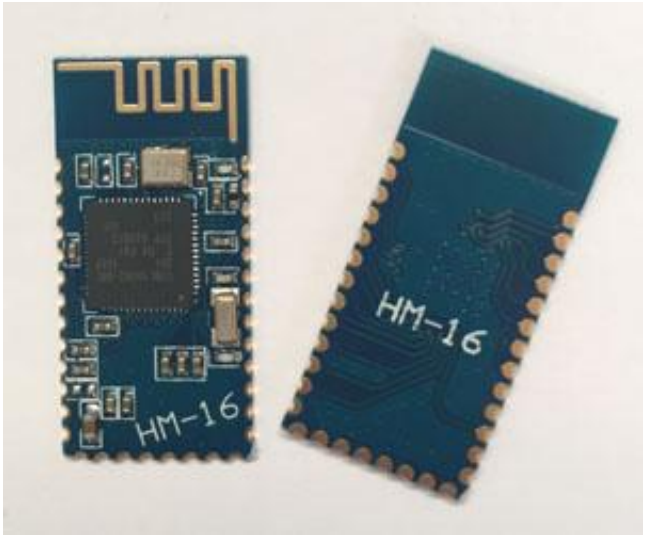
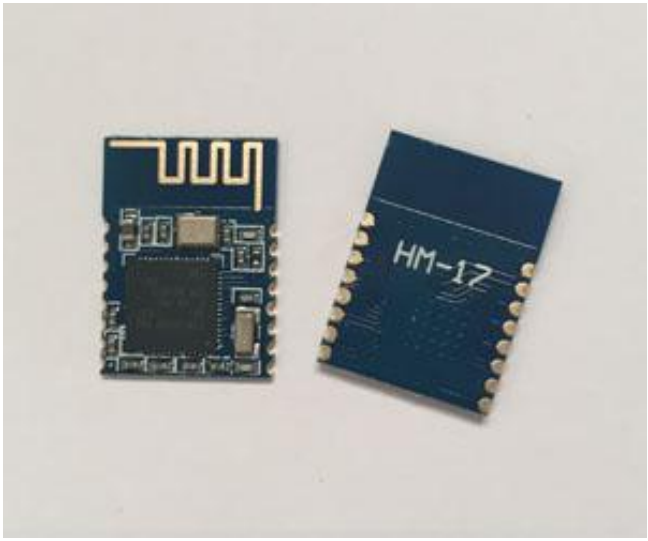

HM-16
HM-16


HM-17

JNHuamao Technology Company

Bluetooth 4.1 BLE module

Datasheet

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

Address: C-4020, Huanbao Park Jinan , 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 luetooth 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**

- BT Version: Bluetooth Specification V4.1 BLE
- Send and receive no bytes limit.
- Working frequency: 2.4GHz ISM band
- Modulation method: GFSK(Gaussian Frequency Shift Keying)
- RF Power: -18dbm ~ 3dbm, can be modify through AT Command AT+POWE.
- Speed: Asynchronous: 1-8K Bytes
  Synchronous: 1-8K Bytes
- Security: Authentication and encryption
- Service: Central & Peripheral UUID FFE0,FFE1
- Power: +1.9~5.5 VDC 50mA
- Long range: Open space have 100 Meters range
- Power: Low Power Mode 50uA~500uA, Standby mode 6mA, Active mode 10mA.
- Working temperature:–40 ~ +85 Centigrade
- Size: HM-16 27mm * 13mm * 2.2 mm
- Size: HM-17 18mm * 13mm * 2.2mm

2. Product overview

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

HM Bluetooth module use CYPress IC, Master and slave roles in one, transmission version and remote control version 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.

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-16, HM-17 is Bluetooth V4.1 BLE version. Use CYPRESS Chip.

HM-18, HM-19 is Bluetooth V4.2 BLE version. Use CYPRESS Chip.

HM-01, HM-09, HM-10, HM-12, HM-16, HM-18 have same size and same pins.

HM-06, HM-07, HM-11, HM-13, HM-17, HM-19 have same size and same pins.

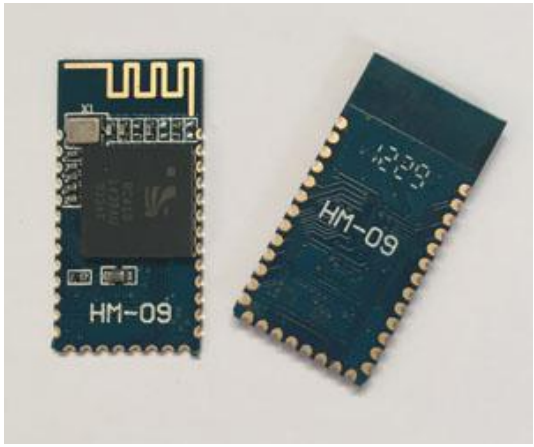
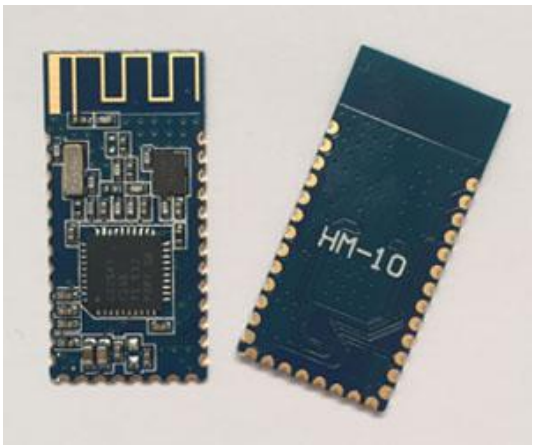
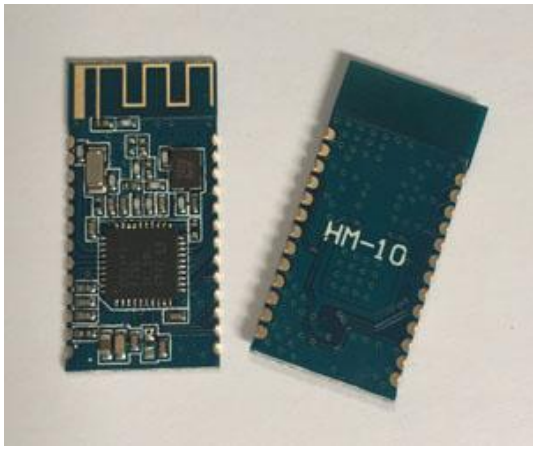
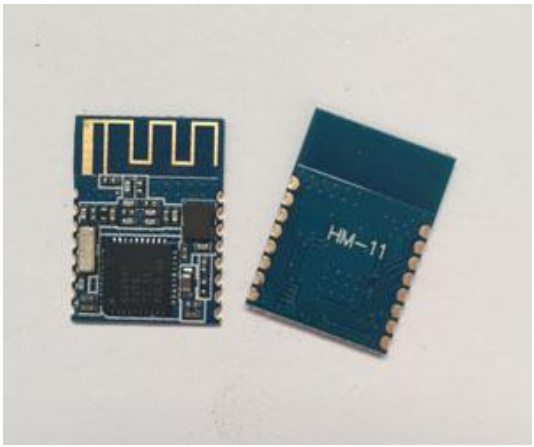
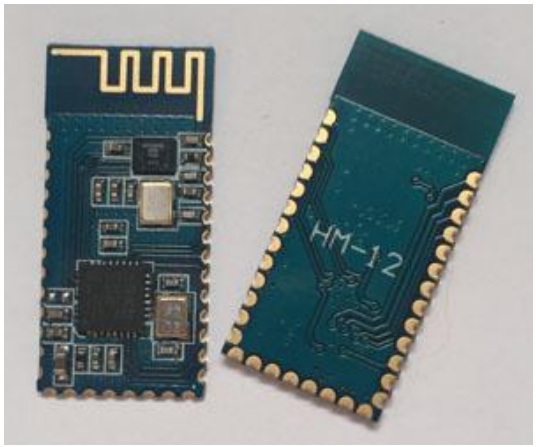
3. Product model

