

Interfacing of Color Sensor





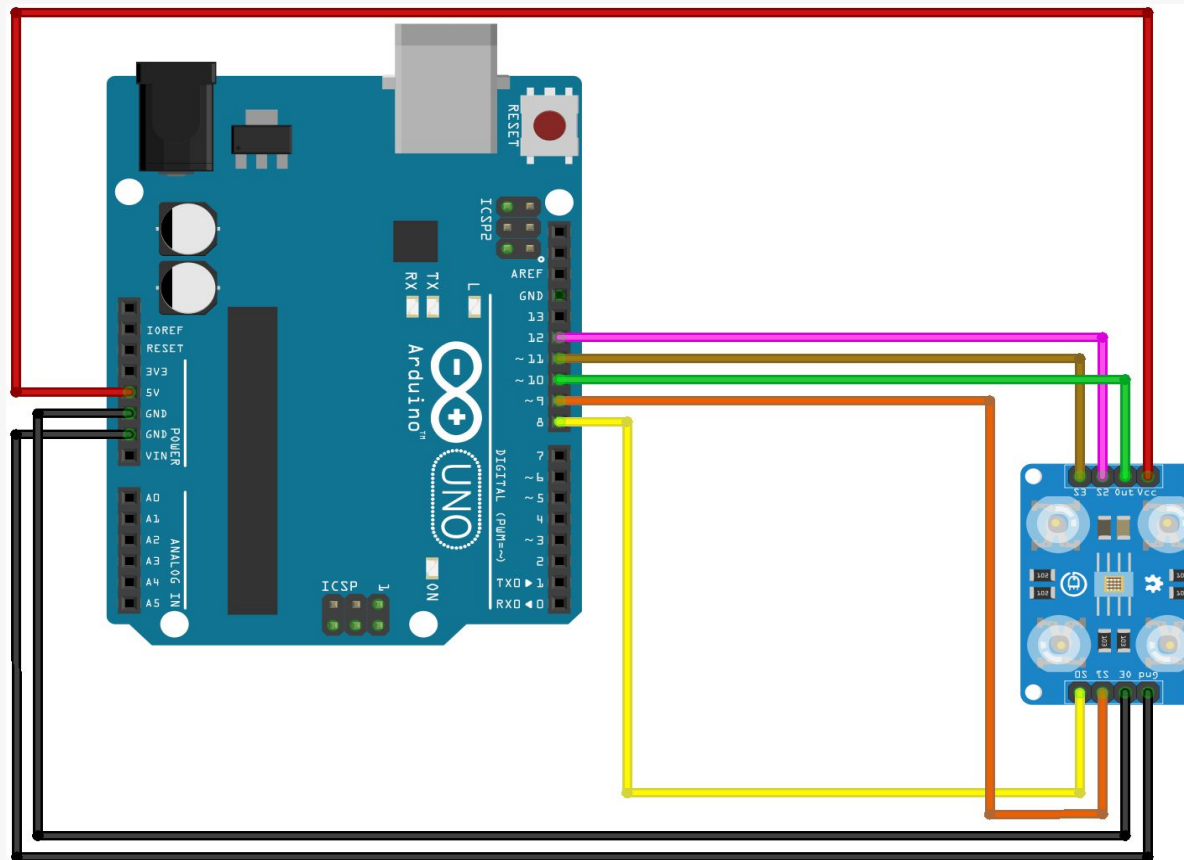
TCS230 TCS3200 Color Sensor

- The TCS230 senses color light with the help of an 8 x 8 array of photodiodes.
- The color sensor detects the color of the surface, usually in the RGB scale. Color is the result of interaction between a light source, an object and an observer.
- In case of reflected light, light falling on an object will be reflected or absorbed depending on surface characteristics, such as reflectance and transmittance.

