



Jinan Huamao Technology Co., Ltd.

Bluetooth 4.0 BLE module

Datasheet

- ✧ Professional Bluetooth products suppliers.
- ✧ Remote control module provider
- ✧ Data transmission module provider
- ✧ PIO state acquisition module provider
- ✧ Customizable Bluetooth modules and Bluetooth solutions
- ✧ Jinan high and new technology enterprise

Address: D-4020, Qilu soft zone Jinan city, Shandong, China

Telephone: (86) 0531-85117999

WebSite: <http://www.jnhuamao.cn>

WebSite: <http://www.huamaosoft.com>

Mail: webmaster@jnhuamao.cn

The most complete, most convenient, the most stable of

**□ Bluetooth data transmission, Remote control and PIO input
status acquisition module**

---- Master and slave role in one

---- Remote control PIO with AT Commands

---- Remote acquisition of PIO input status with AT Commands

1. Product Parameters

- BT Version: BT Specification V4.0 BLE
- Working frequency: 2.4GHz ISM band
- Modulation method: GFSK (Gaussian Frequency Shift Keying)
- RF Power: -23dbm, -6dbm, 0dbm, 6dbm
- Speed: Asynchronous: 2-6K Bytes
Synchronous: 2-6K Bytes
- Security: Authentication and encryption
- Service: 0xFFE0 (Modifiable use AT+UUID command)
- Characteristic: 0xFFE1 (Modifiable use AT+UUID command)
- Characteristic: Notify and Write (Modifiable use AT+UUID command)
- Power: +2.5V~3.5VDC 50mA
- Power: Active state 8.5mA; Sleep state 50~200uA
- Working temperature: -20 ~ +105 Centigrade
- Size: HM-10 27mm x 13mm x 2.2 mm
- Size: HM-11 18mm x 13mm x 2.2mm
- Size: HM-15 65mm x 32mm x 16mm

2. Product overview

First of all, thank you for choose our module products.

If you want to know more about us, www.jnhuamao.cn could help you (Videos, New version datasheet, Module work flow, project Codes, etc.)

HM Bluetooth modules use CSR or TI CC2xxx or cypress chips, Master and slave roles in one, data transmission version and remote-control version and PIO status acquisition versions in one, Support the AT commands modify module parameters, Convenient and flexible.

Data Transmission version:

Before connect:

You can configure module parameters with AT Commands through UART

After connect:

- 1) Send and receive Bluetooth data through UART.

Remote Control version:

Before connect:

You can configure module parameters with AT Commands through UART

After connect:

- 1) Send and receive Bluetooth data through UART.
- 2) Remote device could configure module parameters with AT Commands
- 3) Remote device could control PIO2~PIO11 output low or high

PIO acquisition version:

Before connect

You can configure module parameters with AT Commands through UART

After connect

- 1) Send and receive Bluetooth data through UART.
- 2) Remote device could configure module parameters with AT Commands
- 3) Remote device could control PIO2, 3 output low or high with AT Commands

HM-11 has no this function

- 4) Remote device could get PIO4 ~ 11 input status with AT Commands

HM-11 only has PIO2 and PIO3.

Module version:

HM-01 to HM-09 is Bluetooth V2.1 version.

HM-10, HM-11 is Bluetooth V4.0 BLE version.

HM-12, HM-13 is Bluetooth Dual mode support EDR 4.0 and BLE 4.0

HM-16, HM-17 is Bluetooth V4.1 and V4.2 BLE version.

HM-18, HM-19 is Bluetooth V4.2 and V5.0 BLE version.

HM-01, HM-02, HM-09, HM-10, HM-16 and HM-18 is Pins to Pins.

HM-05, HM-06, HM-07, HM-11, HM-17 and HM-19 is Pins to Pins.

3. Product model

Modules	VDD	Size(mm)	Flash	Chip	BT Version
HM-01	2.5-3.7V	27 * 13 * 2.2	8M	BC417143	V2.1+EDR
HM-02A	2.5-3.7V	27 * 13 * 2.2	6M	BC31A223	V2.1
HM-02B	2.5-3.7V	27 * 13 * 2.2	6M	BC41C671	V2.1+EDR
HM-03A	2.5-3.7V	27 * 12.5 * 4.3	6M	BC31A223	V2.1
HM-03B	2.5-3.7V	27 * 12.5 * 4.3	6M	BC41C671	V2.1+EDR
HM-04A	2.5-3.7V	Not for sale			
HM-04B	2.5-3.7V	Not for sale			
HM-05/06A	2.5-3.7V	18 * 13 * 2.2	6M	BC31A223	V2.1
HM-05/06B	2.5-3.7V	18 * 13 * 2.2	6M	BC41C671	V2.1+EDR
HM-07	2.5-3.7V	18 * 13 * 2.2	8M		V2.1+EDR
HM-08	2.5-3.7V	27 * 13 * 2.5	8M	Class 1	V2.1+EDR
HM-09	2.5-3.7V	27 * 13 * 2.2	8M		V2.1+EDR
HM-10	2.2-3.7V	27 * 13 * 2.2	256Kb	CC2540/1	V4.0 BLE
HM-11	2.2-3.7V	18 * 13 * 2.2	256Kb	CC2540/1	V4.0 BLE
HM-12	2.5-3.9V	27 * 13 * 2.2	64KB	Dual mode	EDR 40 + BLE 40
HM-13	2.5-3.9V	18 * 13 * 2.2	64KB	Dual mode	EDR 40 + BLE 40
HM-14	2.2-4.0V	13 * 12 * 2.0		Dual mode	EDR40 + BLE 40
HM-15	5V	65 * 32 * 16	256Kb	CC2540	BLE V4.0
HM-16	2.1-5.5V	27 * 13 * 2.2	256KB		BLE V4.2
HM-17	2.1-5.5V	18 * 13 * 2.2	256KB		BLE V4.2
HM-18	2.1-5.5V	27 * 13 * 2.2	256KB		BLE V4.2 & V5.0
HM-19	2.1-5.5V	18 * 13 * 2.2	256KB		BLE V4.2 & V5.0

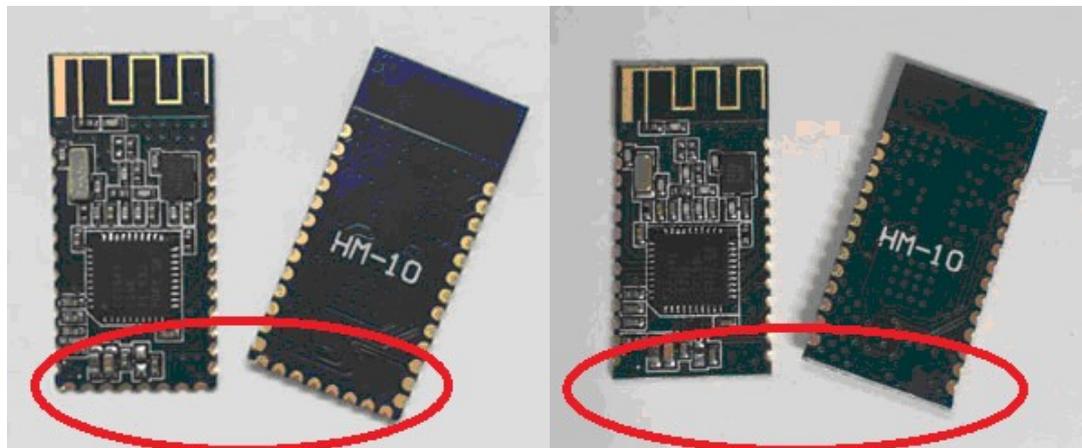
4. Product certificate

Products have FCC-ID, CE, RoHS. You can download certification from www.jnhuamao.cn or www.huamaosoft.com download center, left side.

5. Product technical specifications

This document only include Bluetooth BLE 4.0 document, If you want to know more about other modules, www.jnhuamao.cn or www.huamaosoft.com could help you.

What's different between HM-10S and HM-10C?

