



## SYNACORP TRADING & SERVICES

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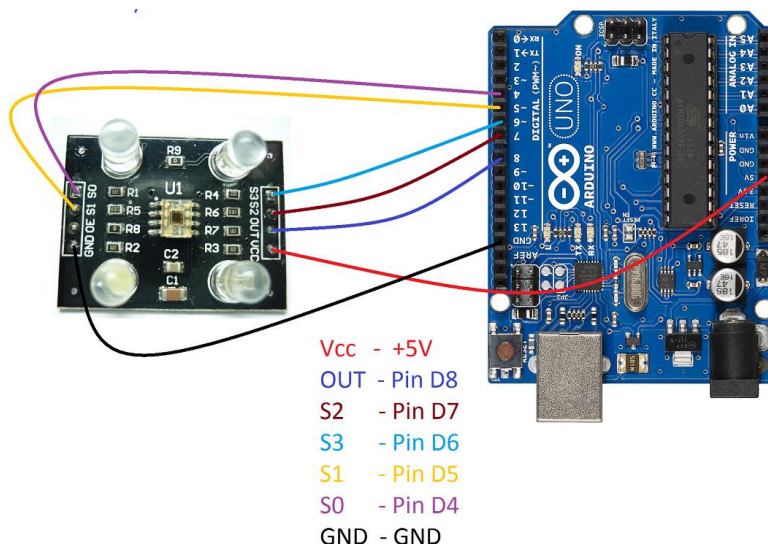
### Application: Test Color Sensor

#### COMPONENT LIST:

- Arduino UNO
- Female to female jumper wire
- Male to male jumper wire
- USB Cable
- Paper with 4 color
- Arduino IDE software
- Paint edit color/Photoshop color picker

#### CONNECTION:

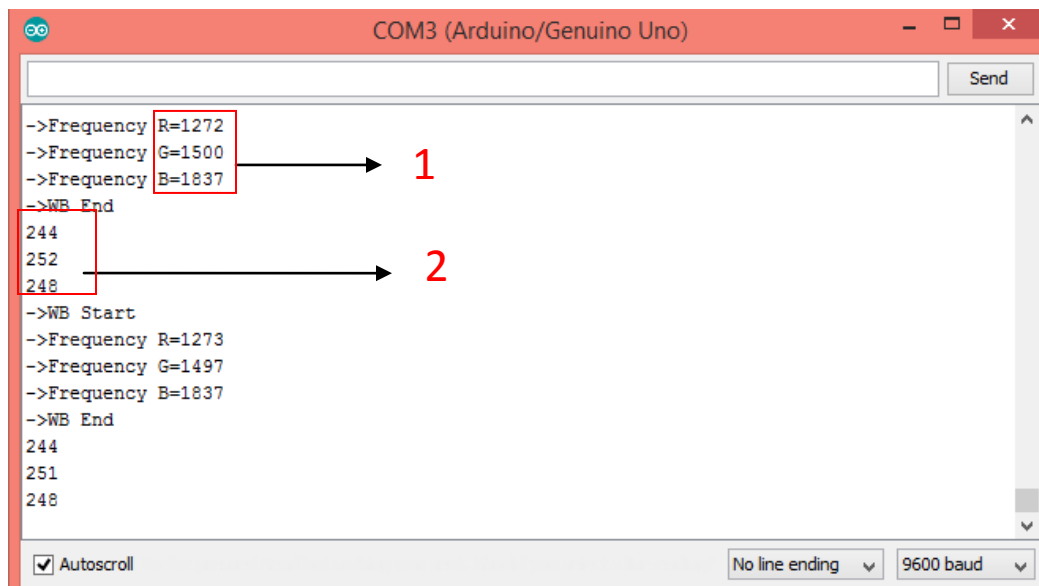
TCS3200	Arduino
S0	D6
S1	D5
S2	D4
S3	D3
OUT	D2
VCC	VCC
GND	3.3 V
OE	GND



1. Connect the circuit as shown in figure above.
2. Connect your Arduino UNO to Arduino IDE.
3. Open your Arduino IDE.
4. Download TimerOne Library on Arduino IDE.
5. Select the right board type and COM port.
6. Upload the sketch. You can get the sketch from *Application1\_Sketch*.
7. Use white objects to perform white balance correction, and do not move the color sensor module and light source to ensure the accuracy of white balance value.



