JiNan Huamao Technology Co., Td.

Bluetooth 4.2 /5.0 BLE module

CC2640R2 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

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 Bluetooth data transmission, remote control, PIO acquisition module

---- Master and slave role in one

---- Remote control without external MCU

---- The PIO data acquisition without external MCU

13. **Product parameters**

➢ BT Version: Bluetooth Specification V4.2 / 5.0 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: 3-8K Bytes

➢ Security: Authentication and encryption

➢ Service: Central & Peripheral

➢ FFE0 is service UUID (could modify by AT+UUID command)

➢ FFE1 is Char1 UUID (could modify by AT+CHAR command)

  Default property: Read, Write Without Response, Notify

  Property could modify by AT+RESP command

➢ FFE2 is Char2 UUID (Could open by AT+FFE2 command)

  If you use AT+CHAR command to change Char1 value, then Char2 value will be Char1 value + 1.

➢ Power: +1.9~3.7 VDC 50mA

➢ Long range: Open space have 100 Meters range

➢ Power: Standby mode 2.6mA, Active mode 2.6mA.

➢ Working temperature: –40 ~ +105 Centigrade

➢ Size: HM-18 27mm * 13mm * 2 mm

➢ Size: HM-19 18mm * 13mm * 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 CC2640 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 is Bluetooth V4.0 BLE version. Use TI Chip.

HM-12, HM-13 is Bluetooth EDR 4.0 + BLE 4.0 dual mode.

HM-16, HM-17 is Bluetooth V4.2 BLE version. Use CC2640 Chip.

HM-18, HM-19 is Bluetooth V5.0 BLE version. Use CC2640 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	2.1-3.7V	27 * 13 * 2.2	128KB		BLE V4.2
HM-17	2.1-3.7V	18 * 13 * 2.2	128KB		BLE V4.2
HM-18	2.1-3.7V	27 * 13 * 2.2	256KB		BLE V5.0
HM-19	2.1-3.7V	18 * 13 * 2.2	256KB		BLE V5.0

4. Product certificate

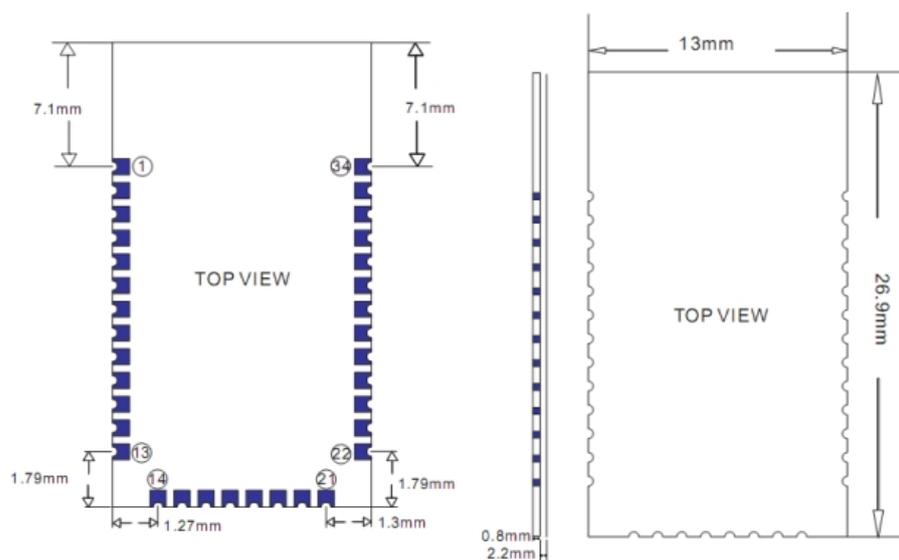Most products have FCC-ID, CE, RoHS. You can download certification from www.jnhuamao.cn or www.huamaosoft.com