Components Required

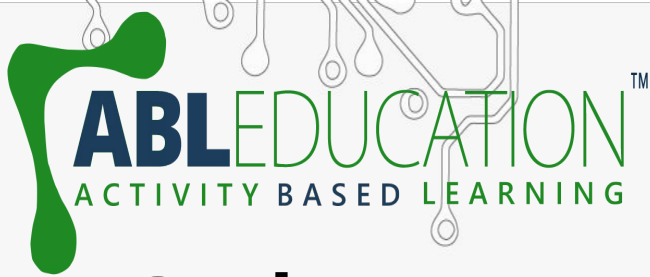
- Arduino UNO
- TCS230 TCS3200 Color Sensor
- Jumper Wires

Connection Diagram



Connections

- Connect **S0** pin of color sensor with pin **8** of Arduino .
- Connect **S1** pin of color sensor with pin **9** of Arduino .
- Connect **OUT** pin of color sensor with pin **10** of Arduino .
- Connect **S2** pin of color sensor with pin **12** of Arduino .
- Connect **S3** pin of color sensor with pin **11** of Arduino .
- Connect **DE & GND** pin of color sensor with **GND** of Arduino .
- Connect **Vcc** pin of color sensor with **+5V** of Arduino .



Code

colour_sensor | Arduino 1.8.19

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colour_sensor

```
/* This code works with GY-31 TCS3200 TCS230 color sensor module
 * It select a photodiode set and read its value (Red Set/Blue set/Green set) and displays it on the Serial monitor
 * Refer to www.surtritech.com for more details
 */

#define P1 8      //Module pins wiring
#define P2 9
#define P3 10
#define P4 11
#define out 12

int data=0;      //This is where we're going to stock our values

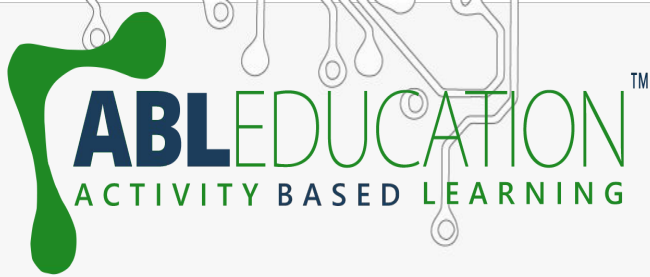
void setup()
{
  pinMode(P1,OUTPUT);    //pin modes
  pinMode(P2,OUTPUT);
  pinMode(P3,OUTPUT);
  pinMode(P4,OUTPUT);
  pinMode(out,INPUT);

  Serial.begin(9600);    //intialize the serial monitor baud rate

  digitalWrite(P1,HIGH); //Putting S0/S1 on HIGH/HIGH levels means the output frequency scalling is at 100% (recommended)
  digitalWrite(P2,HIGH); //LOW/LOW is off HIGH/LOW is 20% and LOW/HIGH is 2%

}

void loop()      //Every 2s we select a photodiodes set and read its data
```



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```
colour_sensor
void loop()
{
    //Every 2s we select a photodiodes set and read its data

    digitalWrite(P3,LOW);          //S2/S3 levels define which set of photodiodes we are using LOW/LOW is for RED LOW/HIGH is for Blue and HIGH/HIGH is for green
    digitalWrite(P4,LOW);
    Serial.print("Red value= ");
    GetData();                    //Executing GetData function to get the value

    digitalWrite(P3,LOW);
    digitalWrite(P4,HIGH);
    Serial.print("Blue value= ");
    GetData();

    digitalWrite(P3,HIGH);
    digitalWrite(P4,HIGH);
    Serial.print("Green value= ");
    GetData();

    Serial.println();

    delay(2000);
}

void GetData() {
    data=pulseIn(out,LOW);        //here we wait until "out" go LOW, we start measuring the duration and stops when "out" is HIGH again
    Serial.print(data);           //it's a time duration measured, which is related to frequency as the sensor gives a frequency depending on the color
    Serial.print("\t");           //The higher the frequency the lower the duration
    delay(20);
}
```

Project Link :