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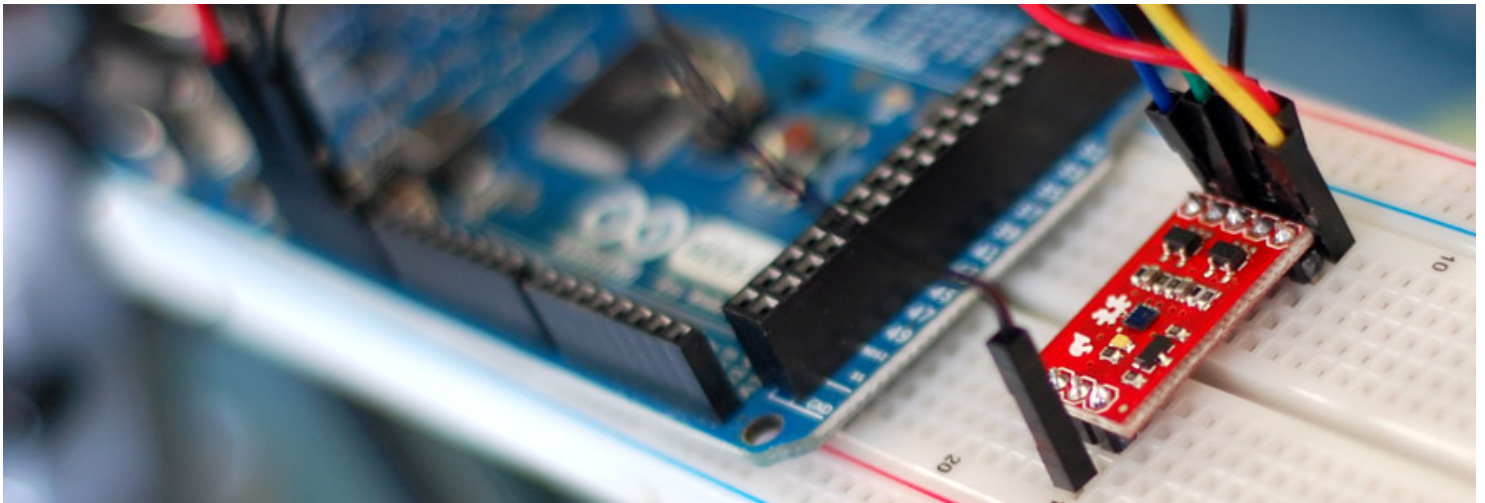
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## Sensing color with the ADJD-S311 + Arduino

Tuesday, January 31<sup>st</sup>, 2012



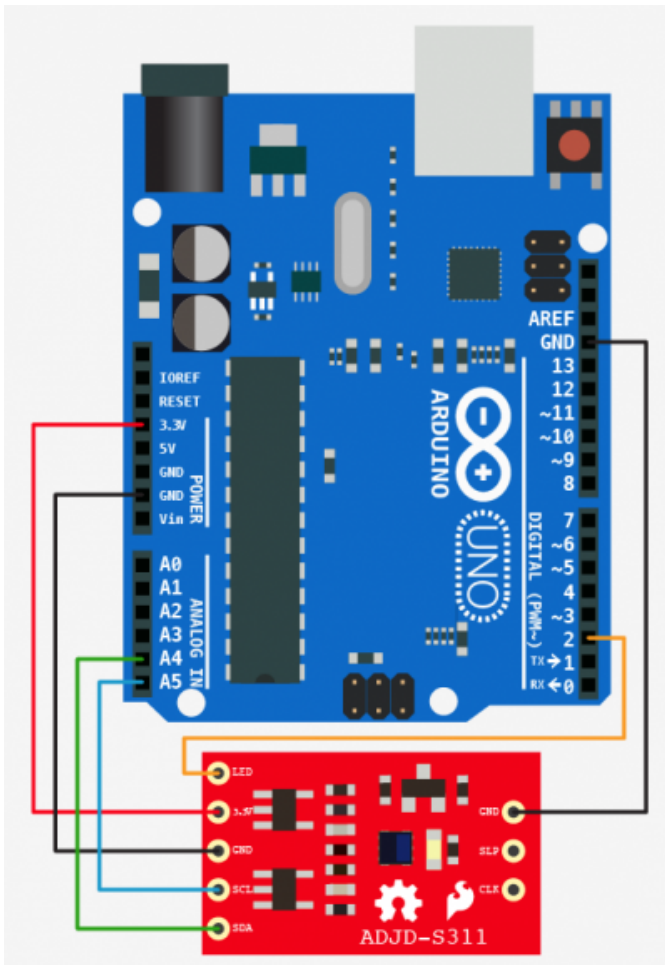
A year ago we had an article called [Sensing color with the ADJD-S371](#). Well the ADJD-S371 is long gone, and its replacement is the [ADJD-S311](#) (breakout board available from sparkfun). It is basically the same all around, so without shame, I will be copying a lot of that article, because... Why reinvent the wheel?