5. Product technical specifications

This document only includes Bluetooth BLE 4.2 document, for more information you can get from www.jnhuamao.cn or www.huamaosoft.com
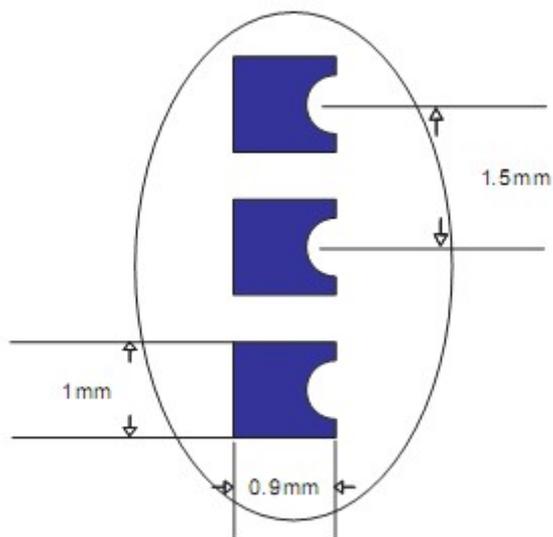
6.1 HM-16 Schematic
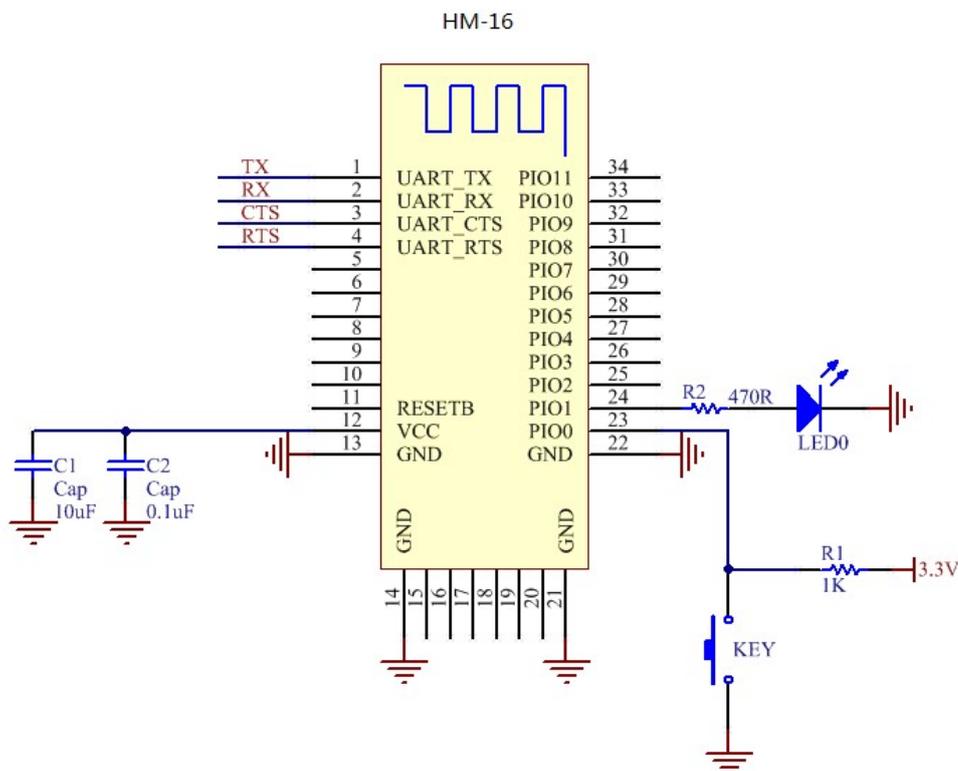
6.2.1 HM-16 Size

