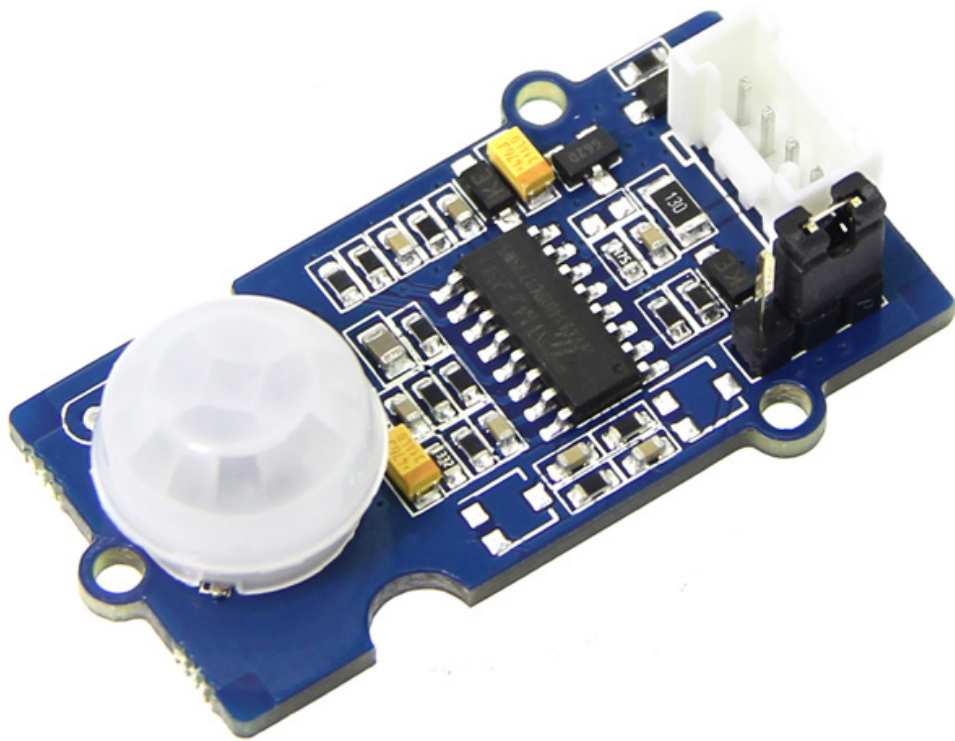


Grove - PIR Motion Sensor



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.

Get One Now 

[<https://www.seeedstudio.com/Grove-PIR-Motion-Sensor-p-802.html>]

Features

- Grove compatible interface
- Adjustable detecting distance
- Adjustable holding time



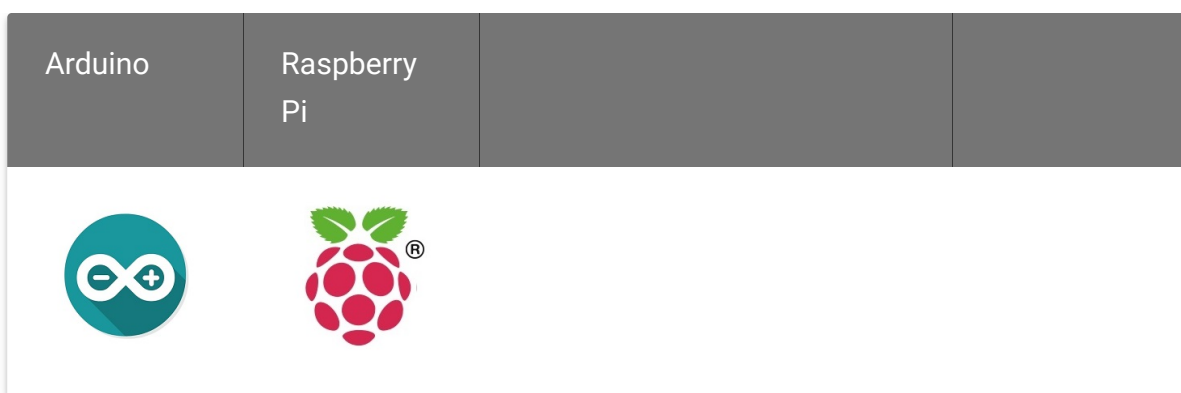
Tip

More details about Grove modules please refer to [Grove System](#)
[https://wiki.seeedstudio.com/Grove_System/]

