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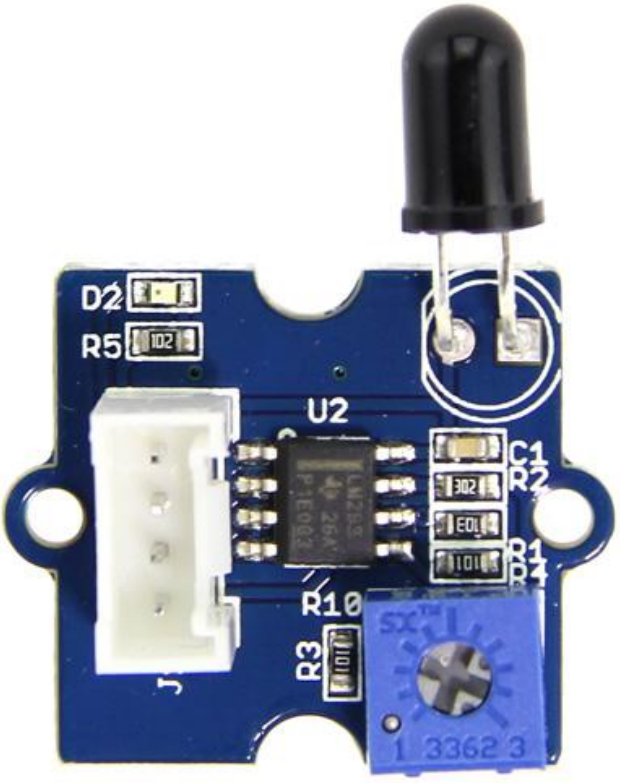
Grove - Flame Sensor



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/]

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	℃

Platforms Supported

Arduino	Raspberry Pi		

Caution
The platforms mentioned above as supported is/are an indication of the module's software or theoritical 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

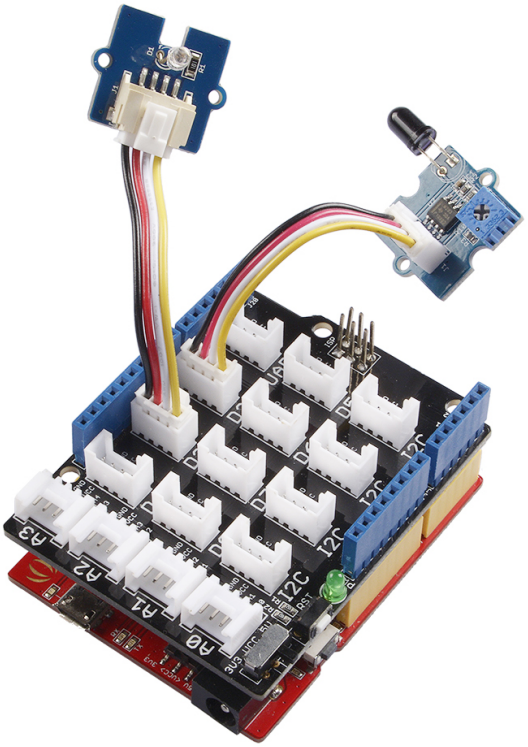
The module is mainly used to detect the infrared light. It outputs digital signal 0 and 1 through a Comparator output. The output value will be 0 when infrared light is detected. And the sensitivity is adjustable by the precision potentiometer.

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]	Get One Now [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

