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## Arduino Color Sensing Tutorial – TCS230 TCS3200 Color Sensor

👤 Dejan ([https://howtomechatronics.com/author/howtom12\\_wp/](https://howtomechatronics.com/author/howtom12_wp/)) ☰ [Arduino Tutorials](#) (<https://howtomechatronics.com/category/tutorials/arduino/>)

⌚ 38 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comments>).



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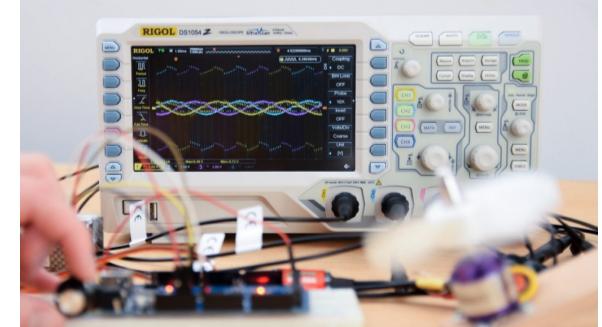
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In this Arduino Tutorial we will learn how to detect colors using Arduino and the TCS230 / TCS3200 Color Sensor. You can watch the following video or read the written tutorial below for more details.

### Arduino Color Sensing Tutorial - TCS230 TCS3200 Color Sensor



#### RECOMMENDED



(<https://howtomechatronics.com/tools/best-entry-level-oscilloscopes-for-beginners-and-hobbyists-2019/>).

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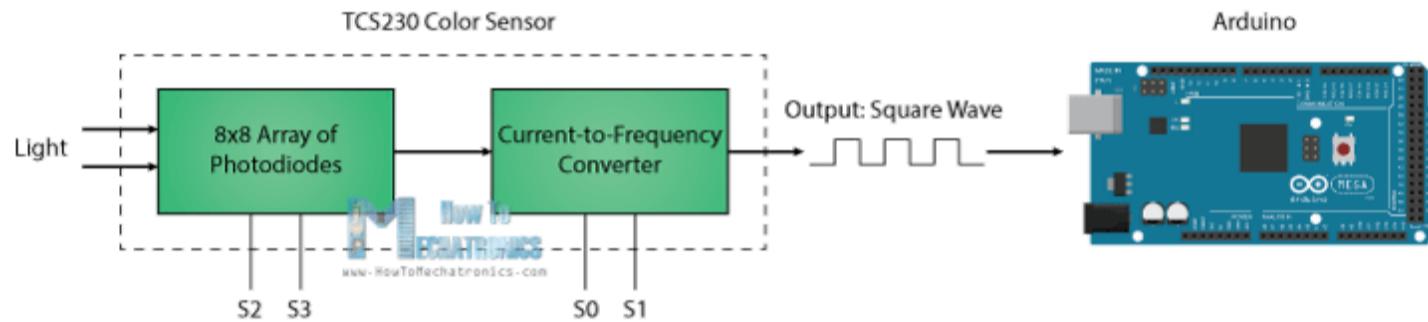
## The 8 Best Arduino Starter Kits

**RECOMMENDED**

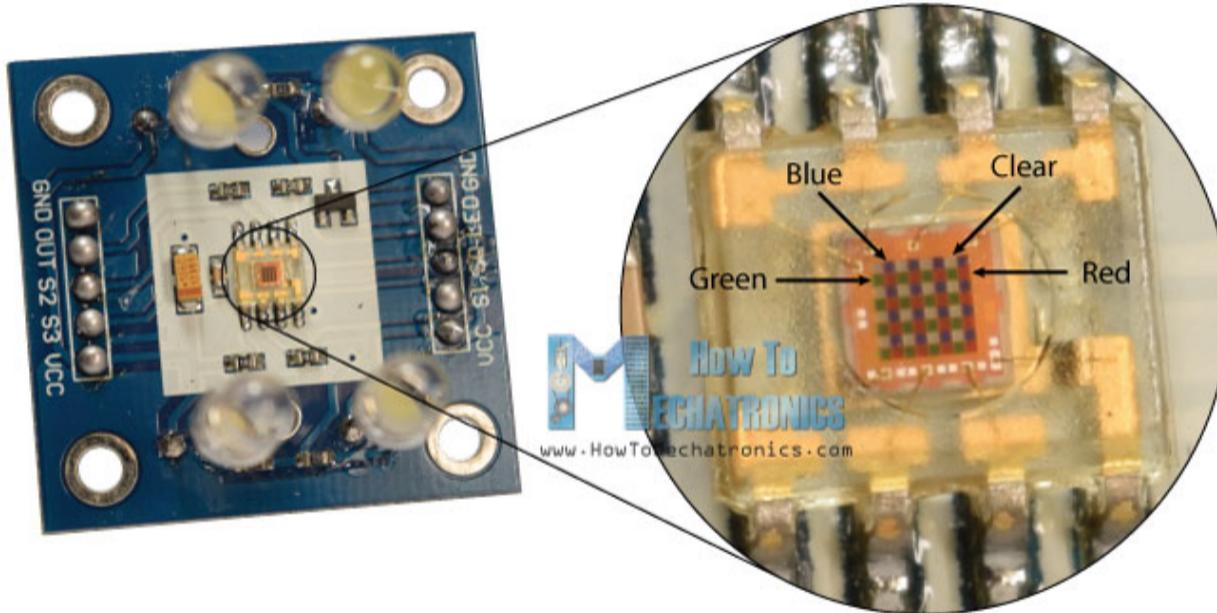
(<https://howtomechatronics.com/tools/best-arduino-starter-kit/>)

### How TCS230 Color Sensor Works

The TCS230 senses color light with the help of an 8 x 8 array of photodiodes. Then using a Current-to-Frequency Converter the readings from the photodiodes are converted into a square wave with a frequency directly proportional to the light intensity. Finally, using the Arduino Board we can read the square wave output and get the results for the color.



If we take a closer look at the sensor we can see how it detects various colors. The photodiodes have three different color filters. Sixteen of them have red filters, another 16 have green filters, another 16 have blue filters and the other 16 photodiodes are clear with no filters.

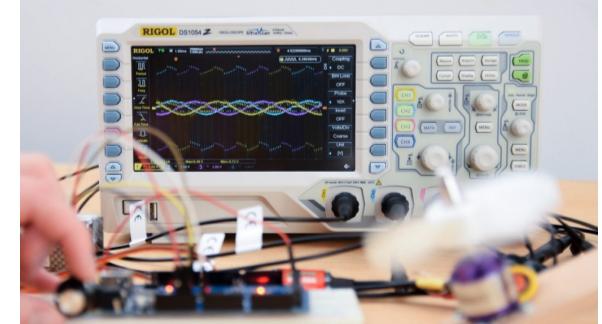


Each 16 photodiodes are connected in parallel, so using the two control pins S2 and S3 we can select which of them will be read. So for example, if we want to detect red color, we can just use the 16 red filtered photodiodes by setting the two pins to low logic level according to the table.

S0	S1	Output Frequency Scaling
L	L	Power down
L	H	2%
H	L	20%
H	H	100%

S2	S3	Photodiode Type
L	L	Red
L	H	Blue
H	L	Clear (no filter)
H	H	Green

**RECOMMENDED**



(<https://howtomechatronics.com/tools/best-entry-level-oscilloscopes-for-beginners-and-hobbyists-2019/>)

The sensor has two more control pins, S0 and S1 which are used for scaling the output frequency. The frequency can be scaled to three different preset values of 100 %, 20 % or 2%. This frequency-scaling function allows the output of the sensor to be optimized for various frequency counters or microcontrollers.

