Flora RGB Smart Neo Pixels

Created by Becky Stern
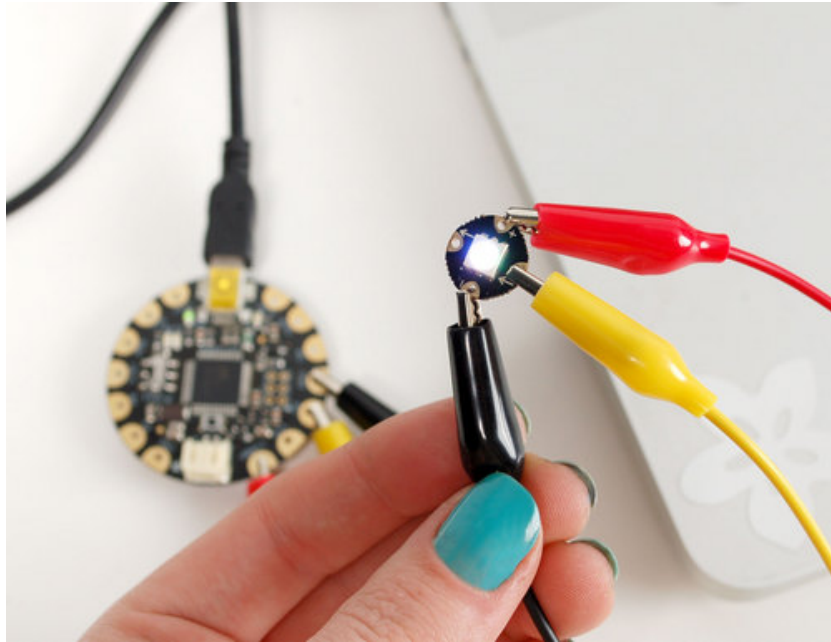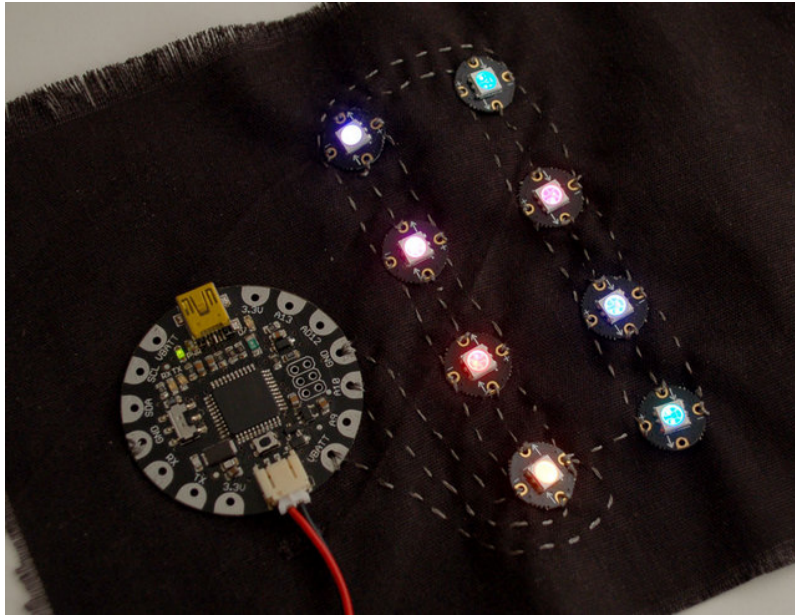
Guide Contents

Overview

What's a wearable project without LEDs? Our favorite part of the Flora platform is these tiny smart pixels. Designed specifically for wearables, we found the brightest RGB LEDs available (an eye-blistering ~3800mcd) (http://adafru.it/619) and paired them with a constant-current driver chip. The contacts are easily sewn with conductive thread. Use this guide to test your first pixel and start on a blinding wearables project!

