

HC-08 and CC41-A is the copycat
company copied behavior on HM-10!!!!!!
If you buy a fake, please apply for a refund
guarantee your legitimate rights and
interests



JNHuaMao Technology Company

Bluetooth 4.0 BLE module

Datasheet

- 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

Address: D-4020, Qilu soft zone

Jinan city, Shandong, China

Telephone: (86) 0531-85117999

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

Mail: webmaster@jnhuamao.cn

**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

1. Product parameters

- Ø BT Version: Bluetooth Specification V4.0 BLE
- Ø Working frequency: 2.4GHz ISM band
- Ø Modulation method: GFSK(Gaussian Frequency Shift Keying)
- Ø RF Power: -23dbm, -6dbm, 0dbm, 6dbm
- Ø Speed: Asynchronous: 6K Bytes
Synchronous: 6K Bytes
- Ø Security: Authentication and encryption
- Ø Service: UUID FFE0, FFE1
- Ø Power: +3.3VDC 50mA
- Ø Power: Active state 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 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-02A	2.5-3.7V	26.9*13*2.2	6M	BC31A223	V2.1
HM-02B	2.5-3.7V	26.9*13*2.2	6M	BC41C671	V2.1+EDR
HM-03A	2.5-3.7V	27.4*12.5*4.3	6M	BC31A223	V2.1
HM-03B	2.5-3.7V	27.4*12.5*4.3	6M	BC41C671	V2.1+EDR
HM-04A	3.3V	Not for sale			
HM-04B	3.3V	Not for sale			
HM-05/06A	2.5-3.7V	13.5*18.5*2.3	6M	BC31A223	V2.1
HM-05/06B	2.5-3.7V	13.5*18.5*2.3	6M	BC41C671	V2.1+EDR
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	2-3.7V	13.5*18.5*2.2	256Kb	CC2540/1	V4.0 BLE
HM-15	5V	65*32*16	256Kb	CC2540	V4.0 BLE

4. Product certificate

CERTIFICATE OF CONFORMITY		
	CERTIFICATE	
	of Conformity	
	Reference No.: LCS120702006TS	
	Applicant	: Jinan Huamao Technology Co., Ltd.
	Address	: Room 4020, South Area, Building #C, Environmental Science and Technology Park, No.554 Zhengfeng Road, High Tech Zone, Jinan, Shangdong, China
	Product	: Bluetooth Module
	Model(s)	: HM-XX (XX stand for 01-99)
	Parameters	: 2.5-3.7V ---, 500mA
	<p>The submitted products have been tested by us with the listed standards and found in compliance with the following European Directives:</p> <p>The LVD Directive 2006/95/EC</p> <p>EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011</p> <p>The tests are performed in normal operation mode. The test results apply only to the particular sample tested and to the specific tests carried out. This certificate applies specifically to the sample investigated in our test reference number only.</p> <p>The CE markings as shown below can be affixed on the product after preparation of necessary technical documentation.</p> <p>Other relevant Directives have to be observed.</p>	
		
 Manager July 04, 2012		
<p>Shenzhen LCS Compliance Testing Laboratory Ltd. Xingyuan Industrial Park, Tongtia Road, Bao'an Blvd., Bao'an District, Shenzhen, Guangdong, China Tel: (86)755-82581330 Fax: (86)755-82581332 Http://www.LCS-cert.com Email: webmaster@LCS-cert.com</p>		

CERTIFICATE OF CONFORMITY



CERTIFICATE

of Conformity

Certificate No.: LCS-12070701

Applicant : Jinan Huamao Technology Co., Ltd

Address : Room 4020, South Area, Building #C, Environmental Science and Technology Park, No.554 Zhengfeng Road, High Tech Zone, Jinan, Shandong, China

Product : Bluetooth Module

Model(s) : HM-XX (XX stand for 01-99)

Trade Mark : N/A

The submitted products have been tested by us with the listed standards and found in compliance with the following European Directives.