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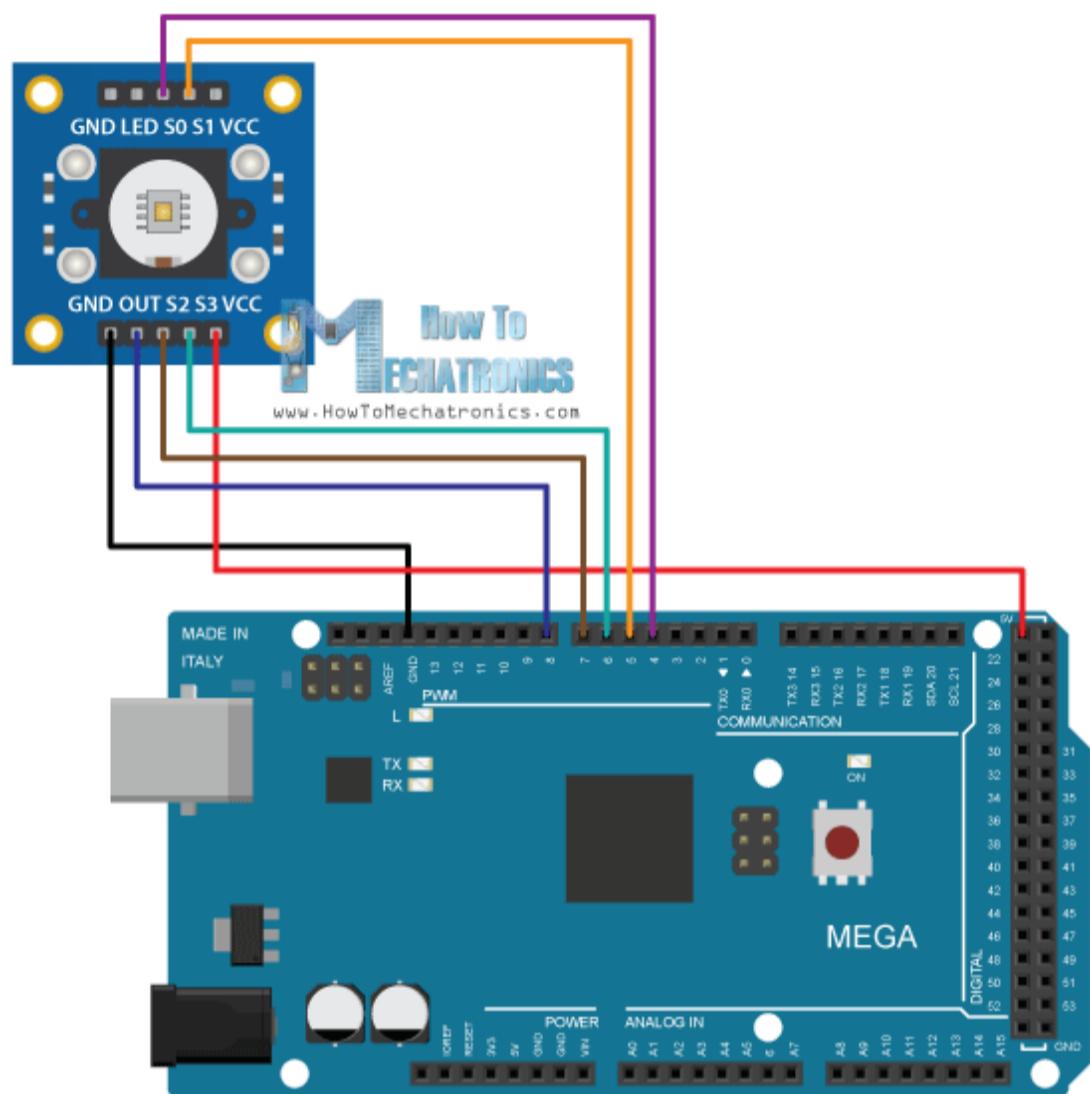
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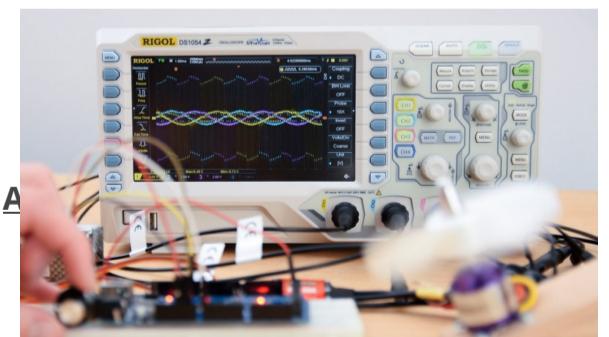
hobbyists-2019/)

Now we are ready to move on and connect the TCS230 sensor to the Arduino board. Here's the circuit schematics.



You can get the components needed for this Arduino tutorial from the links below:

- TCS230 TCS3200 Color Sensor..... [Amazon](https://amzn.to/33fMjDi) (<https://amzn.to/33fMjDi>) / [Banggood](#) (<https://howtomechatronics.com/recommends/tcs230-tcs3200-color-sensor-banggood-2/>) / [AliExpress](#) (<https://howtomechatronics.com/recommends/tcs230-tcs3200-color-sensor-aliexpress/>)
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  - Breadboard and Jump Wires ..... [Amazon](https://amzn.to/2LYGILy) (<https://amzn.to/2LYGILy>) / [Banggood](#) (<https://howtomechatronics.com/recommends/breadboard-and-jump-wires-banggod/>) / [AliExpress](#) (<https://howtomechatronics.com/recommends/breadboard-and-jump-wires-aliexpress/>)



*Disclosure: These are affiliate links. As an Amazon Associate I earn from qualifying purchases.*

TCS230 Color Sensor Source Code

**Description:** First we need to define the pins to which the sensor is connected and define a variable for reading the frequency. In the setup section we need to define the four control pins as outputs and the sensor output as an Arduino input. Here we also need to set the frequency-scaling, for this example we will set it to 20%, and start the serial monitor to display the results in the Serial Monitor.

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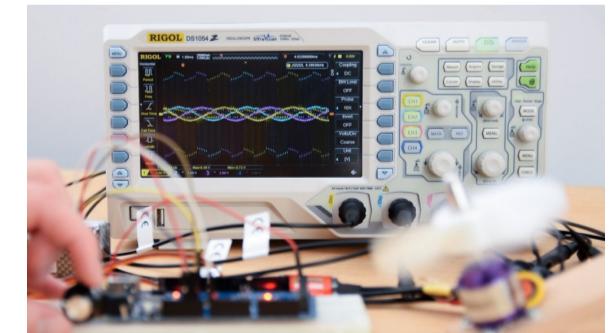
Contact

