



# Grove - PIR Motion Sensor User Manual

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Wiki: [http://www.seeedstudio.com/wiki/Grove\\_-\\_PIR\\_Motion\\_Sensor](http://www.seeedstudio.com/wiki/Grove_-_PIR_Motion_Sensor)

Bazaar: [http://www.seeedstudio.com/depot/Grove-PIR-Motion-Sensor-p-802.html?cPath=25\\_31](http://www.seeedstudio.com/depot/Grove-PIR-Motion-Sensor-p-802.html?cPath=25_31)

## Document Revision History

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Revision	Date	Author	Description
1.0	Sep 22, 2015	Loovee	Create file

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### *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.*

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## 1. Introduction

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This is a simple to use PIR motion sensor with Grove compatible interface. This sensor allows you to sense motion, usually human movement in its range. Simply connect it to Grove - Base shield and program it, when anyone moves in its detecting range, the sensor will output HIGH on its SIG pin.



## 2. Specification

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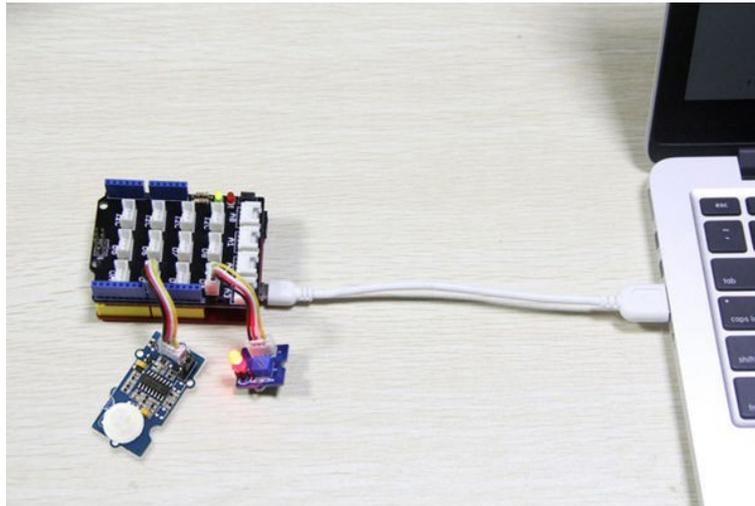
- Operating Voltage: 5V
- Operating Current(VCC = 3V): 100uA
- Operating Current(VCC = 5V): 150uA
- Measuring Range: 3m by default (support 0.1 - 6m)
- Holding Time: 1 - 25s
- Working Wave Length: 7 - 14um
- Detecting Angle: 120 degree

## 3. Usage

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### 3.1 With Arduino

The following sketch demonstrates a simple application of sensing motion. When someone moves in its detecting range, it will output High through its SIG pin and the LED will light. Otherwise, it will output LOW. Then you can use it to detect the motion of people.



```
/******  
/*macro definitions of PIR motion sensor pin and LED pin*/  
#define PIR_MOTION_SENSOR 2//Use pin 2 to receive the signal from the module  
#define LED 4//the Grove - LED is connected to D4 of Arduino  
  
void setup()  
{  
  pinsInit();  
}  
  
void loop()  
{  
  if(isPeopleDetected())//if it detects the moving people?  
    turnOnLED();  
  else  
    turnOffLED();  
}  
  
void pinsInit()  
{  
  pinMode(PIR_MOTION_SENSOR, INPUT);  
  pinMode(LED, OUTPUT);  
}
```

```

void turnOnLED()
{
    digitalWrite(LED, HIGH);
}
void turnOffLED()
{
    digitalWrite(LED, LOW);
}
/*****/
/*Function: Detect whether anyone moves in it's detecting range*/
/*Return:-boolean, true is someone detected.*/
boolean isPeopleDetected()
{
    int sensorValue = digitalRead(PIR_MOTION_SENSOR);
    if(sensorValue == HIGH)//if the sensor value is HIGH?
    {
        return true;//yes,return true
    }
    else
    {
        return false;//no,return false
    }
}

