



Grove - BLE

Release date: 9/20/2015

Version: 1.0

Wiki: <http://www.seeedstudio.com/depot/Grove-EMG-Detector-p-1737.html>

Bazaar: http://www.seeedstudio.com/wiki/Grove_-_EMG_Detector

Document Revision History

Revision	Date	Author	Description
1.0	Sep 21, 2015	Victor.He	Create file

Contents

Document Revision History	2
1. Introduction	2
2. Specification	3
3. Detailed description	4
3.1 Pinout	4
3.2 Features of Design	4
3.3 AT Commands	4
4. SoftwareSerial Communication	7
4.1 Demo: BLE Slave	7
4.2 Demo : BLE Master	8
5. Resources	10

Disclaimer

For physical injuries and possessions loss caused by those reasons which are not related to product quality, such as operating without following manual guide, natural disasters or force majeure, we take no responsibility for that.

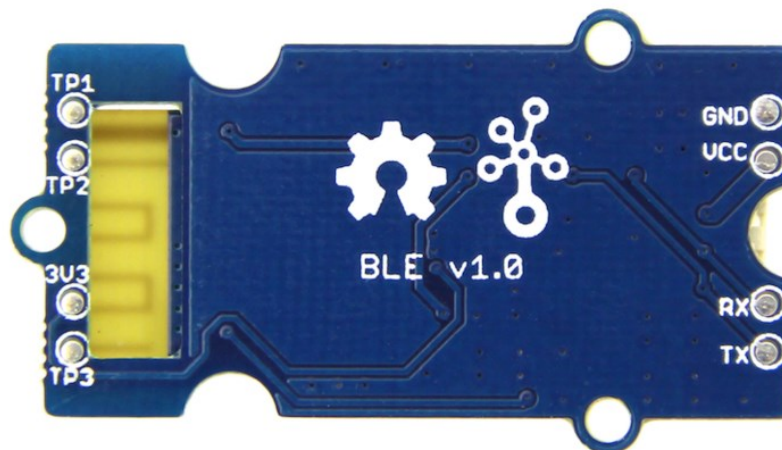
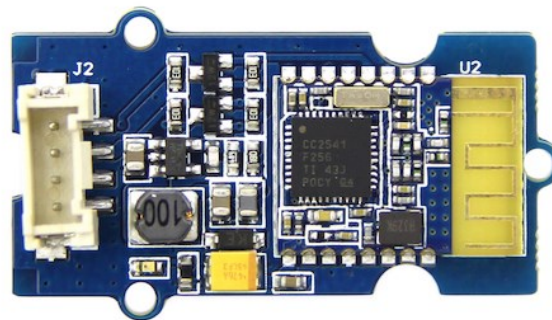
Under the supervision of Seeed Technology Inc., this manual has been compiled and published which covered the latest product description and specification. The content of this manual is subject to change without notice.

Copyright

The design of this product (including software) and its accessories is under tutelage of laws. Any action to violate relevant right of our product will be penalized through law. Please consciously observe relevant local laws in the use of this product.

1. Introduction

Grove - BLE v1 (Grove - Bluetooth Low Energy v1) uses a Low Energy Bluetooth module -- HM-11, based on TI CC2540 chip, which has AT command support. As a Grove product it's convenient to use Grove - BLE with Arduino board via Base Shield.



2. Specification

Specifications	Name
BT Version	Bluetooth Specification V4.0 BLE
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
Sensitivity	≤-84dBm at 0.1% BER
Security	Authentication and encryption
Service	Central & Peripheral UUID FFE0,FFE1
Supply Power	3.3v - 5v
Working temperature	-5 ~ +65 Centigrade
Size	20cm x 10cm
Working Current	< 10 mA
Sourcing Current	< 20 mA
Sleeping Current	< 1 mA

Attention: The supply power of HM-11 is 3.3v, but the Grove - BLE is 3.3v to 5v

3. Detailed description

3.1 Pinout

Grove connector has four wires: GND, VCC, RX, and TX.

3.2 Features of Design

We have used TD6810 chip as the voltage regulator, so the range of the supply power can be 3.3v to 5v. Also, there's a level shift circuit which make sure the accuracy of data transmission.