In the loop section, we will start with reading the red filtered photodiodes. For that purpose we will set the two control pins S2 and S3 to low logic level. Then using the "pulseIn()" function we will read the output frequency and put it into the variable "frequency". Using the Serial.print() function we will print the result on the serial monitor. The same procedure goes for the two other colors, we just need to adjust the control pins for the appropriate color.

```

1.  /*
2.   *
3.   * by Dejan Nedelkovski, www.HowToMechatronics.com
4.   *
5.   */
6.
7. #define S0 4
8. #define S1 5
9. #define S2 6
10. #define S3 7
11. #define sensorOut 8
12.
13. int frequency = 0;
14.
15. void setup() {
16.     pinMode(S0, OUTPUT);
17.     pinMode(S1, OUTPUT);
18.     pinMode(S2, OUTPUT);
19.     pinMode(S3, OUTPUT);
20.     pinMode(sensorOut, INPUT);
21.
22.     // Setting frequency-scaling to 20%
23.     digitalWrite(S0,HIGH);
24.     digitalWrite(S1,LOW);
25.
26.     Serial.begin(9600);
27. }
28.
29. void loop() {
30.     // Setting red filtered photodiodes to be read
31.     digitalWrite(S2,LOW);
32.     digitalWrite(S3,LOW);
33.     // Reading the output frequency
34.     frequency = pulseIn(sensorOut, LOW);
35.     // Printing the value on the serial monitor
36.     Serial.print("R= "); //printing name
37.     Serial.print(frequency); //printing RED color frequency
38.     Serial.print(" ");
39.     delay(100);
40.
41.     // Setting Green filtered photodiodes to be read
42.     digitalWrite(S2,HIGH);
43.     digitalWrite(S3,HIGH);
44.     // Reading the output frequency
45.     frequency = pulseIn(sensorOut, LOW);
46.     // Printing the value on the serial monitor
47.     Serial.print("G= "); //printing name
48.     Serial.print(frequency); //printing RED color frequency
49.     Serial.print(" ");
50.     delay(100);
51.
52.     // Setting Blue filtered photodiodes to be read
53.     digitalWrite(S2,LOW);
54.     digitalWrite(S3,HIGH);
55.     // Reading the output frequency
56.     frequency = pulseIn(sensorOut, LOW);
57.     // Printing the value on the serial monitor
58.     Serial.print("B= "); //printing name
59.     Serial.print(frequency); //printing RED color frequency
60.     Serial.println(" ");
61.     delay(100);
62. }
```

### RECOMMENDED



(<https://howtomechatronics.com/tools/best-entry-level-oscilloscopes-for-beginners-and-hobbyists-2019/>)

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#### AND HOBBYISTS

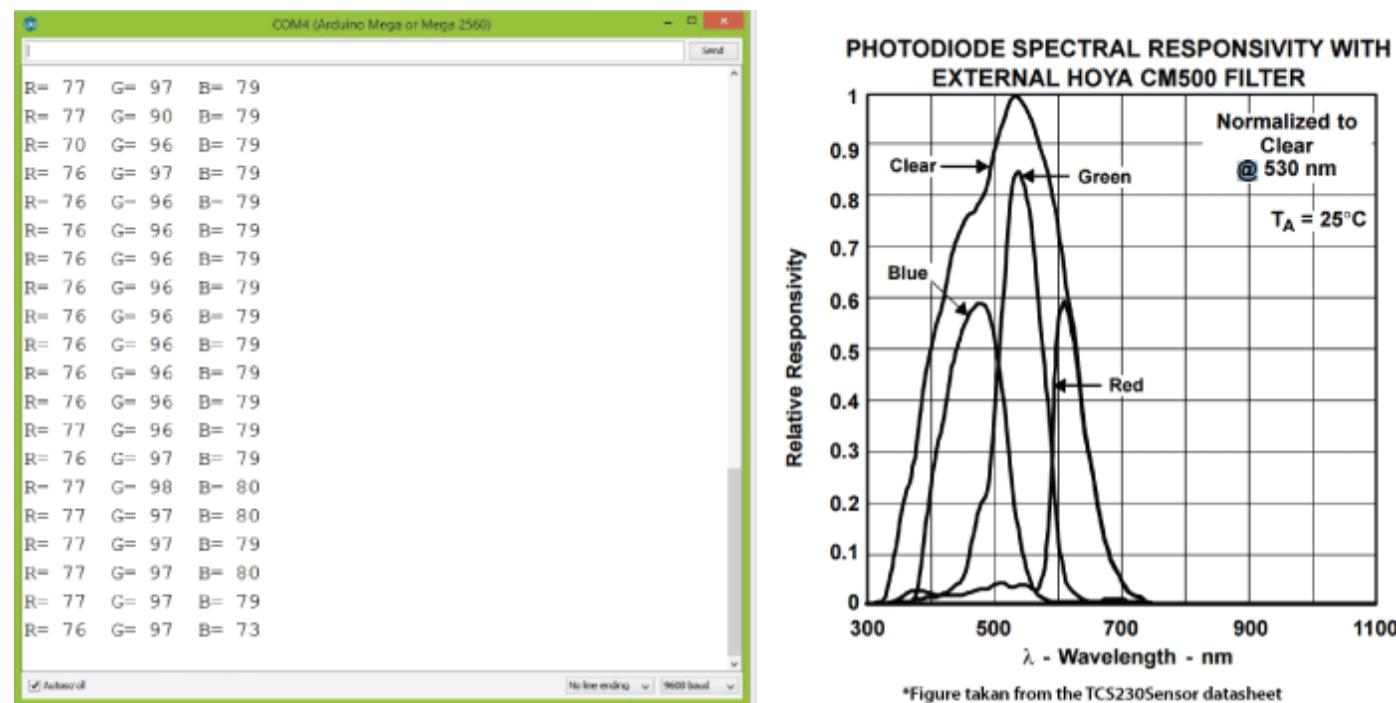
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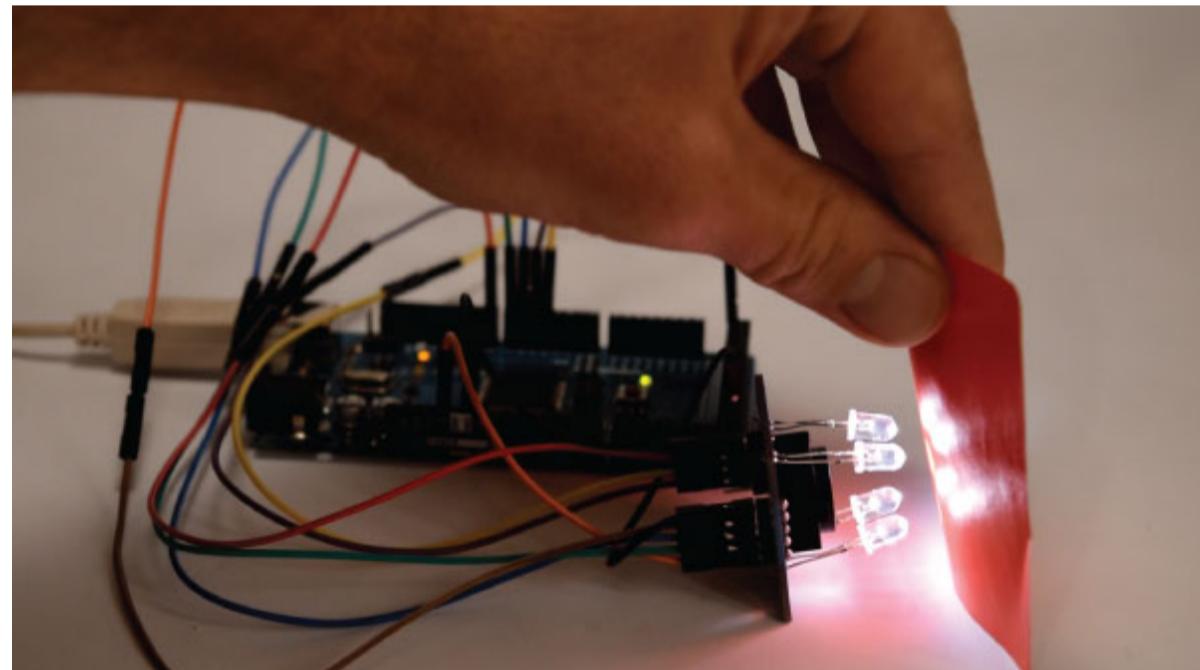
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Now if we run the Serial Monitor we will start getting some values. These values depend on the selected frequency-scaling, as well as from the surrounding lighting.



Note here that three values differ due to the different sensitivity of each photodiode type, as seen from the photodiode spectral responsivity diagram from the datasheet of the sensor.

Nevertheless, now let's see how the values react when we will bring different colors in front of the sensor. So for example, if we bring red color, the initial value will drop down, in my case from around 70 to around 25.

