ARDUINO CC2541 Bluetooth V4.0 HM-11 BLE Module User Manual

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Contents

Introduction

This is a SMD BLE module used in our BLE Bee and Xadow BLE. It is based on TI cc2541 chip, enables robust

network nodes to be built with low total bill-of-material costs and highly suited for ultralow power consumption systems. The module is small and easy to use, with the preprogrammed firmware of manufacturer, you could quickly build BLE communications via its AT command. Supporting BLE communications with iphone, ipad and Android 4.3.

Features

- Bluetooth protocol: Bluetooth Specification V4.0 BLE
- Working frequency: 2.4 GHz ISM band
- Interface way: a serial port Open environment within 30 meters can realize communication between modules
- To send and receive no byte limit between modules
- Modulation method: GFSK (Gaussian Frequency Shift Keying)
- Transmission power: – DBM, 23-6 DBM, 0 DBM, 6 DBM, can be modified by the AT command
- use TI CC2541 chip, configuration space of 256 KB, support the AT command, the user can according to need to change the role (master, slave mode) and the serial port baud rate, name of equipment, matching parameters such as passwords, use agile.
- power supply: + 3.3 VDC 50 mA
- working temperature: – 5 ~ + 65 Centigrade

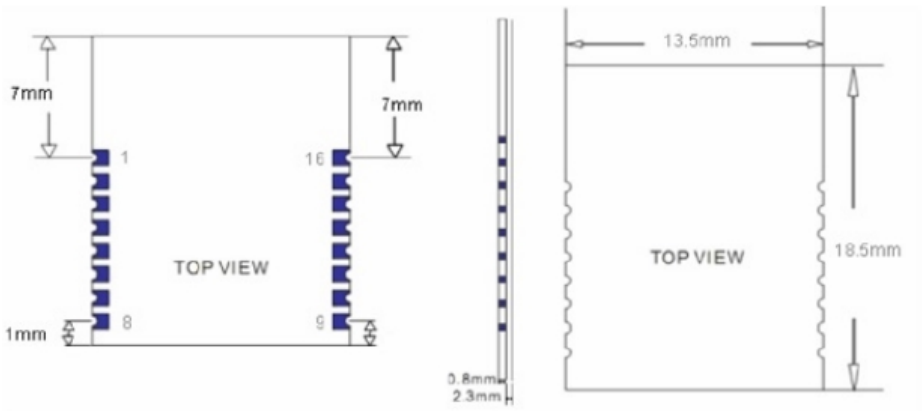
Specification

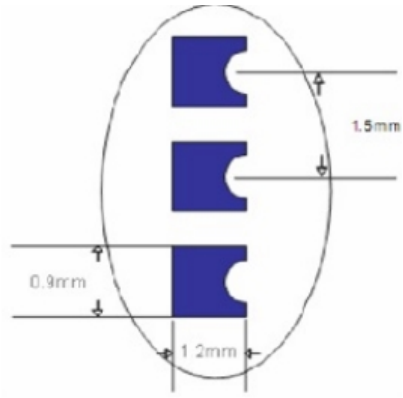
Specification	Value
Microprocessor	CC2541
Resources !TOP	Support the AT command, the user can according to need to change the role (master, slave mode) and the serial port baud rate,name of eguipmenLMatchin g parameters such as password, the use of flexible.
Outline Dimension	13.5mm x 18.Smm x 2.3mm
Power supply	3.3V
Communication Protocol	Uart(3.3V LVTTL)
ID counts	2
Key input ID	1
LED Indicators IC	1
Connectivity	Socket compatible with XBee

Electrical Characteristics

Specification	Mb	7313	Max	Unit
Max Input Voltage	-3		3.6	V
Working Input Voltage	2.0	3.3	3.6	V
Transmit Current		15		mA
Receive Current		8.5		mA
Deep Sleep Current		600		uA
Operating Temperature	-40		+65	•C

Pin definition





Pin	Name	Desaiption
1	UART RTS	UART
2	UART TX	UART
3	UART CTS	UART
4	UART RX	UART
S	NC	
6	NC	
7	NV	
8	NV	
9	VCC	Power supply 13V
10	NC	
11	FLEETS	Reset, active low at least in Sms
12	GND	GND
13	P103	10 port, used for connect to DHT11/D518B20
14	P102	Digital input, output
15	P101	LED indicator
16	P100	Button pin