Specification

Parameter	Value/Range
Operating Voltage	3V-5V
Operating Current(VCC = 3V)	100uA
Operating Current(VCC = 5V)	150uA
Measuring Range	0.1 - 6m
Default detecting distance	3m
Holding Time	1 - 25s
Working Wave Length	7 - 14um
Detecting Angle	120 degrees

Platforms Supported



Caution

The platforms mentioned above as supported is/are an indication of the module's software or theoretical compatibility. We only provide software library or code examples for Arduino platform in most cases. It is not possible to provide software library / demo code for all possible MCU platforms. Hence, users have to write their own software library.

Getting Started



Note

If this is the first time you work with Arduino, we firmly recommend you to see [Getting Started with Arduino](https://wiki.seeedstudio.com/Getting_Started_with_Arduino/)

[https://wiki.seeedstudio.com/Getting_Started_with_Arduino/] before the start.

Play With Arduino

Hardware

- **Step 1.** Prepare the below stuffs:

Seeeduino V4.2



Grove - PIR Motion Sensor



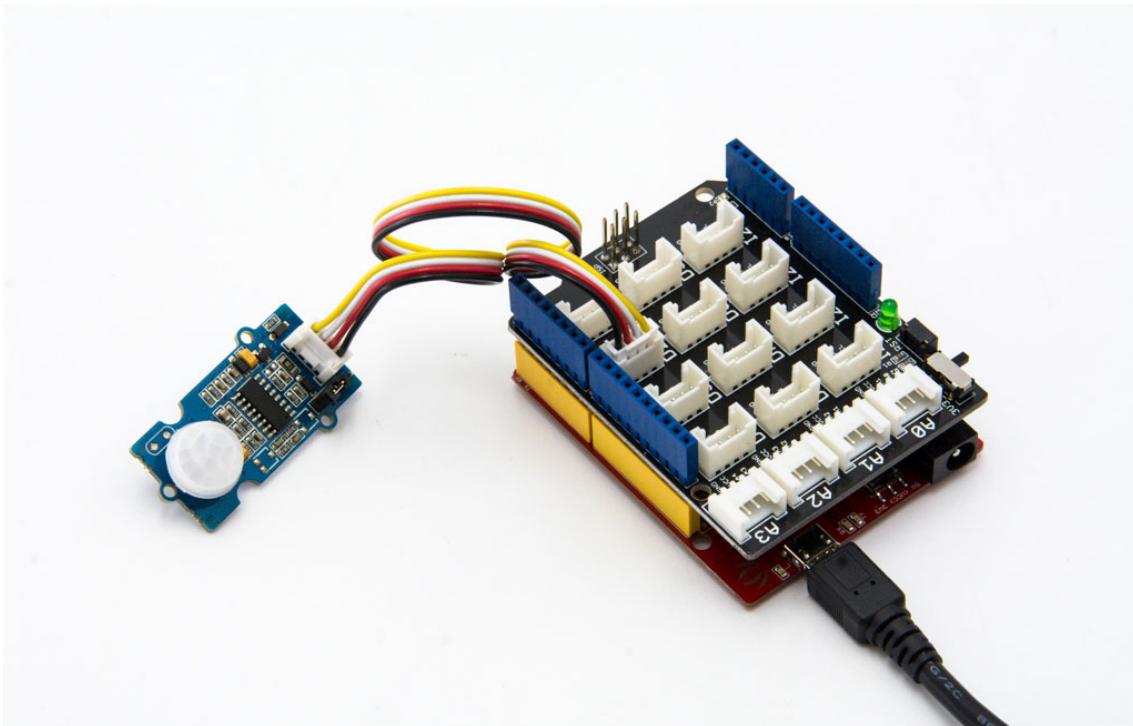
[Get One Now](#)

[<https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html>]

[Get One Now](#)

[<https://www.seeedstudio.com/Grove-PIR-Motion-Sensor-p-802.html>]

- **Step 2.** Connect Grove - PIR Motion Sensor to port **D2** of Grove-Base Shield.
- **Step 3.** Plug Grove - Base Shield into Seeeduino.
- **Step 4.** Connect Seeeduino to PC via a USB cable.