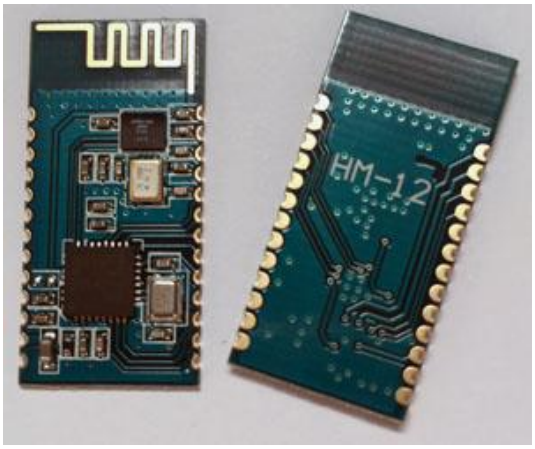
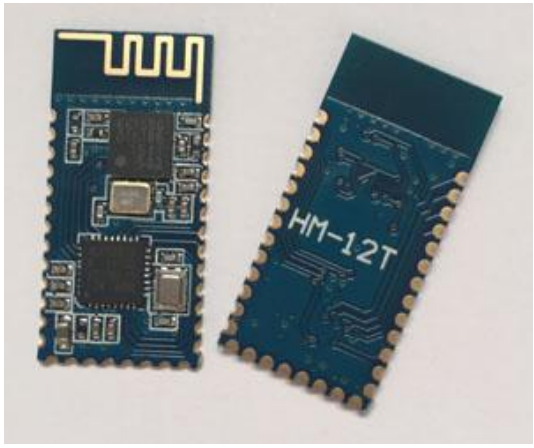
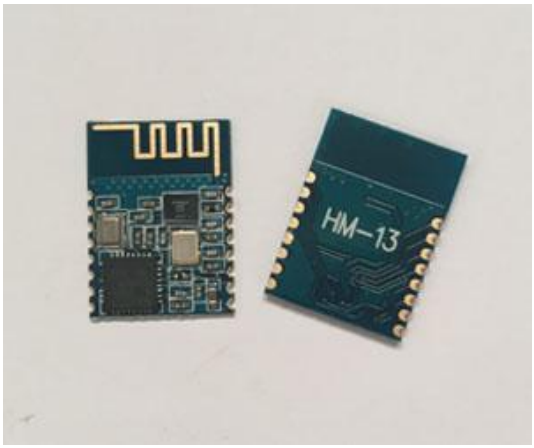
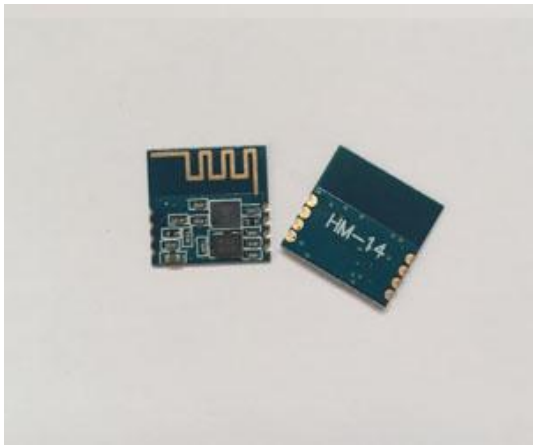
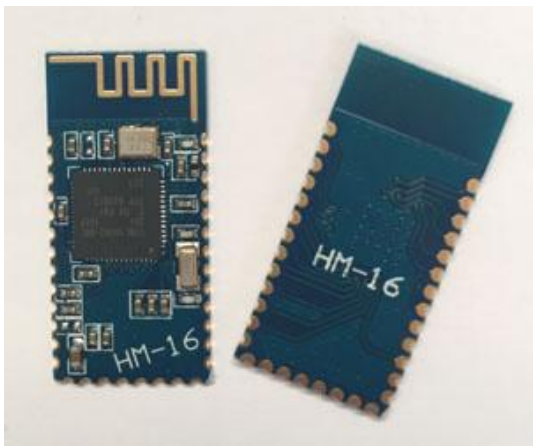
Modules	VDD	Size(mm)	Flash	Chip	BT Version
HM-01	2.5-3.7V	27 * 13 * 2.2	8M	BC417143	V2.1+EDR
HM-02A	2.5-3.7V	27 * 13 * 2.2	6M	BC31A223	V2.1
HM-02B	2.5-3.7V	27 * 13 * 2.2	6M	BC41C671	V2.1+EDR
HM-03A	2.5-3.7V	27 * 12.5 * 4.3	6M	BC31A223	V2.1
HM-03B	2.5-3.7V	27 * 12.5 * 4.3	6M	BC41C671	V2.1+EDR
HM-04A	2.5-3.7V	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	128KB		BLE V4.1
HM-17	2.1-5.5V	18 * 13 * 2.2	128KB		BLE V4.1
HM-18	2.1-5.5V	27 * 13 * 2.2	256KB		BLE V4.2
HM-19	2.1-5.5V	18 * 13 * 2.2	256KB		BLE V4.2

