pin code: 000000; Peripheral Role; transmit mode.

AT Command format:

Uppercase AT command format. string format, without any other symbol. (e.g. \r or \n).



On Transmit version: Only accept AT Command from UART interface when Bluetooth device is not connected with remote device.

On Remote version: Can accept AT Command from UART interface when Bluetooth Device is not connected with remote device, Also can accept AT Command from remote Bluetooth device when connected that.

On PIO collection version: Only accept AT Command from UART interface when Bluetooth device is not connected with remote device.

Bluetooth V2.1 version Command is not here, please download datasheet from [http://www.jnhuamao.cn/Bluetooth\\_en.rar](http://www.jnhuamao.cn/Bluetooth_en.rar)

### 1. Test Command

| Send | Receive       | Parameter |
|------|---------------|-----------|
| AT   | OK<br>OK+LOST | None      |

If Module is not connected to remote device will receive: "OK"

If Module has connected, module will disconnected from remote device, if "AT + NOTI" is setup to 1, will receive: "OK+LOST"

## 2. Query module address

| Send           | Receive     | Parameter                      |
|----------------|-------------|--------------------------------|
| AT+ADC[para1]? | OK+GET:0.00 | Para1: 3~B<br>map to PIO3~PIOB |

HM-11 has no this function.

Added since V526.

## 3. Query module address

| Send     | Receive             | Parameter |
|----------|---------------------|-----------|
| AT+ADDR? | OK+ADDR:MAC Address | None      |

## 3. Query/Set Advertising interval

| Send          | Receive        | Parameter   |
|---------------|----------------|---|
| AT+ADVI?      | OK+ Get:[Para] | None  |
| AT+ADVI[Para] | OK+ Set:[Para] | Para: 0 ~ F<br>0: 100ms<br>1: 152.5 ms<br>2: 211.25 ms<br>3: 318.75 ms<br>4: 417.5 ms<br>5: 546.25 ms<br>6: 760 ms<br>7: 852.5 ms<br>8: 1022.5 ms<br>9: 1285 ms |



|  |  |  |
|--|--|--|
|  |  | A: 2000ms<br>B: 3000ms<br>C: 4000ms<br>D: 5000ms<br>E: 6000ms<br>F: 7000ms<br>Default: 9<br>HMSoft Default: 0<br>HMSensor Default: 9 |
|--|--|--|

The maximum 1285ms recommendations form the IOS system. That is to say, 1285ms is apple allowed, but in response to scan and connected all the time will be long.

This command is added since V517 version.

V522 allow max value F.

#### 4. Query/Set Advertising Type

| Send          | Receive        | Parameter  |
|---------------|----------------|--|
| AT+ADTY?      | OK+ Get:[Para] | None   |
| AT+ADTY[Para] | OK+ Set:[Para] | Para: 0 ~ 3<br>0: Advertising<br>ScanResponse,<br>Connectable<br>1: Only allow last device<br>connect in 1.28 seconds<br>2: Only allow Advertising<br>and ScanResponse.<br>3: Only allow Advertising<br>Default: 0 |

Added since V519

#### 5. Query/Set ANCS switch

| Send          | Receive        | Parameter                                    |
|---------------|----------------|--|
| AT+ANCS?      | OK+ Get:[Para] | None   |
| AT+ANCS[Para] | OK+ Set:[Para] | Para: 0 ~ 1<br>0: Off<br>1: On<br>Default: 0 |

Note1: This command added in V524.

Note2: Please send AT+RESET to restart module if you set value 1.

Note3: Must execute AT+TYPE3 first.

#### 6. Query/Set whitelist switch

| Send          | Receive        | Parameter                                    |
|---------------|----------------|--|
| AT+ALLO?      | OK+ Get:[Para] | None   |
| AT+ALLO[Para] | OK+ Set:[Para] | Para: 0 ~ 1<br>0: Off<br>1: On<br>Default: 0 |

Note1: This command added in V523.

Note2: WhiteList allow three mac address link to module. Please use AT+AD command set whitelist mac address.

#### 7. Query/Set whitelist mac address

| Send                  | Receive         | Parameter  |
|-----------------------|-----------------|--|
| AT+AD[para1]??        | OK+ Get:[Para2] | None   |
| AT+ALLO[Para1][Para2] | OK+ Set:[Para2] | Para1: 1, 2, 3<br>Para2: MAC address<br>Para1 default: 0 |

Note1: This command added in V523.