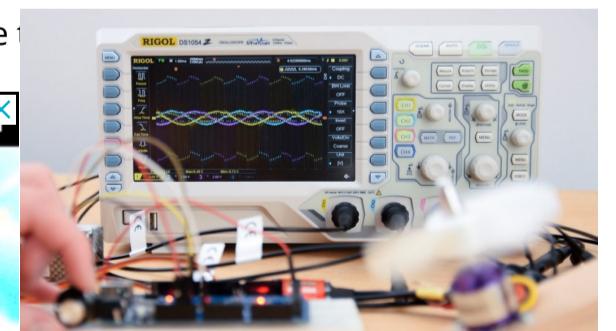


So now if we want to represent the detected colors with the RGB Model which has values from 0 to 255, we will use the map() function to map or convert the readings to the values from 0 to 255.

```
1. //Remapping the value of the frequency to the RGB Model of 0 to 255  
2. frequency = map(frequency, 25, 70, 255, 0);
```

RECOMMENDED

The value of 70 will be mapped to 0, and the value of 25 to 255. The same procedure goes for the



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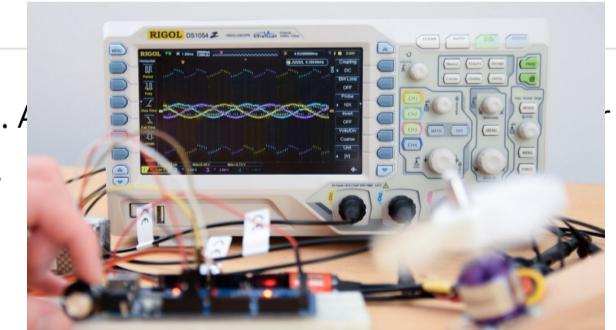
Here's the final source code for this example:

```
1.  /*      Arduino Color Sensing Tutorial
2.   *
3.   * by Dejan Nedelkovski, www.HowToMechatronics.com
4.   *
5.   */
6.
7. #define S0 4
8. #define S1 5
9. #define S2 6
10. #define S3 7
11. #define sensorOut 8
12.
13. int frequency = 0;
14.
15. void setup() {
16.     pinMode(S0, OUTPUT);
17.     pinMode(S1, OUTPUT);
18.     pinMode(S2, OUTPUT);
19.     pinMode(S3, OUTPUT);
20.     pinMode(sensorOut, INPUT);
21.
22.     // Setting frequency-scaling to 20%
23.     digitalWrite(S0,HIGH);
24.     digitalWrite(S1,LOW);
25.
26.     Serial.begin(9600);
27. }
28.
29. void loop() {
30.     // Setting red filtered photodiodes to be read
31.     digitalWrite(S2,LOW);
32.     digitalWrite(S3,LOW);
33.     // Reading the output frequency
34.     frequency = pulseIn(sensorOut, LOW);
35.     //Remaping the value of the frequency to the RGB Model of 0 to 255
36.     frequency = map(frequency, 25,72,255,0);
37.     // Printing the value on the serial monitor
38.     Serial.print("R= "); //printing name
39.     Serial.print(frequency); //printing RED color frequency
40.     Serial.print(" ");
41.     delay(100);
42.
43.     // Setting Green filtered photodiodes to be read
44.     digitalWrite(S2,HIGH);
45.     digitalWrite(S3,HIGH);
46.     // Reading the output frequency
47.     frequency = pulseIn(sensorOut, LOW);
48.     //Remaping the value of the frequency to the RGB Model of 0 to 255
49.     frequency = map(frequency, 30,90,255,0);
50.     // Printing the value on the serial monitor
51.     Serial.print("G= "); //printing name
52.     Serial.print(frequency); //printing GREEN color frequency
53.     Serial.print(" ");
54.     delay(100);
55.
56.     // Setting Blue filtered photodiodes to be read
57.     digitalWrite(S2,LOW);
58.     digitalWrite(S3,HIGH);
59.     // Reading the output frequency
60.     frequency = pulseIn(sensorOut, LOW);
61.     //Remaping the value of the frequency to the RGB Model of 0 to 255
62.     frequency = map(frequency, 25,70,255,0);
63.     // Printing the value on the serial monitor
64.     Serial.print("B= "); //printing name
65.     Serial.print(frequency); //printing BLUE color frequency
66.     Serial.println(" ");
67.     delay(100);
68. }
```

Note that the colors aren't that much accurate but they are still good enough for simple projects. A sensor in my next video we will learn how to make an Arduino Automatic Color Sorting Machine.



#### RECOMMENDED



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Feel free to ask any questions in the comments section below and don't forget to check out my collection of Arduino Projects (<https://howtomechatronics.com/arduino-projects/>)

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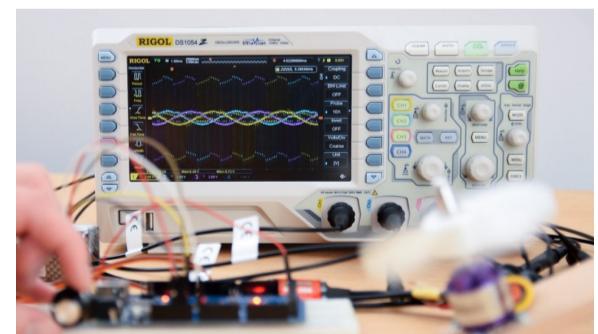
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[\(https://howtomechatronics.com/tutorials/arduino/lcd-tutorial/\)](https://howtomechatronics.com/tutorials/arduino/lcd-tutorial/)

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# ARDUINO TUTORIAL #03

## ANALOG INPUTS

ARDUINO TUTORIAL 03: ANALOG INPUTS ([HTTPS://HOWTOMECHATRONICS.COM/TUTORIALS/ARDUINO/ANALOG-INPUTS/](https://howtomechatronics.com/tutorials/arduino/analog-inputs/))

• Dejan ([https://howtomechatronics.com/author/howtom12\\_wp/](https://howtomechatronics.com/author/howtom12_wp/)) ○ 10 (<https://howtomechatronics.com/tutorials/arduino/analog-inputs/#comments>)  
(<https://howtomechatronics.com/tutorials/arduino/analog-inputs/>).



NRF24L01 - HOW IT WORKS, ARDUINO INTERFACE, CODE, SCHEMATIC ([HTTPS://HOWTOMECHATRONICS.COM/TUTORIALS/ARDUINO-WIRELESS-COMMUNICATION-NRF24L01-TUTORIAL/](https://howtomechatronics.com/tutorials/arduino-wireless-communication-nrf24l01-tutorial/))

• Dejan ([https://howtomechatronics.com/author/howtom12\\_wp/](https://howtomechatronics.com/author/howtom12_wp/)) ○ 102 (<https://howtomechatronics.com/tutorials/arduino-arduino-wireless-communication-nrf24l01-tutorial/#comments>)  
(<https://howtomechatronics.com/tutorials/arduino-arduino-wireless-communication-nrf24l01-tutorial/>). Entry-level oscilloscopes for beginners and hobbyists 2019).

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# ARDUINO TUTORIAL #02

## BUTTONS & PWM

ARDUINO TUTORIAL 02: BUTTONS AND PWM (<https://howtomechatronics.com/tutorials/arduino/buttons-pwm/>)

Dejan (<https://howtomechatronics.com/author/howtomechatronics/>) 1 (<https://howtomechatronics.com/tutorials/arduino/buttons-pwm/#comments>)  
(<https://howtomechatronics.com/tutorials/arduino/buttons-pwm/>).

### 38 RESPONSES

Shashi August 6, 2016 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1119>).

Nice video,

I have a TCS3200, and where does the LED pin go to ? Your video shows that the LED is lit, but you have not connected the LED output to anything in the picture uploaded in this web page ?