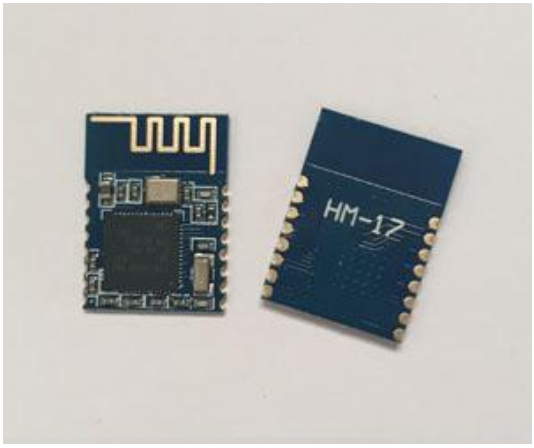
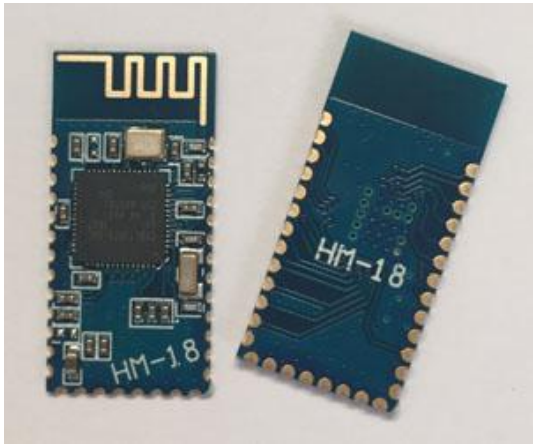
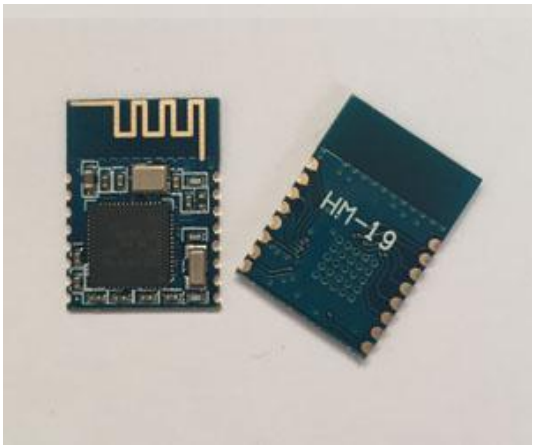
4. Product certificate

Most products have FCC-ID, CE, RoHS. You can download certification from www.jnhuamao.cn or www.huamaosoft.com

5. Product pictures

	
HM-06 EDR 2.1 **HMSoft V621**	**HM-09 EDR 2.1** **HMSoft V621**
	
HM-10S BLE 4.0 **HMSoft V544**	**HM-10C BLE 4.0** **HMSoft V544**
	
HM-11 BLE 4.0 **HMSoft V544**	**HM-12S Dual (EDR 4.0 & BLE 4.0)** **HMSoft V316**

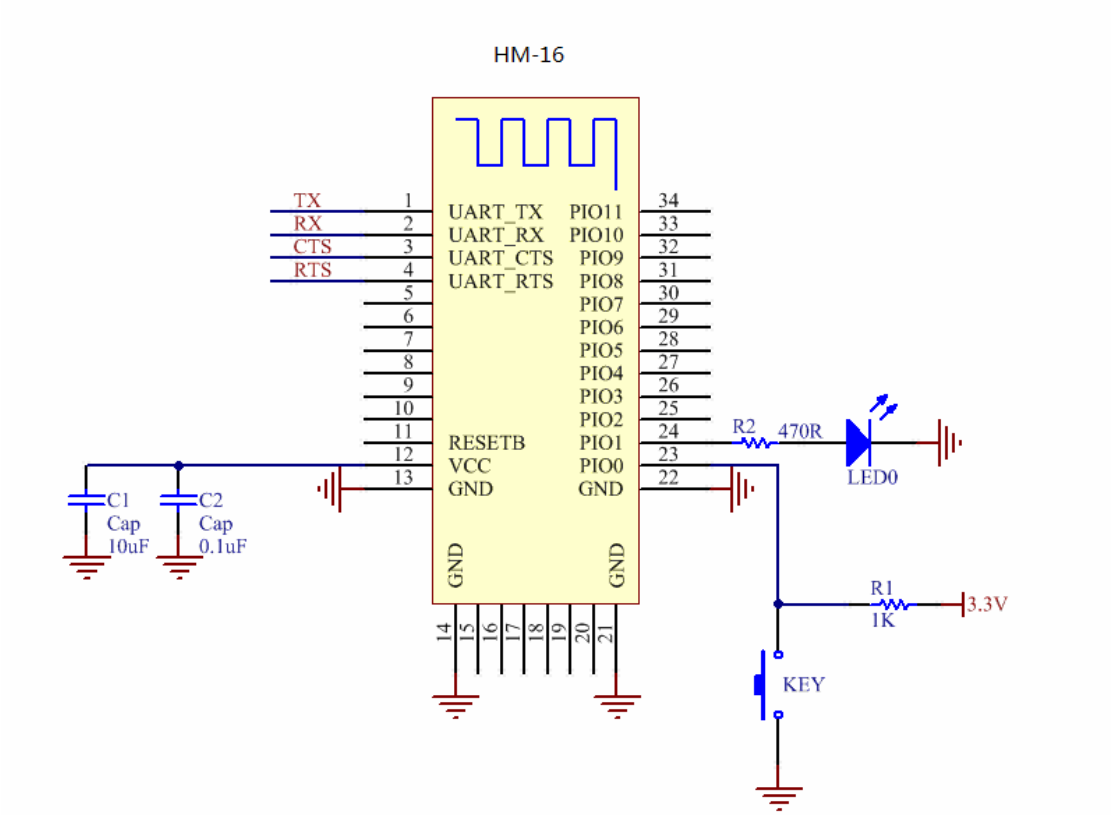
	
HM-12C Dual (EDR 4.0 & BLE 4.0) **HMSoft V316**	**HM-12T Dual (EDR 4.0 & BLE 4.0)** **HMSoft V311**
	