**Note**

If we don't have Grove Base Shield, We also can directly connect Grove-PIR Motion Sensor to Seeeduino as below.

Seeeduino	Grove - PIR Motion Sensor
5V	Red
GND	Black
Not Conencted	White
D2	Yellow

Software

- Copy the code below into Arduino IDE and upload. If you do not know how to upload the code, please check [how to upload](#)

code [https://wiki.seeedstudio.com/Upload_Code/].

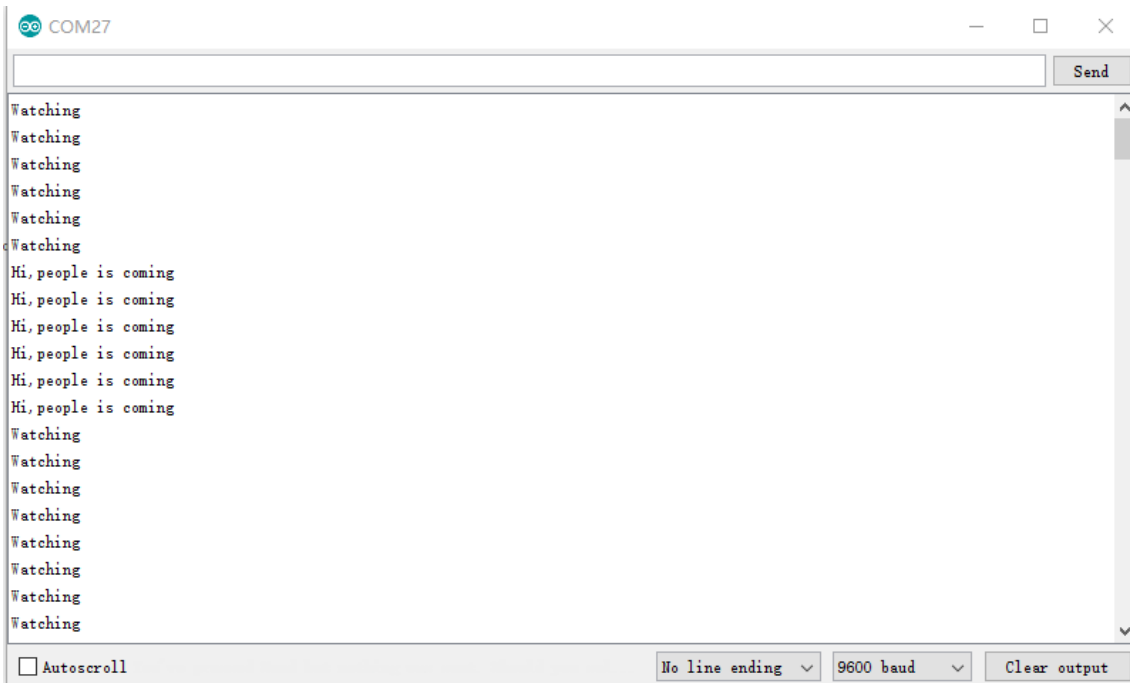
```
1  /*macro definitions of PIR motion sensor pin and LED pin
2  #define PIR_MOTION_SENSOR 2//Use pin 2 to receive the signal
3
4
5  void setup()
6  {
7      pinMode(PIR_MOTION_SENSOR, INPUT);
8      Serial.begin(9600);
9
10 }
11
12 void loop()
13 {
14     if(digitalRead(PIR_MOTION_SENSOR))//if it detects the signal
15         Serial.println("Hi,people is coming");
16     else
17         Serial.println("Watching");
18
19     delay(200);
20 }
```



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.

