

# Grove - Flame Sensor



The Grove - Flame Sensor can be used to detect fire source or other light sources of the wavelength in the range of 760nm - 1100 nm. It is based on the YG1006 sensor which is a high speed and high sensitive NPN silicon phototransistor. Due to its black epoxy, the sensor is sensitive to infrared radiation. In fire fighting robot game,

the sensor plays a very important role, it can be used as a robot eyes to find the fire source.

[Get One Now](#) 

[<https://www.seeedstudio.com/Grove-Flame-Sensor-p-1450.html>]

## Features

- Grove Interface
- High Photo Sensitivity
- Fast Response Time
- Easy to use
- Sensitivity is adjustable



### Tip

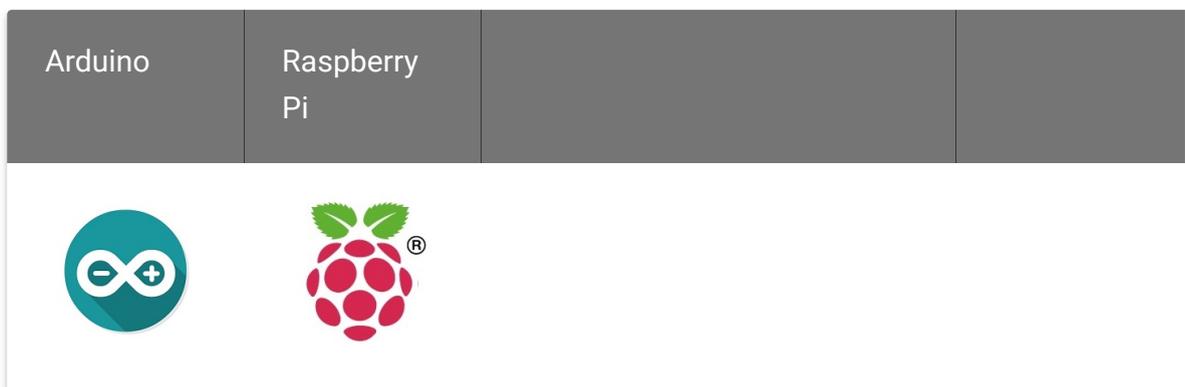
More details about Grove modules please refer to [Grove System](#)  
[[https://wiki.seeedstudio.com/Grove\\_System/](https://wiki.seeedstudio.com/Grove_System/)]

## Specifications

Item	Min	Typical	Max	Unit
Voltage	4.75	5.0	5.30	VDC
Current	/	20	/	mA
Range of Spectral Bandwidth	760	940	1100	nm
Detection range	0	~	1	m
Response Time	15			μS
Operating Temperature	-25	~	85	°C



## 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

The module is mainly used to detect the infrared light. It outputs digital signal 0 and 1 through a Comparator output. The output value will be 0 when infrared light is detected. And the sensitivity is adjustable by the precision potentiometer.