HM-13 Dual (EDR 4.0 & BLE 4.0) **HMSoft V316**	**HM-14 Dual (EDR 4.0 & BLE 4.0)** **HMSoft V218**
	
HM-15 BLE 4.0 USB Dongle **HMSoft V532**	**HM-16 BLE 4.1** **HMSoft V116**

	
HM-17 BLE 4.1 **HMSoft V116**	**HM-18 BLE 4.2** **HMSoft V116**
	
HM-19 BLE 4.2 **HMSoft V116**	**HM Beacon BLE 4.0** **HMBeacon V524**
WIFI **Testing** **Coming soon**	**WIFI+BLE** **Testing** **Coming soon**
HM-20	**HM-21**

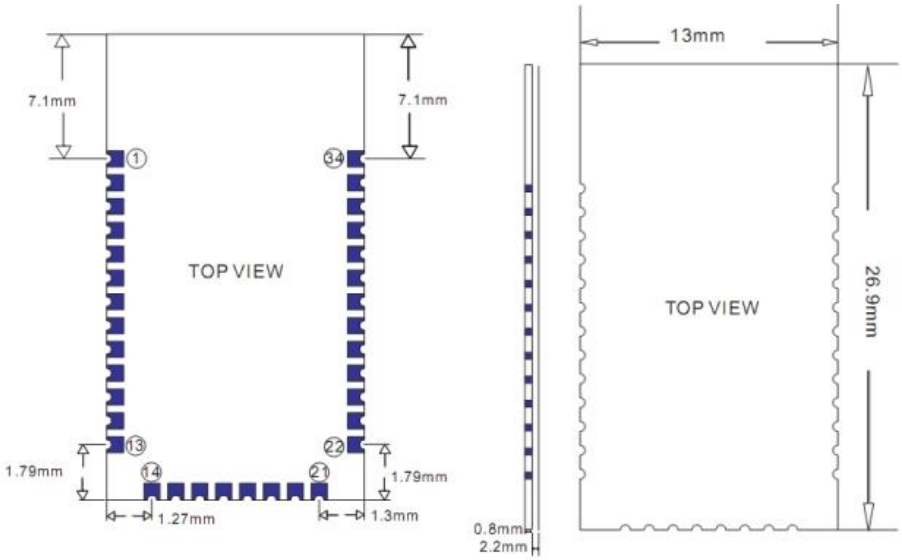
6. Product technical specifications

This document only include Bluetooth BLE 4.2 document, You can download http://www.jnhuamao.cn/bluetooth_en.rar to 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.

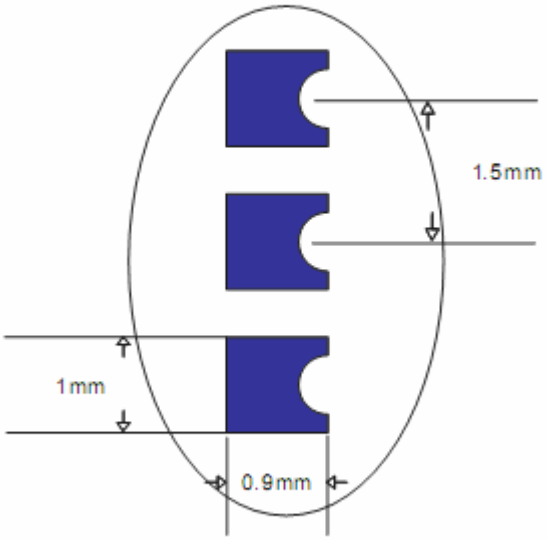
6.1 HM-16 Schematic



6.2.1 HM-16 Size



6.3 HM-16 package information



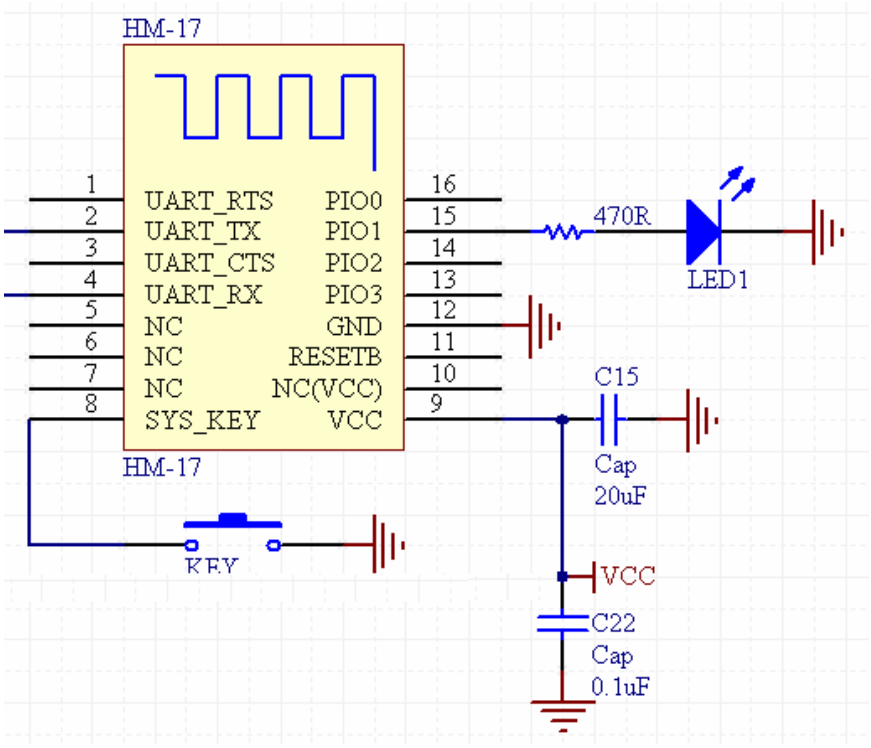
6.4 HM-16 Device Terminal Functions

Pin NO.	Name	Description	CYBL
1	UART_TX	UART interface	PIN20
2	UART_RX	UART interface	PIN19
3	UART_CTS	UART interface	PIN22
4	UART_RTS	UART interface	PIN21