We now have both the older v1 pixels (http://adafru.it/1060) and the newer v2 pixels (http://adafru.it/1260). This tutorial will cover both - the sewing part is the same for both versions but the library code is different as the controlling chipset has been upgraded in v2

Hook up alligator clips
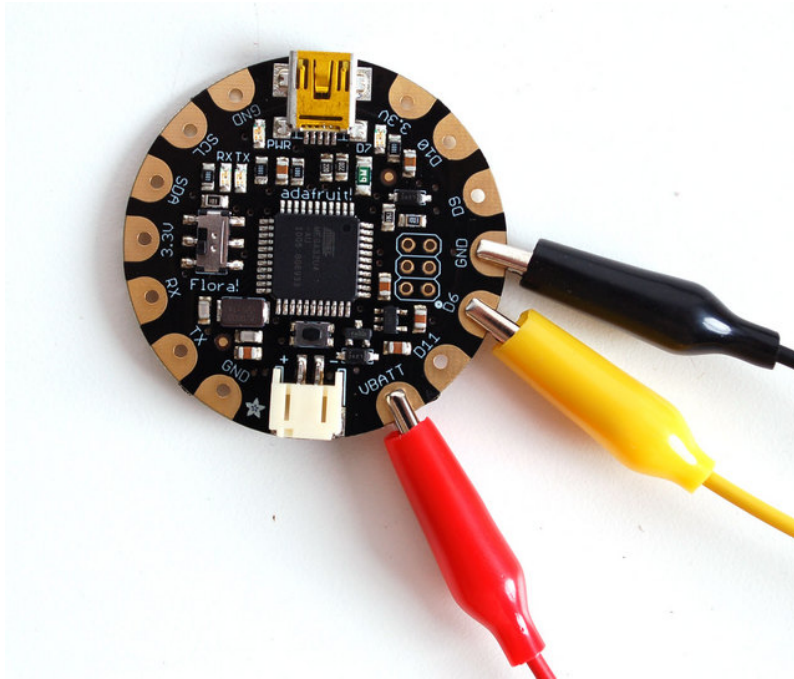
Hook up three alligator clips as shown: one to VBATT, one to D6, and one to GND. I used a red wire for power and a black wire for ground for clarity, but it doesn't matter what color you use.
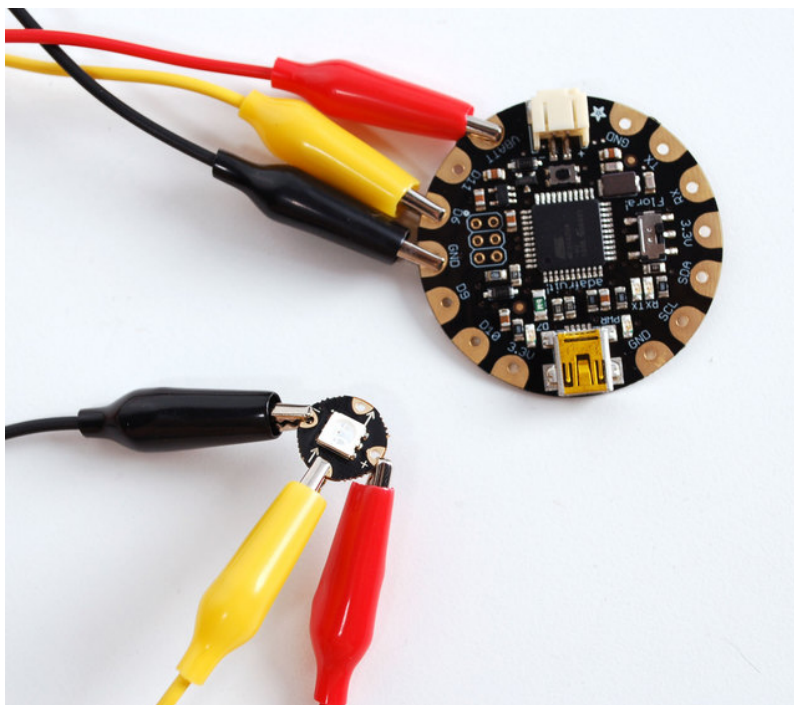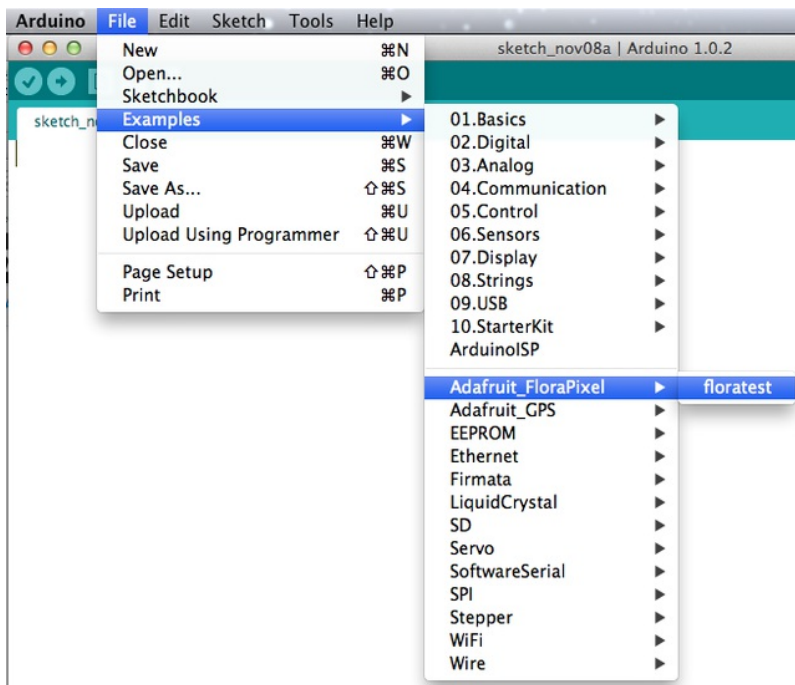

