



## TCS34725 I2C Color Sensor For Arduino SKU: SEN0212



### Introduction

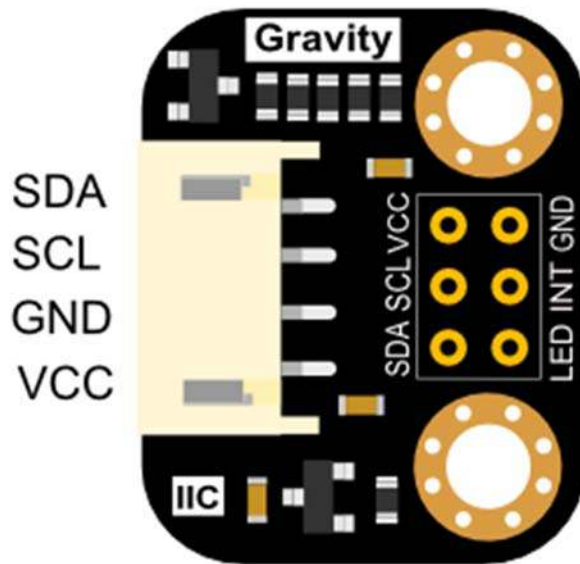
The TCS34725 has a high sensitivity, wide dynamic range, and includes an IR blocking filter making it an ideal color sensing solution for use under varied lighting conditions. The sensor also includes four ultra-bright LEDs to allow the sensor to work without external light resources.

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

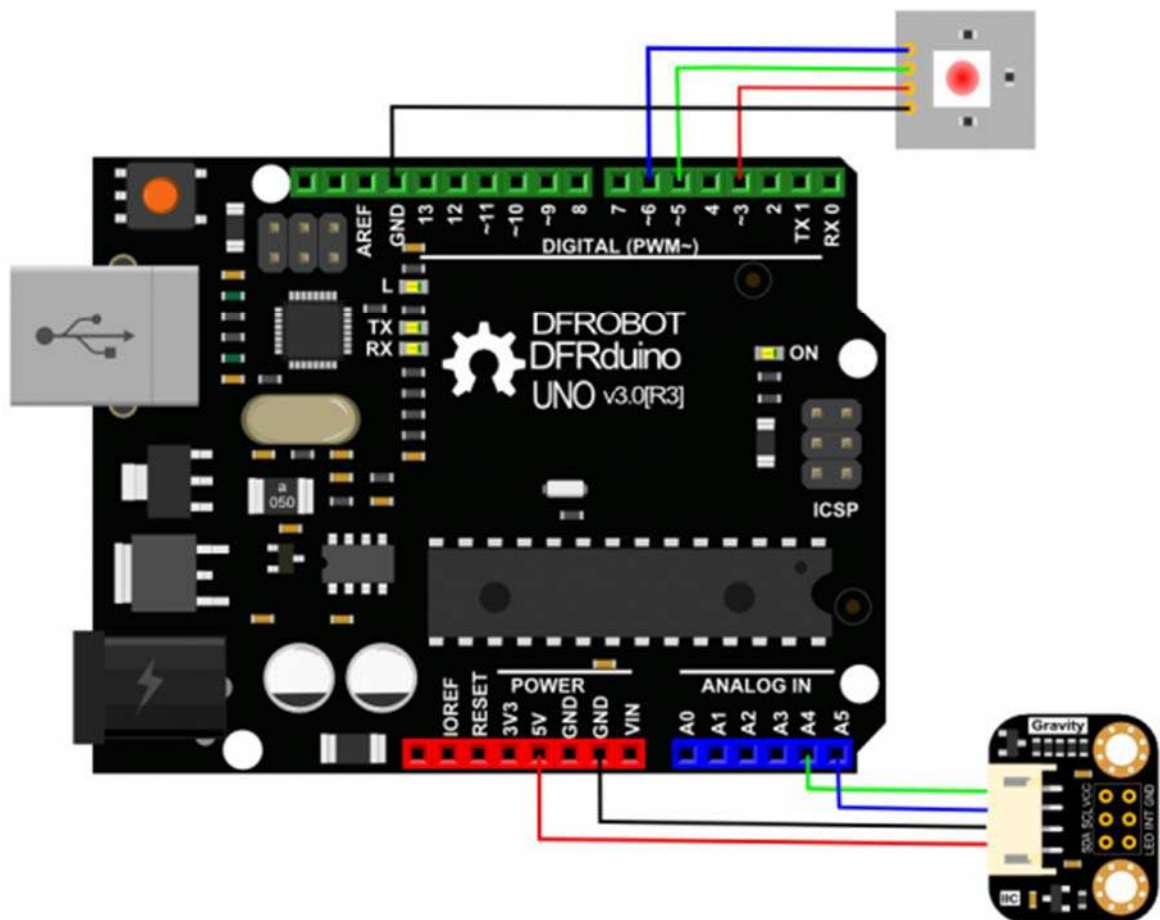
In this tutorial, we'll detect the specimen RGB value, and simulate it with RGB LEDs