E.g.

Send AT+ID1001122334455

Recv OK+Set:001122334455

## 8. Query/Set Module pin output state, After power supplied

| Send          | Receive        | Parameter                      |
|---------------|----------------|--------------------------------|
| AT+BEFC?      | OK+ Get:[Para] | None                           |
| AT+BEFC[Para] | OK+ Set:[Para] | Para: 000~ 3FF<br>Default: 000 |

This command added in V527.

3FF == 001111111111, left to right side is map to PIO0~PIOB, PIO0 and

Pio1 is used by system. Only Pio2~PIOB pins is available.

e.g. Set PIO2~PIOB all output high after power supplied.

Send: AT+BEFC3FF

Recv:OK+Set:3FF

When next time power on, module PIO2~PIOB will output high.

Note: Query PIO pins current state please use AT+PIO?? Command.

Note: Please don't use this command when "AT+MODE1" is setup.

## 9. Query/Set Module pin output state, After connection is established

| Send          | Receive        | Parameter                      |
|---------------|----------------|--------------------------------|
| AT+AFTC?      | OK+ Get:[Para] | None                           |
| AT+AFTC[Para] | OK+ Set:[Para] | Para: 000~ 3FF<br>Default: 000 |

This command added in V527.

3FF == 001111111111, Left to right side is map to PIO0~PIOB, PIO0 and

Pio1 is used by system. Only Pio2~PIOB pins is available.

e.g. Set PIO2~PIOB all output high when connection is established.

Send: AT+AFTC3FF

Recv: OK+Set:3FF

When Bluetooth connection is established, module PIO2~PIOB will output high.

Note: Query PIO pins current state please use "AT+PIO??" command.

Note: Please don't use this command when "AT+MODE1" is setup.

## 10. Query/Set battery monitor switch

| Send          | Receive        | Parameter                                    |
|---------------|----------------|--|
| AT+BATC?      | OK+ Get:[Para] | None   |
| AT+BATC[Para] | OK+ Set:[Para] | Para: 0 ~ 1<br>0: Off<br>1: On<br>Default: 0 |

This command added in V520

## 11. Query battery information

| Send     | Receive        | Parameter     |
|----------|----------------|---------------|
| AT+BATT? | OK+BATT:[Para] | Para: 000~100 |

There has three ways to get battery information:

- Before establishing a connection, Send “AT+BATT?” through UART.
- After established a connection, In Mode 1 or 2, remote side send “AT+BATT?”

Battery information has included in scan response data package, one hour update once. You can use Android or IOS discovery module, when module has been discovered, you can get it from scan result array.

Data format is 0x02, 0x16, 0x00, 0xB0, [FLAG], [temperature], [ humidity], [battery].

Android:

Included in OnLeScan function result array, you can see it direct.

```
private BluetoothAdapter.LeScanCallback mLeScanCallback = new BluetoothAdapter.LeScanCallback() {  
  
    @Override  
  
    public void onLeScan(final BluetoothDevice device, int rssi,  
  
        byte[] scanRecord) {  
  
        .....<Other code>.....  
  
        String sBatt = ""; //Battery  
  
        String sTemp = ""; //Temperature
```

```
String sHumi = ""; //Humidity

for(int i = 0; i < scanRecord.length; i++)

{

    if(i + 7 < scanRecord.length)

    {

        //Since V522

        if(scanRecord[i] == 0x07 && scanRecord[i + 1] == 0x16

            && scanRecord[i + 2] == 0x00 && scanRecord[i + 3] == 0xB0)

        {

            if(scanRecord[i + 7] > 0)

                sBatt = String.valueOf(scanRecord[i + 7]);

            if(scanRecord[i + 5] > 0)

                sTemp = String.valueOf(scanRecord[i + 5]);

            if(scanRecord[i + 6] > 0)

                sHumi = String.valueOf(scanRecord[i + 6]);

        }

    }

}

.....<Other code>.....

}

};
```

iOS:

- c. Included in LeScan function result NSDictionary struct, service id is 0xB000.