The R&TTE Directive 1999/5/EC

Applied Standards	Report No.
Article 3.2: Effective Use of The Radio Spectrum ETSI EN 300 328 V1.7.1 (2006-10)	LCS120702006TE
Article 3.1b): Electromagnetic Compatibility ETSI EN 301 489-17 V2.1.1 (2009-05)	LCS120702007TE
Article 3.1a): Health and Safety EN 62479: 2010	LCS120702006TH
EN 60950-1: 2006+A11: 2009+A1:2010+A12:2011	LCS120702006TS

The tests were performed in normal operation mode. The test results apply only to the particular sample tested and to the specific tests carried out. This certificate applies specifically to the sample investigated in our test reference number only.

The CE markings as shown below can be affixed on the product after preparation of necessary technical documentation.

Other relevant Directives have to be observed.





Shenzhen LCS Compliance Testing Laboratory Ltd.

1F., Xingyuan Industrial Park, Tongde Road, Bao'an Blvd.,

Bao'an District, Shenzhen, Guangdong, China











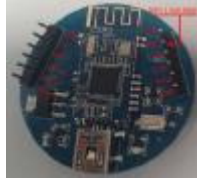

Tel: (86)755-82591330

Http://www.LCS-cert.com

Fax: (86)755-82591332

Email: webmaster@lcs-cert.com

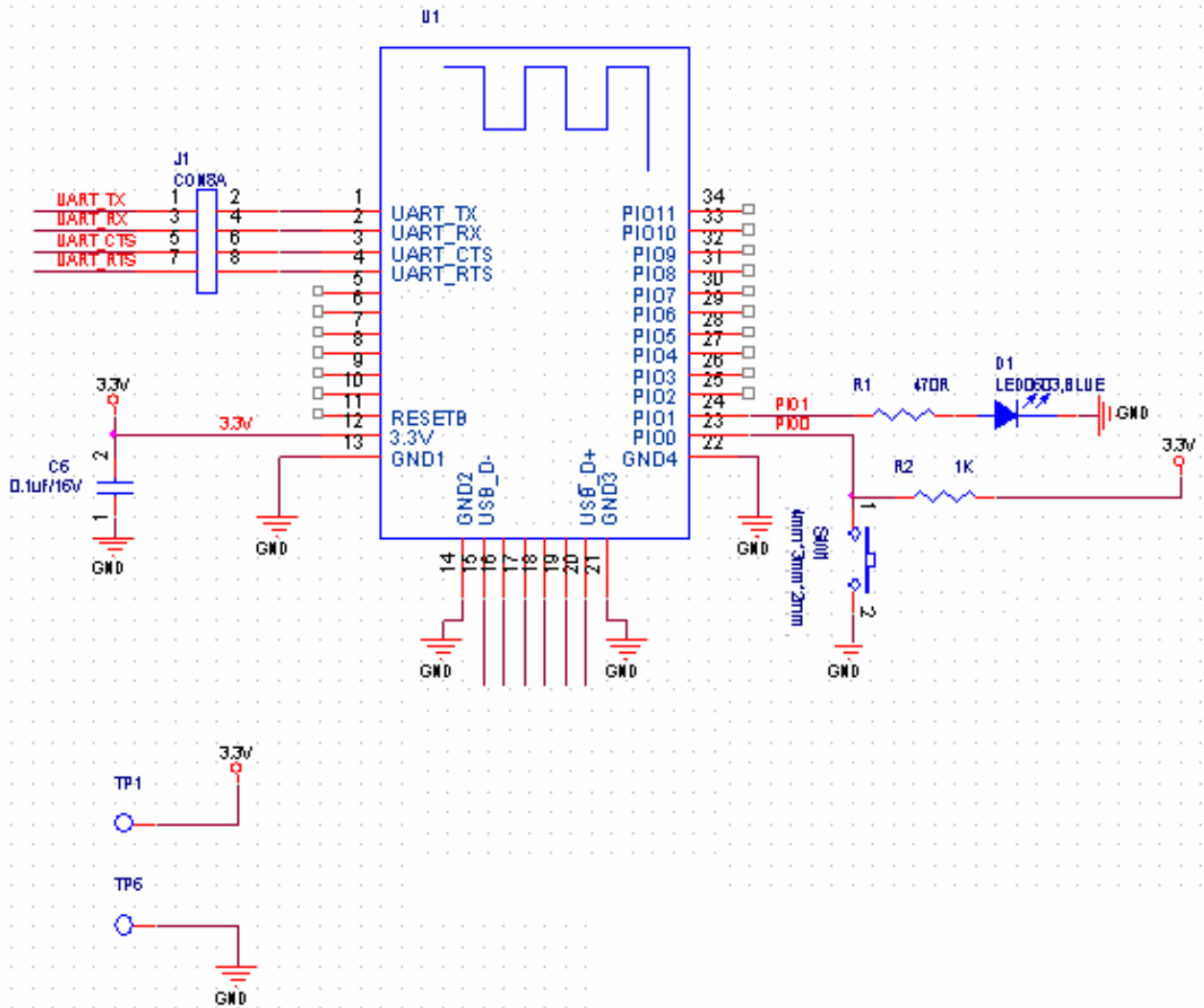
5. Product pictures

			Not for sale	
HM-01 BT 2.1	HM-02 BT 2.1	HM-03 BT 2.1	HM-04 BT 2.1	HM-05 BT 2.1
		Class1 Testing		
HM-06 BT 2.1	HM-07 BT 2.1	HM-08 BT 2.1	HM-09 BT 2.1	HM-10 BLE 4.0
	Dual mode Testing			
HM-11 BLE 4.0	HM-12 HM-13	HM-15 USB Dongle	HMSensor	

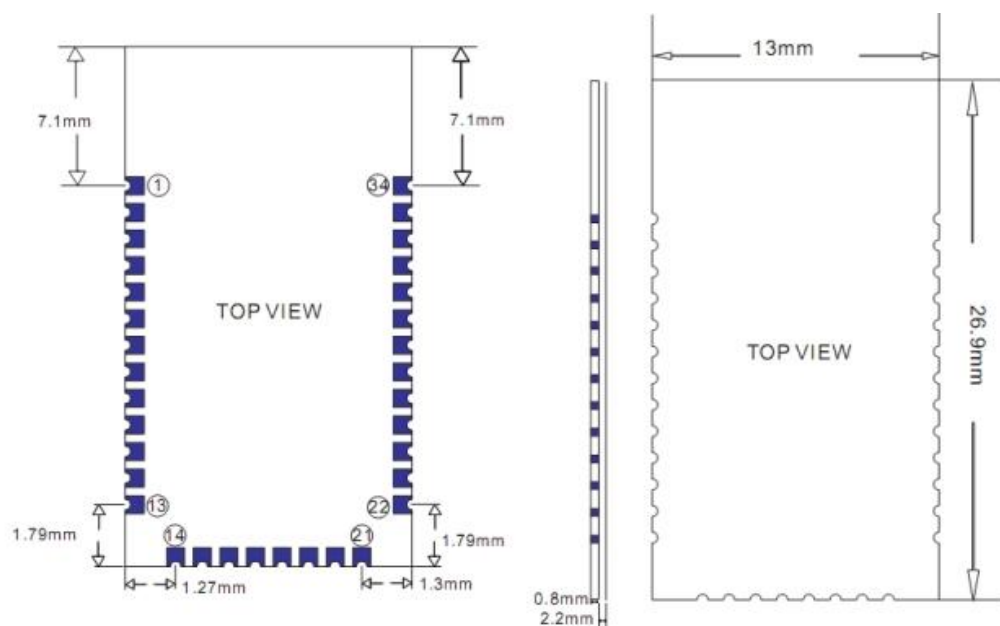
6. Product technical specifications

This document only include Bluetooth BLE 4.0 document, You can goto 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.