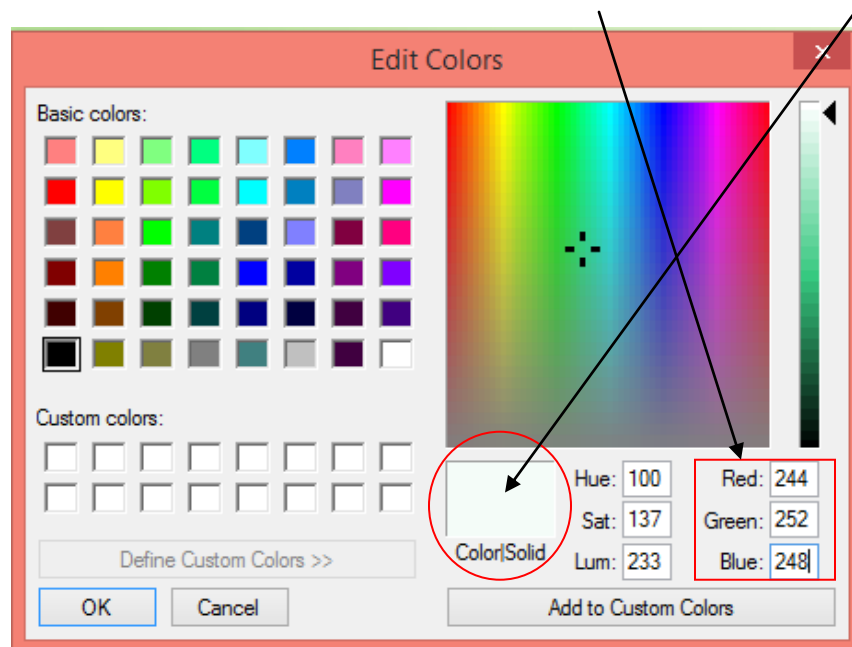
7. Open Arduino IDE and click Serial Monitor and set the Baud Rate as 9600.
8. The Serial Monitor would display lots of parameter values.



**Figure: Parameter value**

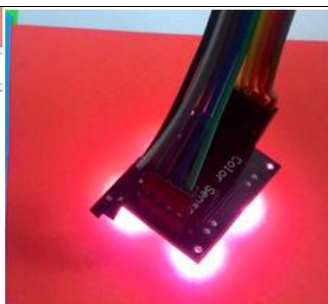

- As the figure, the mark 1 is the RGB value at 1S period. The RGB value are: Red=1272, Green=1500 and Blue =1837.
- The mark 2 is the scale factor.
- Use the scale factor for adjusting the RGB value.


9. Lastly, open Paint>> Edit Color. \*RGB value (244 252 248) means it is white.



10. Then, try on another color of paper.

**RESULT:**

<pre> -&gt;Frequency R=1028 -&gt;Frequency G=378 -&gt;Frequency B=468 -&gt;WB End 197 63 63 -&gt;WB Start -&gt;Frequency R=1016 -&gt;Frequency G=351 -&gt;Frequency B=438 -&gt;WB End 195 59 59 </pre>	 <table border="1"> <tr> <td>Hue: 0</td> <td>Red: 195</td> </tr> <tr> <td>Sat: 29</td> <td>Green: 59</td> </tr> <tr> <td>Lum: 20</td> <td>Blue: 59</td> </tr> </table>	Hue: 0	Red: 195	Sat: 29	Green: 59	Lum: 20	Blue: 59	<pre> -&gt;Frequency R=554 -&gt;Frequency G=919 -&gt;Frequency B=534 -&gt;WB End 105 148 69 -&gt;WB Start -&gt;Frequency R=554 -&gt;Frequency G=918 -&gt;Frequency B=534 -&gt;WB End 105 147 69 </pre>	 <table border="1"> <tr> <td>Hue: 62</td> <td>Red: 105</td> </tr> <tr> <td>Sat: 87</td> <td>Green: 148</td> </tr> <tr> <td>Lum: 102</td> <td>Blue: 69</td> </tr> </table>	Hue: 62	Red: 105	Sat: 87	Green: 148	Lum: 102	Blue: 69
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Sat: 29	Green: 59														
Lum: 20	Blue: 59														
Hue: 62	Red: 105														
Sat: 87	Green: 148														
Lum: 102	Blue: 69														

<pre> -&gt;Frequency B=1370 -&gt;WB End 84 153 185 -&gt;WB Start -&gt;Frequency R=443 -&gt;Frequency G=916 -&gt;Frequency B=1372 -&gt;WB End 85 154 185 -&gt;WB Start -&gt;Frequency R=442 </pre>	 <table border="1"> <tr> <td>Hue: 132</td> <td>Red: 85</td> </tr> <tr> <td>Sat: 100</td> <td>Green: 154</td> </tr> <tr> <td>Lum: 127</td> <td>Blue: 185</td> </tr> </table>	Hue: 132	Red: 85	Sat: 100	Green: 154	Lum: 127	Blue: 185
Hue: 132	Red: 85						
Sat: 100	Green: 154						
Lum: 127	Blue: 185						

**CONCLUSION:**

The color sensor TCS3200 can differentiate each color of paper.