



## TCS34725 I2C Color Sensor For Arduino SKU: SEN0212



### Introduction

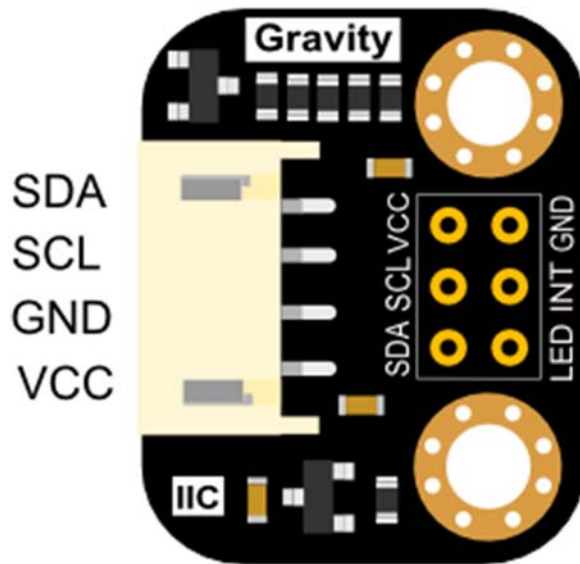
The TCS34725 has a high sensitivity, wide dynamic range, and includes an IR blocking filter making it an ideal color sensing solution for use under varied lighting conditions. The sensor also includes four ultra-bright LEDs to allow the sensor to work without external light resources.

The module works via your Arduino's I2C bus and includes PH2.0-4P and XH2.54 (breadboard) interfaces to meet a range of user scenarios.

### Specification

- Operating Voltage: 3.3~5V
- Operating Current: 65 uA
- Detection Range: 3-10 mm
- The Clock Frequency: 0-400 KHZ
- Interface: IIC interface
- IIC Address: 0x29
- Temperature Range: - 30 °C ~ + 70 °C
- Feet inches: 18.5 \* 23 mm/ 0.73 \* 0.9 inches
- Weight: 12 g

## Board Overview



| Num | Label | Description           |
|-----|-------|-----------------------|
| 1   | SDA   | I2C-SDA               |
| 2   | SCL   | I2C-SCL               |
| 3   | VCC   | 3.3~5V                |
| 4   | GND   | GND                   |
| 5   | LED   | Active-High/Vacant On |
| 6   | INT   | Active Low            |

Note:

1. I2C address: 0x29
2. XH2.54 interface (BreadBoard Compatible) need soldering.
3. The paper of the blocking filter could be teared out.

## Tutorial

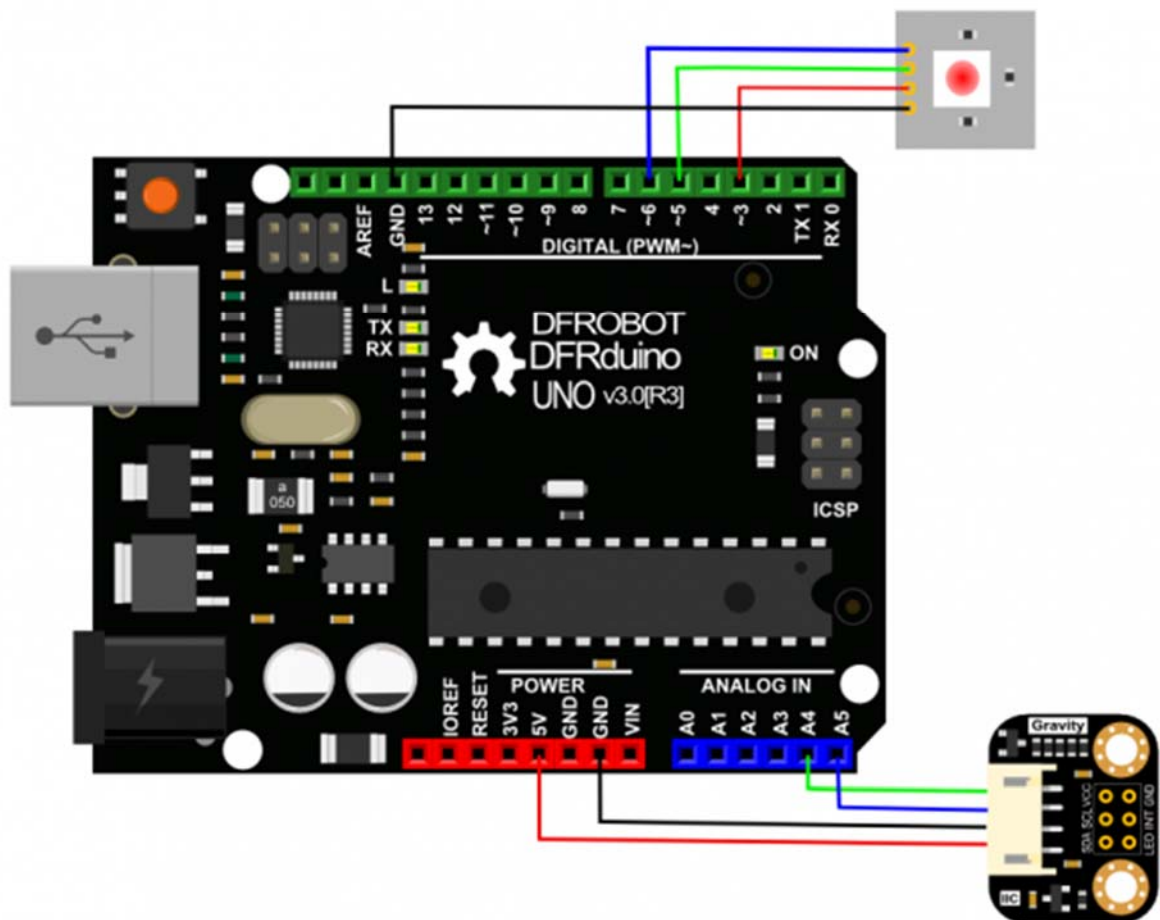
In this tutorial, we'll detect the specimen RGB value, and simulate it with RGB LEDs