3.3 AT Commands

1) Query module address

Send: AT+ADDR?

Receive: OK+LADD: address

2) Query baud rate

Send: AT+BAUD?

Receive: OK+Get:[para1]

Range : 0~8 ; 0--9600, 1--19200, 2--38400, 3--57600, 4--115200, 5--4800, 6--2400, 7--1200, 8--230400. Default: 0--9600.

Set baud rate

Send: AT+BAUD[para1]

Receive: OK+Set:[para1]

e.g. : Send : AT+BAUD1 , Receive: OK+Set:1. The Baud rate has been set to 19200.

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.

3) Try connect an address

Send: AT+CON[para1]

Receive: OK+CONN[para2]

Range : A,E,F

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

Notice: Only central role is used. If remote device has already connected to other device or shut down, "OK+CONN" will be received after about 10 seconds.

4) Clear Last Connected device address

Send: AT+CLEAR

Receive: OK+CLEAR

5) Query Module Work Mode

Send: AT+MODE?

Receive: OK+Get:[para]

Range: 0~2. 0: Transmission Mode; 1: PIO collection Mode + Mode 0 ; 2: Remote Control Mode + Mode 0 .

Default 0.

Set Module Work Mode

Send: AT+MODE[]

Receive: OK+Set:[para]

6) Query Module name

Send: AT+NAME?

Receive: OK+NAME[para1]

Set Module name

Send: AT+NAME[para1]

Receive: OK+Set:[para1]

e.g. : Send: AT+NAMEseeed , Receive : OK+Set:seeed

Notice: Name would change after next power on.

7) Query Pin Code

Send: AT+PASS?

Receive: OK+PASS:[para1]

Range : 000000~999999. Default: 000000.

Set Pin Code

Send: AT+PASS[para1]

Receive: OK+Set:[para1]

8) Restore all setup value to factory setup

Send: AT+RENEW

Receive: OK+RENEW

9) Restart module

Send: AT+RESET

Receive: OK+RESET

10) Query Master and Slaver Role

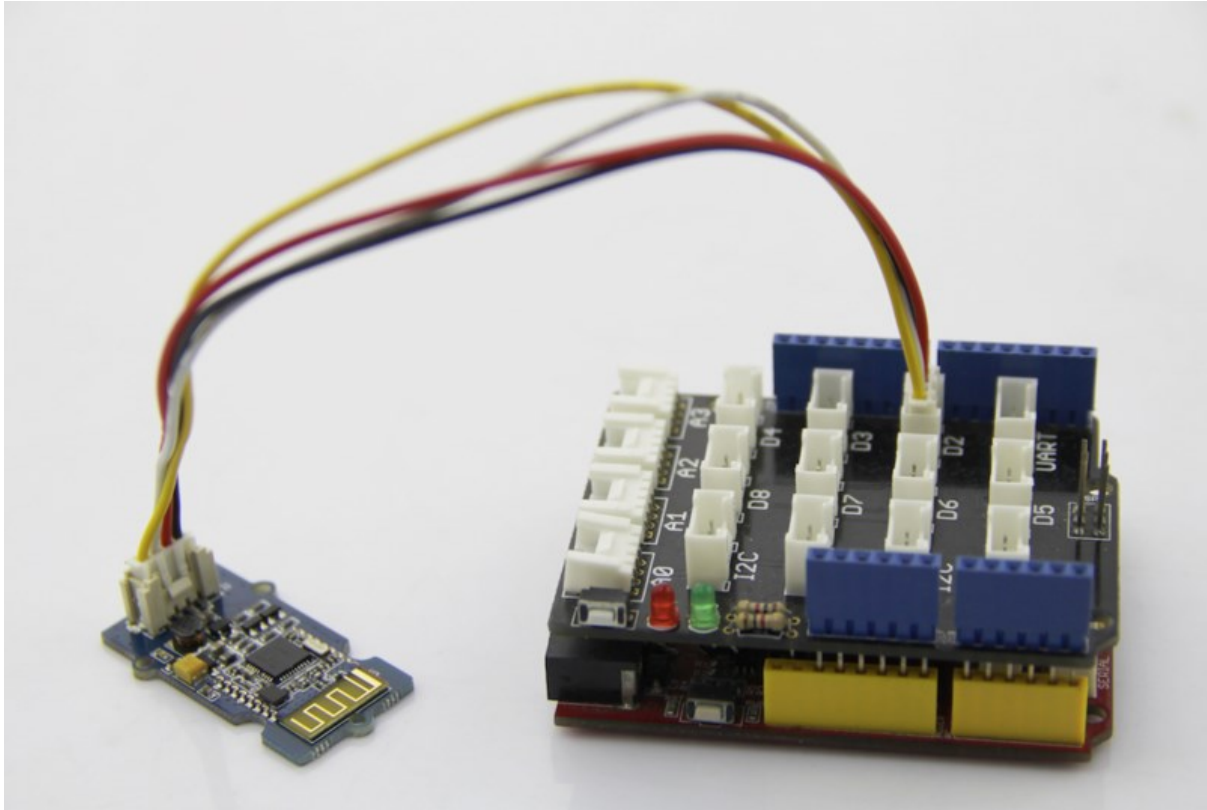
Send: AT+ROLE[para1]