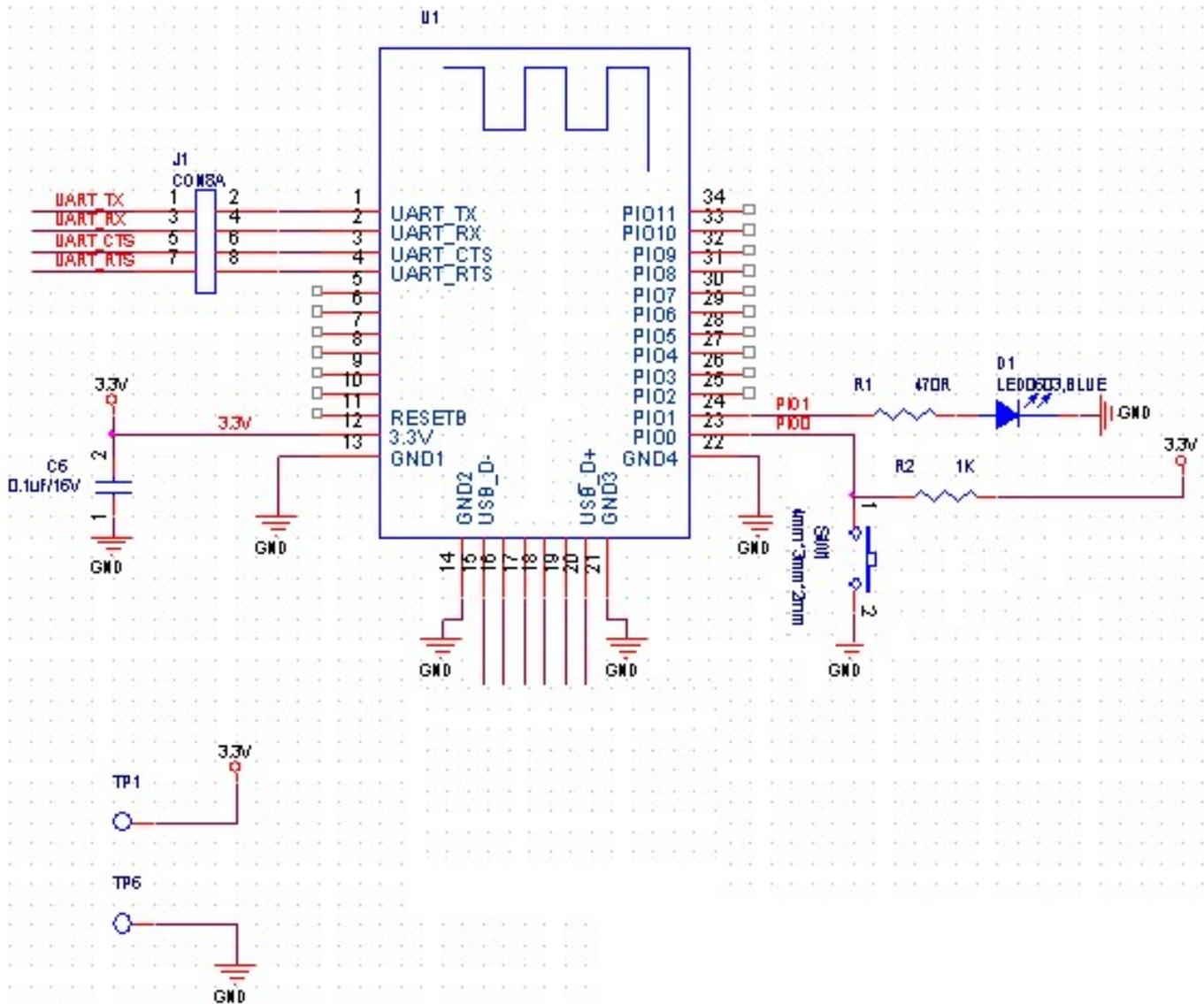


Left is HM-10S, it has 34 Pads. Right is HM-10C and it only have 26 Pads

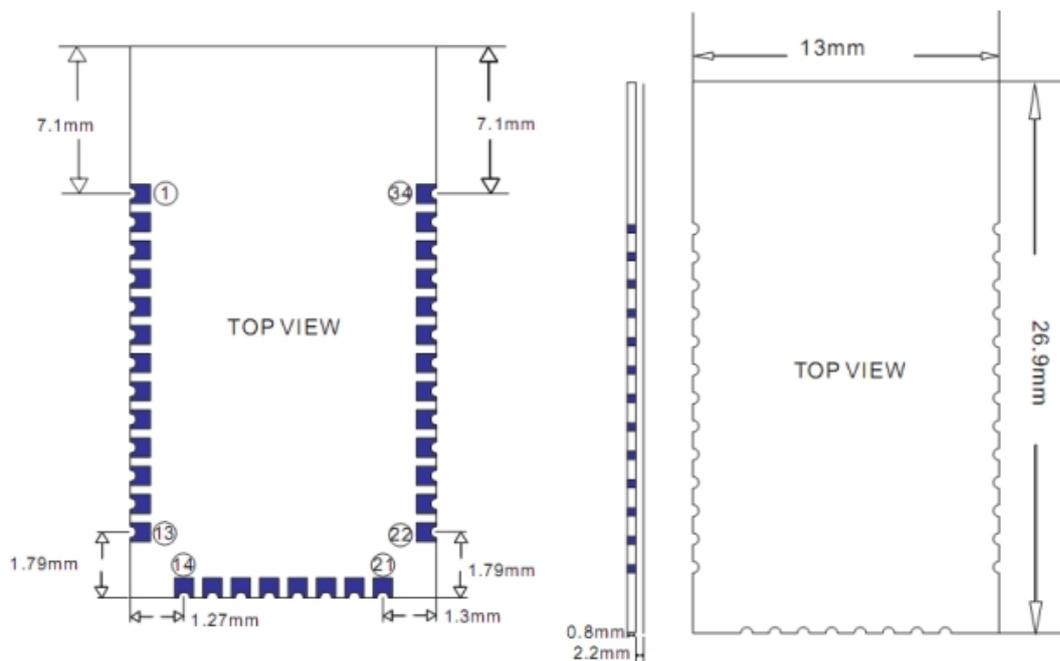
HM-10C is cheaper than HM-10S.

There have a lot of fake version in the market, please look at carefully, we put “HM-10” string on the top layer and the bottom layer,

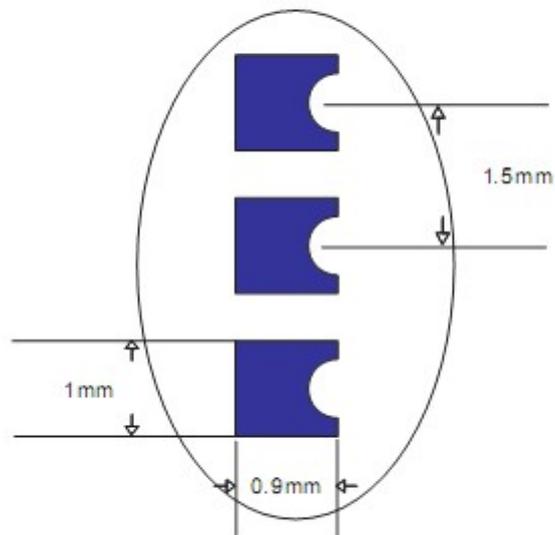
5.1 HM-10 Schematic



5.2 HM-10 Size



6.3 HM-10 package information



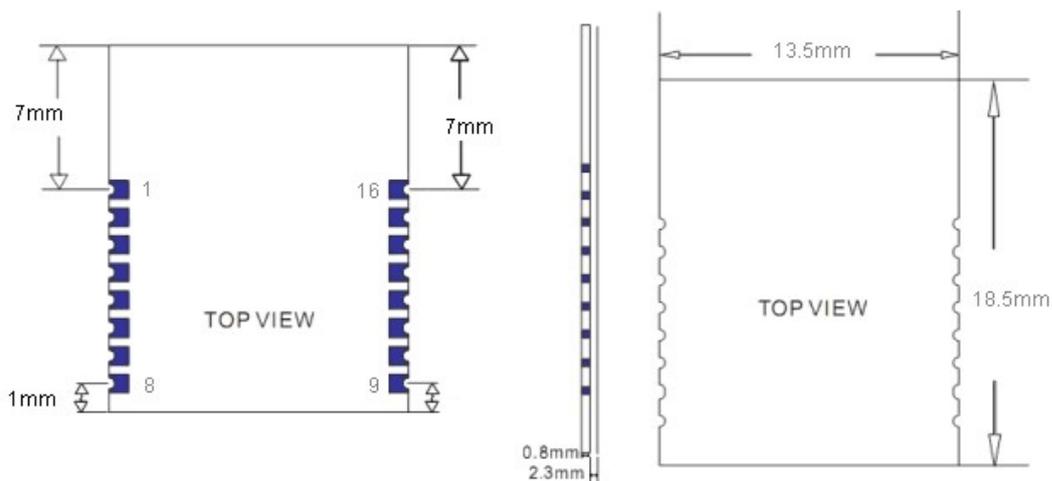
6.4 HM-10 Device Terminal Functions

HM-10S	HM-10C	Name	Description	CC254X
1	1	UART_TX	UART interface	P1_6
2	2	UART_RX	UART interface	P1_7
3	3	UART_CTS	UART interface	P1_4

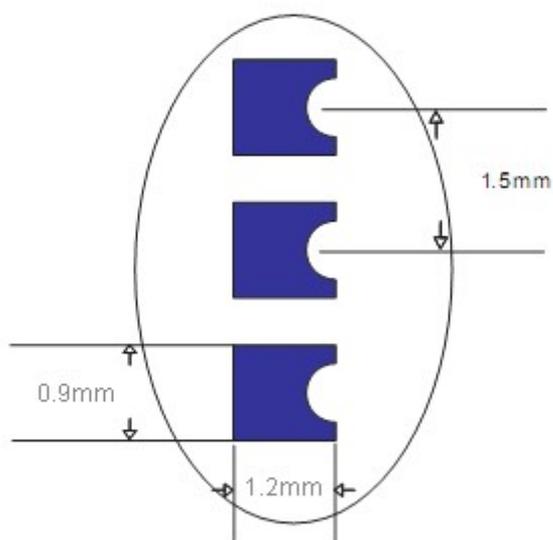
4	4	UART_RTS	UART interface	P1_5
5	5	NC	NC	
6	6	NC	NC	
7	7	NC	NC	P2_2
8	8	NC	NC	P2_1
9	9	NC	NC	P2_0
10	10	NC	NC	
11	11	RESETB	Reset if low >100ms.	RESET
12	12	VCC	3.3V	
13	13	GND	Ground	
14	X	GND	Ground HM-10C doesn't have this pin	
15	X	USB_D-	USB interface HM-10C doesn't have this pin	PIN3
16	X	NC	NC HM-10C doesn't have this pin	
17	X	NC	NC HM-10C doesn't have this pin	
18	X	NC	NC HM-10C doesn't have this pin	
19	X	NC	NC HM-10C doesn't have this pin	
20	X	UB_D+	USB interface HM-10C doesn't have this pin	PIN2
21	X	GND	Ground HM-10C doesn't have this pin	GND
22	22	GND	Ground	GND
23	23	PIO0	System Key	P1_3
24	24	PIO1	System LED	P1_2