### Requirements

- **Hardware**
  - DFRduino UNO (or similar) x 1
  - RGB LED Module
  - M-M/F-M/F-F Jumper wires
- **Software**
  - Arduino IDE (Version requirements: V1.6.x), Click to Download Arduino IDE from Arduino® <https://www.arduino.cc/en/Main/Software%7C>

**Note:** The sensor should be placed above the specimen, 3 ~ 10 mm

### Connection Diagram



TCS34725 I2C Color Sensor For Arduino

## Sample Code

Install the Arduino Library Download here How to install Libraries in Arduino IDE

[https://github.com/DFRobot/DFRobot\\_TCS34725/raw/master/DFRobot\\_TCS34725.rar](https://github.com/DFRobot/DFRobot_TCS34725/raw/master/DFRobot_TCS34725.rar)

<https://www.arduino.cc/en/Guide/Libraries#.UxU8mdzF9H0%7C>

```
1 /*!
2  * @file colorview.ino
3  * @brief DFRobot's Color Sensor
4  * @n [Get the module here]
5  * @n This example read current R,G,B,C value by the IIC bus
6  * @n [Connection and Diagram](http://wiki.dfrobot.com.cn/index.php?
title=(SKU:SEN0212)Color_Sensor-TCS34725_%E9%A2%9C%E8%89%B2%E4%BC%A0%E6
%84%9F%E5%99%A8)
7  *
8  * @copyright [DFRobot](http://www.dfrobot.com), 2016
9  * @copyright GNU Lesser General Public License
10 *
11 * @author [carl](carl.xu@dfrobot.com)
12 * @version V1.0
13 * @date 2016-07-12
14 */
15 #include <Wire.h>
16 #include "DFRobot_TCS34725.h"
17
18 // Pick analog outputs, for the UNO these three work well
19 // use ~560 ohm resistor between Red & Blue, ~1K for green (its bri
ghter)
20 #define redpin 3
21 #define greenpin 5
22 #define bluepin 6
23 // for a common anode LED, connect the common pin to +5V
24 // for common cathode, connect the common to ground
25
```

```

26 // set to false if using a common cathode LED
27 #define commonAnode true
28
29 // our RGB -> eye-recognized gamma color
30 byte gammatable[256];
31
32 DFRobot_TCS34725 tcs = DFRobot_TCS34725(TCS34725_INTEGRATIONTIME_50M
S, TCS34725_GAIN_4X);
33 void setup() {
34   Serial.begin(115200);
35   Serial.println("Color View Test!");
36
37   if (tcs.begin()) {
38     Serial.println("Found sensor");
39   } else {
40     Serial.println("No TCS34725 found ... check your connections");
41     while (1); // halt!
42   }
43   // use these three pins to drive an LED
44   pinMode(redpin, OUTPUT);
45   pinMode(greenpin, OUTPUT);
46   pinMode(bluepin, OUTPUT);
47
48   // thanks PhilB for this gamma table!
49   // it helps convert RGB colors to what humans see
50   for (int i=0; i<256; i++) {
51     float x = i;
52     x /= 255;
53     x = pow(x, 2.5);
54     x *= 255;
55
56     if (commonAnode) {
57       gammatable[i] = 255 - x;
58     } else {
59       gammatable[i] = x;

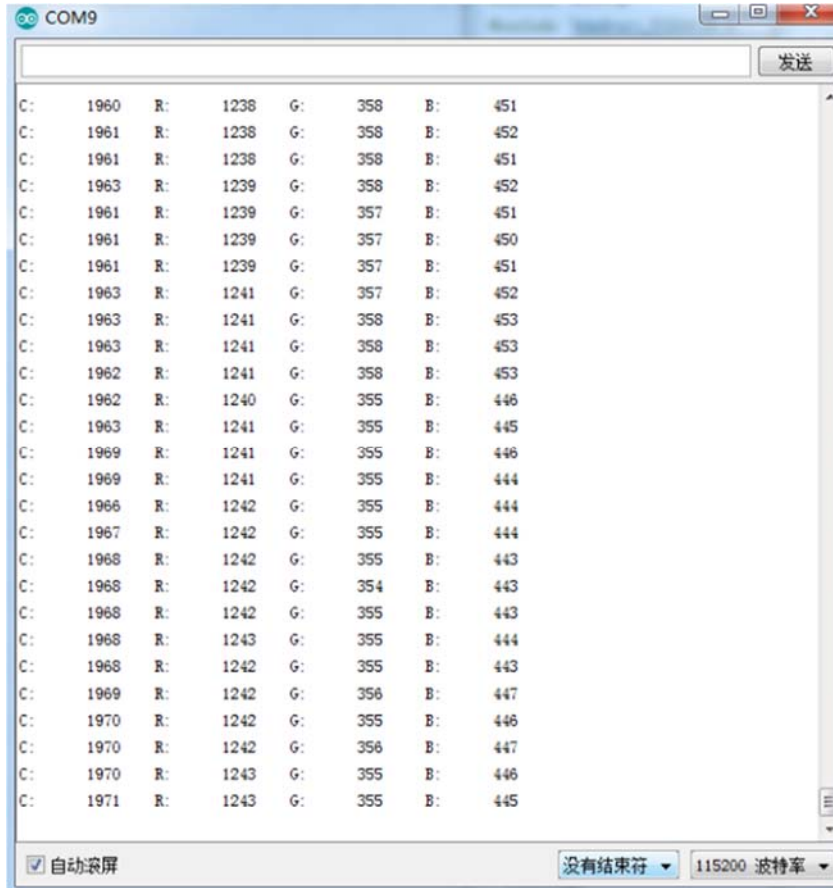
```

```

60     }
61     //Serial.println(gammatable[i]);
62 }
63 }
64
65 void loop() {
66     uint16_t clear, red, green, blue;
67     tcs.getRGBC(&red, &green, &blue, &clear);
68     tcs.lock(); // turn off LED
69     Serial.print("C:\t"); Serial.print(clear);
70     Serial.print("\tR:\t"); Serial.print(red);
71     Serial.print("\tG:\t"); Serial.print(green);
72     Serial.print("\tB:\t"); Serial.print(blue);
73     Serial.println("\t");
74
75     // Figure out some basic hex code for visualization
76     uint32_t sum = clear;
77     float r, g, b;
78     r = red; r /= sum;
79     g = green; g /= sum;
80     b = blue; b /= sum;
81     r *= 256; g *= 256; b *= 256;
82     Serial.print("\t");
83     Serial.print((int)r, HEX); Serial.print((int)g, HEX); Serial.print
((int)b, HEX);
84     Serial.println();
85
86     //Serial.print((int)r ); Serial.print(" "); Serial.print((int)g);S
erial.print(" "); Serial.println((int)b );
87     //Set the color lamp
88     analogWrite(redpin, gammatable[(int)r]);
89     analogWrite(greenpin, gammatable[(int)g]);
90     analogWrite(bluepin, gammatable[(int)b]);
91 }