Hook up the other ends of your alligator clips to a single pixel. VBATT (red) connects to the +

on the pixel, GND (black) to the -, and D6 (yellow) to the pad marked with an arrow pointing towards the LED on the tiny board (not away from it).
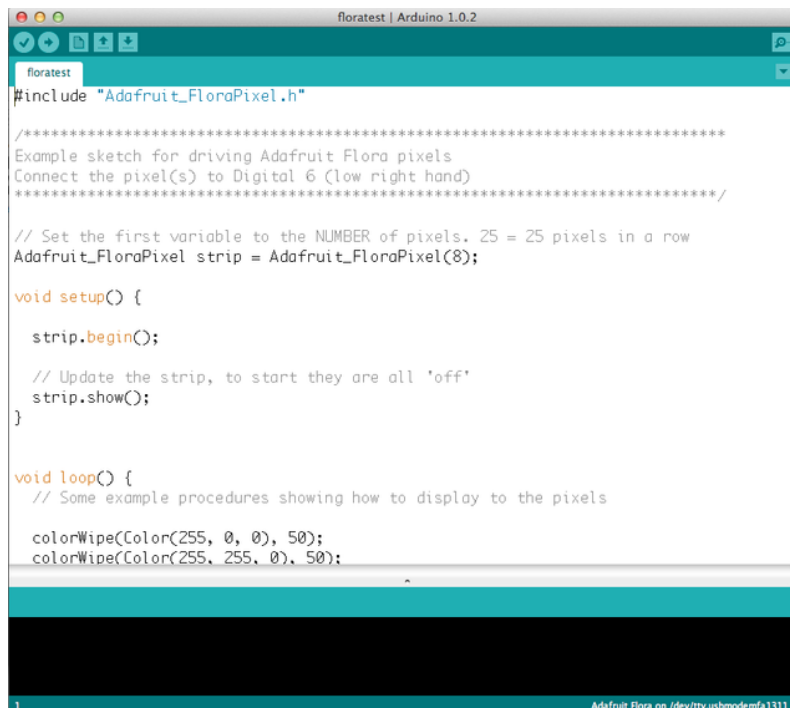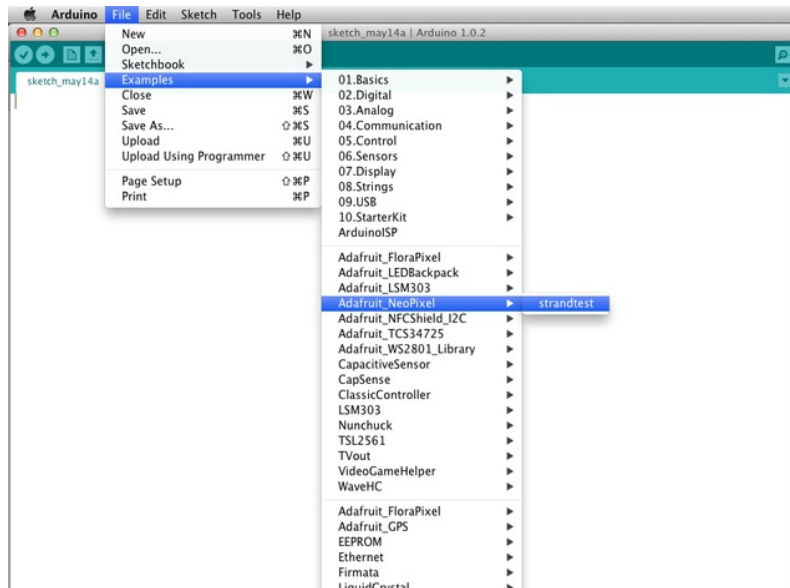
Run pixel test code
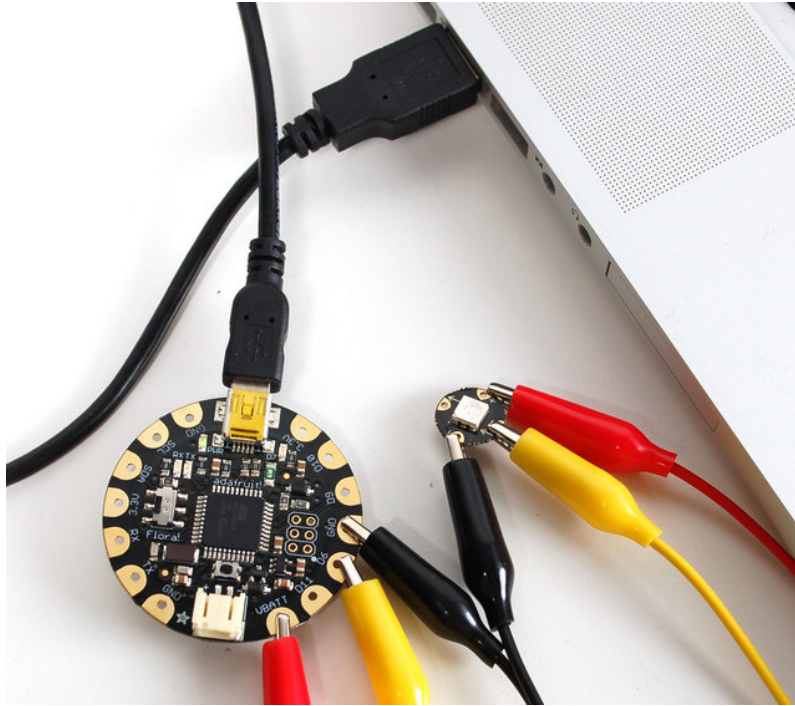
Connect your FLORA and computer with a USB cable.

For version 1 pixels:

In the Adafruit IDE, open up the Smart Pixels sample code-- go to File-->Examples--
>Adafruit_FloraPixel-->floratest. Check out our "Getting Started with Flora (http://adafru.it/aRM)"
tutorial for more info on the software.