```

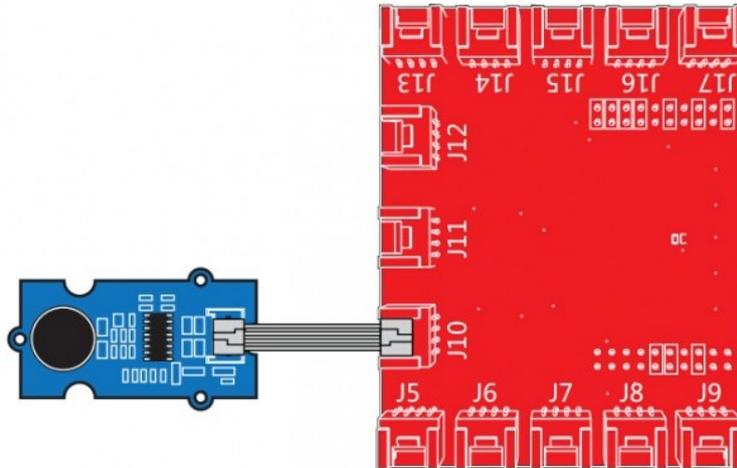
**Note:**

The detecting distance and holding time can be adjusted by adding two extra potentiometers on board. For the details please refer to the V1.2 Eagle below. The module can also be set as retriggerable or un- retriggerable by changing the jumper hat.

### 3.2 With TI LaunchPad

Is Anybody here (PIR Motion Sensor)

The following sketch demonstrates a simple application of sensing motion. When someone moves in its detecting range, the output of the application will be high through its SIG0 pin and the LED will turn on. Otherwise, the output will be LOW. Note that the PIR motion sensor is very sensitive to motion!



```

/*
  Grove-PIR-Motion-Sensor
  The following sketch demonstrates a simple application of sensing motion.
  When someone moves in its detecting range, it will output High through its
  SIG pin and the LED will light. Otherwise, it will output LOW. Then you can
  use it to detect the motion of people.

  The circuit:
  * sig pin of the Grove-PIR-Motion-Sensor to pin39 (J14 plug on Grove Base BoosterPack)
  * one side pin (either one) to ground
  * the other side pin to +VCC
  * LED anode (long leg) attached to RED_LED
  * LED cathode (short leg) attached to ground

  * Note: Position the trig jumper on N_Retrig to ensure

  This example code is in the public domain.

```

[http://www.seeedstudio.com/wiki/index.php?title=Twig\\_-\\_PIR\\_Motion\\_Sensor](http://www.seeedstudio.com/wiki/index.php?title=Twig_-_PIR_Motion_Sensor)

```

*/

/* Macro Define */
#define PIR_MOTION_SENSOR      39          /* sig pin of the PIR sensor */
#define LED                    RED_LED     /* led */

#define ON                      HIGH        /* led on */
#define OFF                     LOW        /* led off */
#define _handle_led(x)         digitalWrite(LED, x) /* handle led */

/* the setup() method runs once, when the sketch starts */

```

```

void setup() {

    pinMode(PIR_MOTION_SENSOR, INPUT);  /* declare the sig pin as an INPUT */
    pinMode(RED_LED, OUTPUT);           /* declare the red_led pin as an OUTPUT */
    _handle_led(OFF);
}

/* the loop() method runs over and over again */
void loop() {

    if(isPeopleDetected()) {
        _handle_led(ON);                /* if we detect a people, turn on the led */
    } else {
        _handle_led(OFF);               /* found nobody, turn off the light */
    }
}

/* judge if there is a people around */
boolean isPeopleDetected() {
    int sensor_val = digitalRead(PIR_MOTION_SENSOR);    /* read sig pin */
    if(HIGH == sensor_val) {
        return true;                                  /* people detected */
    } else {
        return false;                                /* people un-detected */
    }
}

```

### 3.3 With Raspberry Pi

1. You should have got a raspberry pi and a grovepi or grovepi+.
2. You should have completed configuring the development enviroment, otherwise follow [here](#).
3. Connection
  - Plug the sensor to grovepi socket D8 by using a grove cable.
4. Navigate to the demos' directory:

```
cd yourpath/GrovePi/Software/Python/
```

- To see the code

```

nano grove_pir_motion_sensor.py  # "Ctrl+x" to exit #
import time
import grovepi

```

```
# Connect the Grove PIR Motion Sensor to digital port D8
# SIG, NC, VCC, GND
pir_sensor = 8

grovepi.pinMode(pir_sensor, "INPUT")

while True:
    try:
        # Sense motion, usually human, within the target range
        if grovepi.digitalRead(pir_sensor):
            print 'Motion Detected'
        else:
            print '-'

        # if your hold time is less than this, you might not see as many detections
        time.sleep(.2)

    except IOError:
        print "Error"
```

## 5. Run the demo.

```
sudo python grove_pir_motion_sensor.py
```

## 4. Resources

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- [Grove - PIR Motion Sensor Eagle File v1.2](#)
- [Grove - PIR Motion Sensor v1.2 PDF](#)
- [Grove - PIR Motion Sensor Eagle File](#)
- [github repository for PIR Motion Sensor](#)
- [BISS0001 Datasheet](#)
- [Fresnel lens 8120 Datasheet](#)