## 12. Query/Set Bit format

| Send     | Receive        | Parameter           |
|----------|----------------|---------------------|
| AT+BIT7? | OK+Get:[para1] | Para1: bit7 switch. |

|                |                |  |
|----------------|----------------|--|
| AT+BIT7[para1] | OK+Set:[para1] | 0-----Not compatible<br>1-----Compatible<br>Default: 0 |
|----------------|----------------|--|

This command is used only for compatible uses 7 data bits, 2 stop bit device.

### 13. Query/Set baud rate

| Send           | Receive        | Parameter   |
|----------------|----------------|---|
| AT+BAUD?       | OK+Get:[para1] | Para1: Baud rate No.  |
| AT+BAUD[para1] | OK+Set:[para1] | 0-----9600<br>1-----19200<br>2-----38400<br>3-----57600<br>4-----115200<br>5-----4800<br>6-----2400<br>7-----1200<br>8-----230400<br>Default: 0(9600) |

e.g.

Query baud:

Send: AT+BAUD?

Receive: OK+Get:0

Setup baud:

Send: AT+BAUD1

Receive: OK+Set:1

Note: If setup to Value 7, After next power on, module will not support any AT Commands, until PIO0 is pressed, Module will change Baud to 9600.

### 14. Query/Set Characteristic

| Send     | Receive        | Parameter            |
|----------|----------------|----------------------|
| AT+CHAR? | OK+Get:[para1] | Para1: 0x0001~0xFFFE |

|                |                |                 |
|----------------|----------------|-----------------|
| AT+CHAR[para1] | OK+Set:[para1] | Default: 0xFFE1 |
|----------------|----------------|-----------------|

e.g. change characteristic value to 0xAAA0

Send: AT+CHAR0xAAA0

Recv: OK+Set:0xAAA0

#### 15. Clear Last Connected device address

| Send     | Receive  | Parameter |
|----------|----------|-----------|
| AT+CLEAR | OK+CLEAR | None      |

Notice: Only Central role is used.

#### 16. Try connect to last succeeded device

| Send     | Receive        | Parameter  |
|----------|----------------|--|
| AT+CONNL | OK+CONN[Para1] | Para1: L, E, F, N<br>L: Connecting<br>E: Connect error<br>F: Connect Fail<br>N: No Address |

Notice: Only Central role is used.

If remote device has already connected to other device or shut down,  
“OK+CONN” will received after about 10 seconds.

#### 17. Try connect an address

| Send          | Receive        | Parameter  |
|---------------|----------------|--|
| AT+CON[Para1] | OK+CONN[Para2] | Para1: Address<br>Like: 0017EA090909<br>Para2: A, E, F<br>A: Connecting<br>E: Connect error<br>F: Connect Fail |

Notice: Only central role is used.

If remote device has already connected to other device or shut down,  
“OK+CONN” will received after about 10 Seconds.

e.g.

Try to connect an device which MAC address is 00:17:EA:09:09:09

Send: AT+CON0017EA090909

May receive a reply:

OK+CONNA ===== Accept request, connecting  
 OK+CONNE ===== Connect error  
 OK+CONN ===== Connected, if AT+NOTI1 is setup  
 OK+CONNF ===== Connect Failed, After 10 seconds

#### 18. Query PIO04~PIO11 input(output) state

| Send     | Receive         | Parameter        |
|----------|-----------------|------------------|
| AT+COL?? | OK+ Col:[Para1] | Para1: 0x00~0xFF |

Para1 is a byte, has 8 bits, bit 7 ~ bit 0 is map to the PIO4 ~ PIO11.

This command is added since V515 version.

#### 19. Query/Set PIO collection rate

| Send          | Receive         | Parameter                                    |
|---------------|-----------------|--|
| AT+CYC??      | OK+ Get:[para1] | Para1: 00~99<br>Unit: seconds<br>Default: 10 |
| AT+CYC[para1] | OK+ Set:[para1] |  |

In mode 1, when PIO state is change, module will send OK+Col:[xx] to UART or remote side. This command is set send interval.

This command is added since V515 version.

#### 20. Start a device discovery scan

| Send     | Receive        | Parameter   |
|----------|----------------|---|
| AT+DISC? | OK+DISC[para1] | Para1: S, E, Address string<br>S: Start discovery<br>E: End discovery<br>Address string:<br>Discovered device |



|  |  |   |
|--|--|---|
|  |  | address information<br>max results is 6 devices |
|--|--|---|

Please set AT+ROLE1 and AT+IMME1 first.

e.g.