How did the LED on the TCS 230 light up ? In my case, the LED does not light up as it is NOT connected. Appreciate a reply.

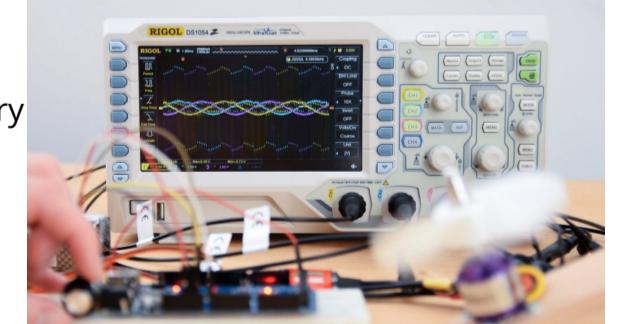
REPLY

Dejan Nedelkovski (<https://howtomechatronics.com>) August 14, 2016 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1137>).

Thanks. Well in my case the LEDs light up by just connecting power to the VCC pin. Did you try module, did you get your LEDs light up?

REPLY

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(<https://howtomechatronics.com/tools/best-entry-level-oscilloscopes-for-beginners-and-hobbyists-2019/>)

sahan kalkara October 16, 2016 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1306>)

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I tested this example it's work, but i couldn't understand how to map color valve,

Red 25~37 to map 0 ~ 255

Green 30~90 to map 0 ~ 255

Blue 25~70 to map 0 ~ 255

How to gate those (25~37,30~90,25~70) value

please help me to understand how to change those value

Thank you

BR

Sahan kalhara

REPLY

*Dejan Nedelkovski (<https://howtomechatronics.com>) October 18, 2016 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1315>)*

Hi there. Did you try using the following function for mapping values: map(variable, fromLow, fromHigh, toLow, toHigh)?

REPLY

*xwarrior April 15, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1892>)*

The formula is (variable, fromLow, fromHigh, toLow, toHigh) or (variable, fromLow, fromHigh, toHigh, toLow) because in coding is write frequency = map(frequency, 25,70,255,0);

*Dejan Nedelkovski (<https://howtomechatronics.com>) April 15, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1893>)*

That's a good note. The formula is more like (variable, fromValue1, fromValue2, toValue1, toValue2) and the reason the code line is frequency = map(frequency, 25,70,255,0) is because we want to reverse the values.

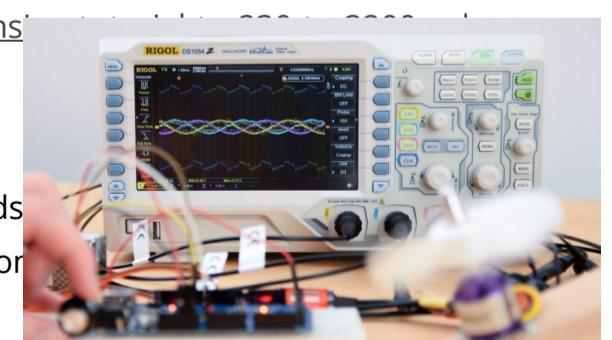
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*FerNava October 23, 2016 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensor/#comment-1341>)*

Hello.

Am I right to assume those are just regular white LEDs? I have a TCS3200 that came with the leds short and I need it to have a smaller field of view. Can I just remove those leds and solder new ones?

Thank you, very useful website!!



(<https://howtomechatronics.com/tools/best-entry-level-oscilloscopes-for-beginners-and-hobbyists-2019/>)

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*Dejan Nedelkovski (<https://howtomechatronics.com>) October 23, 2016 (<https://howtomechatronics.com/tutorials/arduino/color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1341>)*

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Yes, they are regular LEDs and you should be able to replace them.

REPLY

*David Jordan* October 30, 2016 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1376>)

Good job Dejan. Thanks.

I'm really enjoying getting to know the sensors for the Arduino. The generosity of guys like you, posting helpful material like this makes it so much quicker to learn.

I wish now that I hadn't bought the TCS3200 board before I read your guide or I would definitely have clicked through to Amazon from here.

All the best, David

REPLY

*Dejan Nedelkovski* (<https://howtomechatronics.com>) November 9, 2016 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1405>)

Thank you!

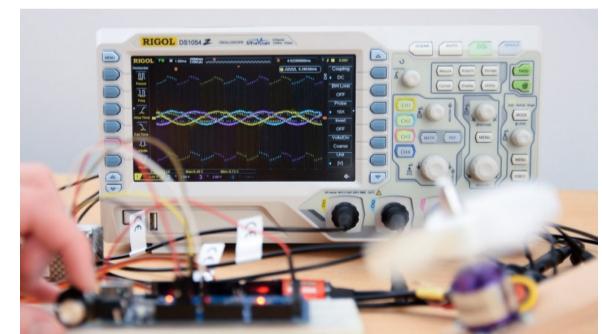
REPLY

*Schurke* December 1, 2016 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1442>)

With your code i get values like:

```
"R= 245 G= 382 B= 170  
R= -292 G= 382 B= 182  
R= -292 G= 382 B= 187  
R= -292 G= 382 B= 182  
R= -292 G= 382 B= 170  
R= -292 G= -875 B= 193  
R= -282 G= 382 B= 204  
R= -271 G= 217 B= 210  
R= -271 G= 221 B= 216  
R= -184 G= 382 B= -640  
R= -43 G= -2579 B= -11951  
R= -1101 G= -3162 B= -11622  
R= 55 G= -2915 B= -11401  
"  
I Dont know what's happening there. I have a smaller arduino and connected all to Analog pins. The LED's are on.
```

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[Dejan Nedelkovski](https://howtomechatronics.com) (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1470>)

You should connect it to digital pins.

REPLY

[Le Tuan Anh](https://howtomechatronics.com) [January 7, 2017](https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1532) (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1532>)

Hi Dear Mr.Dejan Nedelkovski

Thanks for your post. But i dont understand about S0, S1 and the output frequency scaling. What does it show? and in the 1st code, why you setting frequency scaling to 20%?

Thanks,

REPLY

[Dejan Nedelkovski](https://howtomechatronics.com) (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1537>)

The frequency can be scaled to three different preset values of 100 %, 20 % or 2%. This frequency-scaling function allows the output of the sensor to be optimized for various frequency counters or microcontrollers. In other words depending on the selected value it will produce different output signal.

REPLY

[Nguyen Khang](https://howtomechatronics.com) [January 16, 2017](https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1548) (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1548>)

Dear Mr. Dejan.

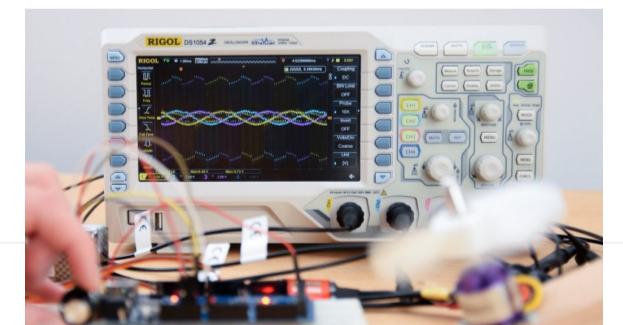
Thanks for your post. But I have some problems because our TCS has different Relative Responsivity. So my result don't fall into 0 – 255 as I like.

Could you explain to me how do you get the interval of each color like you did, such as R (25;70) please. I can't figure out how to get that. Thank you.

I'm looking forward to your reply.

REPLY

#### RECOMMENDED



[Dejan Nedelkovski](https://howtomechatronics.com) (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1550>)

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*Nguyen Khang* January 25, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1582>)

I mean how can we know the range of the sensor is between 25-70 ? Because my sensor gave me the totally different data.