AT commands & Configuration

1. Query the native MAC address
   Send: AT + ADDR?
   Send after a successful return: OK + LADD: MAC address (address for 12 string)
2. Query the baud rate
   Send: AT+BAUD? Send after a successful return: OK + Get: [para1]
   Scope of para1:0 ~ 8. The parameters corresponding to: 0 represents 9600, 1, 2, 9600, 38400, on behalf of the representative representative of 57600, 115200, 5, 4800, 6, 7 represents 1200, 1200 2400. The default baud rate to 9600.
3. Set the baud rate
   Send: AT+BAUD[para1]
   Send after a successful return: OK+Set:[para1]
   Example: send: AT + BAUD1, return: OK + Set: 2.The baud rate is set to 19200.
   Note: after the switch to the 1200, module will no longer support the configurations of the AT command, and press the PIO0 under standby, module can restore the factory Settings.Do not recommend using the baud rate.After setting the baud rate, modules should be on electricity, anew set parameters can take effect.
4. from the device connected to the bluetooth address specified
   Send: AT+CON[para1]
   Send after a successful return: OK+CONN[para2]

Para2 range is: A, E, F

Example: from the bluetooth address is: 0017EA0943AE, sending the AT + CON0017EA0943AE, module returns: OK + CONNA or OK + + CONNF CONNE or OK.

5. removal equipment matching information

   Send: AT + CLEAR

   Send after a successful return: OK +

   CLEAR Clear success had connected device address code information.

6. query module working mode

   Send: AT + MODE?

   Send after a successful return: OK + Get: [para]

   Para: the range of 0 ~ 2. 0 represents passthrough mode, on behalf of the PIO acquisition + remote control + 1 passthrough, 2 representative passthrough + remote control mode.The default is 0.

7. set module working mode:

   Send: AT + MODE []

   Send after a successful return: OK + Set: [para]

8. query device name

   Send: AT + NAME?

   Send after a successful return: OK + NAME [para1]

9. set the device name

   Send: AT + NAME [para1]

   Send after a successful return: OK + Set: [para1]

   Example: Set the device name to Seeed, sending the AT + NAMESeeed, return OK + Set: Seeed AT this time, the name of the bluetooth module has been changed to Seeed. Note: after the instruction execution, required to electricity, set the parameters of the approval.

10. query matching password

    Send: AT + PASS?

    Send after a successful return: OK + PASS: [para1]

    Para1 range is 000000 ~ 999999, the default is 000000.

11. pairing set password

    Send the AT + PASS [para1]

    Send after a successful return: OK + Set: [para1]

12. restore factory Settings

    The AT + RENEW send

    Send after a successful return: OK + RENEW

    Restore the default factory Settings module, the module Settings will be reset so, back to the factory with the status of the factory default, delay module 500 ms after the restart.If no need, please be careful.

13. module reset

    Send: AT + RESET

    Send after a successful return: OK + RESET

    After the instruction execution module will delay 500 ms after the restart.

14. set the master-slave mode

    Send: AT + ROLE [para1]

    Send after a successful return: OK + Set: [para1]

Example Code

//master

```
/*

 This example code is in the public domain.

 */
#include <SoftwareSerial.h>

SoftwareSerial mySerial(2, 3); // RX, TX

void setup()
{
  // Open serial communications and wait for port to open:
  Serial.begin(9600);
  while (!Serial) {
    ; // wait for serial port to connect. Needed for Leonardo only
  }


  Serial.println("Goodnight moon!");

  // set the data rate for the SoftwareSerial port
  mySerial.begin(9600);
  // set master
  mySerial.print("AT+ROLE1");
  delay(10000);



}

void loop() // run over and over
{

    // set the data rate for the SoftwareSerial port
  mySerial.print("test I am master  ");
  delay(10000);
  if (mySerial.available())
    Serial.write(mySerial.read());
  if (Serial.available())
    mySerial.write(Serial.read());
}
```

//slave

```
/*

 This example code is in the public domain.

 */
#include <SoftwareSerial.h>

SoftwareSerial mySerial(2, 3); // RX, TX

void setup()
{
  // Open serial communications and wait for port to open:
  Serial.begin(9600);
  while (!Serial) {
    ; // wait for serial port to connect. Needed for Leonardo only
  }


  Serial.println("Goodnight moon!");

  // set the data rate for the SoftwareSerial port
  mySerial.begin(9600);
  // set slave
  mySerial.print("AT+ROLE0");
  delay(10000);



}

void loop() // run over and over
{

    // set the data rate for the SoftwareSerial port
  mySerial.print("test I am slave ");
  delay(10000);
  if (mySerial.available())
    Serial.write(mySerial.read());
  if (Serial.available())
    mySerial.write(Serial.read());
}
```

Documents / Resources

	**ARDUINO CC2541 Bluetooth V4.0 HM-11 BLE Module** [pdf] User Manual CC2541, Bluetooth V4.0 HM-11 BLE Module, CC2541 Bluetooth V4.0 HM-11 BLE Module, V4.0 HM-11 BLE Module, HM-11 BLE Module, BLE Module, Module