



DFROBOT
DRIVE THE FUTURE



Gravity VEML6075 UV Sensor Module

SKU:SEN0303

Introduction

This is a UV sensor module based on Vishay VEML6075 sensor, adopting individual UVA and UVB channel solution with 16-bit resolution. It can convert solar UV light intensity to digital data to provide an accurate measure of the signal strength.

VEML6075 UV sensor can give a reliable performance of UV radiation measurement under long time solar UV exposure. Furthermore, the sensor provides excellent temperature compensation capability within -40°C to $+85^{\circ}\text{C}$. VEML6075 features, low power consumption, and its minimum power can be as low as 800nA in shut-down mode. The operating voltage of the sensor ranges from 3.3V to 5V. It adopts IIC protocol, which can work well with any microcontroller that supports IIC.

Compatible with Arduino and Raspberry Pi, this sensor can be used in portable electronic product, wearable device, weather station, flame detecting and so on. We have related Arduino and Python library for your reference, and provide you with a Gravity connector to enable you to use the sensor without soldering.

Application

Ultraviolet tester, outdoor UV detector, bactericidal lamp

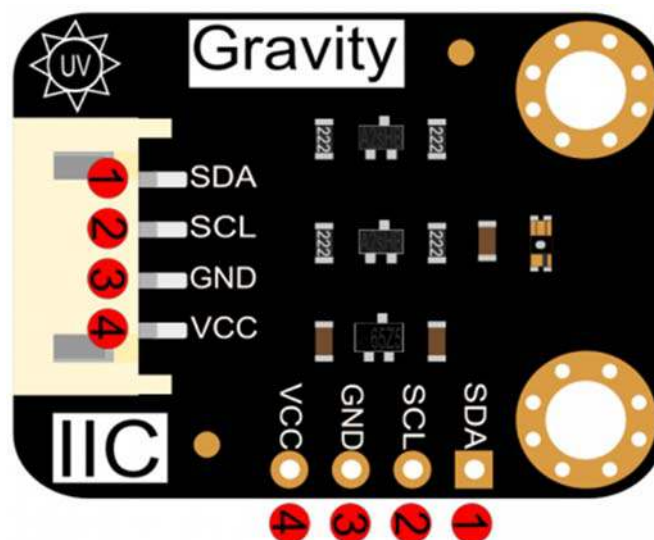
Specification

- Operating Voltage: 3.3V~5V
- Operating Current: 700uA
- Shut-down Mode: 10uA
- UV Chip: VEML6075
- Output: digital output
- Response Wavelength: UVB ($\lambda 0.5$) within 315nm to 340nm; UVA ($\lambda 0.5$) within 350nm to 375nm.
- Interface: PH2.0-4P
- IIC Address: 0x10
- Dimension: 22×30mm/0.87×1.18"
- Mount Hole Size: 3mm
- Mount Hole Pitch: 15mm
- Operating Temperature: -40°C~+85°C



NOTE: to get more accurate measurement, the sensor should direct to ultraviolet light source.