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-19 Schematic

HM-17-19
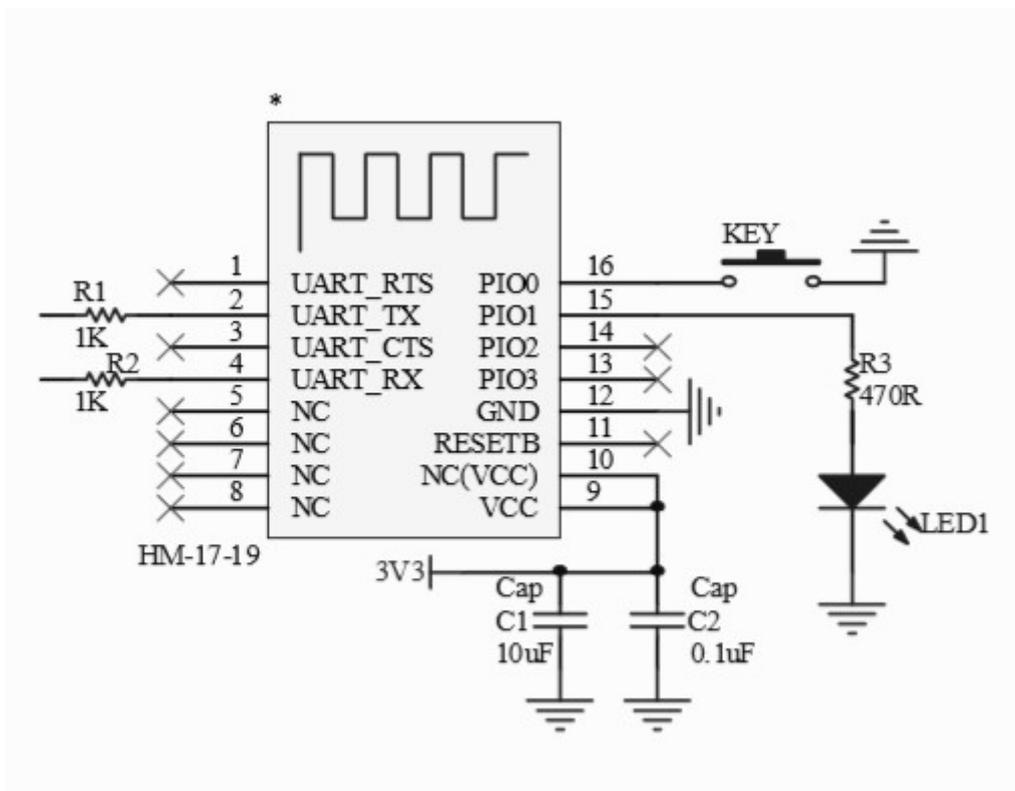
6.6 HM-19 Size
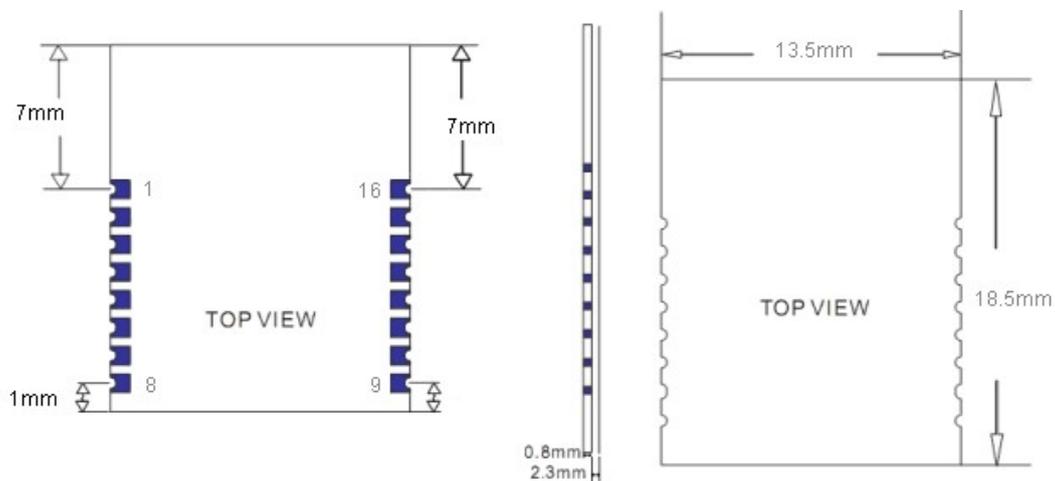
6.7 HM-19 Package information
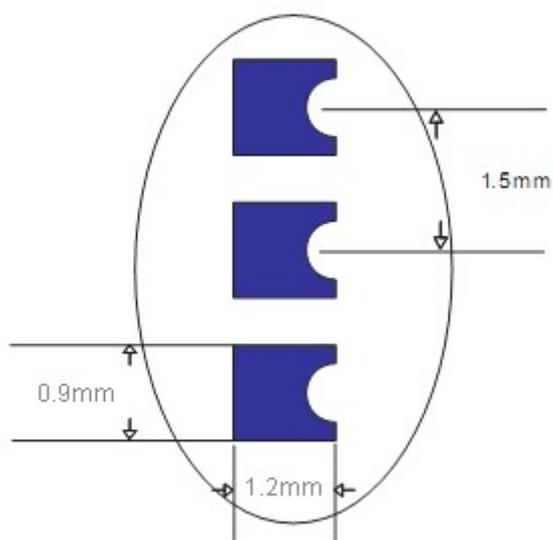
6.8 HM-19 Device Terminal Functions

No	Name	Description	CC2640
1	UART_RTS	UART interface	DIO_9
2	UART_TX	UART interface	DIO_2
3	UART_CTS	UART interface	DIO_0
4	UART_RX	UART interface	DIO_1
5	NC	NC	DEBUG
6	NC	NC	DEBUG
7	NC	NC	DIO_3
8	KEY	System KEY	DIo_4
9	VCC	V3.3	VCC
10	NC	NC or VCC	
11	RESETB	Reset if low >1000ms	RESET
12	GND	Ground	GND
13	PIO3	input/output pin	DIO_5
14	PIO2	input/output pin	DIO_6

15	PIO1	System LED	DIO_7
16	PIO0	input/output pin	DIO_8

7. System function

How to wake up module from sleep mode?