25	25	PIO2	input/output pin. PWM output	P1_1
26	26	PIO3	input/output pin/ADC	P1_0
27	27	PIO4	input/output pin/ADC	P0_7
28	28	PIO5	input/output pin/ADC	P0_6
29	29	PIO6	input/output pin/ADC	P0_5
30	30	PIO7	input/output pin/ADC	P0_4
31	31	PIO8	input/output pin/ADC	P0_3
32	32	PIO9	input/output pin/ADC	P0_2
33	33	PIO10	input/output pin/ADC	P0_1
34	34	PIO11	input/output pin/ ADC/DS18B20/DHT11	P0_0

6.5 HM-11 Size



5.6 HM-11 Package information



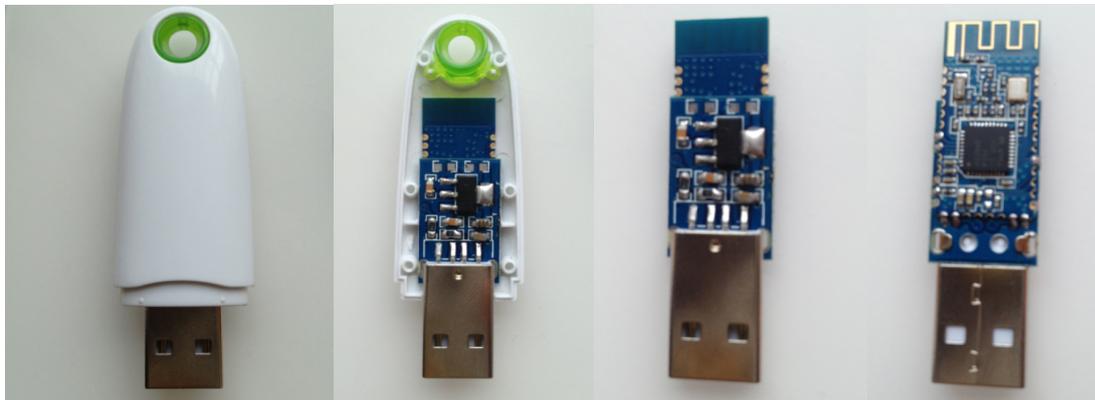
5.7 HM-11 Device Terminal Functions

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

5.8 HM-15

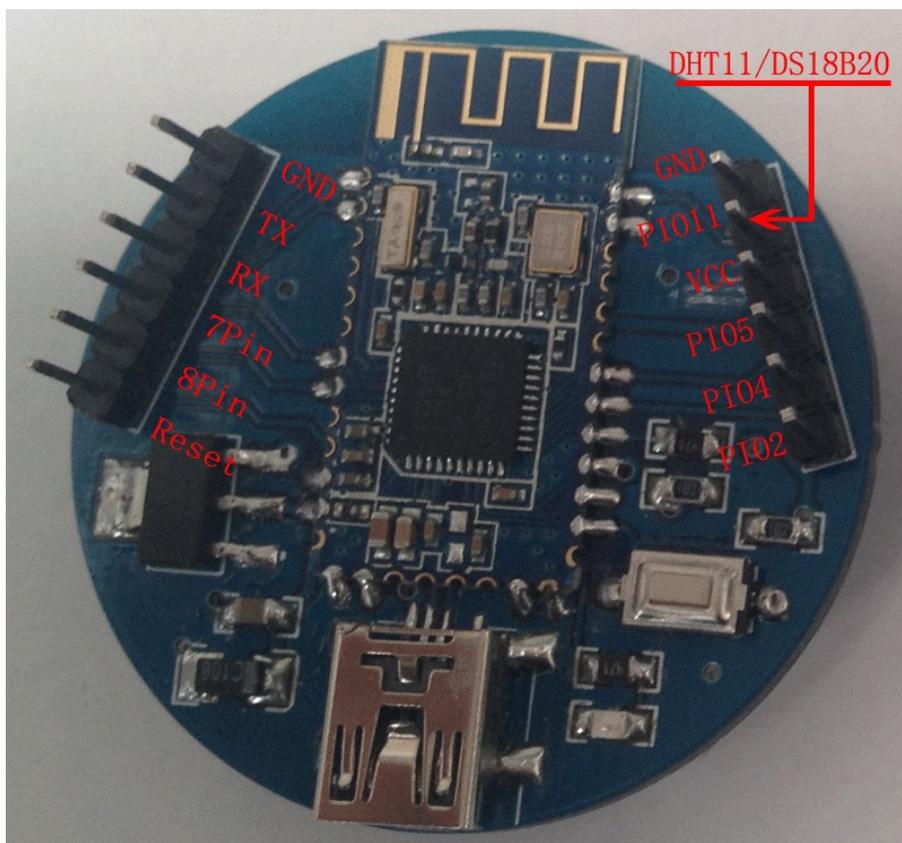
HM-15 is based HM-10, a real USB interface.