Receive: OK+Set:[para1]

Range : 0~1。 0--Peripheral: 1--Central: Default: 0.

More AT commands please refer to the Date sheet of BLE module.

4. SoftwareSerial Communication



Grove - BLE can be acted as a master or slave, you can use the one via different demos. **If you are going to use the following SoftwareSerial program, please refer to the way of connection in the previous pic. TX-->D2, RX-->D3.**

Open Arduino IDE, copy the following program and upload it onto the Arduino/Seeeduno board. And then two BLE modules can communicate with each other.

4.1 Demo: BLE Slave

```
#include <SoftwareSerial.h> //Software Serial Port
#define RxD 2
#define TxD 3

#define DEBUG_ENABLED 1

SoftwareSerial BLE (RxD, TxD);

void setup()
{
  Serial.begin(9600);
  pinMode(RxD, INPUT);
}
```

```

    pinMode(TxD, OUTPUT);
    setupBleConnection();
}

void loop()
{
    char recvChar;
    while(1){
        if(BLE.available()){//check if there's any data sent from the
remote BLE
            recvChar = BLE.read();
            Serial.print(recvChar);
        }
        if(Serial.available()){//check if there's any data sent from the
local serial terminal, you can add the other applications here
            recvChar = Serial.read();
            BLE.print(recvChar);
        }
    }
}

void setupBleConnection()
{
    BLE.begin(9600); //Set BLE BaudRate to default baud rate 9600
    BLE.print("AT+CLEAR"); //clear all previous setting
    BLE.print("AT+ROLE0"); //set the bluetooth name as a slaver
    BLE.print("AT+SAVE1"); //don't save the connect information
}

```

4.2 Demo : BLE Master

```

#include <SoftwareSerial.h> //Software Serial Port

#define RxD 2
#define TxD 3

#define DEBUG_ENABLED 1

SoftwareSerial BLE(RxD,TxD);

void setup()
{
    Serial.begin(9600);

```

```
pinMode(RxD, INPUT);
pinMode(TxD, OUTPUT);
setupBleConnection();

}

void loop()
{
    char recvChar;
    while(1){
        if(BLE.available()){//check if there's any data sent from the
remote BLE
            recvChar = BLE.read();
            Serial.print(recvChar);
        }
        if(Serial.available()){//check if there's any data sent from the
local serial terminal, you can add the other applications here
            recvChar = Serial.read();
            BLE.print(recvChar);
        }
    }
}

void setupBleConnection()
{
    BLE.begin(9600); //Set BLE BaudRate to default baud rate 9600
    BLE.print("AT+CLEAR"); //clear all previous setting
    BLE.print("AT+ROLE1"); //set the bluetooth name as a master
    BLE.print("AT+SAVE1"); //don't save the connect information
}
```

5. Resources

[BLE apk for Android](#)

[DataSheet of BLE module](#)

[Schematic](#)



Стандарт Электрон Связь

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331