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

Yes, that is a joke, in sleep mode, you can send a long string (Length > 1K Bytes 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 the module, you can send and receive AT commands.

How to let module into sleep mode?

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

2. Execute AT+PWRM0 and AT+RESET command, module will control power by self.
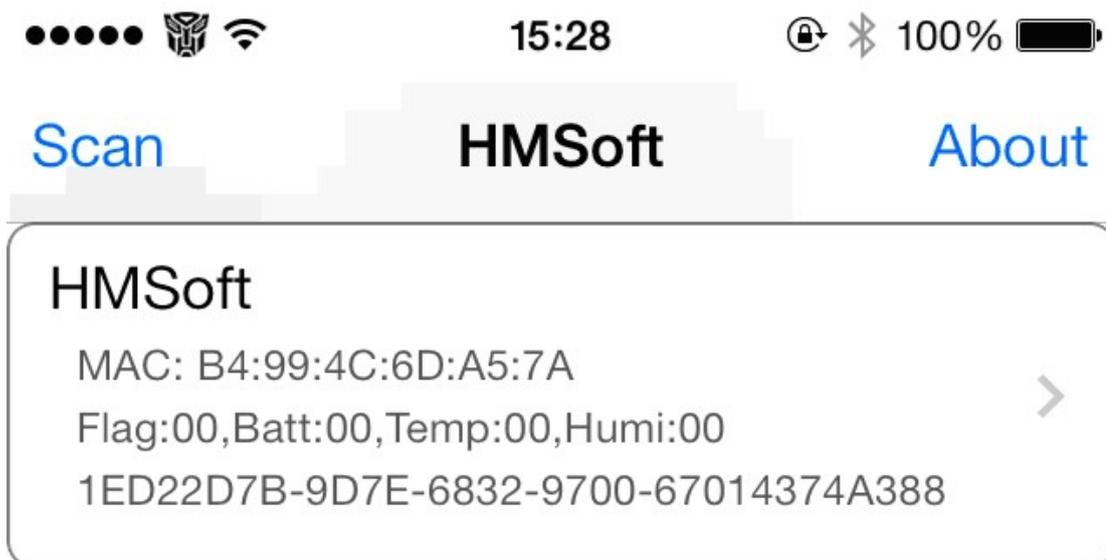
System advert packet

In iOS can't get module 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 (Length 8 Bytes)

0x48 and 0x4D is "HM" string.

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

System KEY function (KEY)

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 in standby mode (AT+PIO01)

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(Remote control mode).

C) Mode 2(Limited remote-control mode):

When the module is wait for a connect, you can send and receive AT command through UART, after connect, you can send and receive AT command through remote device, also you can send and receive serial data to each other through UART.

In limited remote-control mode, module only support remote device to read some value, such like AT+BAUD? you can get module UART information, but you can't modify it in Limited remote-control mode.