*Anas Masood Quddusi* February 18, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1642>)

Hi,

Can you please tell me how to make an LED illuminate the same color as the color recognized by the sensor?  
and also, what ever the value is read, lets say R=255, G = 108, B = 20, put it in another function where a ratio is calculated?

Thank you.

**REPLY**

*Dejan Nedelkovski* (<https://howtomechatronics.com>) February 20, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1655>)

Well you just need and RGB led and using the digital.Write() function send those values to each R, G and B pin. Check my Arduino RGB tutorial for more details how to use an RGB LED with Arduino.

**REPLY**

*SANATH* March 22, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1785>)

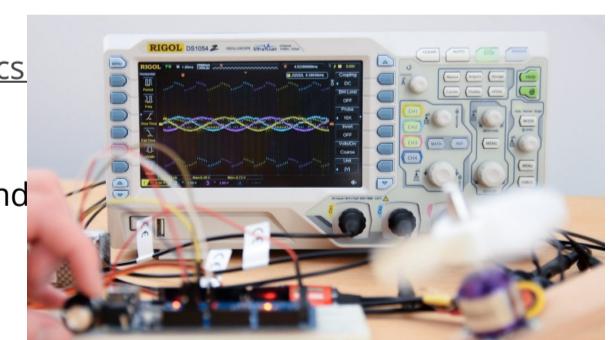
HOW to make tcs3200 only to detect green color, ignoring red and blue? So that, if it detects green color green we have to run a motor.

**REPLY**

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*Dejan Nedelkovski* (<https://howtomechatronics.com>) March 27, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1812>)

Well just take into consideration the values from the sensor when reading the green color and



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*wanix* April 20, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1909>)

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hello sir, your circuit connection is different with the codes. just concern it might confused other user.  
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Dejan Nedelkovski (<https://howtomechatronics.com>) May 11, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-1987>)

Thanks for the remark, you are right. S0 should go to pin number 4, S1 to pin number 5.

**REPLY**

Dylan Petkus June 13, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-2117>)

Hello,

I'm having the same difficulty as Nguyen Khang above. My sensor hovers around the following for each sensor

R: 200

G: 350

B: 450

Granted we are in a room with bright office lighting. How would you recommend mapping these values? Just use a bigger range than yours (25-70)?

We're using an arduino Uno by the way.

**REPLY**

Dejan Nedelkovski (<https://howtomechatronics.com>) June 17, 2017 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-2130>)

Well yes, you should adjust the ranges according your the values you are getting. This have to be done by manually testing each color you want to scan, and do that multiply times for getting more accurate or average values.

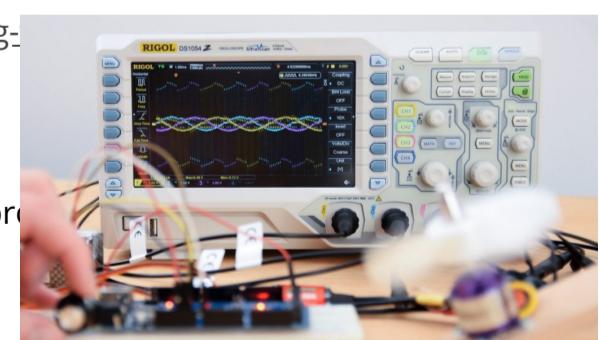
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uday January 15, 2018 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-sensor/#comment-2939>)

hi sir ,

we are stuck in calibration .how long we have to calibrate. sensor are not detecting the colour properly . can you identify the problem .



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Dejan Nedelkovski (<https://howtomechatronics.com>) January 17, 2018 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-2953>)

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Well yeah, the calibration is a problem, because the sensor often gives various readings for the same color. Try changing the environment lightning, add some more light around so it might work better, or maybe reduce the light.

REPLY

Noah January 26, 2018 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-3000>)

Hi,

When connecting the TCS3200 can you use just regular digital pins or do it need to be connected to the PWM ports of the ARDUINO

REPLY

Dejan Nedelkovski (<https://howtomechatronics.com>). January 29, 2018 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-3008>)

Yes, you can use the regular digital pins.

REPLY

kamlesh March 11, 2018 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-3255>)

hi can you please explain how to calibrate the color sensor ?

Dejan Nedelkovski (<https://howtomechatronics.com>). March 18, 2018 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-3277>)

It's kind a hard to calibrate because it's a low quality sensor.

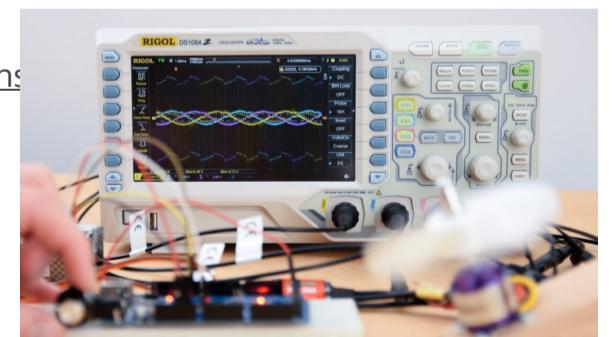
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Rajesh December 25, 2018 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensor/#comment-5015>)

Hi,

Thanks for the tutorial. Does this sensor detects color under sunlight?

REPLY



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Dejan (<https://howtomechatronics.com>). December 25, 2018 (<https://howtomechatronics.com/tutorials/arduino/color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-5027>)

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Well I guess yes, it should be able to detect color under sunlight.

Ok

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*Colonel* January 2, 2019 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-5104>)

In the code that has been written, the `pulseIn(sensorOut,LOW)` method returns the time for which pin 8 is low. It does not return the output frequency.

But this example is however as it gives a good method of using TCS3200.

<https://www.arduino.cc/en/Reference.PulseIn> (<https://www.arduino.cc/en/Reference.PulseIn>)

REPLY

*Tofiq* January 11, 2019 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-5205>)

Hi,

How far can this sensor measure?

maximum range ?

REPLY

*Dejan* (<https://howtomechatronics.com>). January 12, 2019 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-5219>)

The range is pretty small, around 1cm – 3cm.

REPLY

*Maris* February 5, 2019 (<https://howtomechatronics.com/tutorials/arduino/arduino-color-sensing-tutorial-tcs230-tcs3200-color-sensor/#comment-5496>)

Hello, i am anot student in engineering and we need to pick a colour sensor solution for a robot we are making.

The main iqseue as for now is that we don t know from how far we can sense colours with this kin green.

We are on a budget so we can t really afford high quality sensors, do you have any ideas of the m compatible sensors ?

Thank you for the guides !