Send: AT+DISC?

Recv: OK+DISCS

Recv: OK+DISC:123456789012 (discovered device address information)

If AT+SHOW1 is setup, you will receive then Name information as follow

Recv: OK+NAME: xxx

After send Name value, will send two extra “\r\n” value ASCII byte

Recv: OK+DISC:234567890123

Recv: OK+NAME: xxx

After send Name value, will send two extra “\r\n” value ASCII byte

.....(Max results is 6, use array 0~5)

Recv: OK+DISCE

Connect to a discovered device: AT+CONN0, AT+CONN1.....AT+CONN5

## 21. Connect to an Discovery device

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+CONN[para1] | OK+CONN[para2] | Para1: 0~5<br>Para2: E, F, 0~5<br>E: Link error<br>F: Link failed<br>0~5: Try to connect |

This command is use after execute AT+DISC?

This command will clear all discovery data.

## 22. Query/Set iBeacon deploy mode

| Send           | Receive        | Parameter                              |
|----------------|----------------|--|
| AT+DELO[para1] | OK+DELO[para1] | Para1: 1, 2<br>1: Allowed to broadcast |

|  |  |   |
|--|--|---|
|  |  | and scanning<br>2: Only allow broadcast |
|--|--|---|

After receive OK+DELO[para1], module will reset after 500ms.

This command will let module into non-connectable status until next power on.

### 23. Set advertising data FLAG byte

| Send        | Receive      | Parameter           |
|-------------|--------------|---------------------|
| AT+FLAG[P1] | OK+ Set:[P1] | P1: 0~FF (one byte) |

Note: This command added in V530. Please ref to AT+BATT? Command.

### 24. Query/Set filter of HM modules

| Send           | Receive         | Parameter  |
|----------------|-----------------|--|
| AT+FILT?       | OK+ Get:[para1] | Para1: 0, 1<br>0: Will find all BLE modules<br>1: Only find HM Modules<br>Default: 1 |
| AT+FILT[para1] | OK+ Set:[para1] |  |

Note: This command is removed since V530

### 25. Remove bond information

| Send     | Receive  | Parameter |
|----------|----------|-----------|
| AT+ERASE | OK+ERASE |           |

Note1: Added in V524 version.

### 26. Query/Set flow control switch

| Send           | Receive         | Parameter                                    |
|----------------|-----------------|--|
| AT+FIOW?       | OK+ Get:[para1] | Para1: 0, 1<br>0: Off<br>1: On<br>Default: 0 |
| AT+FIOW[para1] | OK+ Set:[para1] |  |

### 27. System Help Information

| Send     | Receive          | Parameter |
|----------|------------------|-----------|
| AT+HELP? | Help Information | None      |

### 28. Query/Set Module work type

| Send           | Receive         | Parameter   |
|----------------|-----------------|---|
| AT+IMME?       | OK+ Get:[para1] | Para1: 0, 1<br><br>1: When module is powered on, only respond the AT Command, don't do anything. until AT + START is received, or can use AT+CON,AT+CONNL<br><br>0: When power on, work immediately<br><br>Default: 0 |
| AT+IMME[para1] | OK+ Set:[para1] |   |

This command is only used for Central role.

#### 29. Query/Set Module iBeacon switch

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+IBEA?       | OK+Get:[para1] | Para1: 0, 1<br><br>0: Turn off iBeacon<br>1: Turn on iBeacon<br><br>Default: 0 |
| AT+IBEA[para1] | OK+Set:[para1] |  |

iBeacon UUID is: 74278BDA-B644-4520-8F0C-720EAF059935.

This command is added since V517 version.

#### 30. Query/Set iBeacon UUID

| Send           | Receive        | Parameter   |
|----------------|----------------|---|
| AT+IBE0?       | OK+Get:[para1] | Para1: 00000001~<br><br>FFFFFFFE<br><br>Default: 74278BDA |
| AT+IBE0[para1] | OK+Set:[para1] |   |

iBeacon UUID is: **74278BDA**-B644-4520-8F0C-720EAF059935.

This command can change red color string in iBeacon UUID.