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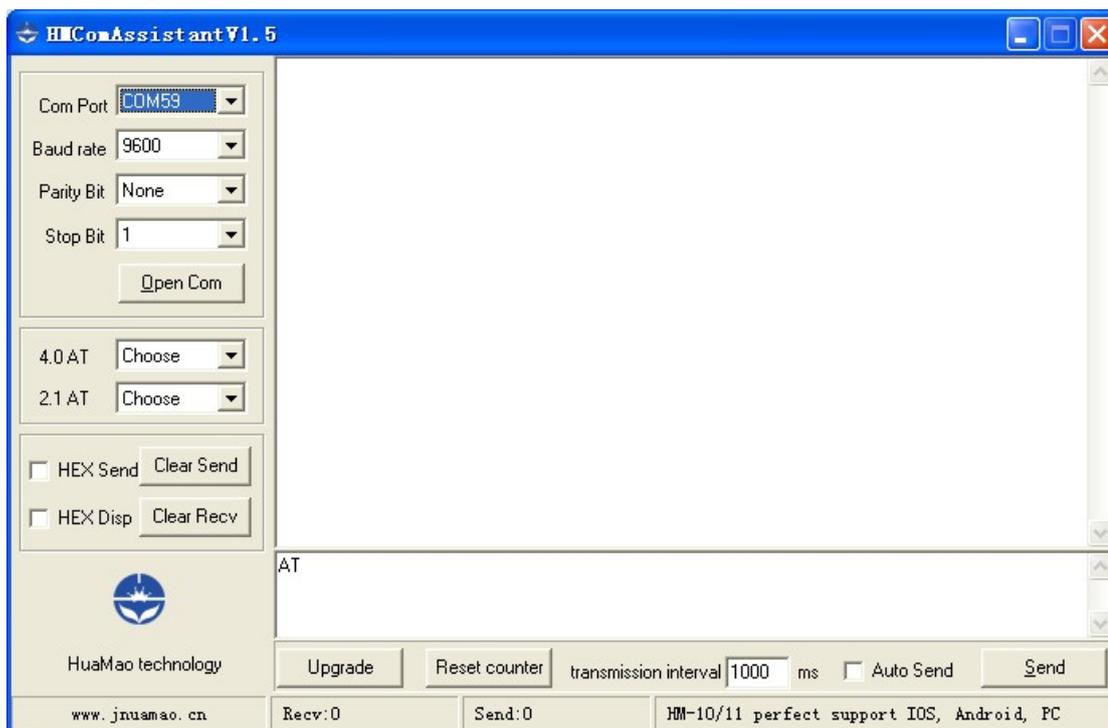
On Transmit version: Only accept AT Command from UART interface when Bluetooth device is not connected with remote device.

On Remote control version: Can accept AT Command from UART interface when the remote Bluetooth Device is not connected, After make connect, module accept AT Command from remote Bluetooth device. In this

mode, you can send and receive data what you want to send.

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" command 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]	P: 0,1,2,3
AT+AFTC[P]	OK+ Set:[P]	Default: 0

0: PIO2 output low, PIO3 output low.

1: PIO2 output low, PIO3 output high

2: PIO2 output high, PIO3 output low

3: PIO2 output high, PIO3 output high

e.g. Set PIO2~PIO3 all output high when connection is established.

Send: AT+AFTC3

Recv: OK+Set:3

When Bluetooth connection is established, module PIO2~PIO3 will output high.

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

Send	Receive	Parameter
AT+BEFC?	OK+ Get:[P]	P: 0, 1, 2, 3
AT+BEFC[P]	OK+ Set:[P]	Default: 0

0: PIO2 output low, PIO3 output low.

1: PIO2 output low, PIO3 output high

2: PIO2 output high, PIO3 output low

3: PIO2 output high, PIO3 output high

7. Query/Set baud rate

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

e.g.

Query baud:

Send:　　AT+BAUD?

Receive: OK+Get:3

Setup baud to 9600:

Send:　　AT+BAUD3

Receive: OK+Set:3

8. 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

9. 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

10. 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

11. 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

12. Query/Set Maximum Link Layer connection interval

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

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

13. 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.

Note: This command is added since V116

14. Clear Last Connected device address

Send	Receive	Parameter
AT+CLEAR	OK+CLEAR	None

15. 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.

16. 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.

17. Try to connect a device use MAC address

Send	Receive	Parameter
AT+CO\<P0\>\<P1\>	OK+CO\<P0\>\<P0\>\<P2\>	P0: N, 1 N: Normal Address 1: Random address 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.

P0 is device type, possible value is 0, 1, 2, could get from AT+DISC? Command.

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 a device which MAC address is 00:17: EA: 09:09:09

Send: AT+CON0017EA090909

May receive a reply:

OK+CONNA ======== Accept request, connecting

OK+CONNE ======== Connect error

OK+CONN   ======== Connected, if AT+NOTI1 is setup

OK+CONNF ======== Connect Failed, After 10 seconds

18. 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 requires 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 address: AT+CO<Device Type>[MAC String]

19. 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 requires AT+IMME1 and AT+ROLE1 support.

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

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.

20. Query/Set if module Char2 UUID is used

Send	Receive	Parameter
AT+FFE2?	OK+ Get:<P1>	P1: 0, 1
AT+FFE2<P1>	OK+ Set:<P1>	0: Only use FFE1
		1: Use FFE1 and FFE2
		Default: 0

FFE2 value is Char1 value + 1

E.g. if you set Char1 value use AT+CHAR0x1234, then Char2 value is 0x1235

21. Query/Set 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

* Doesn't support yet

22. Query/Set module TX gain

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

23. 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

24. System Help Information

Send	Receive	Parameter
AT+HELP?	Help Information	None

25. 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 anything. Until AT + START, AT+CON, AT+CONNL,

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

Note: if "AT+IMME1" setup, When module in slave mode, module wouldn't in advertising mode, until AT+START received.

