

## SEN0187 RGB and Gesture Sensor

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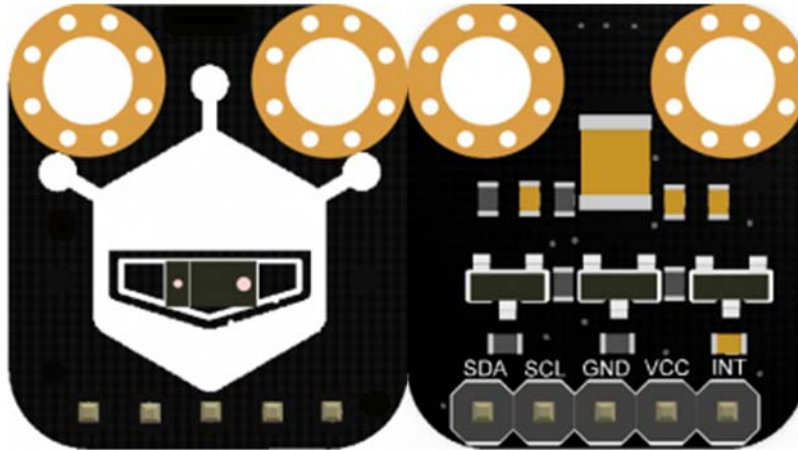
### Introduction

The sensor module uses the APDS-9960 chip, this is a single 8 pin package digital RGB, ambient light, short and gesture sensor device. The device is compatible with I2C interface, with an interrupt pin. And short-range and gestures are measured with infrared LED. RGB and environmental light perception measurement function could work under a variety of light conditions, such as covering by a variety of damping materials including a piece of dark glass. In addition, the integrated UV-IR shading filter can realize ambient light and color temperature detecting.

## Specification

- Operating Voltage: 3.3-5V
- Interface:  
I2C interface x1  
Interrupt pin x1
- Detecting range: 100mm
- Module size: 18.3x16.4mm

## Layout



RGB and Gesture Sensor  
POSITIVE

RGB and Gesture Sensor  
REVERSE

名称	功能描述
SDA	I2C DATA PORT
SCL	I2C CLOCK PORT
GND	GND
VCC	VCC
INT	Interrupt Output

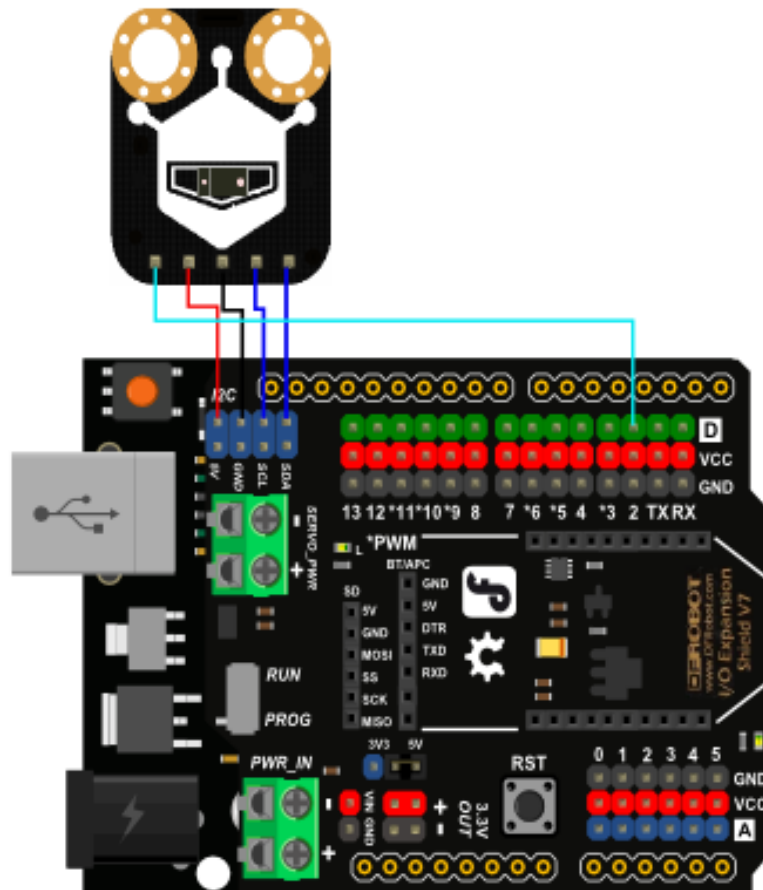
## Tutorial

We will use a simple example to teach you how to use the gesture Sensor. Our goal is to make the sensor to detect gestures up and down around the waving.