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

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

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;
}
```

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 Seeeduino/Arduino.

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

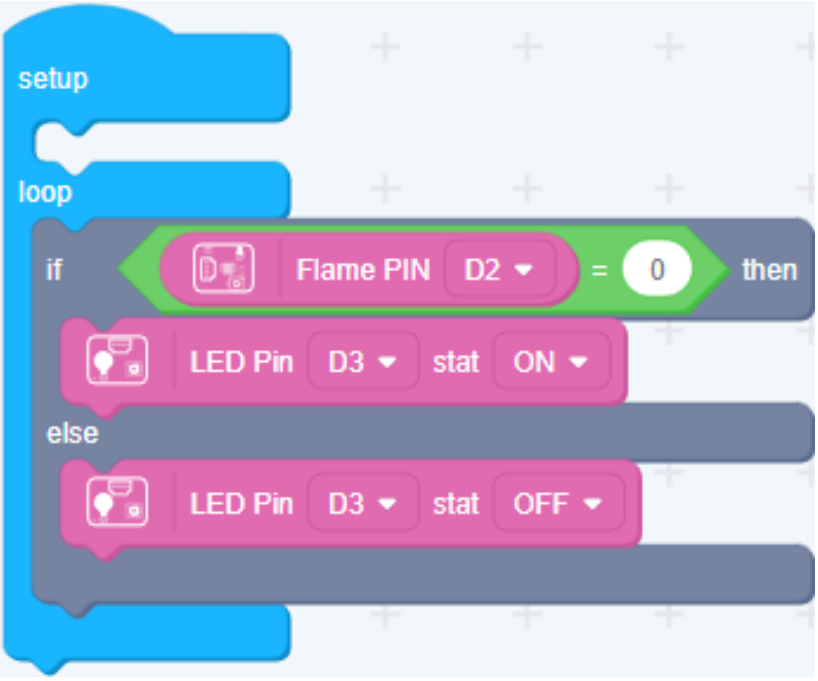
Software

Step 1. Open Codecraft [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/].

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.

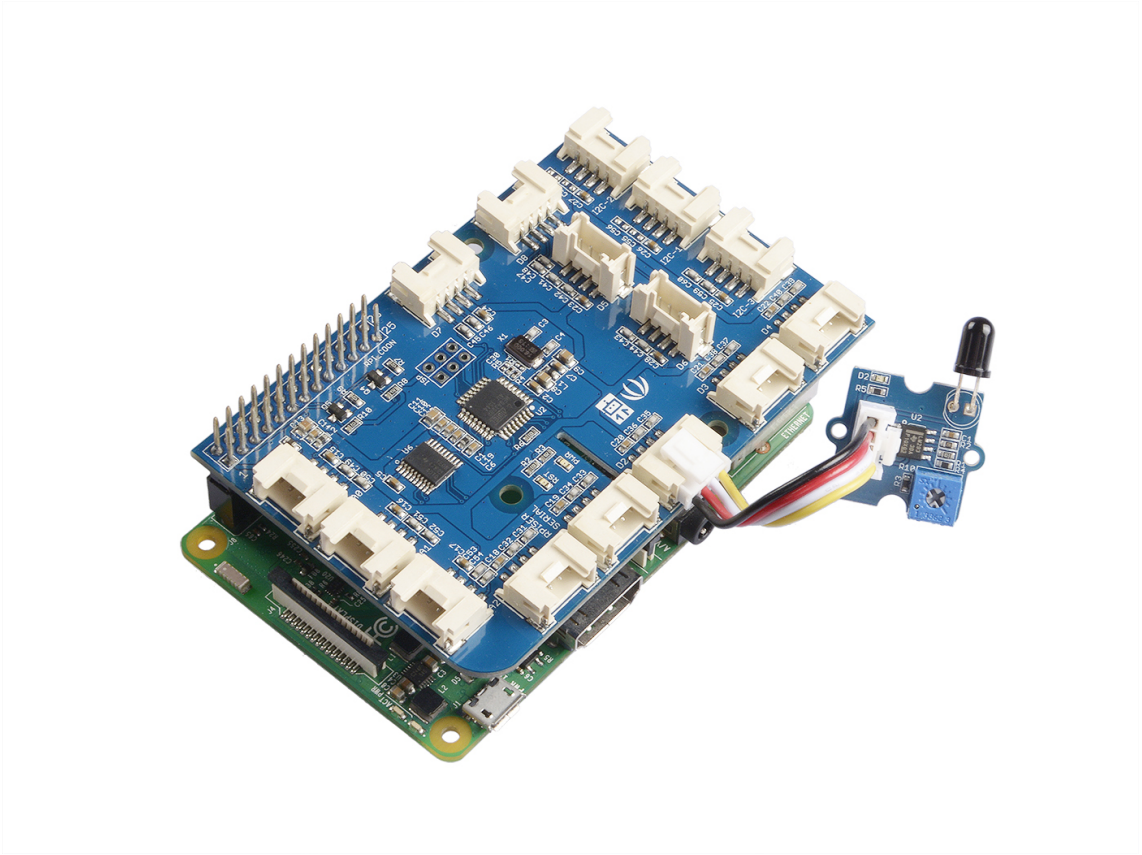
Play With Raspberry Pi

Hardware

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

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

- **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/] to configure the development environment.
- **Step 2.** Git clone the Github repository.

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

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

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

Here is the code of example:

```
#!/usr/bin/env python
#
# GrovePi Example for using the Grove Flame Sensor (http:
#
# The GrovePi connects the Raspberry Pi and Grove sensor
#
# Have a question about this example?  Ask on the forums
#
'''
## License
The MIT License (MIT)
GrovePi for the Raspberry Pi: an open source platform fo
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THE SOFTWARE.
'''
import time
import grovepi

# Connect the Grove Flame Sensor to digital port D2
# SIG,NC,VCC,GND
flame_sensor = 2

grovepi.pinMode(flame_sensor,"INPUT")

```
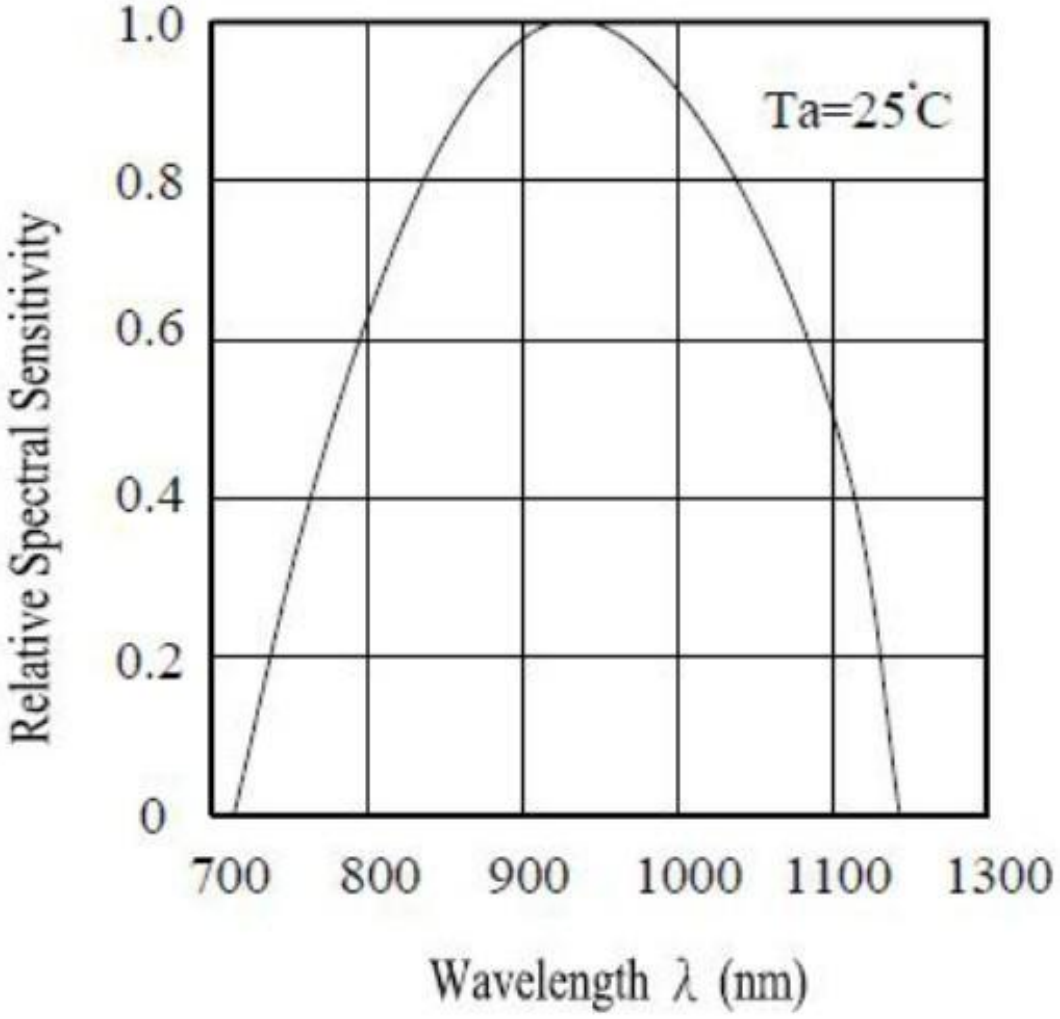

```
while True:
    try:
        print(grovepi.digitalRead(flame_sensor))
        time.sleep(.5)

    except IOError:
        print ("Error")

```

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]
- **[Library]** Github repository for Grove_Flame_Sensor Library [https://github.com/Seeed-Studio/Grove_Flame_Sensor]

- **[Datasheet]** LM293D datasheet [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]

Tech Support

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

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