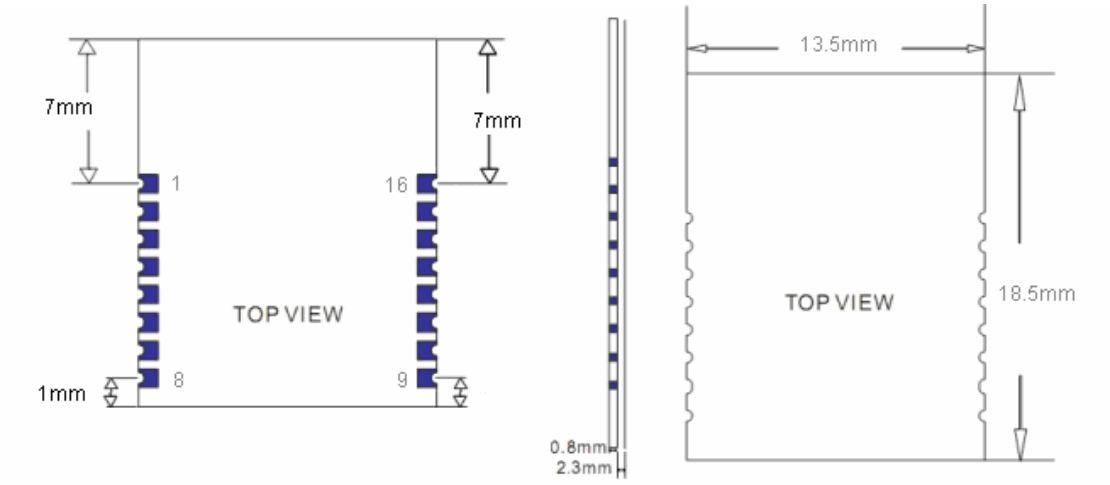
5	NC	NC	PIN27
6	NC	NC	PIN26
7	NC	NC	PIN41
8	NC	NC	PIN42
9	NC	NC	NC
10	NC	NC	NC
11	RESETB	Reset if low >100ms.	RESET
12	VCC	VCC	VCC
13	GND	Ground	Groud
14	GND	Ground	Groud
15	NC	NC	NC
16	NC	NC	NC
17	NC	NC	NC
18	NC	NC	NC
19	NC	NC	NC
20	NC	NC	NC
21	GND	Ground	Ground
22	GND	Ground	Ground
23	PIO0	System Key	PIN47
24	PIO1	System LED	PIN48
25	PIO2	input/output pin.	PIN49
26	PIO3	input/output pin	PIN50
27	PIO4	input/output pin	PIN51
28	PIO5	input/output pin	PIN52
29	PIO6	input/output pin	PIN53
30	PIO7	input/output pin	PIN54
31	PIO8	input/output pin	PIN5
32	PIO9	input/output pin	PIN6
33	PIO10	input/output pin	PIN7

34	PIO11	input/output pin	PIN8

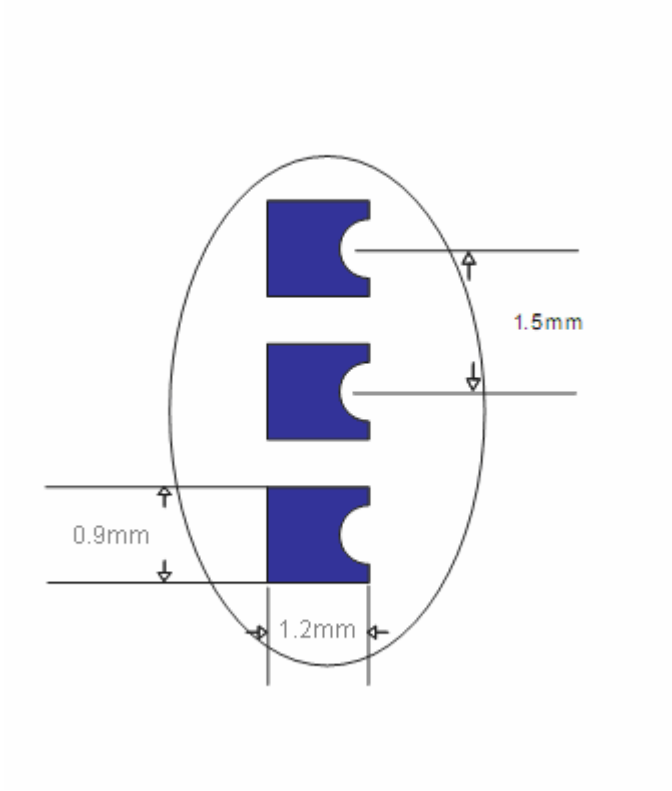
6.5 HM-17 Schematic



6.6 HM-17 Size



6.7 HM-17 Package information



6.8 HM-17 Device Terminal Functions

No	Name	Description	CYBL
1	UART_RTS	UART interface	PIN21
2	UART_TX	UART interface	PIN20
3	UART_CTS	UART interface	PIN22
4	UART_RX	UART interface	PIN19
5	NC	NC	PIN27
6	NC	NC	PIN26
7	NC	NC	PIN39
8	KEY	System KEY	PIN47
9	VCC	V3.3	VCC
10	NC	NC or VCC	
11	RESETB	Reset if low <100ms	RESET
12	GND	Ground	Ground
13	PIO3	input/output pin	PIN5
14	PIO2	input/output pin	PIN6

15	PIO1	System LED	PIN7
16	PIO0	input/output pin	PIN8

7. System function

How to wake up module from sleep mode?

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 made module wake up, and you will receive “OK+WAKE” string through UART. That string can’t include any AT commands.

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 then into sleep mode.

