HM 10 TTL BLE Bluetooth Module(Original)

The Bluetooth-SoC can be accessed via UART interface and supports AT-Commands for setup. It supports full Bluetooth 4.0 standard and can be used for your Arduino or microcontroller to Android or iOS communication projects. If you are in need of such a 4.0 BLE Bluetooth module, MCU can be set up, also can controlled by a remote Bluetooth device for setting, can transfer data, and can remotely control 10 PIO pins,so,the best choice is HM-10 bluetooth module.

It Supports Remote control mode, remote device can control PIO pin or modify settings by AT commander when Connected. (Such as Iphone4s/5 ipad, Note2 etc.) and Support Central and Peripheral mode switch, modify by AT commander.

FEATURES:

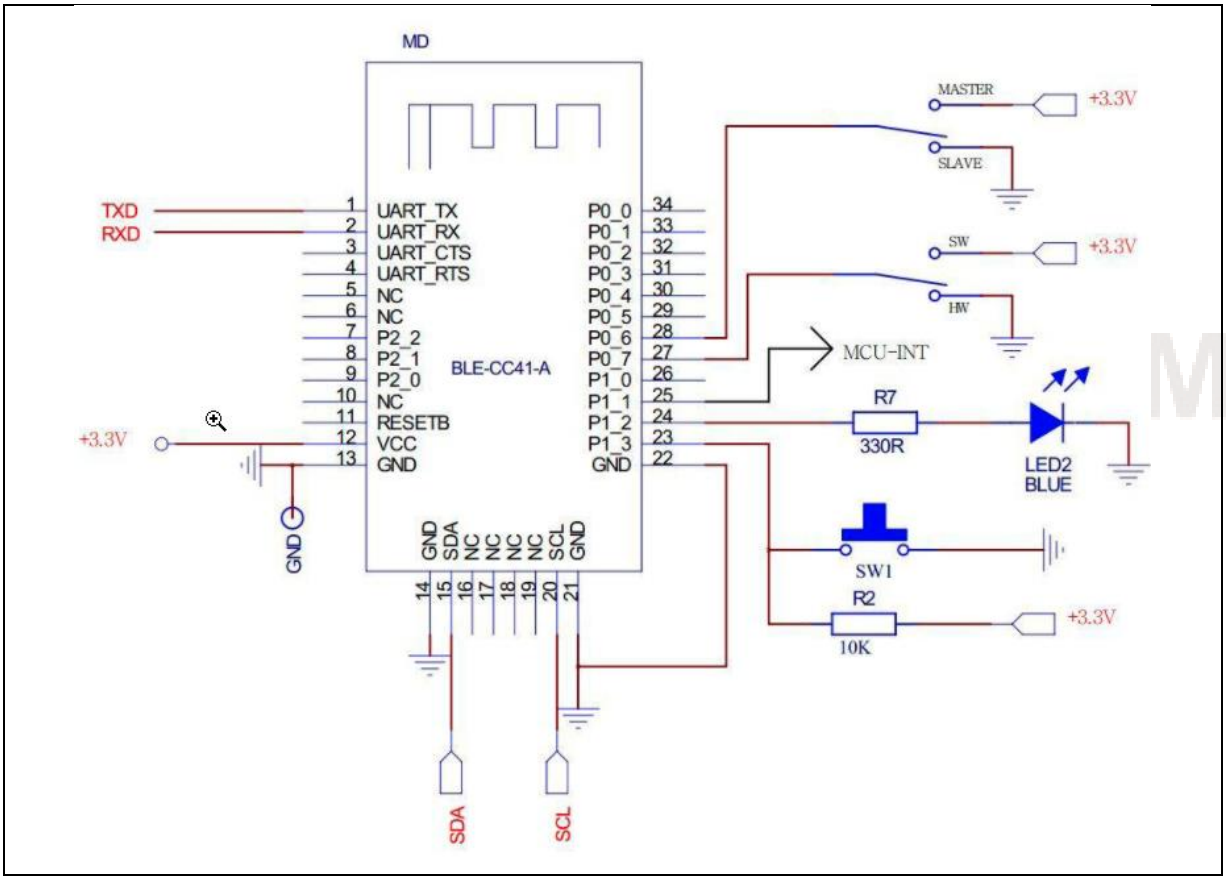
- It’s easy to use and completely encapsulated.
- It can set it as a slave or master.
- It can use the AT command set the baud rate.
- Coverage up to 60 meters.
- Built-in PCB antenna.
- UART design.
- Support bridge direct-driven mode simultaneously (no need for extra CPU).

- 20ms connection interval (default), quick to connect; Support AT instruction, to modify the baud rate of the serial port, gain MAC address and modify module name.
- Support AT instruction, to adjust the Bluetooth connection interval and control the forwarding rate (dynamic power consumption adjustment).
- Support APP; IO expansion.
- 2 channel ADC input (14 bit).
- 4 channel PWM (120Hz) output.
- The RSSI successive acquisition, auto read, and notification to APP (used in anti-lost alarm).
- Power indicator/alert.
- Support anti-hijack password setup, modification, and restoration.
- Ultra-low power consumption standby mode.