The result should be like:



```
COM27
Watching
Watching
Watching
Watching
Watching
Watching
Hi, people is coming
Hi, people is coming
Hi, people is coming
Hi, people is coming
Hi, people is coming
Hi, people is coming
Watching
Watching
Watching
Watching
Watching
Watching
Watching
```

Autoscroll No line ending ▼ 9600 baud ▼ Clear output

Play with Codecraft

Hardware

Step 1. Connect a Grove - PIR Motion Sensor to port D2 of a Base Shield.

Step 2. Plug the Base Shield to your Seeduino/Arduino.

Step 3. Link Seeduino/Arduino to your PC via an USB cable.

Software

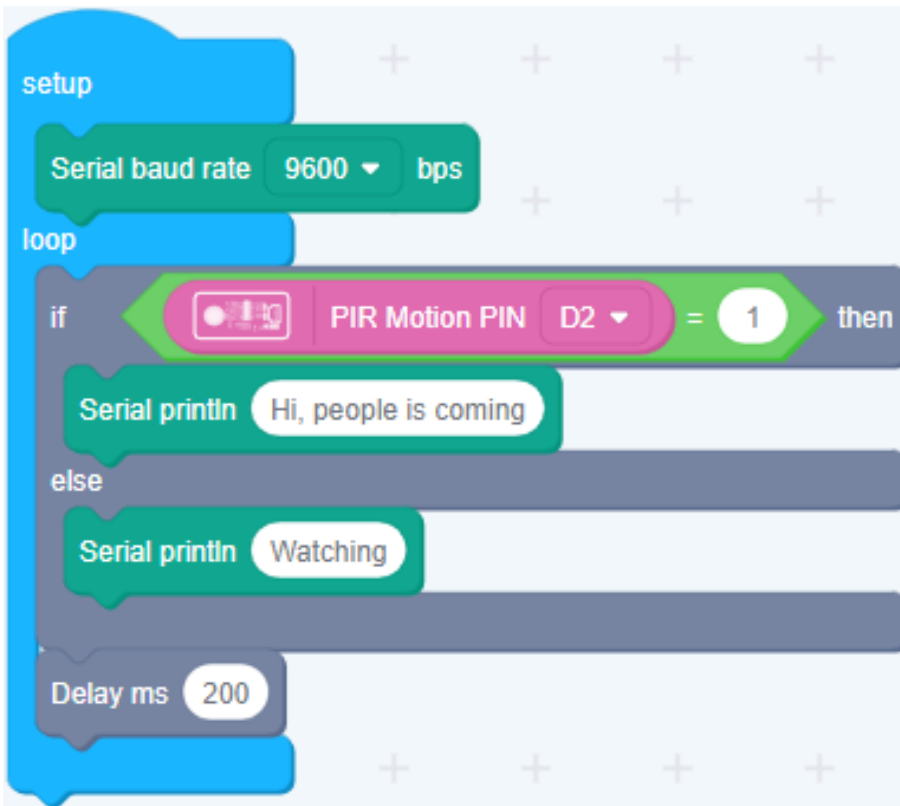
Step 1. Open [Codecraft](https://ide.chmakered.com/) [https://ide.chmakered.com/], add Arduino support, and drag a main procedure to working area.



Note

If this is your first time using Codecraft, see also [Guide for Codecraft using Arduino](https://wiki.seeedstudio.com/Guide_for_Codecraft_using_Arduino/) [https://wiki.seeedstudio.com/Guide_for_Codecraft_using_Arduino/].

Step 2. Drag blocks as picture below or open the cdc file which can be downloaded at the end of this page.



Upload the program to your Arduino/Seeeduino.




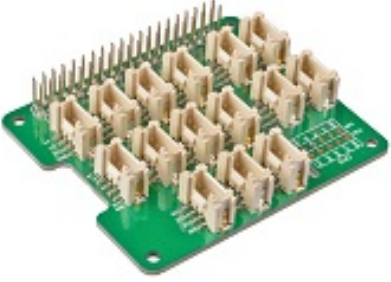
Success

When the code finishes uploaded, the LED will goes on when people is coming.

