P.O. Box 222
Ranagar City,
Rann
Zone 6

480-970-8931 H
480-206-1278 C
dondoerres@cox.net

Dr. Who Handkerchief

USING THE SONIC HANDKERCHIEF

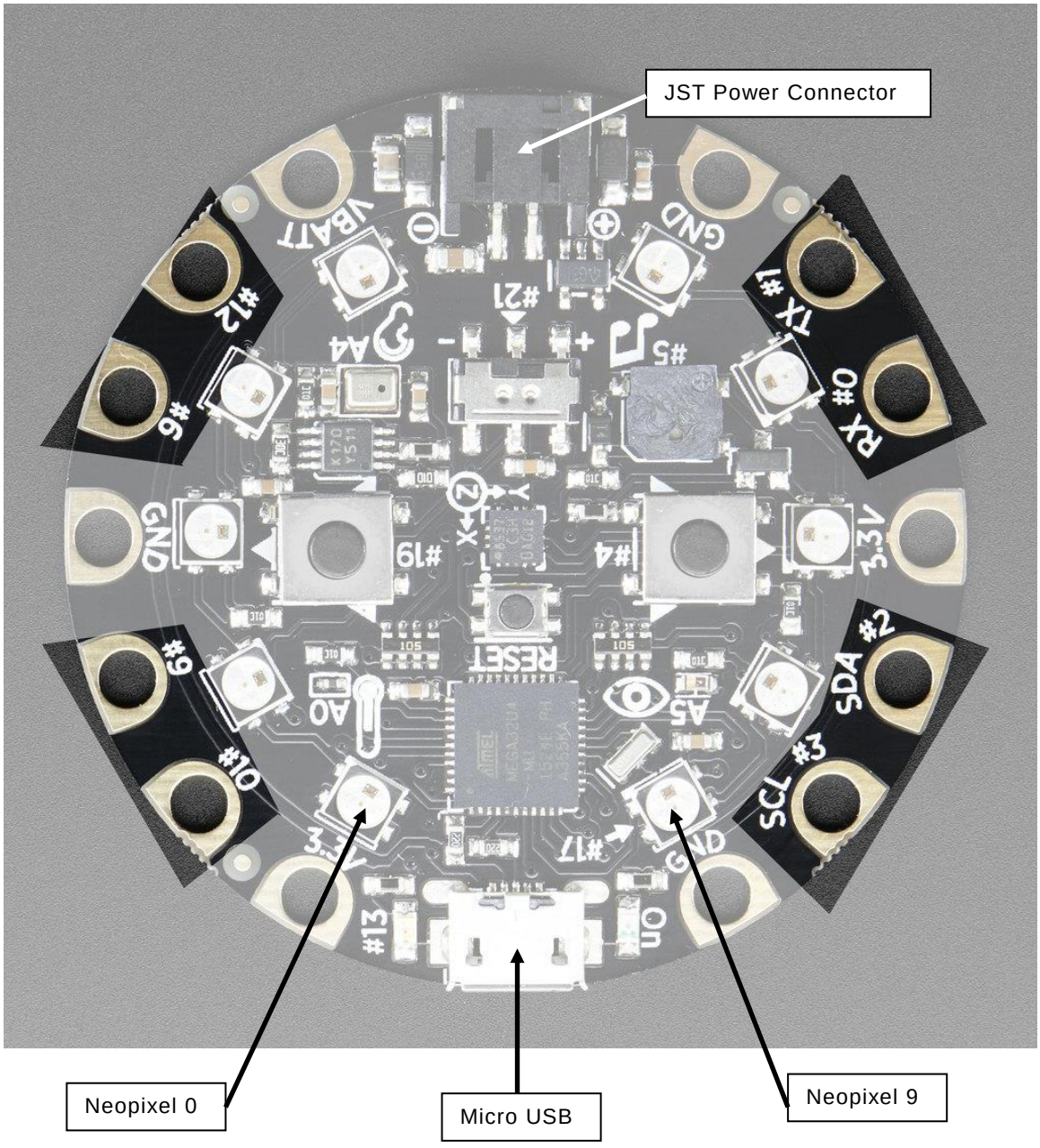
Everything You Wanted to Know
By Don Doerres and Denise Blommel

The sonic handkerchief

The sonic handkerchief is based on the Adafruit Electronic Playground, https://www.adafruit.com/products/3000.

The unit has many capabilities. The initial sonic handkerchief software uses the ten mini neopixels (programmable LED lights), the speaker, the eight touch pads, the thermistor (for temperature measurement), and custom software to perform eight functions.