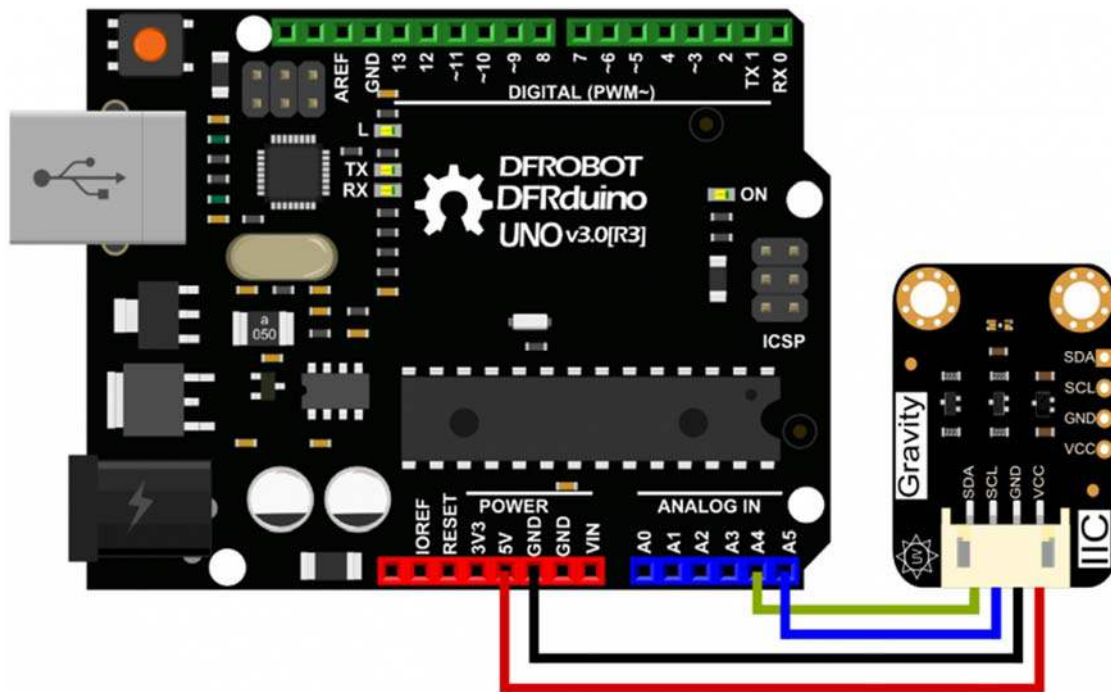
Pinout



Num	Label	Description
1	SDA	Serial Data Line
2	SCL	Serial Clock Line
3	GND	Ground
4	VCC	DC 3.3V~5.5V

Tutorial (Arduino)

Connect the sensor with Arduino UNO via I2C interface as shown below:



- Connect the sensor VCC to power pin(3.3V or 5V) of Arduino microcontroller.
- Connect the sensor GND to Arduino GND.
- Connect the sensor SCL to I2C SCL pin of Arduino (pin A5 in Arduino UNO&328).
- Connect the sensor SDA to I2C SDA pin of Arduino (pin A4 in Arduino UNO&328).

Arduino Example Code

Click to download DFRobot_VEML6075 Library file, about how to install the library?

```
/*!
 * file VEML6075SimpleTest.ino
 * simple test for VEML6075
 * Print UVA index, UVB index and UV index on the serial monitor
 *
 * Copyright [DFRobot](http://www.dfrobot.com), 2018
 * Copyright GNU Lesser General Public License
 * version V1.0
 * date 2018-12-18
 */

#include <Wire.h>
#include <DFRobot_VEML6075.h>

#define VEML6075_ADDR 0x10

DFRobot_VEML6075_IIC VEML6075(&Wire, VEML6075_ADDR); // create object

void setup()
{
  Serial.begin(115200);
  delay(2000);
  while(!Serial);

  Serial.println();
  while(VEML6075.begin() != true) {
    Serial.println("VEML6075 begin failed");
    delay(2000);
  }
  Serial.println("VEML6075 begin succeeded");
}

void loop()
{
  uint16_t UvaRaw = VEML6075.readUvaRaw(); // read UVA raw
  uint16_t UvbRaw = VEML6075.readUvbRaw(); // read UVB raw
  uint16_t comp1Raw = VEML6075.readUvComp1Raw(); // read COMP1 raw
  uint16_t comp2Raw = VEML6075.readUvComp2Raw(); // read COMP2 raw

  float Uva = VEML6075.getUva(); // get UVA
  float Uvb = VEML6075.getUvb(); // get UVB
  float Uvi = VEML6075.getUvi(Uva, Uvb); // get UV index

  Serial.println();
  Serial.println("=====  
Serial.print("UVA raw: ");
  Serial.println(UvaRaw);
  Serial.print("UVB raw: ");
```

```

Serial.println(UvbRaw);
Serial.print("COMP1 raw: ");
Serial.println(comp1Raw);
Serial.print("COMP2 raw: ");
Serial.println(comp2Raw);
Serial.print("UVA:      ");
Serial.println(Uva, 2);
Serial.print("UVB:      ");
Serial.println(Uvb, 2);
Serial.print("UVIndex:  ");
Serial.print(Uvi, 2);
if(Uvi < UVI_LOW)
  Serial.println(" UVI low");
else if(Uvi < UVI_MODERATE)
  Serial.println(" UVI moderate");
else if(Uvi < UVI_HIGH)
  Serial.println(" UVI high");
else if(Uvi < UVI_VERY_HIGH)
  Serial.println(" UVI very high");
else
  Serial.println(" UVI extreme");
Serial.print("mw/cm^2:  ");
Serial.println(Uvi2mwpcm2(Uvi), 2);
Serial.println("==== end print =====");
delay(1000);
}