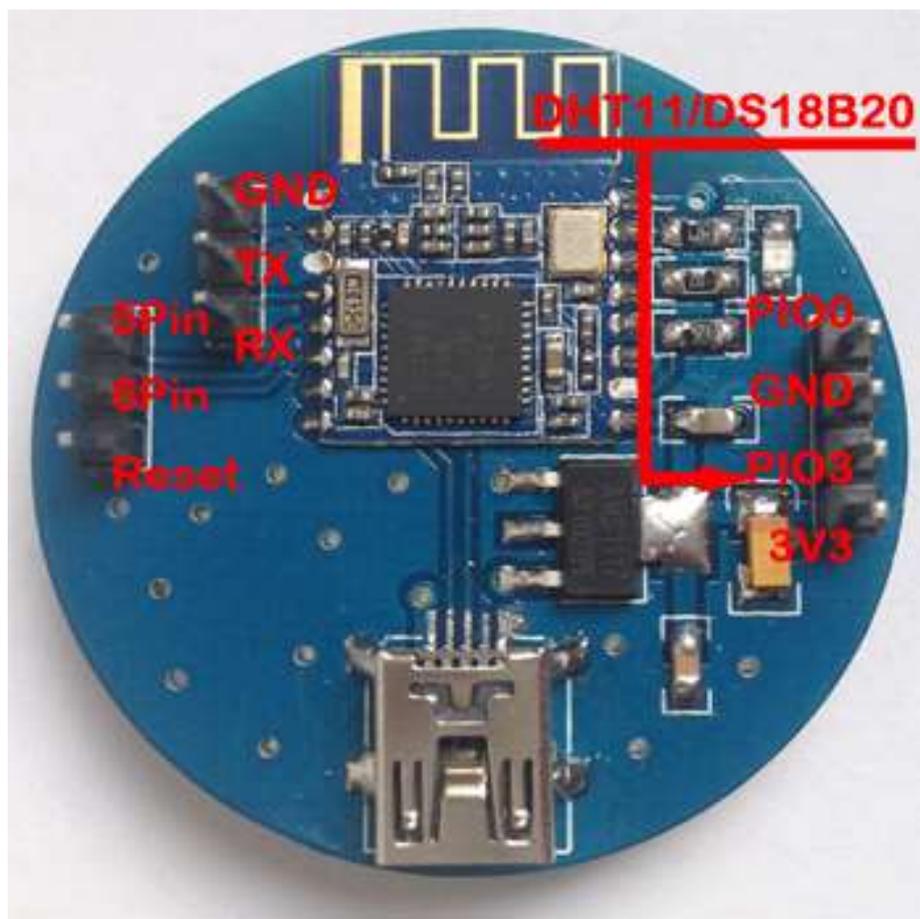


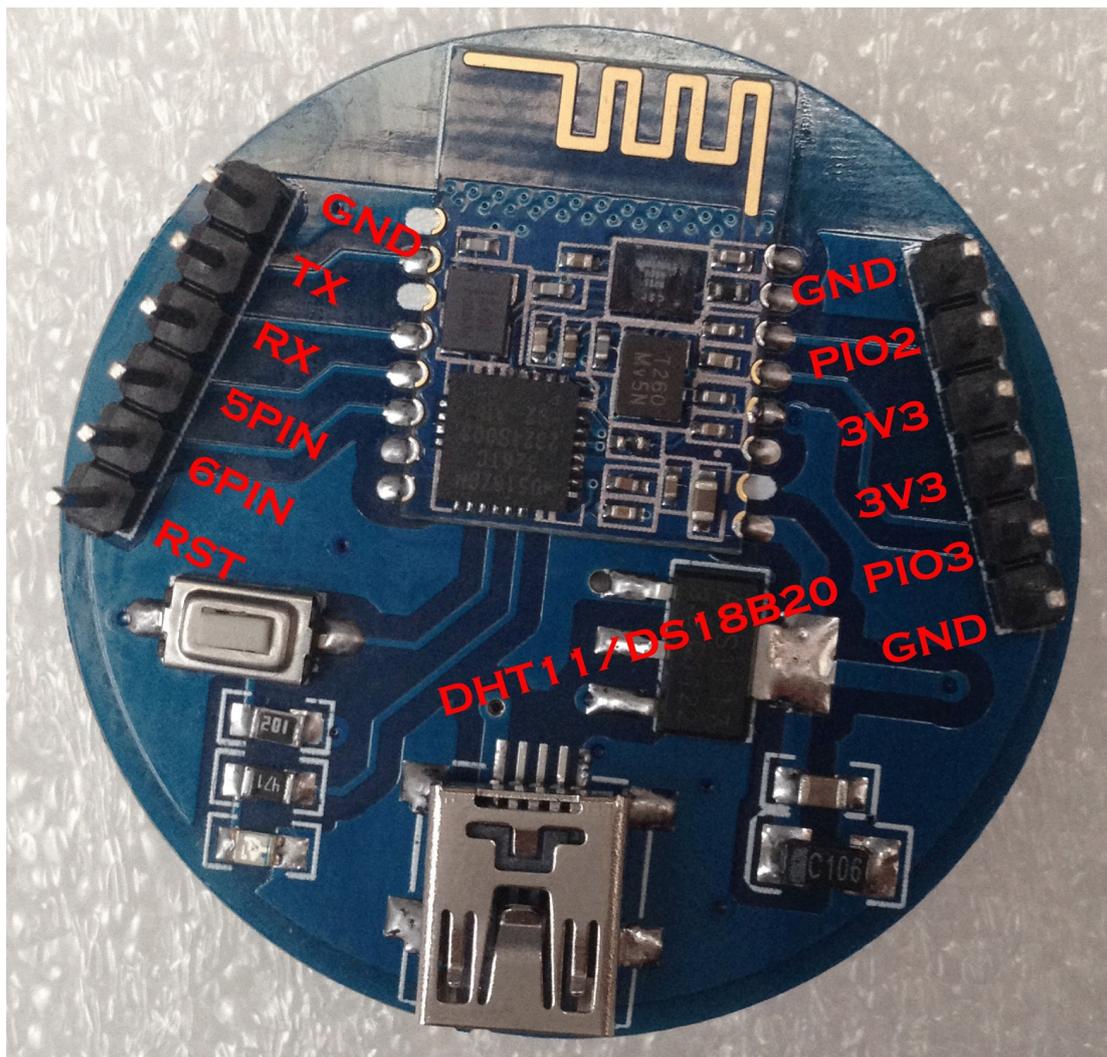
5.9 HM-Sensor

HM-Sensor version is different HMSoft version.

HM-Sensor support DHT11 and DS18B20.







6. System role

Module support Peripheral role and central role; Switch AT command is “AT+ROLE”.

Peripheral role

If AT+IMME0 is setup module will auto into discoverable mode.

If AT+IMME1 is setup, module will do nothing, you can use AT command setup module, then use AT+START to start device.

Central role

Central role support two work methods.

Automatic-scan-connect mode (AT+IMME0) and Command-scan-connect mode (AT+IMME1).

In AT+IMME0 mode, when power on, module will check if have a device address

have already success connect before. If have, module will try to connect that device for ever, if we setup AT+TCON, when AT+TCON value timeout, module will forget that device and try scan devices, then try connect the device what we scanned; If not have a device address, then module will try scan devices and try connect them. AT+SAVE command will let module know if save devices address or not.

In AT+IMME1 modem, when power on, module do nothing, module will wait your command, now you can use AT+DISC? Or AT+DISI? Or AT+DISA? Command to scan devices. Also, you can use AT+CO command connect to a device.

7. System function

How to wake up module from sleep mode?

There are two ways to wake up module from sleep mode, if module was in sleep mode.

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

Yes, that's a joke, in sleep mode, you can send a long string (Length > 1024 or more), that string can caused module wake up, and you will be received "OK+WAKE" string from module UART. Note: That wake-up string is better not including any AT commands.

Since V607/V702, we made wakeup function better, doesn't need 80 strings anymore, you only need send 1-3 bytes to wakeup module.

7.2 Long press system KEY >=1000 ms.

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

How to let module into sleep mode?

1. Send "AT+SLEEP" string through UART, if all is okay, module will return "OK+SLEEP" string and into sleep mode, this command only take effect once more.
2. Execute "AT+PWRM1" command, Module will auto into sleep mode when power on or disconnect from remote device. This command only need setup once more.

System advert packet

In iOS system you can't get module MAC address directly. So, we put MAC

address information into advert packet.

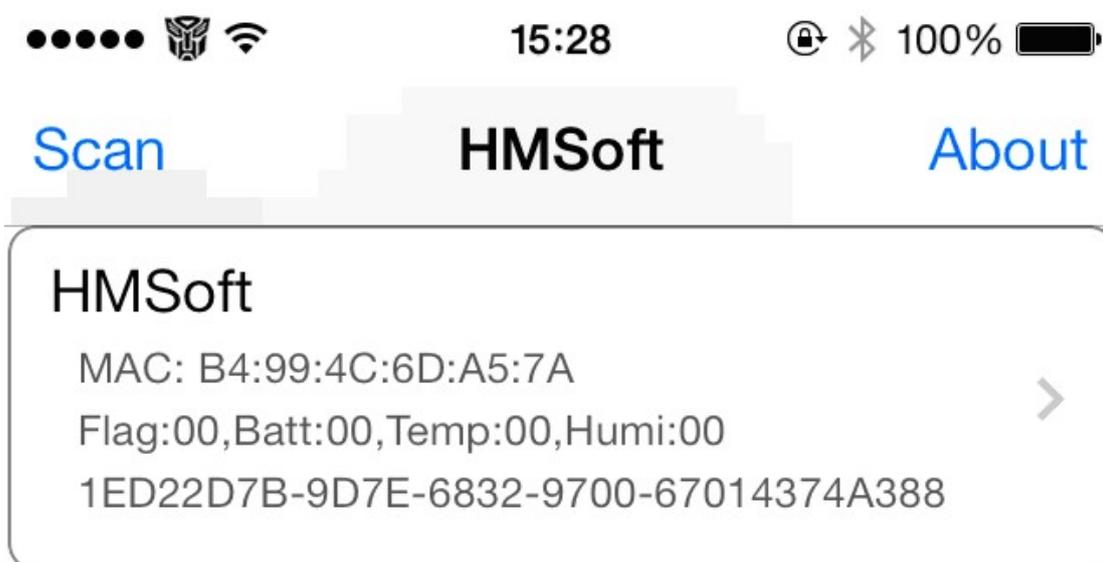
You can use CBAvertisementDataManufactureDataKey property to get it, MAC address information string format like follow:

Total length is 8 Bytes, first of two bytes is identify string, it always is 0x48 and 0x4D, the rest 6 bytes is MAC address string

For example: 0x48, 0x4D, 0xB4, 0x99, 0x4C, 0xXX, 0xXX, 0xXX

0x48 and 0x4D is "HM" string.

0xB4: 0x99: 0x4C: 0xXX: 0xXX: 0xXX is BLE MAC Address.



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.

You can use AT+PIO01 command to close this function.

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, command string: "AT+MODE0"):

Before connect, you can configure module parameters with AT Commands

After connect, you can send and receive Bluetooth data through UART.

B) Mode 1(PIO acquisition mode, command string: "AT+MODE1"):

Before connect, you can configure module parameters with AT Commands

After connect

1) Send and receive Bluetooth data through UART.

2) Remote device could configure module parameters with AT Commands

3) Remote device could control PIO2 and PIO3 output low or high with AT

Commands

HM-11 has no this function

4) Remote device could get PIO4 ~ 11 input status with AT Commands

HM-11 only has PIO2 and PIO3.

C) Mode 2 (Remote control mode command string: "AT+MODE2"):

Before connect, you can configure module parameters with AT Commands

After connect:

1) Send and receive Bluetooth data through UART.

2) Remote device could configure module parameters with AT Commands

3) Remote device could control PIO2~11 output low or high

HM-11 only has PIO2 and PIO3.

8. AT Commands

Factory default setting:

V5xx: Name: HMSoft; Baud: 9600, N, 8, 1; Pin code: 000000; Peripheral Role;

transmit mode.

V6xx: Name: HMSoft; Baud: 9600, N, 8, 1; Pin code: 000000; Peripheral Role; Remote-Control mode.

V7xx: Name: HMSoft; Baud: 115200, N, 8, 1; Pin code: 000000; Peripheral Role; Remote-Control mode.

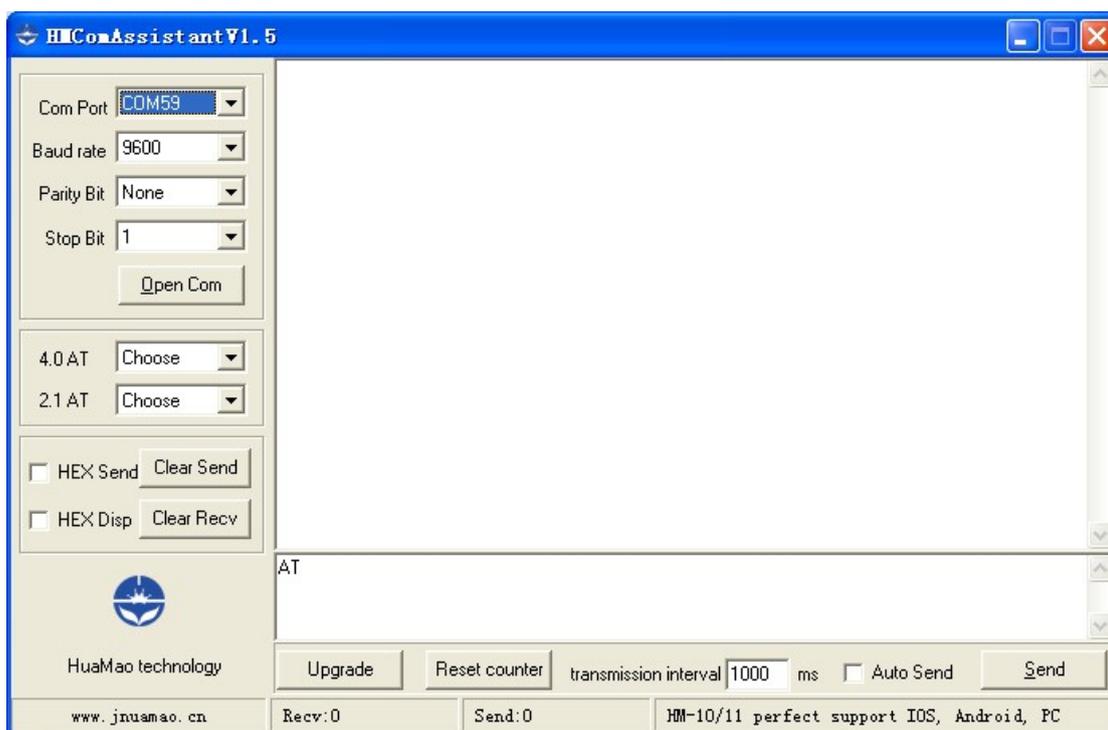
AT Command format:

Uppercase AT command format. string format.