SPECIFICATIONS:

- BT Version : Bluetooth Specification V4.0 BLE
- Send and receive no bytes limit.
- Working frequency : 2.4GHz ISM band
- Modulation method : GFSK(Gaussian Frequency Shift Keying)
- RF Power : -23dbm, -6dbm, 0dbm, 6dbm, can modify through AT Command AT+POWE.
- Speed : Asynchronous 6K Bytes
- Synchronous : 6K Bytes
- Security : Authentication and encryption
- Service : Central & Peripheral UUID FFE0,FFE1
- Power : +3.3VDC 50mA
- Long range : Open space have 100 Meters with iphone4s
- Power : In sleep mode 400uA~1 .5mA, Active mode 8.5mA.
- Working temperature : –5 ~ +65 Centigrade
- Size : 26.9mm x 13mm x 2.2 mm;

SCHEMATIC DIAGRAM:



- HM-10 is a BLE module for embedded system to get BLE wireless communication with BLE capable devices (e.g. iPhone and iPad).
- It is fully configurable by a rich and well documented AT command-set and allows transparent data communication via serial UART (default baudrate 9600bps).
- The Bluetooth 4.0 HM-10 is basically a breakout board for cc2541, it broke out the LED pins, RX/TX and also adding the voltage regulator that regular 5v to 3.3 v.

PIN FUNCTION:

- **STATE:** state test pins, connected to an internal LED, generally keep it unconnected.
- BRK: break connect, it means breaking the Bluetooth connection, generally keep it unconnected.
- **VCC:** positive pole of the power source.
- **GND:** Ground.
- **TXD:** serial interface, transmitting terminal.
- **RXD:** serial interface, receiving terminal.

COMMAND MODE:

- **Factory default setting:**
  Name: HMSoft; Baud: 9600, N, 8, 1; Pin code: 000000; transmit Version.
  AT Command format: Uppercase AT command format. string format, without any other symbol. (e.g. \r or \n).
- **On Transmit version:**
  Only accept AT Command from UART interface when Bluetooth device is not connected with remote device.
- **On Remote version:** Can accept AT Command from UART interface when Bluetooth Device is not connected with remote device, Also can accept AT Command from remote Bluetooth device when connected that.
- **On PIO collection version:** Only accept AT Command from UART interface when Bluetooth device is not connected with remote device.

1. Test command:

Send	Receive	Parameter
AT	OK	None

2. Query/Set baud rate:

Send	Receive	Parameter
AT+BAUD?	OK+Get:[para1]	Para1: Baud rate No. 0---------9600 1---------19200 2---------38400 3---------57600 4---------115200 Default: 0(9600)
AT+BAUD[para1]	OK+Set:[para1]	

3. Query/Set Parity bit:

Send	Receive	Parameter
Query: AT+PARI?	OK+Get:[para1]	None
AT+STOP[para1]	OK+Set:[para1]	Para1:0, 1 0: One stop bit 1: Two stop bit Default: 0 (One stop bit)

4. Query/Set Module Work Mode:

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

5. 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. 1:Unconnected output Low, Connected output High. Default: 0
AT+ PIO1 [para1]	OK+Set:[para1]	

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

Send	Receive	Parameter
AT+PIO[para1]?	OK+PIO:[para1][para2]	Para1: 2~B Para2: 0, 1 HM-11 only have 4 pins. 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
AT+PIO[para1][para2]	OK+PIO:[para1][para2]	

7. 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]	

8. Restore all setup value to factory setup:

Send	Receive	Parameter
AT+RENEW	OK+RENEW	None

9. Reset module:

Send	Receive	Parameter
AT+RESET	OK+RESET	None

10..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]	

11.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]	

12. Clear Last Connected device address:

Send	Receive	Parameter
AT+CLEAR	OK+CLEAR	None

13. Query Software Version:

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

14. System Help Information:

Send	Receive	Parameter
AT+HELP?	Help Information	None

15. Query Last Connected Device Address:

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

16. Query module address:

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

17. Query/Set Module work type:

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

18. Work immediately:

Send	Receive	Parameter
AT+WORK	OK+WORK	None

19. 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

20. Query/Set Module Bond Mode:

Send	Receive	Parameter
AT+TYPE?	OK+Get:[para1]	None
AT+TYPE[para1]	OK+Set:[para1]	Para1: 0~1 0:Not need PIN Code 1:Need PIN Code Default: 0

21.Query RSSI Value:

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

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

Send	Receive	Parameter
AT+START	OK+START	None

23. 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

24. Query/Set Notify information:

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

APPLICATION:

- Hobby projects
- Engineering applications
- Robotics
- Mobile Phone Accessories
- Servers
- Computer Peripherals
- Sports and Leisure Equipment
- USB Dongles