```

Result

Hold the UV sensor towards the ultraviolet light source, open Arduino serial port monitor, band rate 115200.

```

COM54 (Arduino/Genuino Uno)
VEML6075 begin succeeded

==== start print =====
UVA raw: 55
UVB raw: 55
COMP1 raw: 55
COMP2 raw: 55
UVA: -140.25
UVB: -202.95
UVIndex: -0.20 UVI low
mw/cm^2: -511.88
==== end print =====

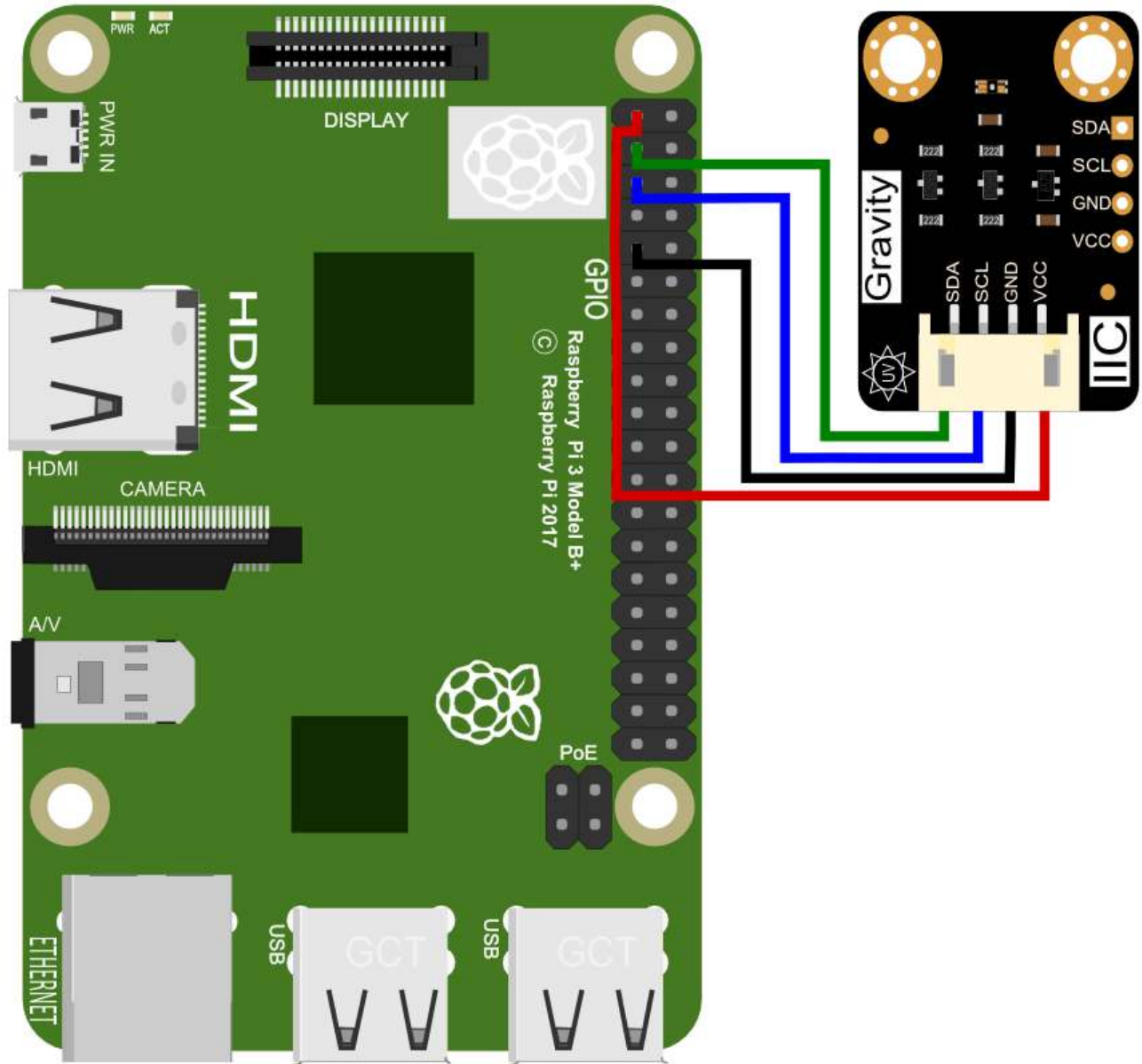
==== start print =====
UVA raw: 19
UVB raw: 16
COMP1 raw: 0
COMP2 raw: 0
UVA: 19.00
UVB: 16.00
UVIndex: 0.02 UVI low
mw/cm^2: 51.39
==== end print =====

==== start print =====
UVA raw: 28
UVB raw: 28