V5xx, module didn't accept command ended with any other symbol. (e.g. \r or \n).

V6xx, module accept more Freestyle when you use command through UART.

V7xx, if you send command ended with CRLF, then module response string would be added CRLF. If you not then module not. You jump, module jump. AT command through UART support more Freestyle.



On Transmit version: module only accept AT Commands from UART interface when Bluetooth device is not connected with remote device.

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

On PIO collection version: module only accept AT Command from UART interface when Bluetooth device is not connected with remote device. After connect with remote device, module could accept and execute AT Command send from remote side.

Note: All command value will be saved in internal flash, doesn't need setup many times.

Note: “[” and “]” is not part of the command.

1. Test Command or Disconnect Command

Send	Receive	Parameter
AT	OK OK+LOST	None

If Module is not connected to remote device, you will receive: “OK”

If Module is connected, module will be disconnected from remote device, if “AT + NOTI” is setup to 1, module will output “OK+LOST” through UART.

2. Query module PIO ADC value

Send	Receive	Parameter
AT+ADC[P1]?	OK+Get:[P2]	P1: 3,4,5,6,7,8,9, A, B map to PIO3~PIOB P2: return value

HM-11 has no this function.

PIO0 is system key, PIO1 is system led, so beginning PIO is PIO3.

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:[P1]	None
AT+ADVI[P1]	OK+ Set:[P1]	P1: 0 ~ F

		0: 100ms; 1: 252.5ms; 2: 211.25ms; 3:318.75ms 4: 417.50ms; 5:546.25ms 6: 760.00ms; 7:852,50ms; 8: 1022.5ms; 9:1285ms A: 2000ms; B: 3000ms C: 4000ms; D: 5000ms E: 6000ms; F: 7000ms HMSoft Default: 0 HMSensor Default: 9
--	--	--

The maximum 1285ms recommendations from the IOS system. That mean 1285ms is apple allowed maximum value.

Added since V517 version.

V522 version added max value F.

4. Query/Set Advertising Type

Send	Receive	Parameter
AT+ADTY?	OK+ Get:[P1]	None
AT+ADTY[P1]	OK+ Set:[P1]	P1: 0 ~ 3 0: Advertising ScanResponse, Connectable 1: Only allow last device connect in 1.28 seconds 2: Only allow Advertising and ScanResponse. 3: Only allow Advertising Default: 0

Added since V519

5. Query/Set apple ANCS switch

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

AT+ANCS?	OK+ Get:[P1]	None
AT+ANCS[P1]	OK+ Set:[P1]	P1: 0 ~ 1 0: Off 1: On Default: 0

Note1: This command added in V524.

Note2: This command required AT+TYPE3 support.

Note3: This command removed in V7xx firmware.

6. Query/Set white list switch

Send	Receive	Parameter
AT+ALLO?	OK+ Get:[P1]	None
AT+ALLO[P1]	OK+ Set:[P1]	P1: 0 ~ 1 0: Off 1: On Default: 0

Note1: This command added in V523.

Note2: White List allows three MAC address link to module. Please use AT+AD command set white list MAC address.

7. Query/Set white list MAC address

Send	Receive	Parameter
AT+AD[P1]??	OK+ Get:[P2]	None
AT+AD[P1][P2]	OK+ Set:[P2]	P1: 1, 2, 3 P2: MAC address P1 default value: 0

Note1: This command added in V523.

E.g.

Send AT+AD1001122334455

Recv OK+Set:001122334455

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

Send	Receive	Parameter
AT+BEFC?	OK+ Get:[P1]	None
AT+BEFC[P1]	OK+ Set:[P1]	P1: 000~3FF; (Hex format string) Default: 0x000

This command added in V527.

Hex format 0x3FF change to binary format is 001111111111, total length is 12 bit, left to right side is mapped to module PIO0~PIOB port, PIO0 and Pio1 is used by system, So must be 0. 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.

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

Send	Receive	Parameter
AT+AFTC?	OK+ Get:[P1]	None
AT+AFTC[P1]	OK+ Set:[P1]	P1:000~3FF;(Hex format string) Default: 000

This command added in V527.

Hex format 0x3FF change to binary format is 001111111111, total length is 12 bit, Left to right side is mapped to module PIO0~PIOB port, PIO0 and Pio1 is used by system. So, must be 0, 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.

10. Query/Set battery monitor switch

Send	Receive	Parameter
AT+BATC?	OK+ Get:[P1]	None
AT+BATC[P1]	OK+ Set:[P1]	P1: 0 ~ 1 0: Off 1: On Default: 0

This command added in V520

When AT+BATC1 command is executed, module will add battery information into scan response data package.

11. Query battery information

Send	Receive	Parameter
AT+BATT?	OK+Get:[P1]	P1: 000~100

There has three ways to get battery information:

- a. Before establishing a connection, Send “AT+BATT?” through UART.
- b. 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 updated once. when module has been discovered, you can get battery information from scan response package.

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. Set battery information byte in advertising data

Send	Receive	Parameter
AT+BATT[P1]	OK+Set:[P1]	P1: 0x00~0xFF Not include '?'

Required: AT+BATC0

This command is used to set battery information byte in advertising data when you closed module power monitor, you can use battery information byte in advertising package for other purposes.

13. Query/Set 7 Bit format

Send	Receive	Parameter
AT+BIT7?	OK+Get:[P1]	P1: bit7 switch.
AT+BIT7[P1]	OK+Set:[P1]	0-----Not compatible 1-----Compatible Default: 0

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

This command removed since V7xx.

14. Query/Set UART baud rate

Send	Receive	Parameter
AT+BAUD?	OK+Get:[P1]	P1: Baud rate
AT+BAUD[P1]	OK+Set:[P1]	0: 9600; 1: 19200;2: 38400; 3: 57600; 4: 115200; 5: 4800; 6: 2400; 7: 1200; 8: 230400; Default: 0(9600)

e.g.

Query baud rate:

Send: AT+BAUD?

Receive: OK+Get:[P1]

Setup baud rate to 9600:

Send: AT+BAUD1

Receive: OK+Set:1

Note: If setup to Value 7, After next power on, module will not support any AT Commands.

15. Query/Set Minimum Link Layer connection interval

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

AT+COMI?	OK+Get:[P1]	P1: 0 ~ 9
AT+COMI[P1]	OK+Set:[P1]	0: 7.5ms; 1: 10ms; 2: 15ms; 3: 20ms; 4: 25ms; 5: 30ms; 6: 35ms; 7: 40ms; 8: 45ms; 9: 4000ms; Default: 3(20ms)

Note: This command is added since V538

16. Query/Set Maximum Link Layer connection interval

Send	Receive	Parameter
AT+COMA?	OK+Get:[P1]	P1: 0 ~ 9
AT+COMA[P1]	OK+Set:[P1]	0: 7.5ms; 1: 10ms; 2: 15ms; 3: 20ms; 4: 25ms; 5: 30ms; 6: 35ms; 7: 40ms; 8: 45ms; 9: 4000ms; Default: 7(40ms)

Note: This command is added since V538

17. Query/Set Link Layer connection slave latency

Send	Receive	Parameter
AT+COLA?	OK+Get:[P1]	P1: 0 ~ 4
AT+COLA[P1]	OK+Set:[P1]	Default: 0

Note: This command is added since V538

18. Query/Set connection supervision timeout

Send	Receive	Parameter
AT+COSU?	OK+Get:[P1]	P1: 0 ~ 6
AT+COSU[P1]	OK+Set:[P1]	0: 100ms; 1: 1000ms; 2: 2000ms; 3: 3000ms; 4: 4000ms; 5: 5000ms; 6: 6000ms; Default: 6(6000ms)

Note: This command is added since V538

19. Query/Set The Switch of update connection Parameter

Send	Receive	Parameter
AT+COUP?	OK+Get:[P1]	P1: 0 ~ 1
AT+COUP[P1]	OK+Set:[P1]	0: Don't update 1: Update Default: 1(update)

This command is only use when module is in slave role. In central role you can use AT+COMI and AT+ COMA command change default connect parameters.

Note: This command is added since V538

20. Query/Set Characteristic

Send	Receive	Parameter
AT+CHAR?	OK+Get:[P1]	P1: 0x0001~0xFFFE
AT+CHAR[P1]	OK+Set:[P1]	Default: 0xFFE1

e.g. change characteristic value to 0xAAA0

Send: AT+CHAR0xAAA0

Recv: OK+Set:0xAAA0

21. Clear Last Connected device address

Send	Receive	Parameter
AT+CLEAR	OK+CLEAR	None

Notice: Only Central role is used.

22. Try connect to last succeeded device

Send	Receive	Parameter
AT+CONNL	OK+CONN[P1]	P1: L, E, F, N L: Connecting E: Connect error F: Connect Fail N: No Address

Notice: Only Central role is used.

Required: AT+IMME1 and AT+ROLE1 and AT+SAVE1.

If remote device is not in connectable status, "OK+CONN" will received after about 10 seconds.