This command is added since V520 version.

e.g.: Send: AT+IBE012345678 change iBeacon UUID red color string to

“12345678”

### 31. Query/Set iBeacon UUID

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+IBE1?       | OK+Get:[para1] | Para1: 00000001~<br>FFFFFFFFE<br>Default: B6444520 |
| AT+IBE1[para1] | OK+Set:[para1] |  |

iBeacon UUID is: 74278BDA-B644-4520-8F0C-720EAF059935.

This command can change red color string in iBeacon UUID.

This command is added since V520 version.

e.g.: Send: AT+IBE112345678 change iBeacon UUID red color string to  
“12345678”

### 32. Query/Set iBeacon UUID

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+IBE2?       | OK+Get:[para1] | Para1: 00000001~<br>FFFFFFFFE<br>Default: 8F0C720E |
| AT+IBE2[para1] | OK+Set:[para1] |  |

iBeacon UUID is: 74278BDA-B644-4520-8F0C-720EAF059935.

This command can change red color string in iBeacon UUID.

This command is added since V520 version.

e.g.: Send: AT+IBE112345678 change iBeacon UUID red color string to  
“12345678”

### 33. Query/Set iBeacon UUID

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+IBE3?       | OK+Get:[para1] | Para1: 00000001~<br>FFFFFFFFE<br>Default: AF059935 |
| AT+IBE3[para1] | OK+Set:[para1] |  |

iBeacon UUID is: 74278BDA-B644-4520-8F0C-720EAF059935.

This command can change red color string in iBeacon UUID.

This command is added since V520 version.

e.g.: Send: AT+IBE112345678 change iBeacon UUID red color string to “12345678”

#### 34. Query/Set Module iBeacon Marjor version

| Send           | Receive        | Parameter                                |
|----------------|----------------|--|
| AT+MARJ?       | OK+Get:[para1] | Para1: 0x0001, 0xFFFE<br>Default: 0xFFE0 |
| AT+MARJ[para1] | OK+Set:[para1] |  |

E.g. Change marjor version to 0x0102

Send: AT+MARJ0x0102, if all is okay, module will send back OK+Set: 0x0102

This command is added since V517 version.

#### 35. Query/Set Module iBeacon minor

| Send           | Receive        | Parameter                                |
|----------------|----------------|--|
| AT+MINO?       | OK+Get:[para1] | Para1: 0x0001, 0xFFFE<br>Default: 0xFFE1 |
| AT+MINO[para1] | OK+Set:[para1] |  |

This command is added since V517 version.

#### 36. Query/Set Module iBeacon Measured power

| Send           | Receive        | Parameter                                |
|----------------|----------------|--|
| AT+MEAS?       | OK+Get:[para1] | Para1: 0x0001, 0xFFFE<br>Default: 0xFFE1 |
| AT+MEAS[para1] | OK+Set:[para1] |  |

This command is added since V519 version.

#### 37. Query/Set Module Work Mode

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+MODE?       | OK+Get:[para1] | Para1: 0, 1, 2<br>0: Transmission Mode<br>1: PIO collection Mode + Mode 0<br>2: Remote Control Mode + Mode 0<br>Default: 0 |
| AT+MODE[para1] | OK+Set:[para1] |  |

#### Mode 0:

Before establishing a connection, you can use the AT command configuration module through UART.

After established a connection, you can send data to remote side from each other.

#### Mode 1:

Before establishing a connection, you can use the AT command configuration module through UART.

After established a connection, you can send data to remote side. Remote side can do fellows:

Send AT command configuration module.

Collect PIO04 to the PIO11 pins input state of HM-10.

Collect PIO03 pins input state of HM-11.

Remote control PIO2, PIO3 pins output state of HM-10.

Remote control PIO2 pin output state of HM-11.

Send data to module UART port (not include any AT command and per package must less than 20 bytes).

#### Mode 2:

Before establishing a connection, you can use the AT command configuration module through UART.

After established a connection, you can send data to remote side. Remote side can do fellows:

Send AT command configuration module.

Remote control PIO2 to PIO11 pins output state of HM-10.

Remote control PIO2, PIO3 pins output state of HM-11.

Send data to module UART port (not include any AT command and per package must less than 20 bytes).