26. 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

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

This command is added since V517 version.

27. Query/Set iBeacon UUID

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

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"

28. 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 string.

e.g.: Send: AT+IBE112345678 to change iBeacon UUID string red color part value to "12345678"

29. 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.

e.g.: Send: AT+IBE112345678 to change iBeacon UUID string red color part value to "12345678"

30. 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.

e.g.: Send: AT+IBE112345678 to change iBeacon UUID string red color part value to "12345678"

31. Query/Set Module iBeacon Major version

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

E.g. Change major version to 0x0102

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

0x0102

32. Query/Set Module iBeacon minor

Send	Receive	Parameter
AT+MINO?	OK+Get:\<P1>	P1: 0x0001 ~ 0xFFFE
AT+MINO\<P1>	OK+Set:\<P1>	Default: 0xFFE1

33. 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

34. 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: Limited remote-control mode + Mode 0 2: Remote Control Mode + Mode 0 Default: 2

Mode 0:

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

After established a connection, you can send and receive data 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 and receive AT command to configuration module.

Remote control PIO2 and PIO3 pins output state of HM-16.

Remote control PIO2, PIO3 pins output state of HM-17.

Mode 1: Like mode 2, but some command only support query, didn't support setup value.

AT+BAUD, AT+ROLE, AT+PARI, AT+STOP.

35. Query/Set Notify information

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

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

36. Query/Set notify mode

Send	Receive	Parameter
Q: AT+NOTP?	OK+ Get<P1>	P1: 0, 1; default: 0
S: 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 link is connected to disconnected, the prompt string will include the remote device address.

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

37. 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

38. Query/Set Parity bit

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

39. 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 500ms Low, Connected output High. 1: Unconnected output Low, Connected output High. Default: 0

40. 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>\<P2>	P1: 2, 3
AT+PIO\<P1>\<P2>	OK+PIO:\<P1>\<P2>	P2: 0, 1, ? P1 is which PIO pin you want to Query/Set P2: "0" is low, "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 and HM-17 only PIO2, PIO3 can be used.

41. 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

Added since V107

42. 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.

Added since V110, Remember, don't use this command if your firmware less than V110

43. Query/Set Module Power

Send	Receive	Parameter
AT+POWE?	OK+Get:<P1>	None
AT+POWE <P1>	OK+Set:<P1>	Para: 0 ~ 9 0: -18dbm 1: -12dbm 2: -6dbm 3: -3dbm 4: -2dbm 5: -1dbm 6: 0dbm 7: 3dbm Default: 6

44. Query/Set reliable advertising mode

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

45. Restore all setup value to factory setup

Send	Receive	Parameter
AT+RENEW	OK+RENEW	None

46. Restart module

Send	Receive	Parameter
AT+RESET	OK+RESET	None

47. 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

48. Query Last Connected Device Address

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

49. 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: Write 2: Both 0 and 1 Default: 0

50. Query/Set PIO0 function (System KEY)

Send	Receive	Parameter
AT+SYSK?	OK+Get:[P1]	P1: 0, 1
AT+SYSK[P1]	OK+Set:[P1]	0: Only cancel operate, 1: When module is standby, restore factory setting. Default: 1

51. Query/Set Stop bit

Send	Receive	Parameter
AT+STOP?	OK+Get:<P1>	P1: 0, 1
AT+STOP<P1>	OK+Set:<P1>	0: One stop bit 1: Two stop bit Default: 0 (One stop bit)

52. Set Module into sleep mode

Send	Receive	Parameter
AT+SLEEP	OK+SLEEP	None

Only support Peripheral role.

Added since V107

53. Let module Work immediately When AT+IMME1 is setted

Send	Receive	Parameter
AT+START	OK+START	None

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

54. Query/Set Module scan time

Send	Receive	Parameter
AT+SCAN?	OK+Get:<P1>	None
AT+SCAN<P1>	OK+Set:<P1>	P1: 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+DISI? command

55. Query/Set Module save connected remote device address parameter

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

56. Query/Set discovery parameter

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

		1: Show name
		Default: 0

If AT+SHOW1 is setup, AT+DISC? Command will show device name information when the device has been found.

57. 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

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

Added since V107.

58. Query/Set service UUID

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 0xAAAA

Send: AT+UUID0xAAAA

Recv: OK+Set:0xAAAA

59. Query Software Version

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

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