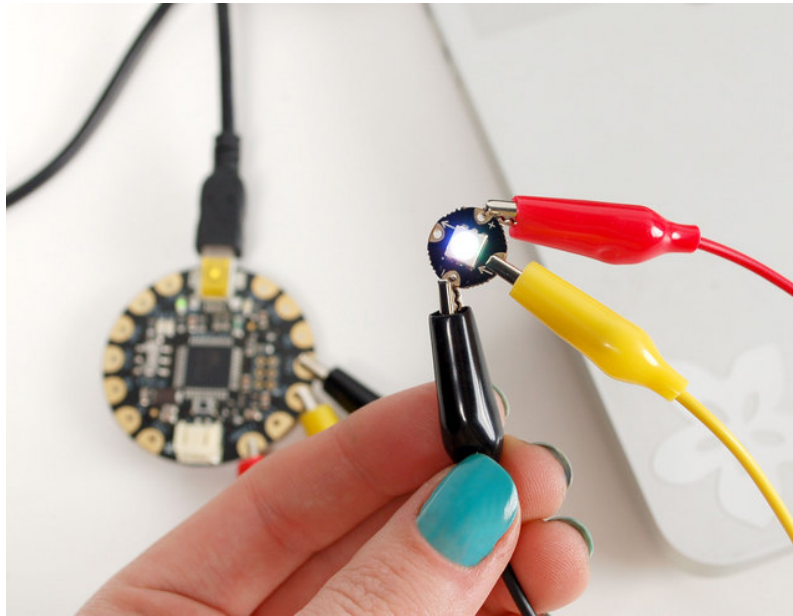# For version 2 pixels:

Install the NeoPixel library (http://adafru.it/aZU) and go to File-->Examples-->Adafruit_NeoPixel-

->strandtest.

This will launch a window containing the sample sketch. Upload it to your FLORA with the Upload button.

Once successfully uploaded to your FLORA, the pixel will flash and fade different colors. Congrats, you've tested your pixel!

We do test each pixel in the factory, but you should use this method to test that all three colors (red, green, blue) work on each of your pixels before sewing them into your project!

Add more pixels
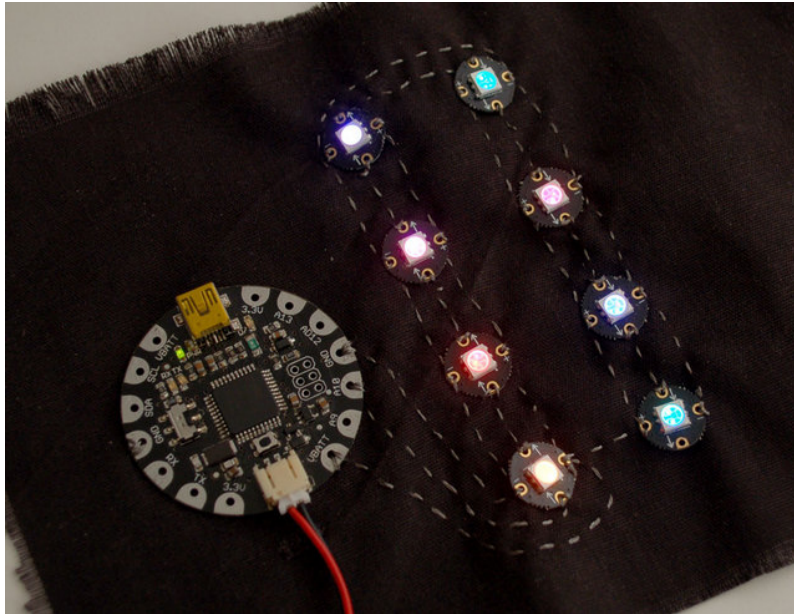
The pixels are chainable - so you only need 1 pin/wire to control as many LEDs as you like. They're easy to sew, and the chainable design means no crossed conductive threads (http://adafru.it/641). The output of one pixel connects directly to the input of the next.

Just make sure that each arrow points away from the Flora in a line. All the +'s and -'s connect together, as you can see above, I sewed the +'s of the two rows together at the bottom, not the top.

Lots of Pixels?

Each pixel draws as much as 60mA (all three RGB LEDs on for full brightness white). In theory, the Flora can drive up to 500 pixels at 30 FPS (it will run out of RAM after that). However, after about 10 pixels (or if the distance between pixels is more than an inch or two) the resistance of the thread can affect the power supply. For large quantities of pixels over 10, you may want to consider using stranded core wire or copper braid to provide a "power bus" for the pixels - the current draw will add up fast!

The library for these pixels is very similar to our Adafruit_WS2801 (http://adafru.it/aRL) library for other types of RGB pixels (http://adafru.it/aRL).