### 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 brighter)
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;

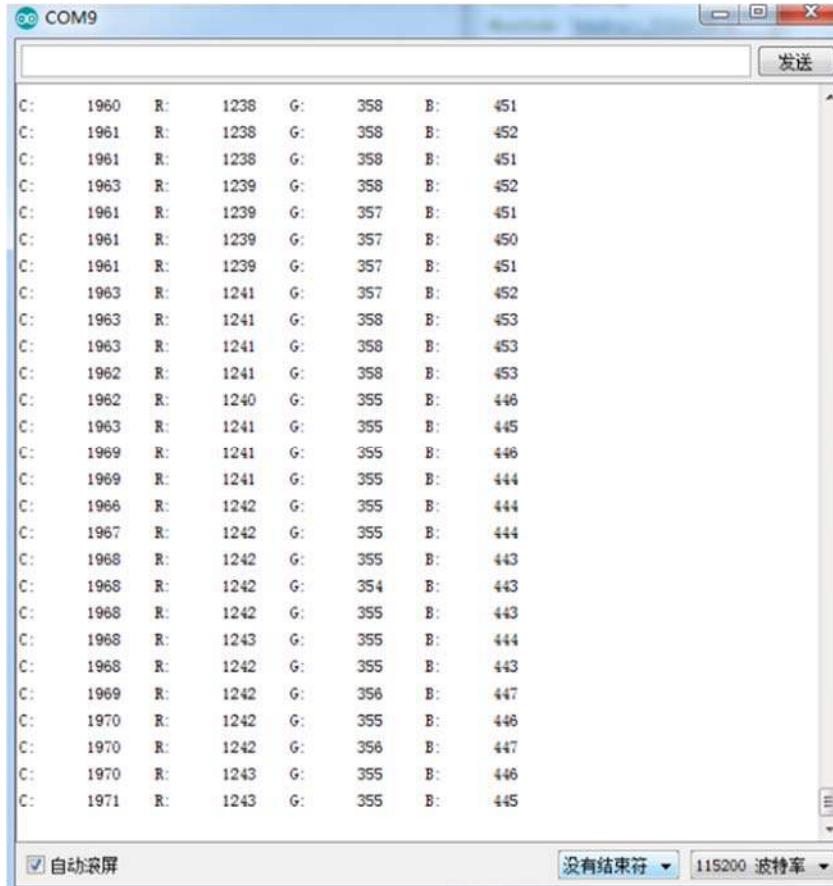
```

```

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



The screenshot shows a serial terminal window titled 'COM9'. The window contains a list of expected RGB values for each year from 1960 to 1971. The data is as follows:

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

At the bottom of the window, there is a checkbox for '自动滚屏' (Auto Scroll) which is checked, a dropdown menu for '没有结束符' (No End Character), and a dropdown menu for '115200 波特率' (115200 Baud Rate).