## Play with Arduino

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## Hardware

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

Seeeduino V4.2



Base Shield



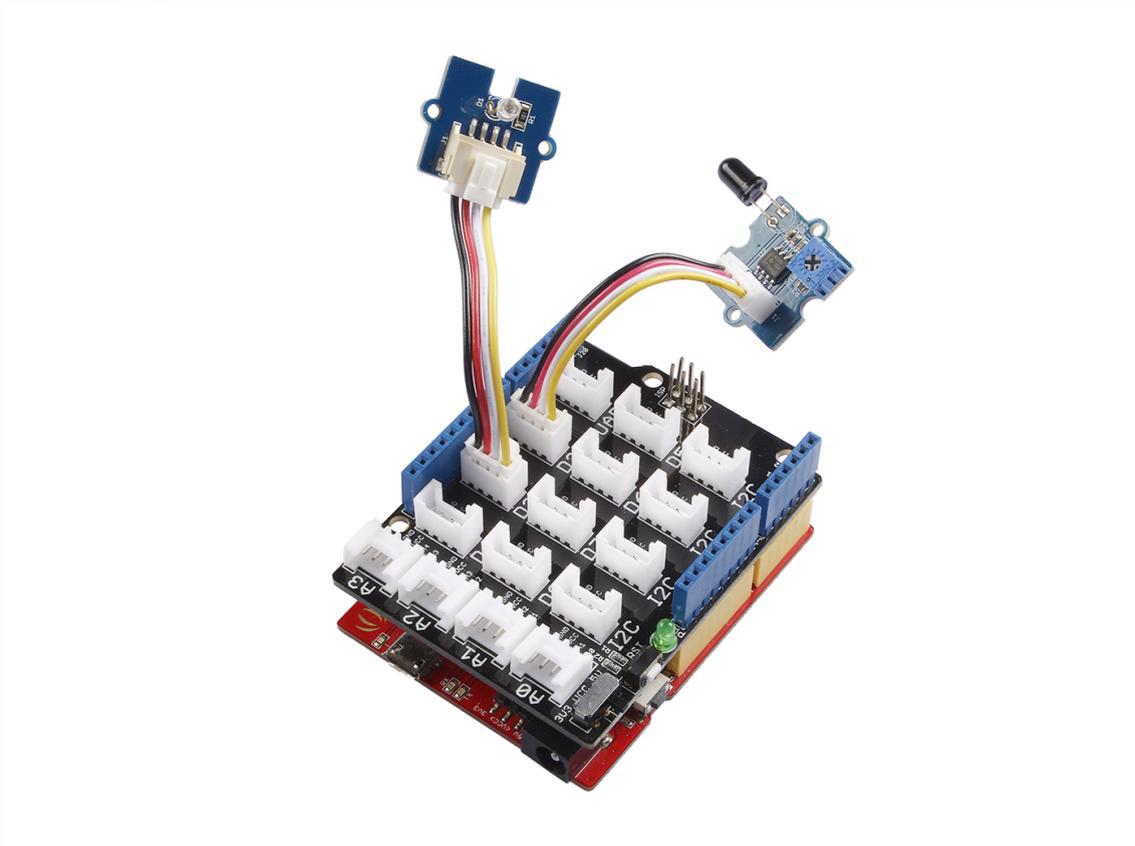
[Get One Now](https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html)

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

[Get One Now](https://www.seeedstudio.com/Base-Shield-V2-p-1378.html)

[<https://www.seeedstudio.com/Base-Shield-V2-p-1378.html>]

- **Step 2.** Connect Grove-Flame\_Sensor to port **D2** of Grove-Base Shield.
- **Step 3.** Connect Grove - Red LED to port **D3** of Grove-Base Shield.
- **Step 4.** Plug Grove - Base Shield into Seeeduino.
- **Step 5.** Connect Seeeduino to PC via a USB cable.

**Note**

If we don't have Grove Base Shield, We also can directly connect this module to Seeeduino as below.

Seeeduino	Grove-Flame_Sensor
5V	Red
GND	Black
Not Conencted	White
D2	Yellow

Seeeduino	Grove - Red LED
5V	Red
GND	Black
Not Conencted	White
D3	Yellow

## Software

**Step 1.** Copy the code and flash it into the controller board.

Here is the code

```
1  /******  
2  
3  #define FLAME_SENSOR 2 //connect SENSOR to digital pin2  
4  #define LED 3 //connect Grove - LED to pin3  
5  
6  void setup()  
7  {  
8      pinsInit();  
9  }  
10 void loop()  
11 {  
12     if(isFlameDetected())  
13         turnOnLED();  
14     else turnOffLED();  
15 }  
16 *****  
17 void pinsInit()  
18 {  
19     pinMode(FLAME_SENSOR, INPUT);  
20     pinMode(LED,OUTPUT);
```

```
21     digitalWrite(LED,LOW);
22 }
23 void turnOnLED()
24 {
25     digitalWrite(LED,HIGH);
26 }
27 void turnOffLED()
28 {
29     digitalWrite(LED,LOW);
30 }
31 boolean isFlameDetected()
32 {
33     if(digitalRead(FLAME_SENSOR))
34         return false;
35     else return true;
36 }
```