### Requirements

- **Hardware**  
UNO x1  
RGB and Gesture Sensor x1
- **Software**  
Arduino IDE V1.6.5 [Click to Download Arduino IDE](https://www.arduino.cc/en/Main/Software)  
<https://www.arduino.cc/en/Main/Software>

### Connection Diagram



Sensor Pin	UNO Pin
VCC	5V
GND	GND
SCL	SCL
SDA	SDA
INT	2

## How to use

In this section, we will use a simple experiment to teach you how to use our gesture sensor. Our goal is to get the sensor detect the gesture UP, DOWN, left and right. Here we begin.

### Codes download

- Download and install the RGB and Gesture Sensor Library:

[Click to download library files](#)

[https://github.com/Arduinolib/DFRobot\\_RGB\\_and\\_gesture\\_sensor/raw/master/SparkFun\\_APDS9960.zip](https://github.com/Arduinolib/DFRobot_RGB_and_gesture_sensor/raw/master/SparkFun_APDS9960.zip)

[Arduino Library Installation Tutorial](https://www.arduino.cc/en/Guide/Libraries#UxU8mdzF9H0) <https://www.arduino.cc/en/Guide/Libraries#UxU8mdzF9H0>

Next, we need to open the ARDUINO IDE, and copy the following simple code to the IDE window. Then select the right serial port and board (Arduino UNO). Wave your hand in front of the sensor, see what happen on the serial port.

### Sample Code

```
1 #include <Wire.h>
2 #include <APDS9960.h>
3
4 // Pins
5 #define APDS9960_INT    2 // Needs to be an interrupt pin
6
7 APDS9960 apds = APDS9960();
8 int isr_flag = 0;
9
10 void setup() {
```

```
11
12 // Initialize Serial port
13 Serial.begin(9600);
14 Serial.println();
15 Serial.println(F("-----"));
16 Serial.println(F("APDS-9960 - GestureTest"));
17 Serial.println(F("-----"));
18
19 // Initialize interrupt service routine
20 attachInterrupt(0, interruptRoutine, FALLING);
21
22 // Initialize APDS-9960 (configure I2C and initial values)
23 if ( apds.init() ) {
24     Serial.println(F("APDS-9960 initialization complete"));
25 } else {
26     Serial.println(F("Something went wrong during APDS-9960 init!"));
27 }
28
29 // Start running the APDS-9960 gesture sensor engine
30 if ( apds.enableGestureSensor(true) ) {
31     Serial.println(F("Gesture sensor is now running"));
32 } else {
33     Serial.println(F("Something went wrong during gesture sensor init!"));
34 }
35 }
36
37 void loop() {
38     if( isr_flag == 1 ) {
39         handleGesture();
40         if(digitalRead(APDS9960_INT) == 0){
41             apds.init();
42             apds.enableGestureSensor(true);
43         }
44     }
```

```
45     isr_flag = 0;
46   }
47 }
48
49 void interruptRoutine() {
50     isr_flag = 1;
51 }
52
53 void handleGesture() {
54     if ( apds.isGestureAvailable() ) {
55         switch ( apds.readGesture() ) {
56             case DIR_UP:
57                 Serial.println("UP");
58                 break;
59             case DIR_DOWN:
60                 Serial.println("DOWN");
61                 break;
62             case DIR_LEFT:
63                 Serial.println("LEFT");
64                 break;
65             case DIR_RIGHT:
66                 Serial.println("RIGHT");
67                 break;
68             case DIR_NEAR:
69                 Serial.println("NEAR");
70                 break;
71             case DIR_FAR:
72                 Serial.println("FAR");
73                 break;
74             default:
75                 Serial.println("NONE");
76         }
77     }
```

## Other functions

This sensor not only support gesture recognition, but also the range, ambient light and RGB color detecting. The specific examples can be found in the library **EXAMPLES** folder. so you can also develop other application according to your requirement.

## Protocol/Library Explanation

[I2C Protocol](https://en.wikipedia.org/wiki/I2C) <https://en.wikipedia.org/wiki/I2C>

## Trouble Shooting

Any question and more cool ideas to share, please visit [DFRobot Forum](#)