```

## Expected Results



|    |      |    |      |    |     |    |     |
|----|------|----|------|----|-----|----|-----|
| C: | 1960 | R: | 1238 | G: | 358 | B: | 451 |
| C: | 1961 | R: | 1238 | G: | 358 | B: | 452 |
| C: | 1961 | R: | 1238 | G: | 358 | B: | 451 |
| C: | 1963 | R: | 1239 | G: | 358 | B: | 452 |
| C: | 1961 | R: | 1239 | G: | 357 | B: | 451 |
| C: | 1961 | R: | 1239 | G: | 357 | B: | 450 |
| C: | 1961 | R: | 1239 | G: | 357 | B: | 451 |
| C: | 1963 | R: | 1241 | G: | 357 | B: | 452 |
| C: | 1963 | R: | 1241 | G: | 358 | B: | 453 |
| C: | 1963 | R: | 1241 | G: | 358 | B: | 453 |
| C: | 1962 | R: | 1241 | G: | 358 | B: | 453 |
| C: | 1962 | R: | 1240 | G: | 355 | B: | 446 |
| C: | 1963 | R: | 1241 | G: | 355 | B: | 445 |
| C: | 1969 | R: | 1241 | G: | 355 | B: | 446 |
| C: | 1969 | R: | 1241 | G: | 355 | B: | 444 |
| C: | 1966 | R: | 1242 | G: | 355 | B: | 444 |
| C: | 1967 | R: | 1242 | G: | 355 | B: | 444 |
| C: | 1968 | R: | 1242 | G: | 355 | B: | 443 |
| C: | 1968 | R: | 1242 | G: | 354 | B: | 443 |
| C: | 1968 | R: | 1242 | G: | 355 | B: | 443 |
| C: | 1968 | R: | 1243 | G: | 355 | B: | 444 |
| C: | 1968 | R: | 1242 | G: | 355 | B: | 443 |
| C: | 1969 | R: | 1242 | G: | 356 | B: | 447 |
| C: | 1970 | R: | 1242 | G: | 355 | B: | 446 |
| C: | 1970 | R: | 1242 | G: | 356 | B: | 447 |
| C: | 1970 | R: | 1243 | G: | 355 | B: | 446 |
| C: | 1971 | R: | 1243 | G: | 355 | B: | 445 |