A few things you should know about the ADJD-S311 before we dive in too deep: I have never been able to get perfect color sampling from this guy without limiting the colors it would detect to just 6, and accurately reproducing color on an [LED](#) is not as simple as one would hope. The color reading from the sensor could be spot on, but the reproduced color on the LED may be way off. (you can blame your eyes and the LEDs)

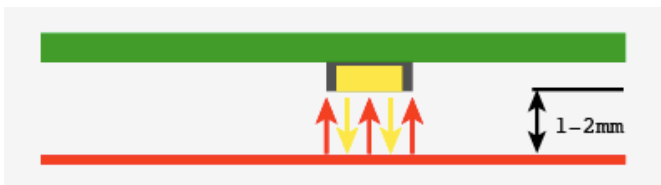
### Hooking it up

The ADJD-S311 is an [I2C](#) device (I2C is a 2-wire serial connection), so we just need to connect the SDA (Data) and SCL (Clock) lines to your Arduino for communication. On your Arduino (everything but the [mega](#)) SDA is on analog pin 4, and SCL is on analog pin 5. On an arduino mega, SDA is digital 20, and SCL is digital 21. (The Arduino Leonardo will also be different). Other than these 2 lines, we just need to connect power(3.3v), ground, and the onboard LED to digital 2 (you can change that in code if you want).

The ADJD-S311 has 4 sensors built into it to detect Red, Green, Blue, and Clear. It reports back an individual reading from each sensor. The white, or clear, sensor is mainly for sensing brightness.



The ADJD-S311 is designed to sense reflected light using the onboard LED, but I have found that by turning the onboard LED off, it works even better for sensing projected light (like from your monitor or projector). If you are interested in using the sensor for sensing reflected colors, you want the sensor to be about 1-2mm from the subject so the onboard LED can bounce off the material and back to the sensor.



## Code

The code for this guy is long and obnoxious, so we made a library out of it. This code is based on the sparkfun code, that was based on the old bildr code, that was based on the code by Marcus over at [Interactive Matter](#). I love open source!

This library is really simple, you can call `calibrate` to calibrate to white (make sure you have a white object or light source in front of it when you do this), you can turn the LED on and off, and you can read. Reading gives you back a RGBC (red, green, blue, clear) variable that has the readings from the sensor. See the code for how to use it.

To make this code work, **before you load the code, or even open the Arduino program**, we need to place the “ADJDS311” folder into your Arduino Library. If you don’t know where that is by default, Look to the right.

If you click the download button to the right of “Arduino” you can download the whole thing as a zip, so you don’t need to copy all the files.

## Default Library Folder Location

**On your Mac:** In (home directory)/Documents/Arduino/libraries

**On your PC:** My Documents -> Arduino -> libraries

On your Linux box:: (home directory)/sketchbook/libraries

ADJD-S311

download

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ADJDS311  
ADJDS311.cpp  
ADJDS311.h  
keywords.txt  
adjd\_s311.ino  
License.txt  
Read\_Me.txt

ADJDS311.cpp - C++  

```
1 #include <Arduino.h>
2 #include <ADJDS311.h>
3
4 ADJDS311::ADJDS311(int led_pin) {
5     led_pin = led_pin;
```

code inserted by [bildrCode](#)

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