#### 38. Query/Set Notify information

| Send | Receive | Parameter |
|------|---------|-----------|
|------|---------|-----------|

|                |                |   |
|----------------|----------------|---|
| AT+NOTI?       | OK+Get:[para1] | Para1: 0, 1<br>0: Don't Notify<br>1: Notify<br>Default: 0 |
| AT+NOTI[para1] | OK+Set:[para1] |   |

If this value is set to 1, when link ESTABLISHED or LOSTED module will send OK+CONN or OK+LOST string through UART.

#### 39. Query/Set Module name

| Send           | Receive        | Parameter   |
|----------------|----------------|---|
| AT+NAME ?      | OK+NAME[para1] | Para1: module name,<br>Max length is 12.<br>Default: HMSoft |
| AT+NAME[para1] | OK+Set[para1]  |   |

e.g.

change module name to bill\_gates

Send: AT+NAMEbill\_gates

Receive: OK+SetName:bill\_gates

#### 40. Query/Set output driver power

| Send                | Receive        | Parameter   |
|---------------------|----------------|---|
| Query: AT+PCTL?     | OK+Get:[para1] | None  |
| Set: AT+PCTL[para1] | OK+Set:[para1] | Para1: 0,1<br>0:Normal power output<br>1:Max power output<br>Default: 1 |

Noted: Added in V527

#### 41. Query/Set Parity bit

| Send                | Receive        | Parameter                        |
|---------------------|----------------|----------------------------------|
| Query: AT+PARI?     | OK+Get:[para1] | None                             |
| Set: AT+PARI[para1] | OK+Set:[para1] | Para1: 0,1,2<br>0:None<br>1:EVEN |

|  |  |                            |
|--|--|----------------------------|
|  |  | 2:ODD<br>Default: 0 (None) |
|--|--|----------------------------|

## 42. Query/Set PIO1 output status (System LED)

| Send             | Receive        | Parameter   |
|------------------|----------------|---|
| AT+PIO1?         | OK+Get:[para1] | Para1: 0, 1   |
| AT+ PIO1 [para1] | OK+Set:[para1] | 0: Unconnected Output<br>500ms High 500ms Low,<br>Connected output High.<br>1: Unconnected output<br>Low, Connected output<br>High.<br>Default: 0 |

## 43. Query/Set PIO pins output high or low (Only this time, when module next power on, this value is not be used)

| Send                 | Receive               | Parameter  |
|----------------------|-----------------------|--|
| AT+PIO[para1]?       | OK+PIO:[para1][para2] | Para1: 2~B, ?  |
| AT+PIO[para1][para2] | OK+PIO:[para1][para2] | Para2: 0, 1, ?<br>HM-11 only has 4 pins.<br>Para1 is which PIO pin<br>you want to Query/Set<br>Value:<br>2,3,4,5,6,7,8,9,A,B.<br>Para2 is Query or setup<br>value.<br>“0” is low and “1” is high<br>and “?” is query |

e.g.

Query PIO2

Send: AT+PIO2?



Setup PIO2 output high

Send: AT+PIO21

Receive: OK+PIO21

HM-10 HMSensor version: para1 value is 2~A

HM-10 HMSoft version: para1 value is 2~B

HM-11 HMSensor version: para1 value is 2

HM-11 HMSoft version: para1 value is 2, 3

V525 added PIO2 PWM function, Para2 value is 0~9

0: output low

1: output high

2: output 100ms PWM

3: output 200ms PWM

.....

9: output 800ms PWM

V527 added AT+PIO?? Format query all pins output state.

#### 44. Query/Set Pin Code

| Send          | Receive        | Parameter  |
|---------------|----------------|--|
| AT+PASS?      | OK+Get:[para1] | Para1 is Pin Code,<br>000000~999999<br>Default: 000000 |
| AT+PIN[para1] | OK+Set:[para1] |  |

e.g.

Query Pin Code

Send: AT+PIN?

Receive: OK+PIN:000000

Setup Pin Code 008888

Send: AT+PIN008888

Receive: OK+Set:008888

#### 45. Query/Set Module Power

| Send | Receive | Parameter |
|------|---------|-----------|
|------|---------|-----------|

|                  |                |  |
|------------------|----------------|--|
| AT+POWE?         | OK+Get:[para1] | None   |
| AT+ POWE [para1] | OK+Set:[para1] | Para: 0 ~ 3<br>0: -23dbm<br>1: -6dbm<br>2: 0dbm<br>3: 6dbm<br>Default: 2 |

## 46. Query/Set Module sleep type

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+PWRM?       | OK+Get:[para1] | None   |
| AT+PWRM[para1] | OK+Set:[para1] | Para1: 0~1<br>0:Auto sleep<br>1:don't auto sleep<br>Default: 1 |

Only support peripheral role.