23. Try to connect a device use MAC address

Send	Receive	Parameter
AT+CO[P0][P1]	OK+CO[P0][P0][P2]	P0: N, 0, 1, 2; 1 Byte Length N: Normal Address 0: Static MAC 1: Static random MAC 2: Random MAC P1: MAC Address Like: 0017EA090909 P2: A, E, F; 1 Byte Length A: Connecting E: Connect error F: Connect Fail

Notice: Only central role is used.

You can get P0 value through AT+DISC? Command.

Required: AT+IMME1 and AT+ROLE1.

If remote device is not in connectable status, "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, this device type is normal

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

Note: O is not zero

24. Try to connect a device use MAC address and UUIDs

Send	Receive	Parameter
AT+CO[P0][P1][P3][P4]	OK+CO[P0][P0][P2]	P0: N, 0, 1, 2; 1 Byte Length N: Normal Address 0: Static MAC 1: Static random MAC 2: Random MAC P1: MAC Address Like: 0017EA090909 P2: A, E, F; 1 Byte Length P3: Write UUID P4: Notify UUID A: Connecting E: Connect error F: Connect Fail

Notice: Only central role is used.

Required: AT+IMME1 and AT+ROLE1 and AT+COMP1.

This command added since V604

This command is based on AT+CO command, modified in V604, added UUIDs support.

P3: Device UUID which one is included Write or Write-Without-Response property.

4 Bytes Length, HEX format string, only accept 16-bit UUID now.

P4: Device UUID which one is included Notify property,

4 Bytes Length, HEX format string, only accept 16-bit UUID now.

This command is used to Communication with different brand BLE device. This command let module know which UUIDs are using.

If the slave module what you want to communication is using 16 Bit UUID. And this device is using one or two Characteristics to send and receive data (Notify property and Write or Write-Without-Response properties), then you can use this command to communication with it.

This command removed in V7xx.

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

25. Try to connect a device use MAC address and UUIDs handle

Send	Receive	Parameter
AT+LN[P0][P1][P3][P4][P5]	OK+LN[P0][P0][P2]	P0: N, 0, 1, 2; 1 Byte Length N: Normal Address 0: Static MAC 1: Static random MAC 2: Random MAC P1: MAC Address Like: 0017EA090909 P2: A, E, F; 1 Byte Length P3: Notify UUID Handle P4: Write UUID Handle A: Connecting E: Connect error F: Connect Fail

Notice: Only central role is used.

Required: AT+IMME1 and AT+ROLE1.

This command added since V605

P3: Notify UUID handle, 4 Byte Length, HEX format, 0x0000 ~ 0xFFFF

P4: Write or Write-Without-Response UUID handle, 4 Bytes Length, HEX format, 0x0000~0xFFFF.

P5: Write method, 1 Byte length, values: 0: Write; 1: Write-Without-Response.

This command is used to communication with different brand BLE device.

This command not care UUIDs value, only care UUIDs handle, use this command, you can talk to any BLE devices, included 16 Bit UUID device and 128 Bit UUID device.

This command is removed in V7xx.

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

26. Connect to a Discovered device use array index

Send	Receive	Parameter
AT+CONN[P1]	OK+CONN[P2]	P1: 0~5 P2: E, F, 0~5 E: Link error F: Link failed 0~5: is Array index.

This command is use after execute AT+DISC?

AT+DISC? command will return discovered devices list

The first discovered device array index is 0, second device array index is 1, AT+DISC? Command could return more than 6 devices, buy only first 6 devices could use array index, other devices must use AT+CO or AT+LN command.

This command will clear all discovered devices list.

27. Query PIO04~PIO11 input(output) state

Send	Receive	Parameter
AT+COL??	OK+ Col:[P1]	P1: 0x00~0xFF

P1 is a byte, has 8 bits, bit 7 ~ bit 0 is mapped to the PIO4 ~ PIO11.

This command is added since V515 version.

This command required AT+MODE1.

28. Query/Set PIO collection rate

Send	Receive	Parameter
AT+CYC??	OK+ Get:[P1]	P1: 00~99

AT+CYC[P1]	OK+ Set:[P1]	Unit: seconds Default: 10
------------	--------------	------------------------------

Required AT+MODE1, 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.

29. Query/Set The switch of study function

Send	Receive	Parameter
AT+COMP?	OK+ Get:[P1]	P1: 0, 1, ?
AT+COMP[P1]	OK+ Set:[P1]	?: Query; 0: Off; 1: On Default: 0

This command is used to communication with different brand BLE devices.

This command is added since V542 version.

This command is removed in V7xx.

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

30. Start a device discovery scan

Send	Receive	Parameter
AT+DISC?	OK+DISCS OK+DIS[P0][P1][P2] OK+DISCE	P0: C, 0, 1, 2; 1 Byte Length C: Common string 0~2: device Address type P1: device MAC string DISCS: Start discovery DISCE: End discovery

Required: AT+ROLE1, AT+IMME1

AT+SHOW command could help you to get more devices information.

OK+DISCS is mean: module start discovery now.

OK+DISCE is mean: module already stopped discovery.

e.g.

Send: AT+DISC?

Recv: OK+DISCS

Recv: OK+DIS[P0]:123456789012 (discovered device address information)

If AT+SHOW1 is setup, you will receive the name information like follow

Recv: OK+NAME: xxx

If AT+SHOW2 is setup, you will receive the RSSI information like follow

Recv: OK+RSSI: xxx\r\n

If AT+SHOW3 is setup, you will be received both the RSSI information and Name information

Recv: OK+DIS[P0]:234567890123

Recv: OK+NAME: xxx\r\n

Recv: OK+RSSI: xxx\r\n

.....

Recv: OK+DISCE

After AT+DISC? Command, you maybe want to choose a device to made connection, now you can use AT+CONN command or AT+CO command or AT+LN command.

AT+DISI? Command and AT+DISA? Command is also used to scan devices.

31. Start an iBeacon device discovery scan

Send	Receive	Parameter
AT+DISI?	OK+DISCS OK+DISC[P0:P1:P2:P3:P4] OK+DISCE	P0: Factory ID P1: iBeacon UUID P2: Major Value Minor Value Measured Power P3: MAC P4: RSSI

Required AT+ROLE1 and AT+IMME1.

e.g.

Send: AT+DISI?

Recv: OK+DISCS (Scan start)

Recv: OK+DIS[P0:P1:P2:P3:P4] (if have one device)

Recv: OK+DIS[P0:P1:P2:P3:P4] (if have two devices)

.....

Recv: OK+DISCE (Scan end)

P0 length is 8 Bytes; P1 length is 32 Bytes; P2 length is 10 Bytes; P3 length is 12 Bytes, P4 length is 4 Bytes, Those values all is ASCII mode.

P2 include Major Value (length 4 Bytes);

Minor Value (length 4 Bytes);

Measured Power (length 2 Bytes)

If the device not enable iBeacon function, P0, P1, P2 will use '0' to fill in.

Note: Added since V539

32. Start a full information device discovery scan

Send	Receive	Parameter
AT+DISA?	OK+DISAS -> Start scan OK+DISC[P0:P1:P2:P3:P4] OK+DISAE -> Scan finished	P0: Device MAC (6Byte) P1: Device Type(1Byte) P2: Device RSSI(1Byte) P3: Rest Data Length (1Byte) P4: Rest Data

Please set AT+IMME1 and AT+ROLE1 first.

Note: P3 and P4 All data is in Hex format, can't show in ascii mode.

Added in V547

33. Query/Set iBeacon deploy mode

Send	Receive	Parameter
AT+DELO[P1]	OK+DELO[P1]	P1: 1, 2 1: Allowed to broadcast and scanning 2: Only allow broadcast

After received OK+Set[P1], module will reset after 500ms.

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

34. Remove bond information

Send	Receive	Parameter
AT+ERASE	OK+ERASE	NONE

Note: Added in V524 version.

35. Find all services UUID on slave device

Send	Receive	Parameter
AT+FINDSERVICES?	***** [P1]:[P2]:[P3] *****	P1: Start Handle P2: End Handle P3: Service UUID

This command added since V700

Required state: after connect; Required role: Central role.

Only central role device can use that command. This command is used to find all services UUID on the slave device.

“*****” is start string, 56 Bytes.

P1: 4 Bytes, Services start handle.

P2: 4 Bytes, Services end handle

P3: Services UUID

“*****” is end string, 56 Bytes.

Possible return value

```
*****
0001:000B:1800
000C:000F:1801
0010:FFFF:FFE0
*****
```

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

36. Find all Characteristic UUID on slave device

Send	Receive	Parameter
AT+FINDALLCHARS?	*****	P1: Chars Handle

	[P1]:[P2]:[P3] *****	P2: Chars properties P3: Chars UUID
--	-------------------------	--

This command added since V700

Required state: after connect; Required role: Central role.

Only central role device can use that command. This command is used to find all Characteristic UUID on the slave device.

Characteristic properties length 14 Bytes, full string is “RD|WR|WN|NO|IN”;

WR – Write; **WN** – Write_Without_Response; **IN** – Indicate; **NO** – Notify; **RD** – Read;

Usually, a characteristic maybe only has one or two properties. Unsupported property part replaced by “--”

“*****” is start string, 56 Bytes.

P1: 4 Bytes, Characteristic handle.

P2: 14 Bytes, “RD|WR|WN|NO|IN”,

P3: Characteristic UUID

“*****” is end string, 56 Bytes.

Possible return value:

```
*****
0003:RD|--|--|--:2A00
0005:RD|--|--|--:2A01
0007:RDWR|--|--:2A02
0009:--WR|--|--:2A03
000B:RD|--|--|--:2A04
000E:--|--|--IN:2A05
0012:RD|--WNNO--:FFE1
*****
```

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

37. Find Characteristics UUID on slave device use start handle and end handle

Send	Receive	Parameter
AT+CHAR[P4][P5]?	***** [P1:P2:P3] *****	P1: Chars Handle P2: Chars properties P3: Chars UUID P4: Start Handle P5: End Handle

This command added since V700

Required state: after connect; Required role: Central role.