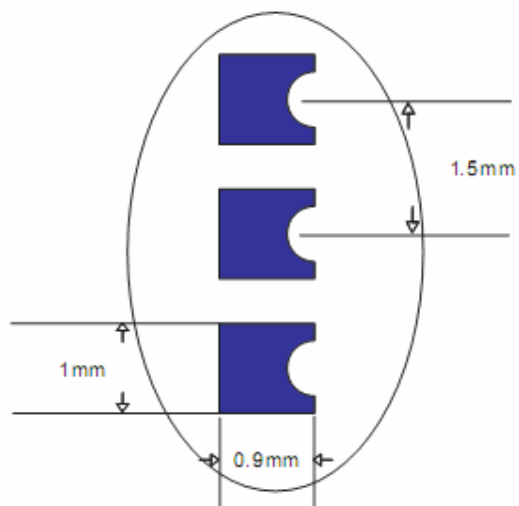
6.1 HM-10 Schematic



6.2 HM-10 Size



6.3 HM-10 package information



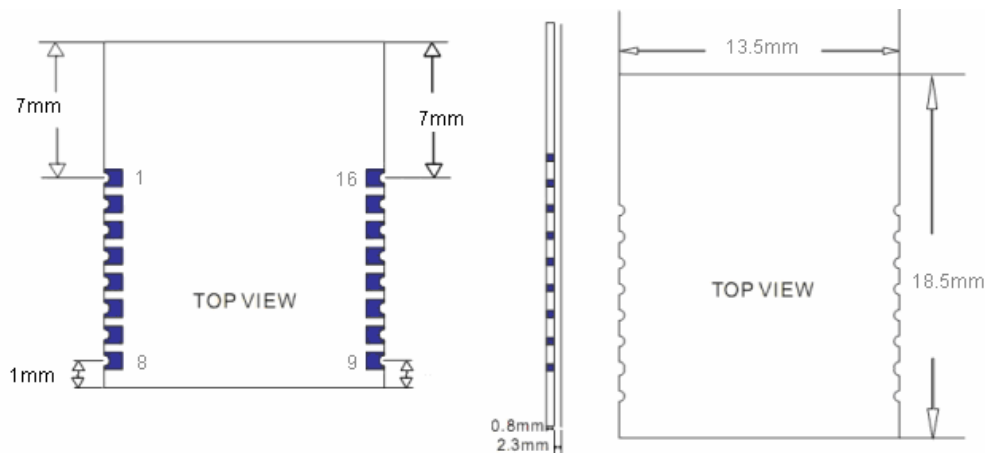
6.4 HM-10 Device Terminal Functions

No	Name	Description
1	UART_TX	UART interface
2	UART_RX	UART interface
3	UART_CTS	UART interface

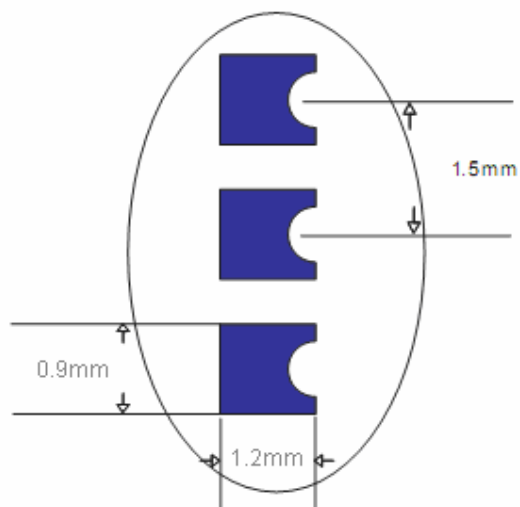
4	UART_RTS	UART interface
5	NC	NC
6	NC	NC
7	NC	NC
8	NC	NC
9	NC	NC
10	NC	NC
11	RESETB	Reset if low >100ms.
12	VCC	3.3V
13	GND	Ground
14	GND	Ground
15	USB_D-	USB interface
16	NC	NC
17	NC	NC
18	NC	NC
19	NC	NC
20	UB_D+	USB interface
21	GND	Ground
22	GND	Ground
23	PIO0	System Key
24	PIO1	System LED
25	PIO2	Programmable input/output line
26	PIO3	Programmable input/output line
27	PIO4	Programmable input/output line
28	PIO5	Programmable input/output line
29	PIO6	Programmable input/output line
30	PIO7	Programmable input/output line
31	PIO8	Programmable input/output line
32	PIO9	Programmable input/output line