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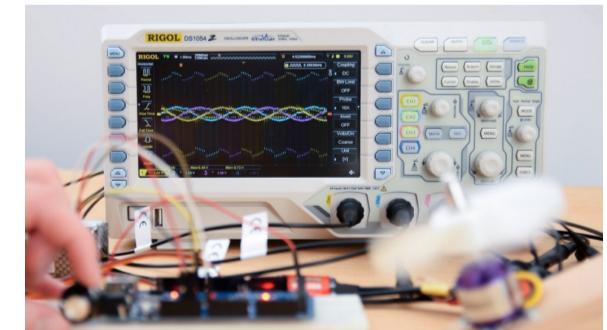
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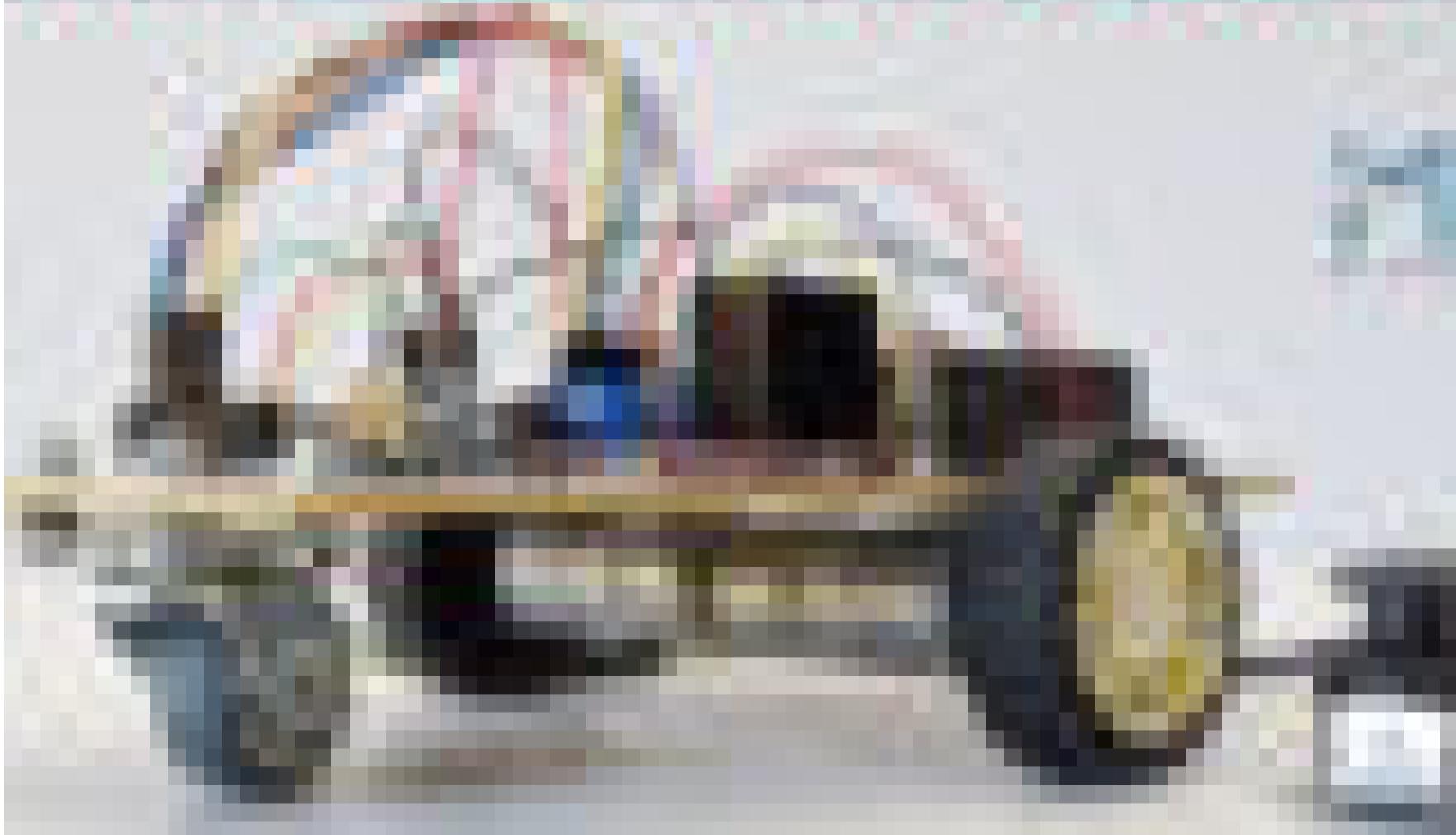
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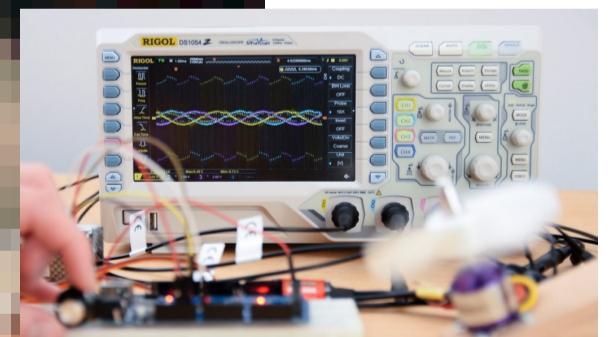
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Ultrasonic Sensor HC-SR04 and Arduino Tutorial (<https://howtomechatronics.com/tutorials/arduino/ultrasonic-sensor-hc-sr04/>)

👤 Dejan ([https://howtomechatronics.com/author/howtom12\\_wp/](https://howtomechatronics.com/author/howtom12_wp/)). 💬 95 (<https://howtomechatronics.com/tutorials/arduino/ultrasonic-sensor-hc-sr04/#comments>).  
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## A4988 Driver

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Driver and  
Arduino  
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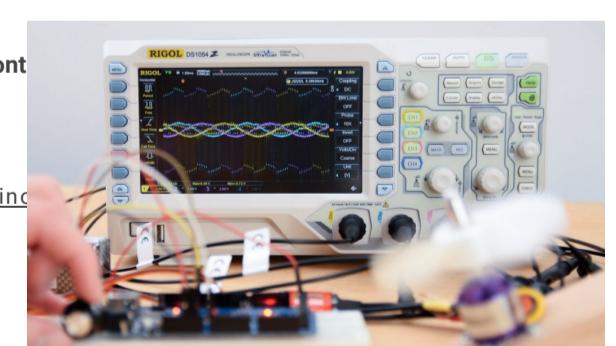
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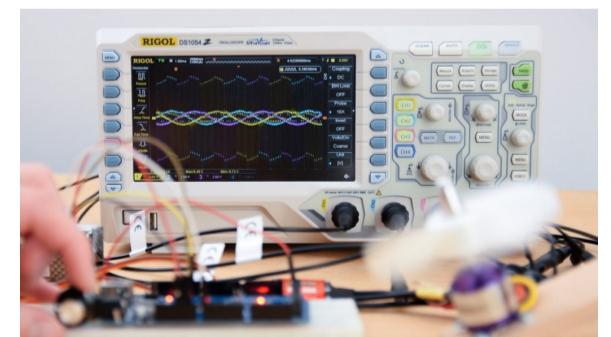