Only central role device can use that command. This command is used to find Characteristics UUID on the slave device with start handle and end handle.

P4 and P5 value could get from AT+FINDSERVICES? Command.

P4: start service handle, 4 bytes, possible value 0x0001 ~ 0xFFFF;

P5: end services handle, 4 bytes, possible value 0x00001 ~ 0xFFFF;

P5 value must large than P4 value.

Characteristic properties length 14 Bytes, full string is "RD|WR|WN|NO|IN";

WR – Write; **WN** – Write_Without_Response; **IN** – Indicate; **NO** – Notify; **RD** – Read;

Usually, a characteristic maybe only has one or two properties. Unsupported property part replaced by "--"

"*****" is start string.

P1: 4 Bytes, Characteristic handle.

P2: 14 Bytes, "RD|WR|WN|NO|IN",

P3: Characteristic UUID

"*****" is end string

Possible return value:

```
*****
0003:RD  --  --  --  --:2A00
0005:RD  --  --  --  --:2A01
0007:RD  WR  --  --  --:2A02
0009:--  WR  --  --  --:2A03
000B:RD  --  --  --  --:2A04
000E:--  --  --  --  IN:2A05
0012:RD  --  WN  NO  --:FFE1
*****
```

V7xx support powerful self-learning function, please look at

"HM-10_11 Self-Learning Function Introduction.pdf"

38. Enable Characteristic notify by characteristic handle

Send	Receive	Parameter
AT+NOTIFY_ON[P1]	OK+SEND-OK OK+SEND-ER OK+DATA-ER	P1: Chars Handle 4 Bytes

This command added since V700

Required state: after connect; Required role: Central role.

Only central role device can use that command. This command is used to enable notify on a characteristic who owned notify property.

OK+SEND-OK – Send command successful.

OK+SEND-ER – Send command error

OK+DATA-ER – This characteristic doesn't have notify property.

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

39. Disable Characteristic notify by characteristic handle

Send	Receive	Parameter
AT+NOTIFYOFF[P1]	OK+SEND-OK OK+SEND-ER OK+DATA-ER	P1: Chars Handle 4 Bytes

This command added since V700

Required state: after connect; Required role: Central role.

Only central role device can use that command. This command is used to disable notify on a characteristic who owned notify property.

OK+SEND-OK – Send command successful.

OK+SEND-ER – Send command error.

OK+DATA-ER – This characteristic doesn't have notify property.

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

40. Read Characteristic value by characteristic handle

Send	Receive	Parameter
AT+READDATA[P1]?	OK+SEND-OK OK+SEND-ER OK+DATA-ER	P1: Chars Handle 4 Bytes.

This command added since V700

Required state: after connect; Required role: Central role.

Only central role device can use that command. This command is used to read characteristic value who owned read property.

OK+SEND-OK – Send command successful.

OK+SEND-ER – Send command error

OK+DATA-ER – This characteristic doesn't have read property.

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

41. Set which method and which characteristic handle we are plan to use.

Send	Receive	Parameter
AT+SET_WAY[P1][P2]	OK+SEND-OK	P1: Send data method 2 Bytes, “WR”, “WN”, “NO”, “IN” P2: Chars Handle 4 Bytes

This command added since V701

Required state: after connect; Required role: Central role.

Note: after execute this command, now you can start to send and receive data without any AT commands.

Note: This command is different between AT+SEND_DATA, this command only need be executed once more.

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

42. Send data to Characteristic by characteristic handle

Send	Receive	Parameter
AT+SEND_DATA[P1][P2][P3]	none	P1: Send method 2 Bytes, “WR”, “WN” P2: Chars Handle 4 Bytes

		P3: data what you want to send
--	--	--------------------------------

This command added since V700

Required state: after connect; Required role: Central role.

Only central role device can use that command. This command is used to send data to a characteristic who owned Write or Write-Without-Response property.

P1: two bytes length, always is “WR” or “WN”

P2: characteristic handle, get by AT+CHAR or AT+FINDALLCHARS command

P3: the data what you want to send.

Note: Since V701, We added AT+SET_WAY command, you can forget this command.

V7xx support powerful self-learning function, please look at

“HM-10_11 Self-Learning Function Introduction.pdf”

43. Set module use one Characteristic UUID or two Characteristics UUID

Send	Receive	Parameter
AT+FFE2[P1]	OK+ Set:[P1]	P1: ?, 0, 1, 2 ?: Query 0: Only use one Characteristic, please look at AT+CHAR command 1: Use two Characteristics Second Char value = first Char value + 1 First char value = AT+CHAR value 2: Use two Characteristic Second Char value = first Char value – 1 First char value = AT+CHAR value

Note: This command added since V550.

This command only uses on slave role.

44. Set advertising package FLAG byte

Send	Receive	Parameter
AT+FLAG[P1]	OK+ Set:[P1]	P1: 00~FF (one byte)

Note: This command added in V530.

This command is used to set flag information byte in advertising package for other purposes.

45. Query/Set UART flow control switch

Send	Receive	Parameter
AT+FIOW?	OK+ Get:[P1]	P1: 0, 1
AT+FIOW[P1]	OK+ Set:[P1]	0: Off 1: On Default: 0

46. Query/Set module RX gain

Send	Receive	Parameter
AT+GAIN?	OK+ Get:[P1]	P1: 0, 1
AT+GAIN[P1]	OK+ Set:[P1]	0: No RX gain 1: Open RX gain Default: 0

Note: This command is added since V535

47. System Help Information

Send	Receive	Parameter
AT+HELP?	Help Information	None

48. Set Humi-information byte in advertising data

Send	Receive	Parameter
AT+HUMI[P1]	OK+Set:[P1]	P1: 0x00~0xFF

This command is used to set humi-information byte in advertising data.

Added in V544

49. Query/Set Module work type

Send	Receive	Parameter
AT+IMME?	OK+ Get:[P1]	P1: 0, 1
AT+IMME[P1]	OK+ Set:[P1]	1: When module is powered on, only respond the AT Command, don't do

		<p>anything. Until received a work AT command.</p> <p>0: When power on, module will start work immediately</p> <p>Default: 0</p>
--	--	--

In slave role:

If AT+IMME0 is setup, module will auto in advertising status.

If AT+MODE1 is setup, module will do nothing, you can config module now, until AT+START command received, module will in advertising status.

In central role:

If AT+IMME0 is setup, module will discovery and try made connection automatic.

If AT+IMME1 is setup, module will do nothing, you can use AT+DISC? AT+DISI? Or AT+DISA? Commands or other AT commands what you want to execute. Or you can execute AT+START let module in auto work mode.

50. Query/Set Module iBeacon switch

Send	Receive	Parameter
AT+IBEA?	OK+Get:[P1]	P1: 0, 1
AT+IBEA[P1]	OK+Set:[P1]	0: Turn off iBeacon 1: Turn on iBeacon Default: 0

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

This command is added since V517 version.

51. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE0?	OK+Get:[P1]	P1: 00000001~
AT+IBE0[P1]	OK+Set:[P1]	FFFFFFFE Default: 74278BDA

Default 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”

52. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE1?	OK+Get:[P1]	P1: 00000001~
AT+IBE1[P1]	OK+Set:[P1]	FFFFFFFE Default: B6444520

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”

53. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE2?	OK+Get:[P1]	P1: 00000001~
AT+IBE2[P1]	OK+Set:[P1]	FFFFFFFE Default: 8F0C720E

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”

54. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE3?	OK+Get:[P1]	P1: 00000001~
AT+IBE3[P1]	OK+Set:[P1]	FFFFFFFE Default: AF059935

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"

55. Query/Set Module iBeacon Marjor version

Send	Receive	Parameter
AT+MARJ?	OK+Get:[P1]	P1: 0x0001~0xFFFE
AT+MARJ[P1]	OK+Set:[P1]	Default: 0xFFE0

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.

56. Query/Set Module iBeacon minor

Send	Receive	Parameter
AT+MINO?	OK+Get:[P1]	P1: 0x0001,~0xFFFE
AT+MINO[P1]	OK+Set:[P1]	Default: 0xFFE1

This command is added since V517 version.

57. Query/Set Module iBeacon Measured power

Send	Receive	Parameter
AT+MEAS?	OK+Get:[P1]	P1: 0x01~ 0xFF
AT+MEAS[P1]	OK+Set:[P1]	Default: 0xC5

This command is added since V519 version.

58. Query/Set Module Work Mode

Send	Receive	Parameter
AT+MODE?	OK+Get:[P1]	P1: 0, 1, 2
AT+MODE[P1]	OK+Set:[P1]	0: Transmission Mode 1: PIO collection Mode + Mode 0 2: Remote Control Mode + Mode 0

		Default: 0
--	--	------------

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).

59. Query/Set Notify information

Send	Receive	Parameter
AT+NOTI?	OK+Get:[P1]	P1: 0, 1 0: Don't Notify 1: Notify Default: 0
AT+NOTI[P1]	OK+Set:[P1]	

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

60. Query/Set notify mode

Send	Receive	Parameter
AT+NOTP?	OK+ Get:[P1]	P1: 0, 1; default: 0
AT+NOTP[P1]	OK+ Set:[P1]	0: without address 1: with address

This command must work with "AT+NOTI1", if this switch is open, when the module connect to disconnect, the prompt string will include the remote address.