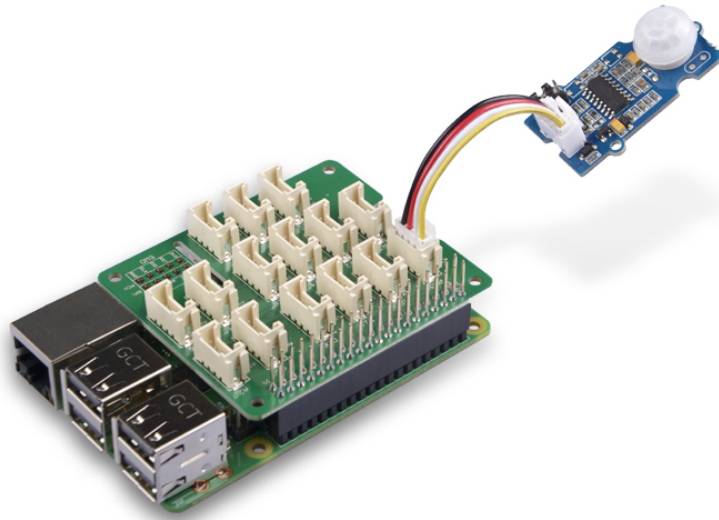
Play With Raspberry Pi (With Grove Base Hat for Raspberry Pi)

Hardware

- **Step 1.** Things used in this project:

Raspberry pi	Grove Base Hat for RasPi
	
<p>Get ONE Now [https://www.seeedstudio.com/Raspberry-Pi-3-Model-B-p-2625.html]</p>	<p>Get ONE Now [https://www.seeedstudio.com/Grove-Base-Hat-for-Raspberry-Pi-p-3186.html]</p>

- **Step 2.** Plug the Grove Base Hat into Raspberry.
- **Step 3.** Connect the PIR motion sensor to port 12 of the Base Hat.
- **Step 4.** Connect the Raspberry Pi to PC through USB cable.



Note

For step 3 you are able to connect the PIR motion sensor to **any GPIO Port** but make sure you change the command with the corresponding port number.

Software

- **Step 1.** Follow [Setting Software](https://wiki.seeedstudio.com/Grove_Base_Hat_for_Raspberry_Pi/#installation) [https://wiki.seeedstudio.com/Grove_Base_Hat_for_Raspberry_Pi/#installation] to configure the development environment.
- **Step 2.** Download the source file by cloning the grove.py library.

```
1 cd ~  
2 git clone https://github.com/Seeed-Studio/grove.py
```



- **Step 3.** Excute below commands to run the code.

```
1 cd grove.py/grove
2 python grove_mini_pir_motion_sensor.py 12
```

Following is the grove_mini_pir_motion_sensor.py code.

```
1 import time
2 from grove.gpio import GPIO
3
4
5 class GroveMiniPIRMotionSensor(GPIO):
6     def __init__(self, pin):
7         super(GroveMiniPIRMotionSensor, self).__init__(pin)
8         self._on_detect = None
9
10    @property
11    def on_detect(self):
12        return self._on_detect
13
14    @on_detect.setter
15    def on_detect(self, callback):
16        if not callable(callback):
17            return
18
19        if self.on_event is None:
20            self.on_event = self._handle_event
21
22        self._on_detect = callback
23
24    def _handle_event(self, pin, value):
25        if value:
26            if callable(self._on_detect):
27                self._on_detect()
28
29 Grove = GroveMiniPIRMotionSensor
30
31
32 def main():
33     import sys
```

```
34
35     if len(sys.argv) < 2:
36         print('Usage: {} pin'.format(sys.argv[0]))
37         sys.exit(1)
38
39     pir = GroveMiniPIRMotionSensor(int(sys.argv[1]))
40
41     def callback():
42         print('Motion detected.')
43
44     pir.on_detect = callback
45
46     while True:
47         time.sleep(1)
48
49
50 if __name__ == '__main__':
51     main()
```



Success

If everything goes well, you will be able to see the following result



```
1 pi@raspberrypi:~/grove.py/grove $ python grove_mini_pir_
2 Motion detected.
3 Motion detected.
4 Motion detected.
5 ^CTraceback (most recent call last):
6   File "grove_mini_pir_motion_sensor.py", line 84, in <m
7     main()
8   File "grove_mini_pir_motion_sensor.py", line 80, in ma
9     time.sleep(1)
10 KeyboardInterrupt
```

You can quit this program by simply press `Ctrl+C`.