33	PIO10	Programmable input/output line
34	PIO11	Programmable input/output line

6.5 HM-11 Size



6.6 HM-11 Package information



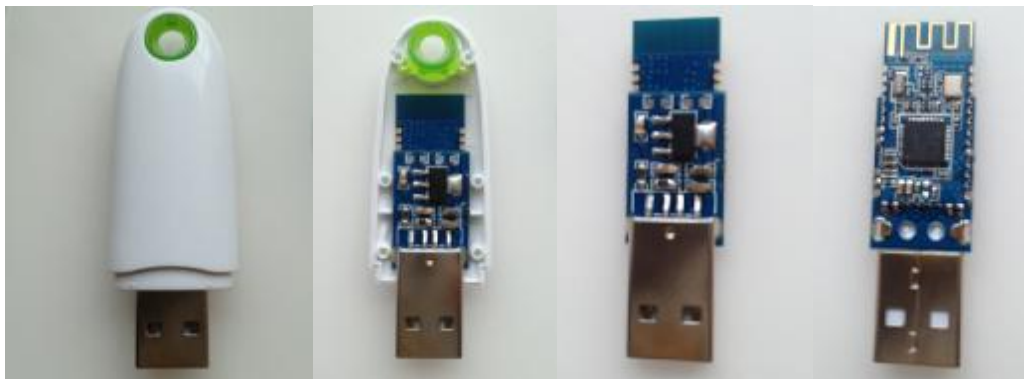
6.7 HM-11 Device Terminal Functions

No	Name	Description
1	UART_RTS	UART interface
2	UART_TX	UART interface

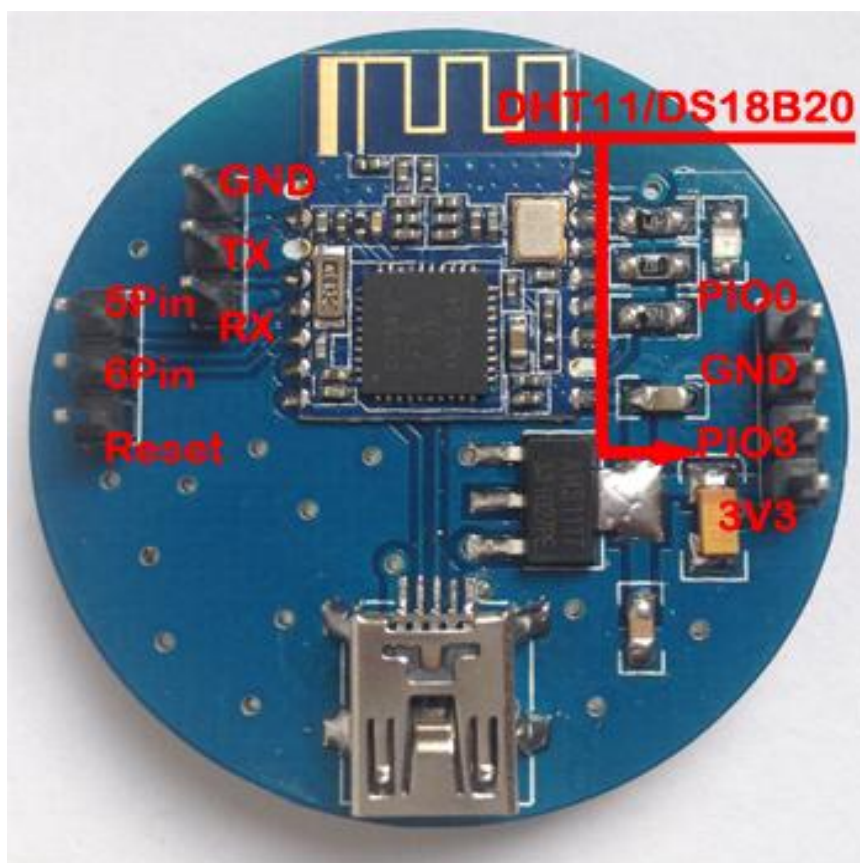
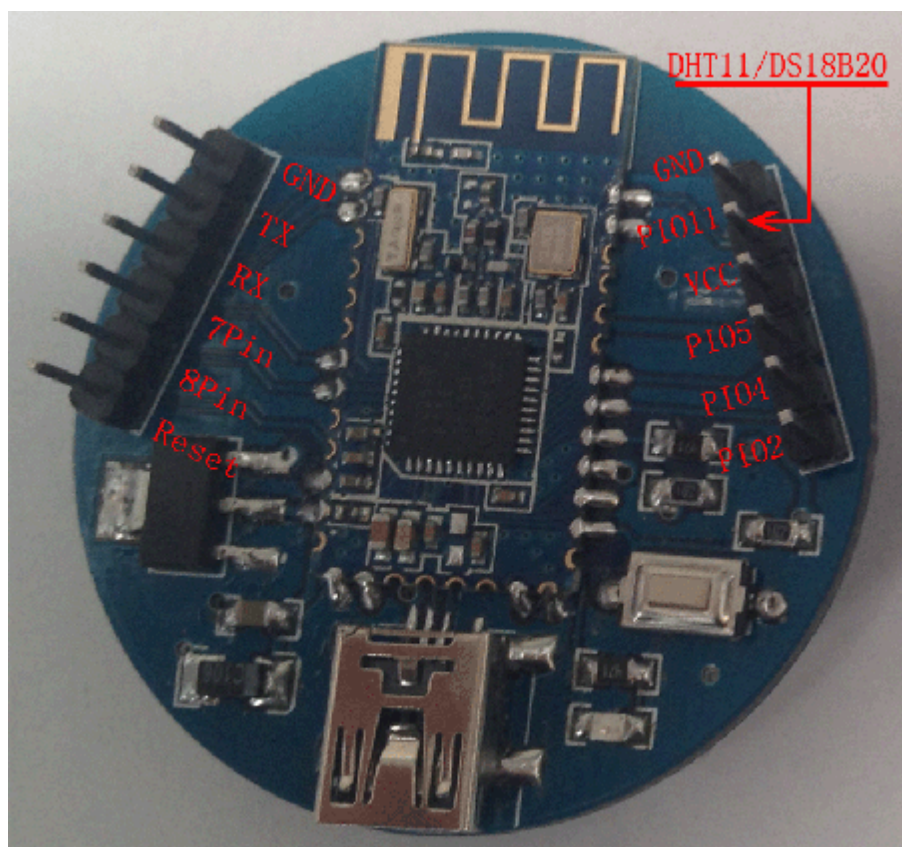
3	UART_CTS	UART interface
4	UART_RX	UART interface
5	NC	NC
6	NC	NC
7	NC	NC
8	NC	NC
9	VCC	V3.3
10	NC	NC or VCC
11	RESETB	Reset if low <100ms
12	GND	Ground
13	PIO3	Programmable input/output line
14	PIO2	Programmable input/output line
15	PIO1	System LED
16	PIO0	System KEY

6.8 HM-15

HM-15 is USB Dongle base on HM-10, Use USB interface.



6.9 HM-Sensor



7. System LED and System KEY

7.1 System KEY function (PIO0)

Press if Low > 100ms:

7.1.1 If Module role is Master

Unconnected status: Clear last connected remote device address information.

Connected status: Disconnect.

7.1.2 If Module role is Slave

Unconnected status: None.

Connected status: Disconnect.

7.2 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.