```

Tutorial (Raspberry Pi)

Connect the sensor to Raspberry Pi 3B+ as shown below.



- Connect the sensor VCC to Raspberry Pi 3.3V
- Connect the sensor GND to Raspberry Pi GND
- Connect the sensor SCL to Raspberry Pi SCL, P3 in BCM code(Pin 5 in physical)
- Connect the sensor SDA to Raspberry Pi SDA, P2 in BCM code(Pin 3 in physical)

Run example codes on Raspberry Pi

Click to download DFRobot_VEML6075 Library file to your Raspberry Pi, and run the code with the reference of following commands. Please confirm that the I2C of Raspberry Pi is enabled.

Enter the directory of Raspberry Pi example codes

```
cd /DFRobot_VEML6075-master/raspberry/examples
```

Run Raspberry Pi example codes

```
python DFRobot_VEML6075_demo.py
```

DFRobot_VEML6075_demo.py Sample Code

```
# -*- coding: utf-8 -*-
'''
* file DFRobot_VEML6075_demo.py
* normal test for VEML6075
* UVA index, UVB index and UV index will print on terminal
*
* Copyright [DFRobot](http://www.dfrobot.com), 2018
* Copyright GNU Lesser General Public License
* version V1.0
* date 2018-12-18
'''

import time
import sys
sys.path.append("..")

from DFRobot_VEML6075 import DFRobot_VEML6075

if __name__ == '__main__':

    VEML6075 = DFRobot_VEML6075(1, 0x10) # use i2c bus 1, module address is 0x10

    while VEML6075.begin() != True:
        print("VEML6075 begin failed")
        time.sleep(2)
    print("VEML6075 begin succeed")

    while True:
        Uva = VEML6075.getUva() # get UVA
        Uvb = VEML6075.getUvb() # get UVB
        Uvi = VEML6075.getUvi(Uva, Uvb) # get UVI
        print("")
```