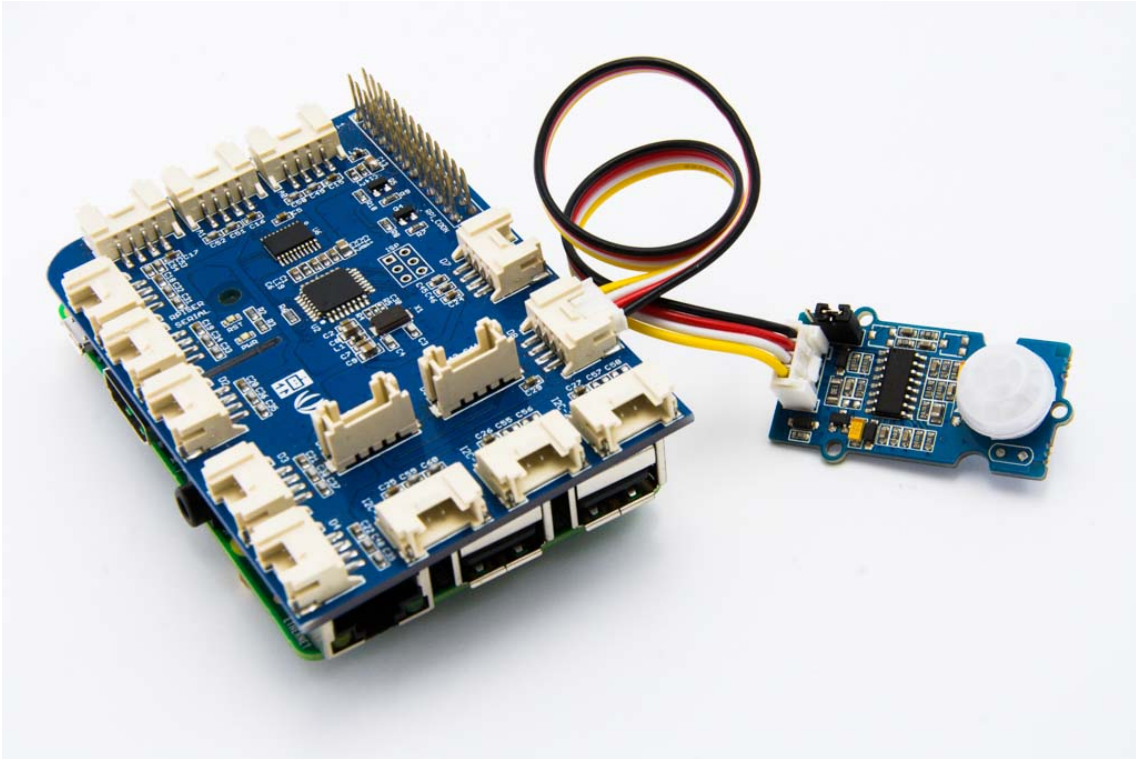
Play With Raspberry Pi (with GrovePi_Plus)

Hardware

- **Step 1.** Prepare the below stuffs:

Raspberry pi	GrovePi_Plus
	
<p>Get One Now [https://www.seeedstudio.com/Raspberry-Pi-3-Model-B-p-2625.html]</p>	<p>Get One Now [https://www.seeedstudio.com/GrovePi-Plus-p-2241.html]</p>

- **Step 2.** Plug the GrovePi_Plus into Raspberry.
- **Step 3.** Connect the sensor to **D8** port of GrovePi_Plus.
- **Step 4.** Connect the Raspberry to PC through USB cable.



Software

- **Step 1.** Follow [Setting Software](https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/setting-software/) [https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/setting-software/] to configure the development environment.
- **Step 2.** Follow [Updating the Firmware](https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/updating-firmware/) [https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/updating-firmware/] to update the newest firmware of GrovePi.



Tip

In this wiki we use the path `~/GrovePi/` instead of `/home/pi/Desktop/GrovePi`, you need to make sure Step 2 and Step 3 use the same path.



Note

We firmly suggest you to update the firmware, or for some sensors you may get errors.