8 AT Commands

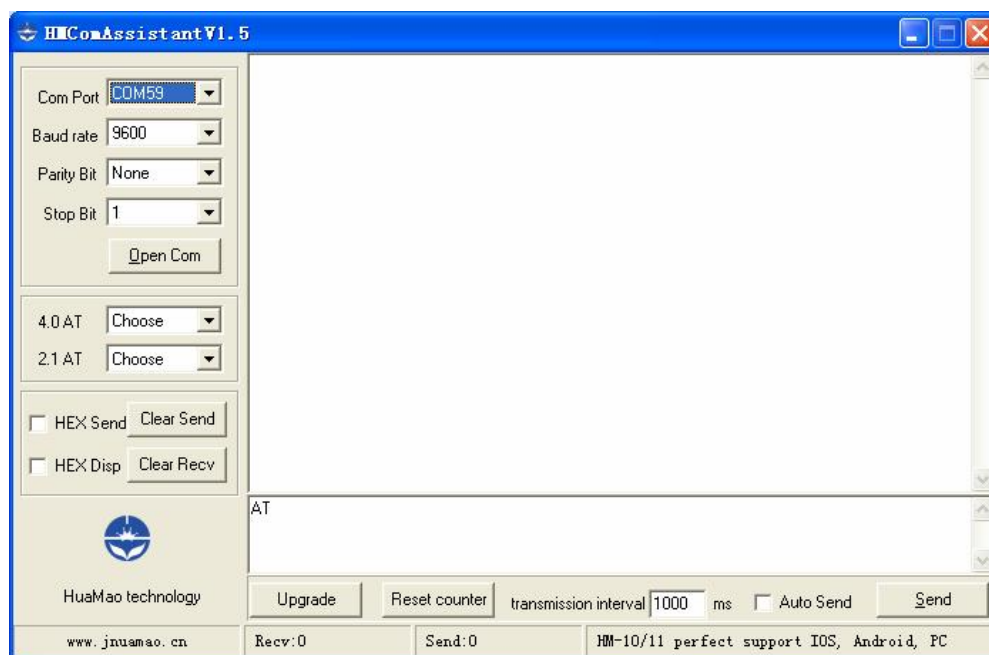
Factory default setting:

Name: HMSoft; Pin code: 000000; transmit Version.

HM-15 Dongle is USB virtual serial port, so it can automatically adapt to any baud rate, please according to your need to choose a proper baud rate.

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.

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

1. Test Command

Send	Receive	Parameter
AT	OK OK+LOST	None

When HM Dongle is not connected, will receive OK, If HM Dongle is connected to remote device, This command will caused link terminated and receive OK+LOST string.

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

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

		1:Unconnected output Low, Connected output High. Default: 0
--	--	--

3. Query module address

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

4. Query/Set Advertising Type

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

Send	Receive	Parameter
AT+CHAR?	OK+Get:[para1]	Para1: 0x0001~0xFFFE Default: 0xFFE1
AT+CHAR[para1]	OK+Set:[para1]	

6. Query/Set write data method

Send	Receive	Parameter
AT+COMP?	OK+Get:[para1]	Para1: 0,1 0: use Notify
AT+COMP[para1]	OK+Set:[para1]	

		1: use Set_Parameter Default: 0
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7. Clear Last Connected device address

Send	Receive	Parameter
AT+CLEAR	OK+CLEAR	None

Notice: This command will stop discovery process(if have).

8. Query/Set filter of HM modules

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

9. Query/Set Module name

Send	Receive	Parameter
AT+NAME ?	OK+NAME[para1]	Para1: module name, Max length is 12. 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

10. Restore all setup value to factory setup

Send	Receive	Parameter
AT+RENEW	OK+RENEW	None

This command will caused module restart after delay 500ms. See Note 1.

11. Reset module

Send	Receive	Parameter
AT+RESET	OK+RESET	None

This command will caused module restart after delay 500ms. See Note 1.

12. Query/Set Master and Slaver Role

Send	Receive	Parameter
AT+ROLE?	OK+ROLE:[para1]	Para1: M, S M: Master S: Slaver Default: S
AT+ROLE[para1]	OK+Set:[para1]	

This command will caused module restart after delay 500ms. See Note 1.

13. Query/Set Pin Code

Send	Receive	Parameter
AT+PASS?	OK+PASS:[para1]	Para1 is Pin Code, 000000~999999 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

14. Query Software Version

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

15. System Help Information

Send	Receive	Parameter
AT+HELP?	Help Information	None

16. Query Last Connected Device Address

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

17. Query/Set Module work type

Send	Receive	Parameter
AT+IMME?	OK+IMME:[para1]	Para1: 0, 1
AT+IMME[para1]	OK+Set:[para1]	1: When module is powered on, only respond the AT Command, don't do anything. until AT + START, AT+DISC, AT+CONN commands is received 0: When power on, work immediately Default: 0

18. 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. when time is up module will not connect this address anymore, then enter search mode. Para1 allowed value: 0000~9999 Unit is second. Default: 0000 Connect forever

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

19. Query/Set Module iBeacon switch

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

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

This command is added since V513 version.

20. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE0?	OK+Get:[para1]	Para1: 0x00000001~ 0xFFFFFFFFFE 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"

21. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE1?	OK+Get:[para1]	Para1: 0x00000001~ 0xFFFFFFFFFE 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"

22. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE2?	OK+Get:[para1]	Para1: 0x00000001~

AT+IBE2[para1]	OK+Set:[para1]	0xFFFFFFFF Default: 8F0C720E
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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"

23. Query/Set iBeacon UUID

Send	Receive	Parameter
AT+IBE3?	OK+Get:[para1]	Para1: 0x00000001~ 0xFFFFFFFF 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"

24. Query/Set Module iBeacon Marjor version

Send	Receive	Parameter
AT+MARJ?	OK+Get:[para1]	Para1: 0x0001, 0xFFFFE 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 V513 version.

25. Query/Set Module iBeacon minor

Send	Receive	Parameter
AT+MINO?	OK+Get:[para1]	Para1: 0x0001, 0xFFFFE Default: 0xFFE1
AT+MINO[para1]	OK+Set:[para1]	

This command is added since V517 version.

26. Query/Set Module Work Mode

Send	Receive	Parameter
AT+MODE?	OK+Get:[para1]	Para1: 0, 1, 2 0: Transmission Mode 1: Mode 0 + Remote Control Mode 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.

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

This command is added since V513 version.

27. Send data to module UART port (not include AT command).

28. Query RSSI Value

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

This command only used by Remote device query when connected.

29. Switch Remote Control Mode to Transmission Mode(Only this time)

Send	Receive	Parameter
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AT+START	OK+START	None
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This command is only used when AT+IMME1 setup, Received that command, Dongle will into automatic work mode, like a common module.

30. Query/Set Module Power

Send	Receive	Parameter
AT+POWE?	OK+Get:[para1]	None
AT+POWE [para1]	OK+Set:[para1]	Para: 0 ~ 3 0: -23dbm 1: -6dbm 2: 0dbm 3: 6dbm Default: 2

31. 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 0:Save when connected 1:Don't Save Default: 0

If you want to use value 1, please execute AT+CLEAR first.

If value is setup to 1, In Master role module will into discover mode when power on or after reset.

32. Query/Set discovery parameter

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

		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.

33. Start a device discovery scan

Send	Receive	Parameter
AT+DISC?	OK+DISC[para1]	Para1: S, E, Address string S: Start discovery E: End discovery Address string: Discovered device address information max results is 6 devices

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

PS: Since V512 can receive OK+NAME string

34. Connect to an Discovery device

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

This command is use after execute AT+DISC?

If connect success, will clear all discovery data.

35. Connect to last connected address (if have)

Send	Receive	Parameter
AT+CONNL	OK+CONN[para1]	Para1: L, E, F L: Try to connect E: Link error F: Link failed

Work with AT+ROLE1, AT+IMME1 value setup.

If connect success, will clear all discovery data.

36. Query/Set service UUID

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

37. Query/Set Service write property

Send	Receive	Parameter
AT+RESP?	OK+Get:[para1]	Para1: 0, 1 0: WriteWithResponse 1: WriteWithoutResponse Default: 0
AT+RESP[para1]	OK+Set:[para1]	

38.

39. Query/Set Notify information

Send	Receive	Parameter
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AT+NOTI?	OK+Get:[para1]	Para1: 0, 1 0: Don't Notify 1: Notify 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.

40. Query/Set notify mode

Send	Receive	Parameter
Q: AT+NOTP?	OK+ Get[P1]	P1: 0, 1; default: 0 0: without address 1: with address
Q: 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 “001122334455” is the MAC address string
Added since V525.

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_ios6.zip

http://www.jnhuamao.cn/HMSoft_ios7.zip

Note 1:

Insert and pull HM Dongle please use follow step

1. Close serial port in your software.
2. Pull out HM Dongle.
3. Wait 5 seconds
4. Insert HM Dongle.
5. wait 5 secondes.
6. Open serial port in your software.

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.)