This picture is “right side up” for the ‘chief’, with the JST power connector at the top and the micro USB connector at the bottom. The reasoning for the orientation is the numbering of the neopixel LED’s. They are numbered “0” through “9” clockwise with 0 right next to the micro USB connector.



The ‘chief’ can be powered three different ways:

1. AAA 3-battery pack plugged into the JST connector at the top of the disk.
2. USB cable plugged into a computer with a type A USB plug at one end and a micro USB plug at the other.

3. Five volt cell phone or other 5 volt “wall wart” recharger with a standard micro USB plug.

The sonic handkerchief starts running its internal software when powered up. It may be reset by toggling the power switch, unplugging its micro USB connector, or pressing the reset button in the center of the ‘chief’

The sonic handkerchief is controlled by touching its touch sensitive pads. Try holding it by either the micro USB connector or the JST connector. If you touch one of the pads while holding it, you will likely activate it.

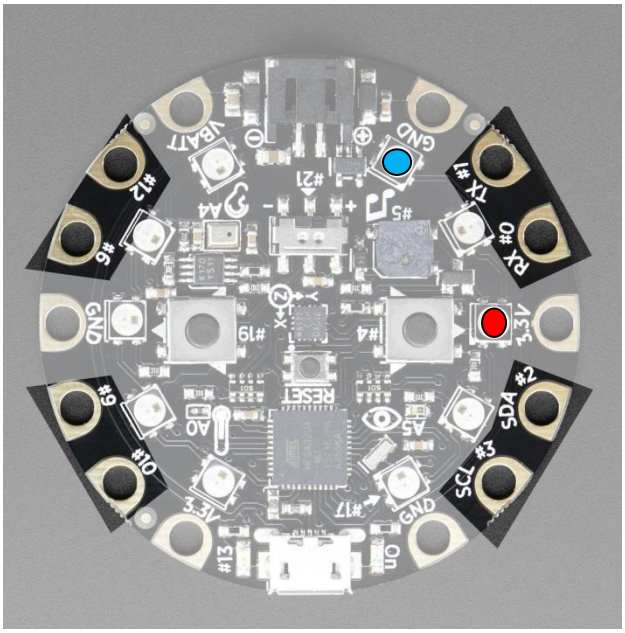
The eight control pads are numbered around the ring in an odd pattern (that is, the numbers are not sequential). The functions will be listed in numerical order. Please see the picture to see the (unusual) order of the pads. The order must have something to do with integrated circuit pin outs or board layout.

The Functions

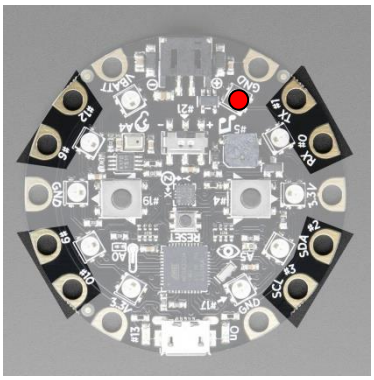
0: Temperature

When you touch the temperature pad, two neopixels light up. A red light represents the units, and a blue light represents the tens. The zero neopixel starts the units count. Values are 0 through 9. The zero neopixel starts the tens count, starting at 20 for neopixel 9. So the tens

count may be 20, 30, 40, 50, 60, 70, 80, 90, 100, 110. Units are degrees Fahrenheit. This picture shows 77 degrees.



What happens if the temperature requires the same neopixel to light both red and blue? It is the case that the red neopixel will be “on top of” the blue one, so only the red one will be visible. For example, below is 75 degrees.



To stop showing temperature, press the center reset button or start another function.

1: Flashlight

Touching pad 1 lights all 10 neopixels to white color. To turn off the flashlight, touch pad 1 again, press reset, or start another function.

2: Clockwise Rainbow

Press pad 2 for a clockwise color rainbow that repeats three times and then stops.

3: Counter-Clockwise Rainbow

Press pad 3 for a counter-clockwise rainbow that repeats three times and then stops.

6: Sound Effect #1

Press pad 6 for sound effect #1. This will run and stop. Also note that there is no pad 4 and no pad 5.

9: Merry Christmas

Press pad for a Merry Christmas swirl that repeats four times. Christmas should last longer, don't you agree? So it runs four times rather than three. There are no pads 7 or 8.

10: Sound Effect plus Wreath

Press pad 10 for the wreath light show and a matching sound effect. This will repeat three times.

12: Sound Effect #2

Press pad 12 (there is no pad 11) for sound effect #2. This will run and stop.