## 47. Query/Set reliable advertising mode

| Send           | Receive         | Parameter   |
|----------------|-----------------|---|
| AT+RELI?       | OK+ Get:[para1] | Para1: 0, 1<br>0: Normal advertising<br>1: Reliable advertising<br>Default: 0 |
| AT+RELI[para1] | OK+ Set:[para1] |   |

Note: This command is added since V530

## 48. Restore all setup value to factory setup

| Send     | Receive  | Parameter |
|----------|----------|-----------|
| AT+RENEW | OK+RENEW | None      |

## 49. Restart module

| Send     | Receive  | Parameter |
|----------|----------|-----------|
| AT+RESET | OK+RESET | None      |

## 50. Query/Set Master and Slaver Role

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+ROLE?       | OK+Get:[para1] | Para1: 0, 1<br>0: Peripheral<br>1: Central<br>Default: 0 |
| AT+ROLE[para1] | OK+Set:[para1] |  |

## 51. Query RSSI Value

| Send     | Receive         | Parameter |
|----------|-----------------|-----------|
| AT+RSSI? | OK+RSSI:[para1] | None      |

Require: AT+MODE value > 0

This command only used by Remote device query when connected.

## 52. Query Last Connected Device Address

| Send     | Receive             | Parameter |
|----------|---------------------|-----------|
| AT+RADD? | OK+RADD:MAC Address | None      |

## 53. Query/Set Module Sensor work interval

| Send          | Receive        | Parameter   |
|---------------|----------------|---|
| AT+RAT??      | OK+Get:[para1] | Para1: 00~99<br>0:Save when connected<br>1:Don't Save<br>Default: 0<br>Unit: minute |
| AT+RAT[para1] | OK+Set:[para1] |   |

Note: This command is only use for HMSensor

## 54. Query/Set Stop bit

| Send           | Receive        | Parameter   |
|----------------|----------------|---|
| AT+STOP?       | OK+Get:[para1] | None  |
| AT+STOP[para1] | OK+Set:[para1] | Para1:0, 1<br>0: One stop bit<br>1: Two stop bit<br>Default: 0 (One stop bit) |

## 55. Work immediately

| Send     | Receive  | Parameter |
|----------|----------|-----------|
| AT+START | OK+START | None      |

This command is only used when AT+IMME1 is setup.

#### 56. Query Module into sleep mode

| Send     | Receive  | Parameter |
|----------|----------|-----------|
| AT+SLEEP | OK+SLEEP | None      |

Only support Peripheral role.

#### 57. Query/Set Module save connected address parameter

| Send           | Receive        | Parameter   |
|----------------|----------------|---|
| AT+SAVE?       | OK+Get:[para1] | None  |
| AT+SAVE[para1] | OK+Set:[para1] | Para1: 0~1<br>0:Save when connected<br>1:Don't Save<br>Default: 0 |

#### 58. Query/Set sensor type on module PIO11(HM-11 is PIO3)

| Send           | Receive        | Parameter                                       |
|----------------|----------------|---|
| AT+SENS?       | OK+Get:[para1] | Para1: 0, 1, 2                                  |
| AT+SENS[para1] | OK+Set:[para1] | 0: None<br>1: DHT11<br>2: DS18B20<br>Default: 0 |

Note: This command is use for HMSensor.

#### 59. Query/Set discovery parameter

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+SHOW?       | OK+Get:[para1] | None   |
| AT+SHOW[para1] | OK+Set:[para1] | Para1: 0~1<br>0:Don't show name<br>1:Show name<br>Default: 0 |

Please execute AT+FILT0 first.

If AT+SHOW1 is setup, AT+DISC? Command will show you name information included into scan result package.

#### 60. Query/Set Module Sensor Temperature and humidity(if has a sensor)

| Send     | Receive               | Parameter                        |
|----------|-----------------------|----------------------------------|
| AT+TEHU? | OK+Get:[para1][para2] | Para1: 000~120<br>Para2: 000~100 |

Note: This command is use for HMSensor.