Attention

If you are using **Raspberry Pi with Raspberrypi OS >= Bullseye**, you have to use this command line **only with Python3**.

- **Step 3.** Git clone the Github repository.

```
1 cd ~
2 git clone https://github.com/DexterInd/GrovePi.git
```

- **Step 4.** Run below commands to use the PIR Motion Sensor to monitor the movement of people.

```
1 cd ~/GrovePi/Software/Python
2 sudo python3 grove_pir_motion_sensor.py
```

Here is the grove_pir_motion_sensor.py code.

```
1 import time
2 import grovepi
3
4 # Connect the Grove PIR Motion Sensor to digital port D8
5 # SIG,NC,VCC,GND
6 pir_sensor = 8
7
8 grovepi.pinMode(pir_sensor,"INPUT")
9
10 while True:
11     try:
12         # Sense motion, usually human, within the target
13         if grovepi.digitalRead(pir_sensor):
14             print 'Motion Detected'
```



```
15         else:
16             print '-'
17
18             # if your hold time is less than this, you might
19             time.sleep(.2)
20
21         except IOError:
22             print "Error"
```

The result should be like:

```
1 pi@raspberrypi:~/GrovePi/Software/Python $ sudo python3
2
3 -
4 -
5 -
6 Motion Detected
7 Motion Detected
8 Motion Detected
9 Motion Detected
10 Motion Detected
11 Motion Detected
12 Motion Detected
13 Motion Detected
14 Motion Detected
15 Motion Detected
16 Motion Detected
17 -
18 -
```

FAQs

Q1: How to make the distance adjustable?

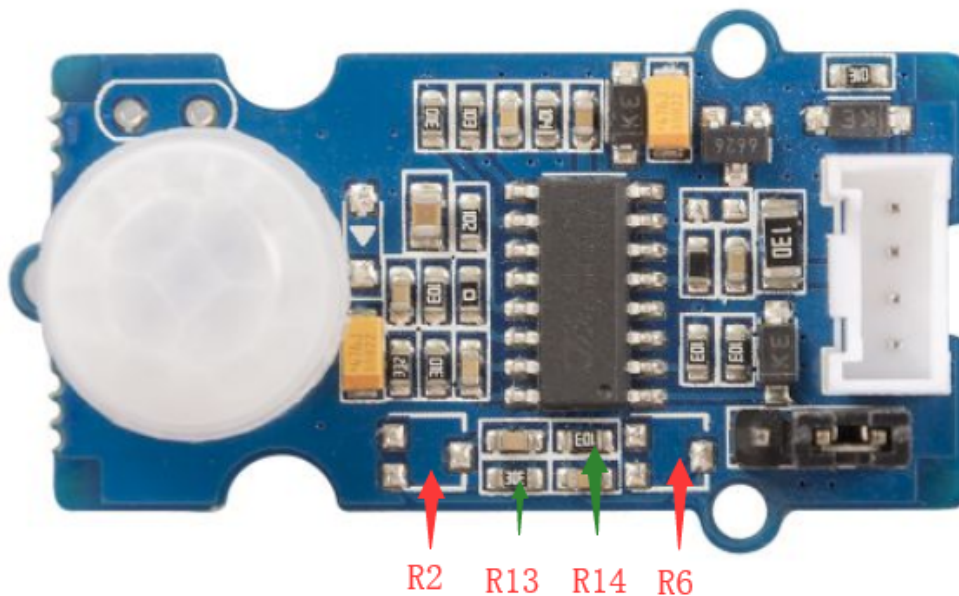
A1: R2: used to adjust the detecting distance(the AMP coefficient, 2M Ω). R6: used to adjust the holding time(the trigger duty, 100K Ω).

The detecting distance can be adjusted from 6 meters to only several centimeters. If the potentiometer is set to one end, the module will be too sensitive to be triggered by the atmosphere even there is no people moving before it. The holding time can also be adjusted by the Delay_time potentiometer, the value is about from 25s to 1s.

If R2 and R6 are soldered, please make sure R13 and R14 are empty.

**Note**

There is risk that the board may be destroyed. Please think it over before making this modification.