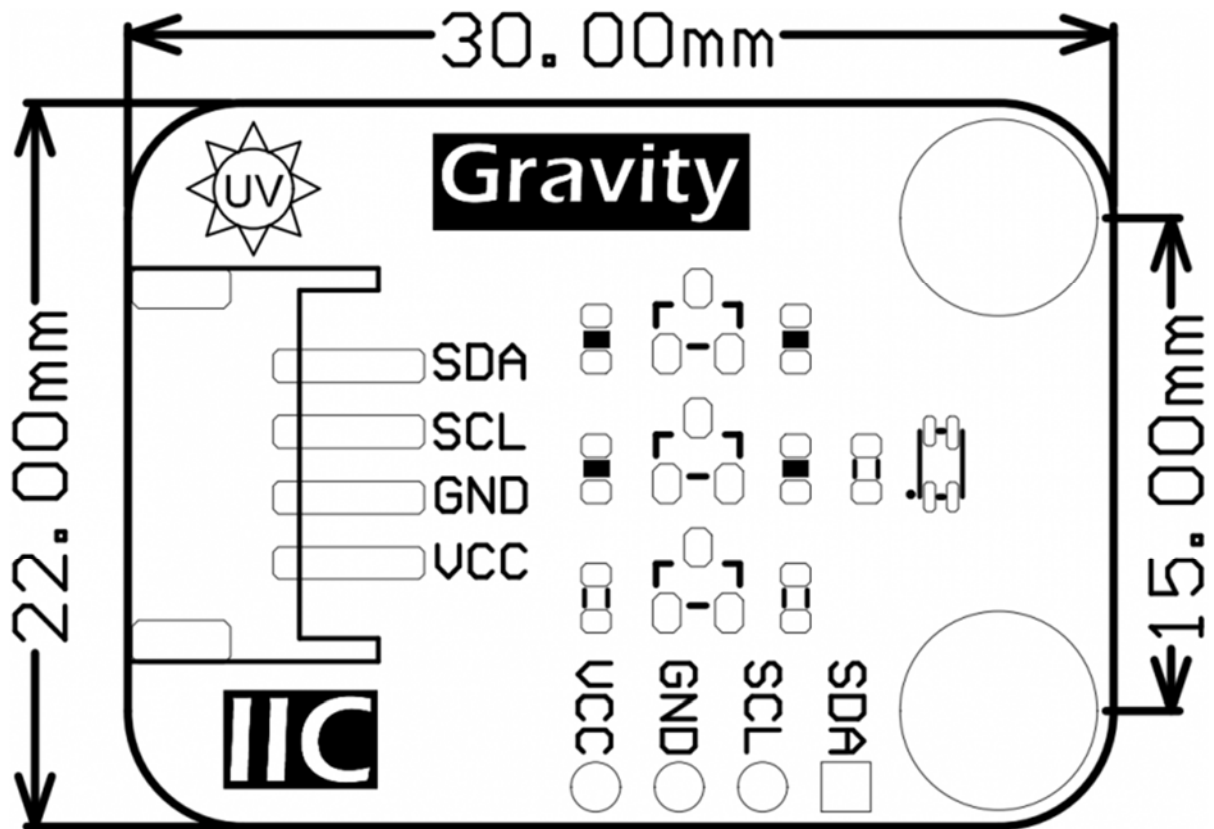


```
print("=====  
start print =====")  
print("UVA:      %.2f" %(Uva))  
print("UVB:      %.2f" %(Uvb))  
print("UVA:      %.2f" %(Uvi))  
print("mw/cm^2:  %.2f" %(VEML6075.Uvi2mwpcm2(Uvi)))  
print("=====  
end print =====")  
time.sleep(1)
```

Read UV data on Raspberry Pi

```
pi@raspberrypi:~/DFRobot_VEML6075-master/raspberry/examples $ python DFRobot_VEM  
L6075_demo.py  
VEML6075 begin succeed  
  
=====  
start print =====  
UVA:      0.00  
UVB:      0.00  
UVI:      0.00  
mw/cm^2:  0.00  
=====  
end print =====  
  
=====  
start print =====  
UVA:      19.00  
UVB:      13.00  
UVI:      0.02  
mw/cm^2:  44.44  
=====  
end print =====  
  
=====  
start print =====  
UVA:      18.00  
UVB:      12.00  
UVI:      0.02  
mw/cm^2:  41.66  
=====  
end print =====  
  
=====  
start print =====  
UVA:      19.00  
UVB:      12.00  
UVI:      0.02  
mw/cm^2:  43.05  
=====  
end print =====  
  
=====  
start print =====  
UVA:      20.00  
UVB:      13.00  
UVI:      0.02  
mw/cm^2:  45.83  
=====  
end print =====  
  
=====  
start print =====  
UVA:      19.00  
UVB:      13.00  
UVI:      0.02
```


Product Size



FAQ

For any questions, advice or cool ideas to share, please visit the **DFRobot Forum**