System advert packet

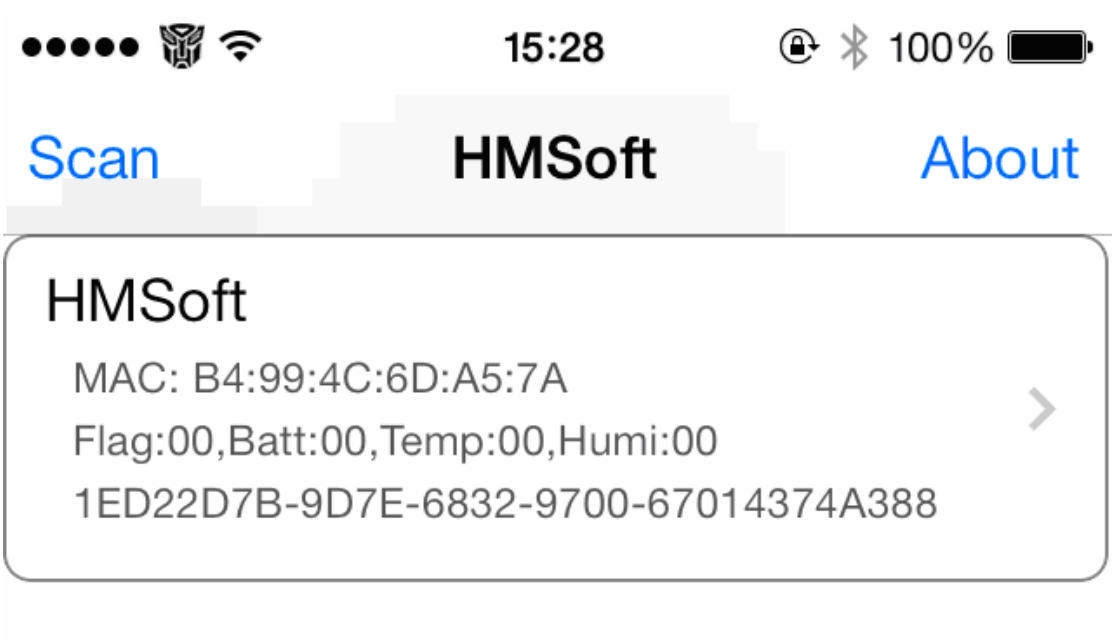
In iOS cant get model MAC address directly. So we put MAC address information into advert packet.

You can use CBAdvertisementDataManufactureDataKey property to get it, string format like follow:

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 has already connected to remote device

Module will disconnect from remote device.

7.3.3 If Module is standby mode (AT+PIO0)

Module will reset to default configuration. Then restart.

System LED function (PIO1)

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(Reserved).

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).

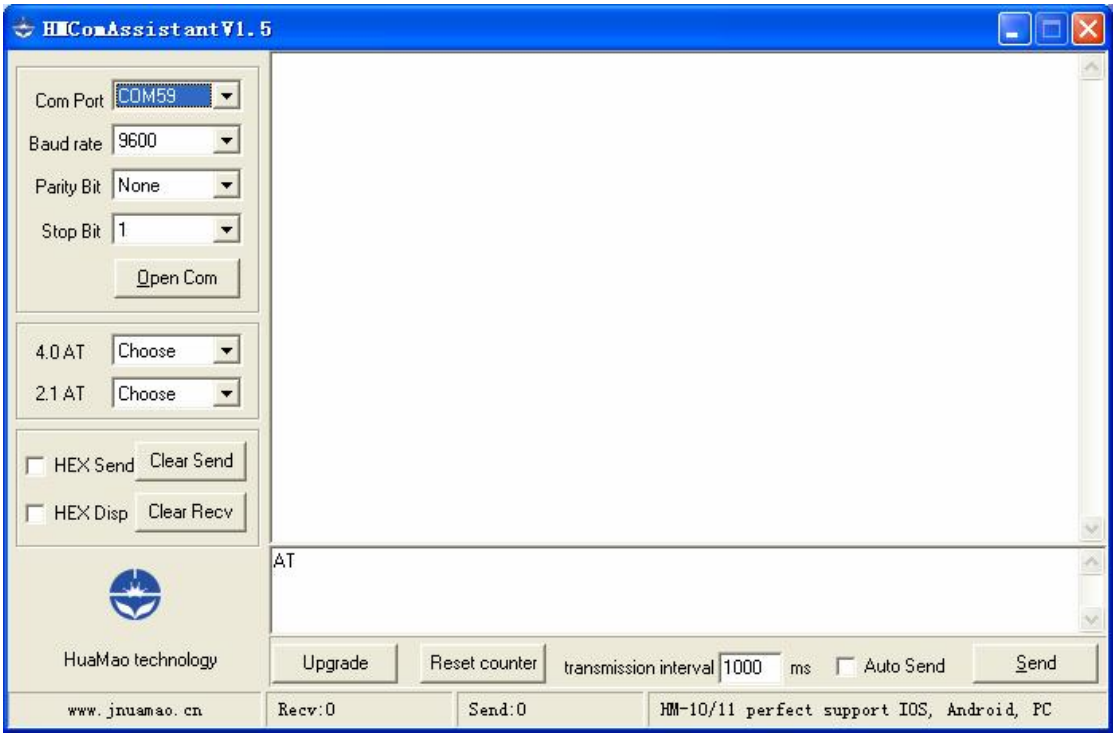
8 AT Commands

Factory default setting:

Name: HMSoft; Baud: 9600, N, 8, 1; 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 control 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.

Bluetooth V2.1 version Command is not here, please download datasheet from http://www.jnhuamao.cn/Bluetooth_en.rar

1. Test Command Or Disconnect command

Send	Receive	Parameter
AT	OK OK+LOST	None

If Module is not connect to remote device will receive: “OK”

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

2. 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:[P]	None
AT+ADVI[P]	OK+ Set:[P]	P: 0 ~ F 0: 100ms 1: 152.5 ms 2: 211.25 ms 3: 318.75 ms 4: 417.5 ms 5: 546.25 ms 6: 760 ms 7: 852.5 ms 8: 1022.5 ms 9: 1285 ms A: 2000ms B: 3000ms C: 4000ms D: 5000ms E: 6000ms F: 7000ms

		Default: 9 Default: 0

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.

4. Query/Set Advertising Type

Send	Receive	Parameter
AT+ADTY?	OK+ Get:[P]	None
AT+ADTY[P]	OK+ Set:[P]	P: 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

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

Send	Receive	Parameter
AT+AFTC?	OK+ Get:[P]	None
AT+AFTC[P]	OK+ Set:[P]	P: 000~ 3FF (HM-16) P: 000~ B00 (HM-17) Default: 000

3FF == 001111111111, Left to right side is map to PIO0~PIOB, For HM-16 PIO0 and PIo1 is used by system. Only Pio2~PIOB pins is available. For HM-17 only PIO0, PIO2, PIO3 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.