**Step 2.** The LED will light up when there is infrared light.

## Play with Codecraft

### Hardware

**Step 1.** Connect a Grove - Flame Sensor to port D2, and connect a Grove - Red LED to port D3 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

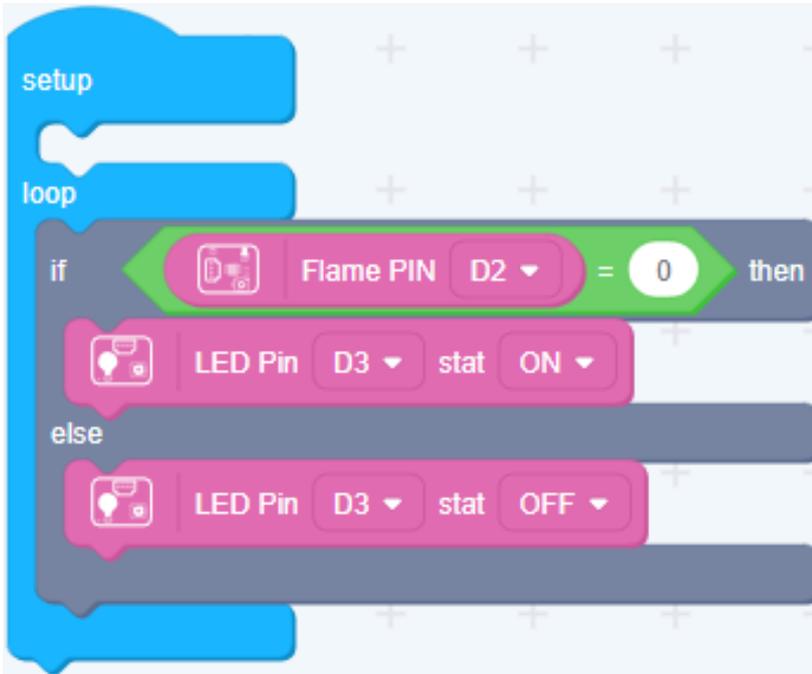
**Step 1.** Open [Codecraft](https://ide.chmakered.com/) [https://ide.chmakered.com/], add Arduino support, and drag a main procedure to working area.



#### 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/](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 Flame Sensor detects flame.

