# Grove - Flame Sensor

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Wiki: http://wiki.seeedstudio.com/Grove-Flame_Sensor/

Bazaar: https://www.seeedstudio.com/Grove-Flame-Sensor-p-1450.html

## Document Revision History

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

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*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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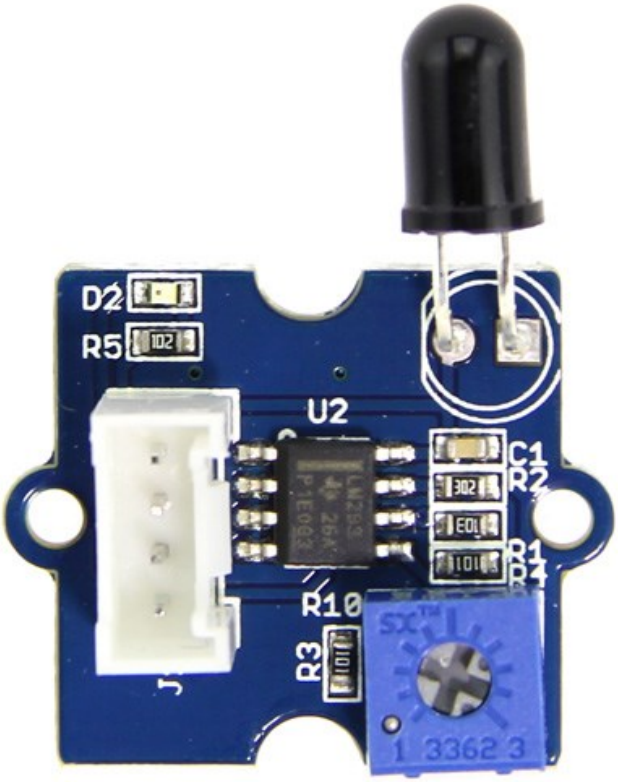
## 1. Introduction

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



## 2. Feature

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

# 3. Specification

| 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 | ℃ |

## 4. Usage

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.

Let's use it to control. When the output value is 0, the led will light up.

1. Connect the module to the D3 of Grove - Base Shield using the 4-pin grove cable.

2. Plug the Grove - Base Shield into Arduino.

3. Connect Arduino to PC by using a USB cable.

4. Copy and paste code below to a new Arduino sketch. Please click here if you do not know how to upload.

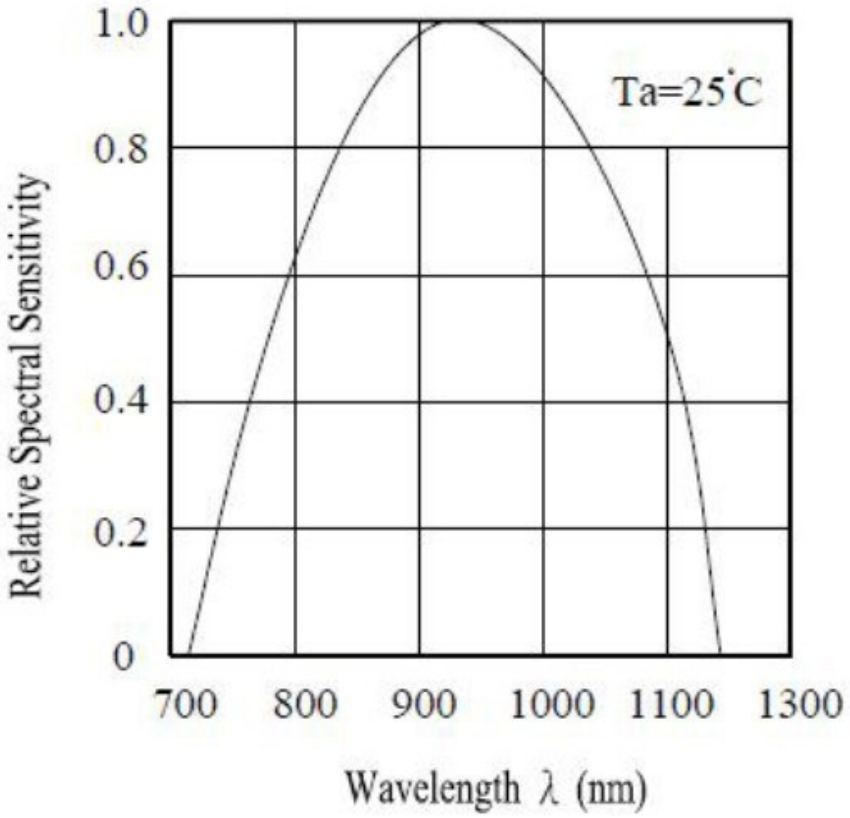
```
/*********************************************************************
******/

#define SENSOR 3 //connect SENSOR to digital pin3
#define LED 2//connect Grove - LED to pin2

void setup()
{
    pinsInit();
}
void loop()
{
    if(isFlameDetected())
    turnOnLED();
    else turnOffLED();
}
/*******************************/
void pinsInit()
{
    pinMode(FLAME_SENSOR, INPUT);
    pinMode(LED,OUTPUT);
    digitalWrite(LED,LOW);
}
void turnOnLED()
{
    digitalWrite(LED,HIGH);
}
void turnOffLED()
{
```

```
    digitalWrite(LED,LOW);
}
boolean isFlameDetected()
{
    if(digitalRead(FLAME_SENSOR))
    return false;
    else return true;
}
```

5. The LED will light up when there is infrared light. Please use it to design your products.

## 5. Reference

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



## 6. Resource

Grove - Flame Sensor Eagle File

Github repository for Grove_Flame_Sensor Library (new)

LM293D datasheet

## 7. Support

If you have questions or other better design ideas, you can go to our forum to discuss.

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