OK+CONN:001122334455 String "001122334455" is the MAC address string

Added since V534

61. Query/Set Module name

Send	Receive	Parameter
AT+NAME ?	OK+Get:[P1]	P1: module name, Max length is 12. Default: HMSoft
AT+NAME[P1]	OK+Set:[P1]	

e.g.

change module name to "bill_gates"

Send: "AT+NAMEbill_gates"

Recv: "OK+Set:bill_gates"

62. Query/Set output driver power

Send	Receive	Parameter
Query: AT+PCTL?	OK+Get:[P1]	None
Set: AT+PCTL[P1]	OK+Set:[P1]	P1: 0,1

		0:Normal power output 1:Max power output Default: 1
--	--	---

Noted: Added in V527

63. Query/Set Parity bit

Send	Receive	Parameter
Query: AT+PARI?	OK+Get:[P1]	None
Set: AT+PARI[P1]	OK+Set:[P1]	P1: 0,1,2 0: None 1: ODD 2: EVEN Default: 0 (None)

64. Query/Set PIO1 output status (System LED)

Send	Receive	Parameter
AT+PIO1?	OK+Get:[P1]	P1: 0, 1
AT+ PIO1 [P1]	OK+Set:[P1]	0: Unconnected output 500ms High then 500ms Low, after connected output High. 1: Unconnected output Low, After connected output High. Default: 0

65. Query/Set PIO pins output high or low or PWM

Send	Receive	Parameter
AT+PIO[P1]?	OK+PIO:[P1][P2]	P1: 2~B, ?
AT+PIO[P1][P2]	OK+PIO:[P1][P2]	P2: 0, 1, ? HM-11 only has 4 pins. P1 is which PIO port you want to Query/Set Value: 2,3,4,5,6,7,8,9,A,B.

		P2 is Query or setup value. "0" is low and "1" is high and "?" is query
--	--	---

Required AT+MODE0 or AT+MODE2

e.g.

Query PIO2

Send: AT+PIO2?

Setup PIO2 output high

Send: AT+PIO21

Receive: OK+PIO21

HM-10 HMSensor version: P1 value is 2~A

HM-10 HMSoft version: P1 value is 2~B

HM-11 HMSensor version: P1 value only is 2

HM-11 HMSoft version: P1 value is 2, 3

V525 added PIO2 PWM function, P2 value support 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.

66. Query/Set multiple PIO pins output high or low

Send	Receive	Parameter
AT+MPIO[P1]	OK+Set:[P1]	P1: 000 ~ 3FF; Hex format string

This command added since V551

This command is used to control multiple PIO pins output HIGH or LOW.

P1 is Hex format, max value 3FF changed to binary format is 001111111111,

Total length is 12 bit, left side to right bit mapped to module PIO0 to PIOB,

Note: HM-11 only have PIO0, PIO1, PIO2,PIO3

1: is output HIGH;

0: is output LOW.

67. Query/Set Pin Code

Send	Receive	Parameter
AT+PASS?	OK+Get:[P1]	P1: 000000~999999
AT+PASS[P1]	OK+Set:[P1]	Default: 000000

e.g.

Query Pin Code

Send: AT+PASS?

Receive: OK+Get:000000

Setup Pin Code 008888

Send: AT+PASS008888

Receive: OK+Set:008888

68. Query/Set Module Power

Send	Receive	Parameter
AT+POWE?	OK+Get:[P1]	None
AT+ POWE [P1]	OK+Set:[P1]	P1: 0 ~ 3 0: -23dbm 1: -6dbm 2: 0dbm 3: 6dbm Default: 2

69. Query/Set Module sleep type

Send	Receive	Parameter
AT+PWRM?	OK+Get:[P1]	None
AT+PWRM[P1]	OK+Set:[P1]	P1: 0~1 0: Auto sleep 1: Don't auto sleep

		Default: 1
--	--	------------

Only support peripheral role.

70. Query/Set reliable advertising mode

Send	Receive	Parameter
AT+RELI?	OK+ Get:[P1]	P1: 0, 1
AT+RELI[P1]	OK+ Set:[P1]	0: Normal advertising 1: Reliable advertising Default: 0

Note: This command is added since V530

This command is used to make sure module always send advertising package when module is in long time standby mode.

71. Restore all setup value to factory setup

Send	Receive	Parameter
AT+RENEW	OK+RENEW	None

72. Restart module

Send	Receive	Parameter
AT+RESET	OK+RESET	None

73. Query/Set Master and Slaver Role

Send	Receive	Parameter
AT+ROLE?	OK+Get:[P1]	P1: 0, 1
AT+ROLE[P1]	OK+Set:[P1]	0: Peripheral 1: Central Default: 0

74. Query RSSI Value

Send	Receive	Parameter
AT+RSSI?	OK+RSSI:[P1]	None

Require: AT+MODE1 or AT+MODE2

Required status: Connected.

This command only used by Remote device query after connected.

75. Query Last Connected Device Address

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

76. Query/Set Module Sensor work interval

Send	Receive	Parameter
AT+RAT??	OK+Get:[P1]	P1: 00~99
AT+RAT[P1]	OK+Set:[P1]	Default: 0 Unit: minute

Note: This command is only used for HMSensor

77. Query/Set Stop bit

Send	Receive	Parameter
AT+STOP?	OK+Get:[P1]	None
AT+STOP[P1]	OK+Set:[P1]	P1:0, 1 0: One stop bit 1: Two stop bit Default: 0 (One stop bit)

78. Work immediately (Switch to auto work state)

Send	Receive	Parameter
AT+START	OK+START	None

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

79. Let module into sleep mode

Send	Receive	Parameter
AT+SLEEP	OK+SLEEP	None

Only support Peripheral role.

80. Query/Set Module save connected device MAC address information

Send	Receive	Parameter
AT+SAVE?	OK+Get:[P1]	None
AT+SAVE[P1]	OK+Set:[P1]	P1: 0~1 0: Save when connected

		1: Don't Save Default: 0
--	--	-----------------------------

Note: In central role, when power on, module will check if there have a device address in internal flash, if have, module will try to connect it. If not, module will start a scan device procedure.

81. Query/Set Module discovery time when module in central role

Send	Receive	Parameter
AT+SCAN?	OK+Get:[P1]	None
AT+SCAN[P1]	OK+Set:[P1]	P1: 1 ~ 9 Unit: Second Default: 3 Seconds

Note: Add in V543

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

Send	Receive	Parameter
AT+SENS?	OK+Get:[P1]	P1: 0, 1, 2
AT+SENS[P1]	OK+Set:[P1]	0: None 1: DHT11 2: DS18B20 Default: 0

Note: This command is only use for HMSensor.

83. Query/Set if show device information when discovery

Send	Receive	Parameter
AT+SHOW?	OK+Get:[P1]	None
AT+SHOW[P1]	OK+Set:[P1]	P1: 0, 1, 2 0: Don't show information 1: Show name 2: Show RSSI 3: Show RSSI and Name Default: 0

If AT+SHOW1 is setup, AT+DISC? Command will add the device name information into scan result package.

If AT+SHOW2 is setup, AT+DISC? Command will add device RSSI information into scan result package.

If AT+SHOW3 is setup, AT+DISC? Command will add device name and RSSI information into scan result package.

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

Send	Receive	Parameter
AT+TEHU?	OK+Get:[P1][P2]	P1: 000~120 P2: 000~100

Note: This command is only use for HMSensor version.

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 directly.

iOS:

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

85. Query module temperature

Send	Receive	Parameter
AT+TEMP?	OK+Get:[P1]	P1: 000.000~255.000

HMSoft version could get internal temperature.

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

Note2: Added in V523 version, Modified at V544.

86. Set temperature information byte in advertising data

Send	Receive	Parameter
AT+TEMP[P1]	OK+Set:[P1]	P1: 0x00~0xFF Not include '?'

This command is used to set temperature information byte in advertising data.

Added in V544

87. Query/Set module connect remote device timeout value in central role

Send	Receive	Parameter
AT+TCON?	OK+Get:[P1]	None
AT+TCON[P1]	OK+Set:[P1]	P1 is timeout value. P1 value: 000000~999999 Unit is ms. Default: 000000 Connect forever

This command is only used in central role.

In central role, when module power on, if module have a saved device MAC address, then module will not into scan procedure, module will try to connect this device. This command caused module into a scan procedure if setup value is not 000000.

88. Query/Set Module Bond Mode

Send	Receive	Parameter
AT+TYPE?	OK+Get:[P1]	None
AT+TYPE[P1]	OK+Set:[P1]	P1: 0~2 0: Not need PIN Code 1: Auth not need PIN 2: Auth with PIN 3: Auth and bonded Default: 0

Important: If your module version is less than V515, please don't use this command.

Android system AT+TYPE1 is same to AT+TYPE2.

Note: Value 3 is added in V524.

89. Query/Set service UUID value

Send	Receive	Parameter
AT+UUID?	OK+Get:[P1]	P1: 0x0001~0xFFFE
AT+UUID[P1]	OK+Set:[P1]	Default: 0xFFE0

e.g. Change UUID value to 0xAAA0

Send: AT+UUID0xAAA0

Recv: OK+Set:0xAAA0

90. Query/Set UART sleep type

Send	Receive	Parameter
AT+UART?	OK+Get:[P1]	P1: 0~1
AT+UART[P1]	OK+Set:[P1]	0: When module into sleep mode, you can wake up module through UART. 1: When module into sleep mode, also shutdown UART. Default: 0xFFE0

Note: This command is only use for HMSensor version.

91. Set module advertisement data

Send	Receive	Parameter
AT+PACK<P1>	OK+Set:[P1]	P1: Length 12, Hex string 000000000000 – FFFFFFFFFFFF

Added since V607/V702

92. Query Software Version

Send	Receive	Parameter
AT+VERR?	Version Information	None
AT+VERS?		