6. Query/Set Module pin output state, After power on

Send	Receive	Parameter
AT+BEFC?	OK+ Get:[P]	P: 000~ 3FF (HM-16) P: 000~ B00 (HM-17) Default: 000
AT+BEFC[P]	OK+ Set:[P]	

3FF == 001111111111, left to right side is map to PIO0~PIOB, For HM-16 PIO0 and PIo1 is used by system. Only Pio2~PIOB pins is available. For HM-17 only PIO0, PIO2, PIO3 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.

7. Query/Set battery monitor switch (*)

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

*Doesn’t support yet

8. Query battery information(*)

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

*Doesn’t support yet

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 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.

9. Query/Set baud rate

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

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.

10. 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 0xABCD

Send: AT+CHAR0xABCD

Recv: OK+Set:0xABCD

11. Query/Set Minimum Link Layer connection interval

Send	Receive	Parameter
AT+COMI?	OK+Get:<P1>	P1: 0 ~ 9
AT+COMI<P1>	OK+Set:<P1>	Default: 0(7.5ms)

P1 Value: 0: 7.5ms; 1: 10ms; 2: 15ms; 3: 20ms; 4: 25ms; 5: 30ms; 6: 35ms; 7: 40ms; 8: 45ms; 9: 4000ms

12. Query/Set Maximum Link Layer connection interval

Send	Receive	Parameter
AT+COMA?	OK+Get:<P1>	P1: 0 ~ 9
AT+COMA<P1>	OK+Set:<P1>	Default: 3(20ms)

P1 Value: 0: 7.5ms; 1: 10ms; 2: 15ms; 3: 20ms; 4: 25ms; 5: 30ms; 6: 35ms; 7: 40ms; 8: 45ms; 9: 4000ms

13. 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

14. Query/Set Maximum Link Layer connection interval

Send	Receive	Parameter
AT+COSU?	OK+Get:<P1>	P1: 0 ~ 6 Default: 6(6000ms)
AT+COSU<P1>	OK+Set:<P1>	

P1 Value: 0: 100ms; 1: 1000ms; 2: 2000ms; 3: 3000ms; 4: 4000ms; 5: 5000ms; 6: 6000ms;

15. Query/Set The Switch of update connection Parameter

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

This command is only use when module is in slave role.

Note: This command is added since V116

16. Clear Last Connected device address

Send	Receive	Parameter
AT+CLEAR	OK+CLEAR	None

17. Try connect to last succeeded device

Send	Receive	Parameter
AT+CONNL	OK+CONN<P1>	Para1: L, E, F, N L: Connecting E: Connect error F: Connect Fail N: No Address

Notice: This command is used for central role. Must set up AT+IMME1 and AT+ROLE1 first.

If remote device has already connected to other device or shutdown, "OK+CONNF" will be receive after about 10 seconds.

18. Try to connect a address use array index after AT+DISC?

Send	Receive	Parameter
AT+CONN<P1>	OK+CONN<P2>	P1: 0~5 P2: A: Connecting E: Connect error F: Connect Fail

Notice: Only Central role is used. Must set up AT+IMME1 and AT+ROLE1 first.

If remote device has already connected to other device or shutdown, “OK+CONNF” will receive after about 10 seconds.

19. Try to connect an address

Send	Receive	Parameter
AT+CO<P0><P1>	OK+CO<P0><P0><P2>	P0: N, 1 N: Normal Address 1: Dual module Addr P1: Address Like: 0017EA090909 P2: A, E, F A: Connecting E: Connect error F: Connect Fail

Notice: Only central role is used. Must set up AT+IMME1 and AT+ROLE1 first.

If remote device has already connected to other device or shut down, “OK+CONNF” 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

20. Start a device discovery scan

Send	Receive	Parameter
AT+DISC?	OK+DIS<P0><P1>	P0: C, 0, 1, 2 C: Common string 0~2: Address type P1: S, E, [MAC String] S: Start discovery E: End discovery MAC String : Device MAC string

This command require AT+IMME1 and AT+ROLE1 support.

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 then Name information as follow

Recv: OK+NAME: xxx

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

Recv: OK+DIS<P0>:234567890123

Recv: OK+NAME: xxx

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

…..(Before V535 max results is 6, Since V535 not limit)

Recv: OK+DISCE

Connect use array index:

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

Connect use MAC string: AT+CON[MAC String]

21. Start a iBeacon device discovery scan

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

This command require AT+IMME1 and AT+ROLE1 support.

e.g.

Send: AT+DISC?

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; P1 length is 32; P2 length is 10; P3 length is 12, P4 length is 4

P2 include Major Value (length 4);

Minor Value (length 4);

Measured Power (length 2)

If the device not enable iBeacon function, P0, P1, P2 will use ‘0′ fill.

Note: Added since V539

22. 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.

23. Query/Set flow control switch (%)

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

* Doesn't support yet

24. Query/Set module TX gain

Send	Receive	Parameter
AT+GAIT?	OK+ Get:<P1>	P1: 0, 1 0: No TX gain 1: High TX gain Default: 0
AT+GAIT<P1>	OK+ Set:<P1>	

25. Query/Set module RX gain

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

26. System Help Information

Send	Receive	Parameter
AT+HELP?	Help Information	None

27. Query/Set Module work type

Send	Receive	Parameter
AT+IMME?	OK+ Get:<P1>	P1: 0, 1 1: When module is powered on, only respond the AT Command, don't do anything. Until AT + START, AT+CON, AT+CONNL,
AT+IMME<P1>	OK+ Set:<P1>	

		AT+DISC?, AT+DISI? commands is received. 0: When power on, module will start work immediately Default: 0

This command is only used for Central role.

28. Query/Set Module iBeacon switch

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

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

This command is added since V517 version.

29. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE0?	OK+Get:<P1>	Para1: 00000001~FFFFFFFE Default: 74278BDA
AT+IBE0<P1>	OK+Set:<P1>	

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”

30. Query/Set iBeacon UUID

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

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"

31. Query/Set iBeacon UUID

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

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+IBE3?	OK+Get:<P1>	P1: 00000001~ FFFFFFFE Default: AF059935
AT+IBE3<P1>	OK+Set:<P1>	

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 Module iBeacon Marjor version

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

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.

34. 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.

35. 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.