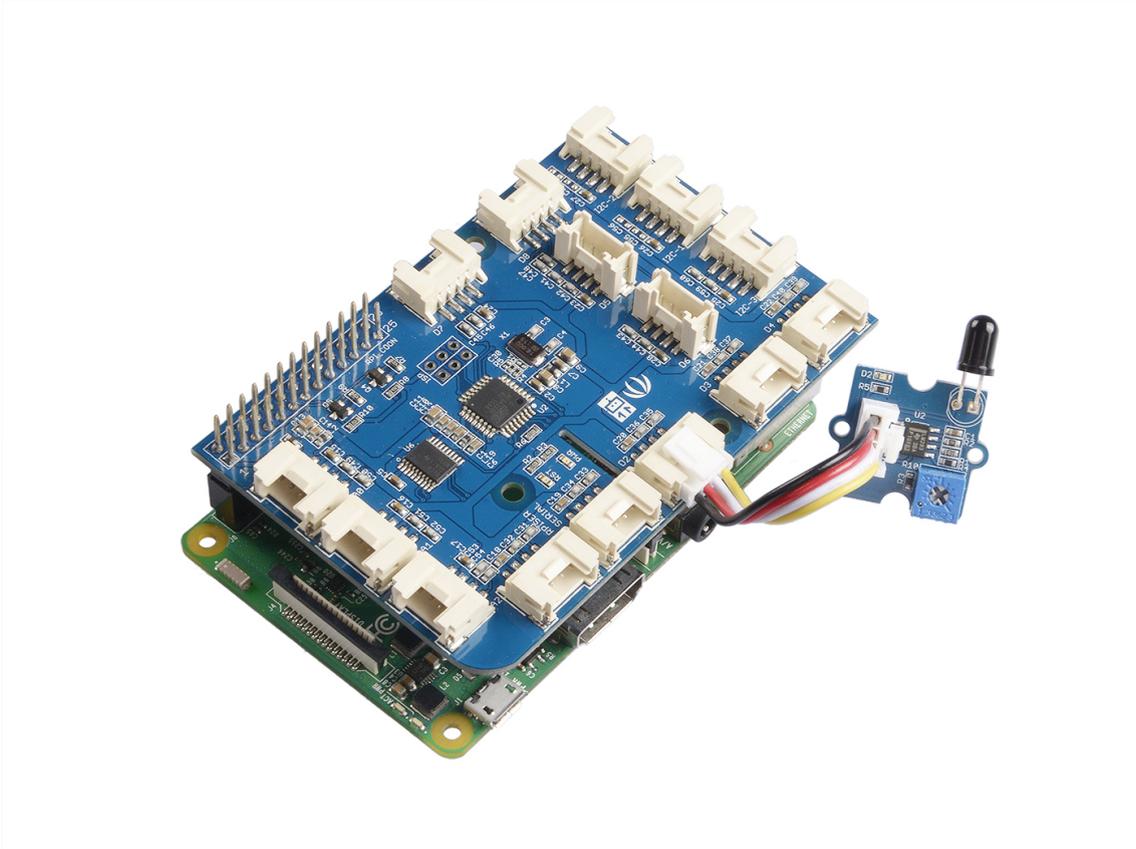
## Play With Raspberry Pi

### Hardware

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

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

- **Step 2.** Plug the GrovePi\_Plus into Raspberry.
- **Step 3.** Connect Grove-Flame\_Sensor to **D2** 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.** Git clone the Github repository.

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

- **Step 3.** Excute below commands to use this sensor

```
1 cd ~/GrovePi/Software/Python  
2 python grove_flame_sensor.py
```

Here is the code of example:

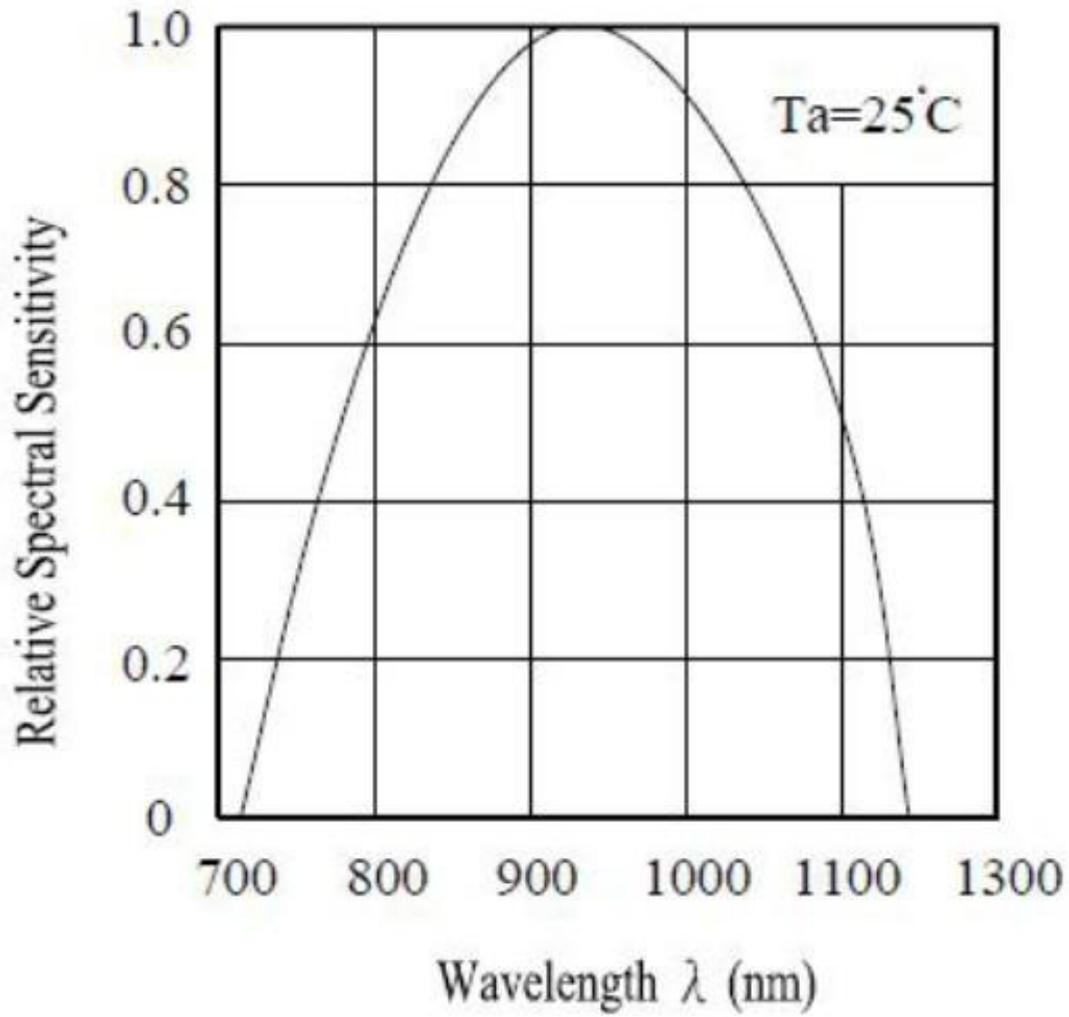
```
1  #!/usr/bin/env python
2  #
3  # GrovePi Example for using the Grove Flame Sensor (http://www.seeedstudio.com/Grove-Flame_Sensor/)
4  #
5  # The GrovePi connects the Raspberry Pi and Grove sensor.
6  #
7  # Have a question about this example? Ask on the forums at http://www.seeedstudio.com/forum
8  #
9  '''
10 ## License
11 The MIT License (MIT)
12 GrovePi for the Raspberry Pi: an open source platform for prototyping making connected devices
13 Copyright (C) 2017 Dexter Industries
14 Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:
15 The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.
16 THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR PERFORMANCE OF THE SOFTWARE.
17 '''
18 import time
19 import grovepi
20
21 # Connect the Grove Flame Sensor to digital port D2
22 # SIG,NC,VCC,GND
23 flame_sensor = 2
24
25 grovepi.pinMode(flame_sensor,"INPUT")
26
27
28
29
30
31
32
33
34
35
36
37
38
```

```
39 while True:
40     try:
41         print(grovepi.digitalRead(flame_sensor))
42         time.sleep(.5)
43
44     except IOError:
45         print ("Error")
46
```

## Reference

The sensor can detect the light source whose wavelength is in the range of 760nm - 1100 nm. The picture below shows the spectral

sensitivity.



Schematic Online Viewer



## Resources

- **[Eagle]** [Grove - Flame Sensor Eagle File](https://files.seeedstudio.com/wiki/Grove-Flame_Sensor/res/Grove-Directional_Light_Sensor_Eagle_File.zip)  
[[https://files.seeedstudio.com/wiki/Grove-Flame\\_Sensor/res/Grove-Directional\\_Light\\_Sensor\\_Eagle\\_File.zip](https://files.seeedstudio.com/wiki/Grove-Flame_Sensor/res/Grove-Directional_Light_Sensor_Eagle_File.zip)]
- **[Library]** [Github repository for Grove\\_Flame\\_Sensor Library](https://github.com/Seeed-Studio/Grove_Flame_Sensor)  
[[https://github.com/Seeed-Studio/Grove\\_Flame\\_Sensor](https://github.com/Seeed-Studio/Grove_Flame_Sensor)]

- **[Datasheet]** [LM293D datasheet](https://files.seeedstudio.com/wiki/Grove-Flame_Sensor/res/LM293D.pdf)  
[https://files.seeedstudio.com/wiki/Grove-Flame\_Sensor/res/LM293D.pdf]
- **[Codecraft]** [CDC File](https://files.seeedstudio.com/wiki/Grove-Flame_Sensor/res/Grove_Flame_Sensor_CDC_File.zip) [https://files.seeedstudio.com/wiki/Grove-Flame\_Sensor/res/Grove\_Flame\_Sensor\_CDC\_File.zip]

## 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=newpr  
oducts]