This value is added into scan response data package.

Data format is 0x02, 0x16, 0x00, 0xB0, [reserved], [temperature], [ humidity], [battery].

Android:

Included in OnLeScan function result array, you can see it direct.

iOS:

Included in LeScan function result NSDictionary struct, service id is 0xB000.

#### 61. Query DS18B20 Sensor or IC temperature

| Send     | Receive        | Parameter                 |
|----------|----------------|---------------------------|
| AT+TEMP? | OK+Get:[para1] | Para1:<br>000.000~255.000 |

Note1: if not setup AT+SENS value, will get IC temperature.

Note2: Added in V523 version, Modified at V526.

#### 62. Query/Set module connect remote device timeout value

| Send           | Receive         | Parameter   |
|----------------|-----------------|---|
| AT+TCON?       | OK+TCON:[para1] | None  |
| AT+TCON[para1] | OK+Set:[para1]  | Para1 is timeout value.<br>when time is up module<br>will not connect this<br>address anymore, then |

|  |  |  |
|--|--|--|
|  |  | enter search mode.<br><br>Para1 allowed value:<br>000000~999999<br><br>Unit is ms.<br><br>Default:<br>000000 Connect forever |
|--|--|--|

This value is only used for Central Role, when module has Last Connected address.

### 63. Query/Set Module Bond Mode

| Send           | Receive        | Parameter  |
|----------------|----------------|--|
| AT+TYPE?       | OK+Get:[para1] | None   |
| AT+TYPE[para1] | OK+Set:[para1] | Para1: 0~2<br>0:Not need PIN Code<br>1:Auth not need PIN<br>2:Auth with PIN<br>3:Auth and bond<br>Default: 0 |

**Important: If your module version is less than V515, please don't use this command. Under android 4.3 AT+TYPE1 is same to AT+TYPE2.**

**Note1: Value 3 is added in V524.**

### 64. Query/Set service UUID

| Send           | Receive        | Parameter                                   |
|----------------|----------------|---|
| AT+UUID?       | OK+Get:[para1] | Para1: 0x0001~0xFFFE<br><br>Default: 0xFFE0 |
| AT+UUID[para1] | OK+Set:[para1] |   |

e.g. Change UUID value to 0xAAA0

Send: AT+UUID0xAAA0

Recv: OK+Set:0xAAA0

### 65. Query/Set UART sleep type

| Send | Receive | Parameter |
|------|---------|-----------|
|------|---------|-----------|

|                |                |   |
|----------------|----------------|---|
| AT+UART?       | OK+Get:[para1] | Para1: 0~1  |
| AT+UART[para1] | OK+Set:[para1] | 0: When module into sleep mode, you can wake up module through UART.<br>1: When module into sleep mode, shutdown UART too.<br>Default: 0xFFE0 |

Note: This command is only use for HMSensor.

#### 66. Query Software Version

| Send                 | Receive             | Parameter |
|----------------------|---------------------|-----------|
| AT+VERR?<br>AT+VERS? | Version Information | None      |

Resource:

Bluetooth Module 2.1 datasheet:

[http://www.jnhuamao.cn/Bluetooth\\_en.zip](http://www.jnhuamao.cn/Bluetooth_en.zip)

Bluetooth Module 4.0 datasheet:

[http://www.jnhuamao.cn/Bluetooth40\\_en.zip](http://www.jnhuamao.cn/Bluetooth40_en.zip)

Bluetooth Module 4.0 USB Dongle

[http://www.jnhuamao.cn/HMDongle40\\_en.zip](http://www.jnhuamao.cn/HMDongle40_en.zip)

Bluetooth 2.1 Com Assistant for android:

<http://www.jnhuamao.cn/HMComAssistant.rar>

Bluetooth 4.0 Com Assistant for android 4.3:

<http://www.jnhuamao.cn/HMBLEComAssistant.rar>

Bluetooth 4.0 IOS Code:

[http://www.jnhuamao.cn/HMSoft\\_iso7.zip](http://www.jnhuamao.cn/HMSoft_iso7.zip)

[http://www.jnhuamao.cn/HMSoft\\_iso7.zip](http://www.jnhuamao.cn/HMSoft_iso7.zip)