36. Query/Set Module Work Mode

Send	Receive	Parameter
AT+MODE?	OK+Get:<P1>	P1: 0, 1, 2 0: Transmission Mode 1: Reserved 2: Remote Control Mode + Mode 0 Default: 0
AT+MODE<P1>	OK+Set:<P1>	

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 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).

37. 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 output OK+CONN or OK+LOST string through UART.

38. Query/Set notify mode

Send	Receive	Parameter
Q: AT+NOTP?	OK+ Get<P1>	P1: 0, 1; default: 0 0: without address 1: with address
S: AT+NOTP<P1>	OK+ Set<P1>	

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

39. Query/Set Module name

Send	Receive	Parameter
AT+NAME?	OK+NAME<P1>	P1: module name, Max

AT+NAME<P1>	OK+Set<P1>	length is 13. Default: HMSoft

e.g.

change module name to bill_gates

Send: AT+NAMEbill_gates

Receive: OK+SetName:bill_gates

40. Query/Set Parity bit

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

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

Send	Receive	Parameter
AT+PIO1?	OK+Get:<P1>	P1: 0, 1 0: Unconnected Output 500ms High 500ms Low, Connected output High. 1: Unconnected output Low, Connected output High. Default: 0
AT+PIO1 <P1>	OK+Set:<P1>	

42. 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<P1>?	OK+PIO:<P1>[para2]	Para1: 2~B, ? Para2: 0, 1, ? HM-11 only has 4 pins.
AT+PIO<P1>[para2]	OK+PIO:<P1>[para2]	

		Para1 is which PIO pin you want to Query/Set Value: 2,3,4,5,6,7,8,9,A,B. Para2 is Query or setup value. “0” is low and “1” is high and “?” is query

e.g.

Query PIO2

Send: AT+PIO2?

Setup PIO2 output high

Send: AT+PIO21

Receive: OK+PIO21

HM-16 HMSensor version: para1 value is 2~A

HM-16 HMSoft version: para1 value is 2~B

HM-17 HMSensor version: para1 value is 2

HM-17 HMSoft version: para1 value is 2, 3

43. Query/Set Pin Code(*)

Send	Receive	Parameter
AT+PASS?	OK+Get:<P1>	Para1 is Pin Code, 000000~999999 Default: 000000
AT+PASS<P1>	OK+Set:<P1>	

e.g.

Query Pin Code

Send: AT+PIN?

Receive: OK+PIN:000000

Setup Pin Code 008888

Send: AT+PIN008888

Receive: OK+Set:008888

Removed since V116, doesn't support pair function

44. Query/Set Module sleep type

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

Only support peripheral role.

45. Query/Set Module Power

Send	Receive	Parameter
AT+POWE?	OK+Get:<P1>	None
AT+POWE <P1>	OK+Set:<P1>	Para: 0 ~ 7 0: -18dbm 1: -12dbm 2: -6dbm 3: -3dbm 4: -2dbm 5: -1dbm 6: 0dbm 7: 3dbm Default: 6

46. Query/Set reliable advertising mode

Send	Receive	Parameter
AT+RELI?	OK+ Get:<P1>	Para1: 0, 1 0: Normal advertising 1: Reliable advertising Default: 0
AT+RELI<P1>	OK+ Set:<P1>	

47. Restore all setup value to factory setup

Send	Receive	Parameter
AT+RENEW	OK+RENEW	None

48. Restart module

Send	Receive	Parameter
AT+RESET	OK+RESET	None

49. Query/Set Master and Slaver Role

Send	Receive	Parameter
AT+ROLE?	OK+Get:<P1>	Para1: 0, 1 0: Peripheral 1: Central Default: 0
AT+ROLE<P1>	OK+Set:<P1>	

50. Query RSSI Value

Send	Receive	Parameter
AT+RSSI?	OK+RSSI:<P1>	None

Require: AT+MODE<P1>, P1 value > 0

This command is used by remote device query RSSI value when connected.

51. Query Last Connected Device Address

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

52. Query/Set BLE talk method

Send	Receive	Parameter
AT+RESP?	OK+Get:<P1>	None
AT+RESP<P1>	OK+Set:<P1>	Para1: 0, 1, 2 0: Writewithoutresponse 1: Writewithresponse 2: Both 0 and 1 Default: 0

53. Query/Set PIO0 function (System KEY)

Send	Receive	Parameter
AT+SYSK?	OK+Get:[P]	Para1: 0, 1 0: Only cancel operate, 1: When module is standby, restore factory setting. Default: 1
AT+SYSK[P]	OK+Set:[P]	

54. Query/Set Stop bit

Send	Receive	Parameter
AT+STOP?	OK+Get:<P1>	None
AT+STOP<P1>	OK+Set:<P1>	Para1:0, 1 0: One stop bit 1: Two stop bit Default: 0 (One stop bit)

55. Set Module into sleep mode

Send	Receive	Parameter
AT+SLEEP	OK+SLEEP	None

Only support Peripheral role.

56. Work immediately

Send	Receive	Parameter
AT+START	OK+START	None

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

57. Query/Set Module scan time

Send	Receive	Parameter
AT+SCAN?	OK+Get:<P1>	None
AT+SCAN<P1>	OK+Set:<P1>	Para1: 1~5 1: 1 Second 2: 2 Seconds

		3: 3 Seconds 4: 4 Seconds 5: 5 Seconds Default: 3

This parameter is used for AT+DISC or AT+DISC

58. Query/Set Module save connected address parameter

Send	Receive	Parameter
AT+SAVE?	OK+Get:<P1>	None
AT+SAVE<P1>	OK+Set:<P1>	Para1: 0~1 0:Save when connected 1:Don't Save Default: 0

59. Query/Set discovery parameter

Send	Receive	Parameter
AT+SHOW?	OK+Get:<P1>	None
AT+SHOW<P1>	OK+Set:<P1>	Para1: 0~1 0:Don't show name 1:Show name Default: 0

If AT+SHOW1 is setup, AT+DISC? Command will show you device name information.

60. Query/Set service UUID

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

e.g. Change UUID value to 0xAAAA

Send: AT+UUID0xAAAA

Recv: OK+Set:0xAAAA

61. Query Software Version

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

Resource:

Bluetooth Module 2.1 datasheet:

http://www.jnhuamao.cn/Bluetooth_en.zip

Bluetooth Module 4.0 datasheet:

http://www.jnhuamao.cn/Bluetooth40_en.zip

Bluetooth Module 4.0 USB Dongle

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