Schematic Online Viewer



Resources

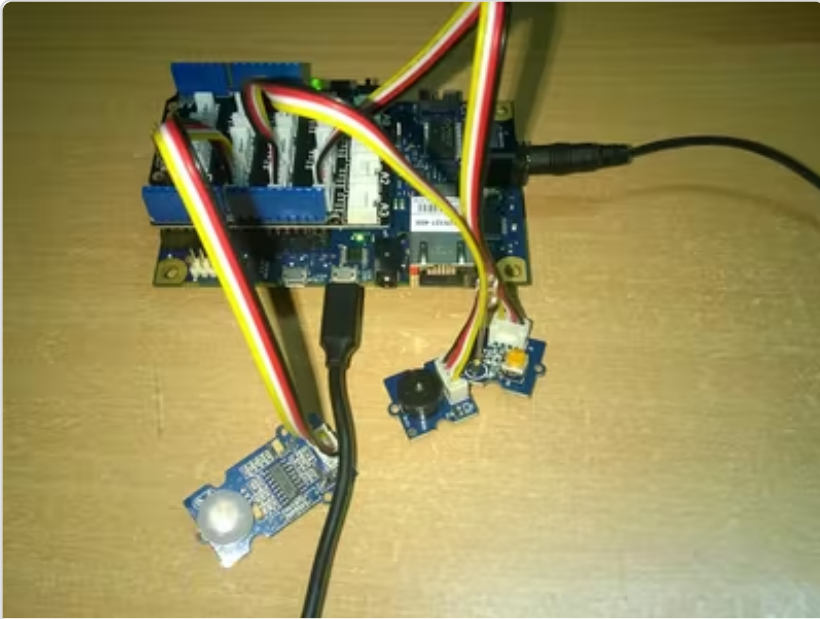
- **[Eagle]** [Grove - PIR Motion Sensor Eagle File v1.2](https://files.seeedstudio.com/wiki/Grove_PIR_Motion_Sensor/res/Grove%20PIR%20Motion%20Sensor_v1_2.zip)
[https://files.seeedstudio.com/wiki/Grove_PIR_Motion_Sensor/res/Grove%20PIR%20Motion%20Sensor_v1_2.zip]
- **[PDF]** [Grove - PIR Motion Sensor v1.2 Schematics](https://files.seeedstudio.com/wiki/Grove_PIR_Motion_Sensor/)
[https://files.seeedstudio.com/wiki/Grove_PIR_Motion_Sensor/]

[resources/Grove_PIR_Sensor_v1.2.pdf](#)]

- **[PDF]** [Grove - PIR Motion Sensor Eagle V1.2 PCB](#)
[https://files.seeedstudio.com/wiki/Grove_PIR_Motion_Sensor/res/Grove%20-%20PIR%20motion%20sensor%20v1.1b%20PCB.pdf]
- **[Library]** [Github repository for PIR Motion Sensor](#)
[https://github.com/Seeed-Studio/PIR_Motion_Sensor]
- **[Datasheet]** [BISS0001 Datasheet](#)
[https://files.seeedstudio.com/wiki/Grove_PIR_Motion_Sensor/resources/Twig_-_BISS0001.pdf]
- **[Datasheet]** [Fresnel lens 8120 Datasheet](#)
[https://files.seeedstudio.com/wiki/Grove_PIR_Motion_Sensor/resources/Fresnel_lens_8120.pdf]
- **[Codecraft]** [CDC File](#)
[https://files.seeedstudio.com/wiki/Grove_PIR_Motion_Sensor/res/Grove_PIR_Motion_Sensor_CDC_File.zip]

Projects

Burglar Alarm with PIR Motion Sensor: This article explains Burglar Alarms with a PIR Motion Sensor.



(https://www.hackster.io/pooja_baraskar/burglar-alarm-with-pir-motion-sensor-964c42)

Tech Support

Please submit any technical issue into our [forum](https://forum.seeedstudio.com/) [<https://forum.seeedstudio.com/>].



[https://www.seeedstudio.com/act-4.html?utm_source=wiki&utm_medium=wikibanner&utm_campaign=newproducts]