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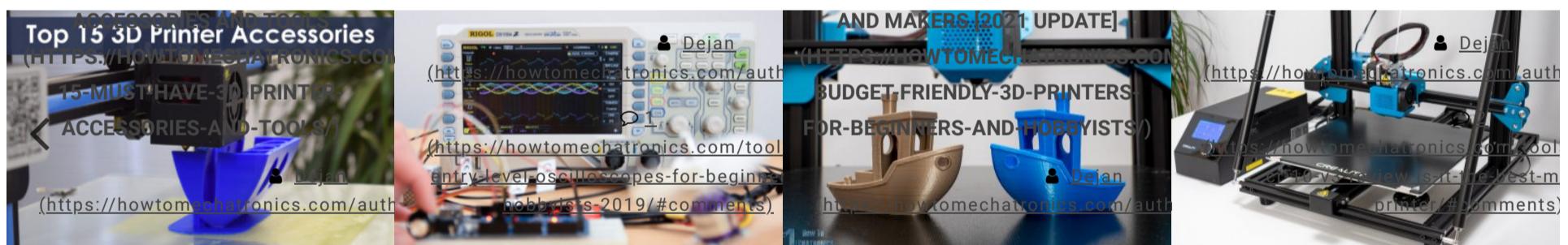
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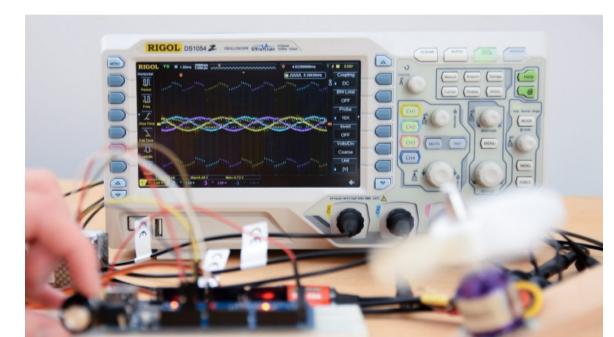
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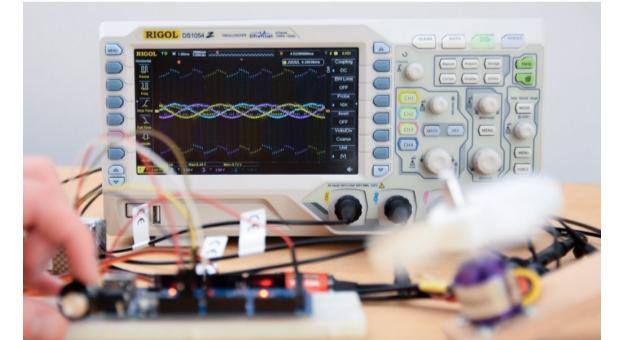
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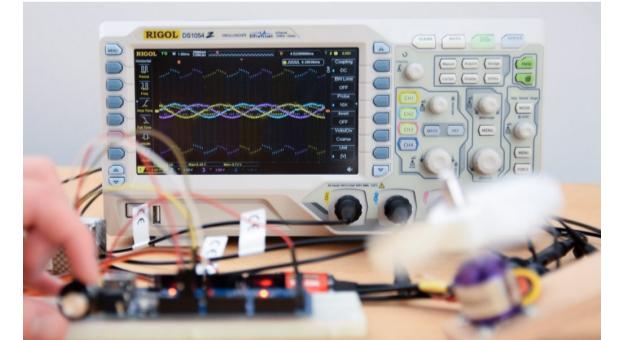
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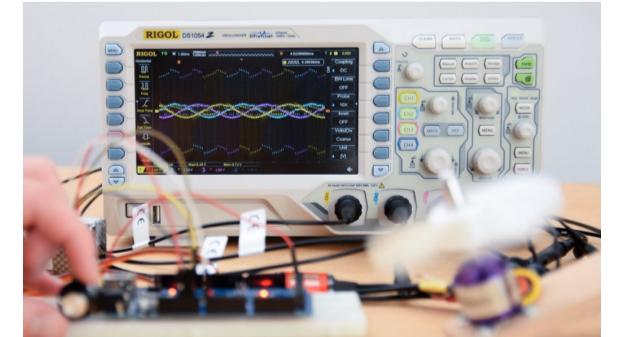
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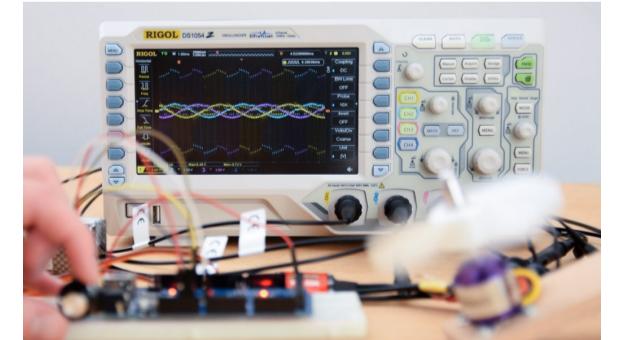
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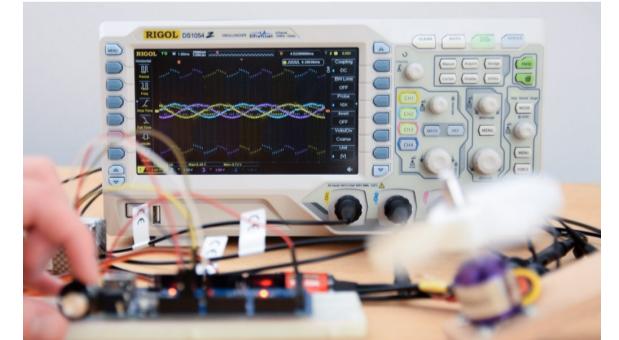
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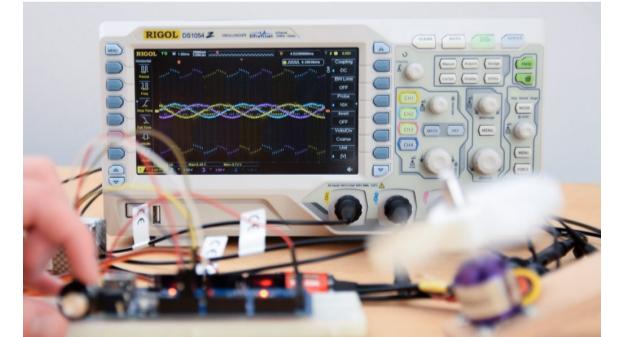
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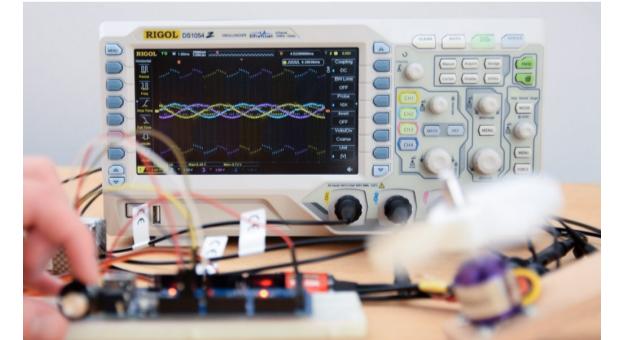
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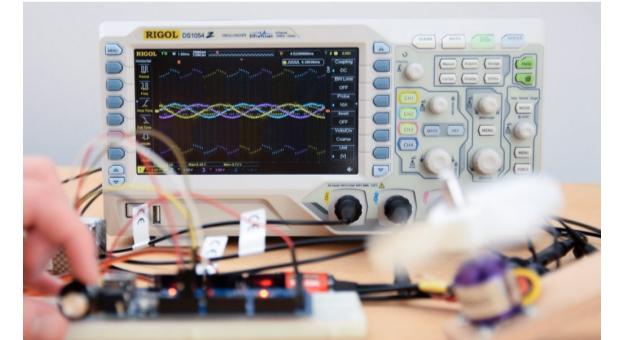
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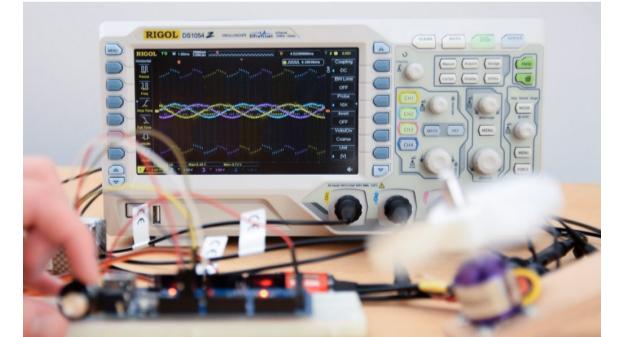
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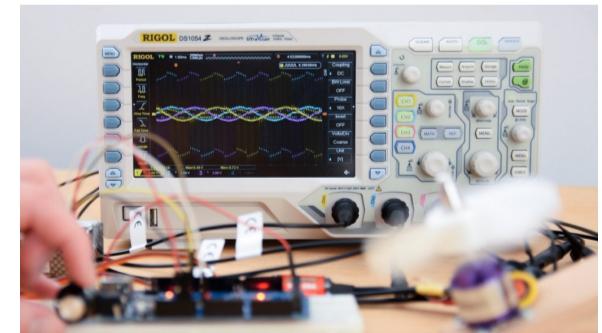
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