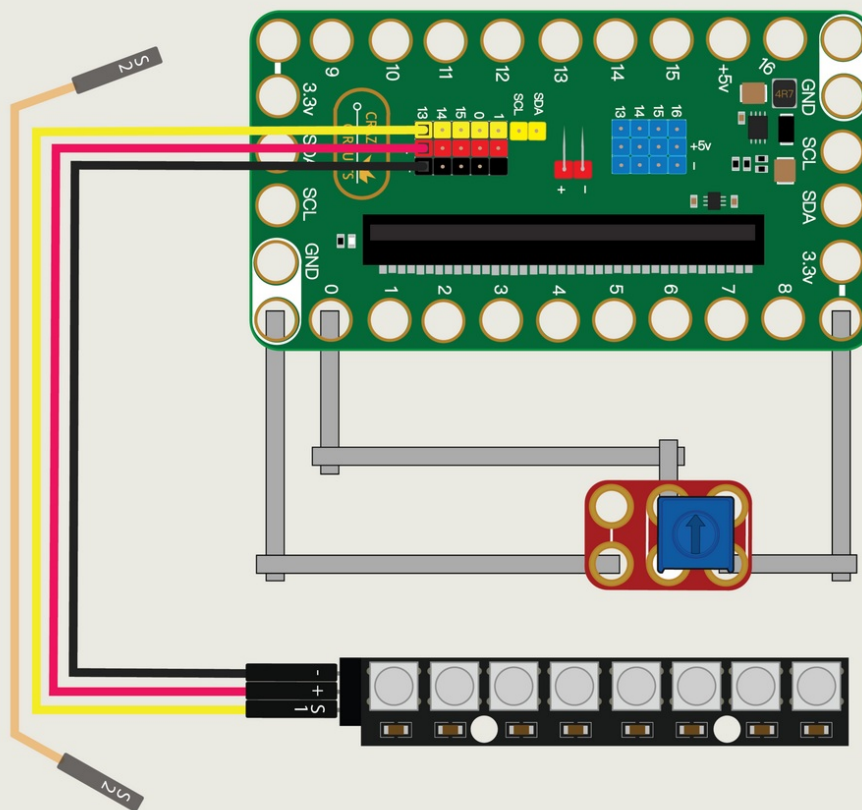




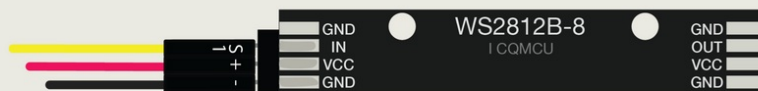
CH23-A - NeoPixel Bright

Connect a NeoPixel Stick and a Potentiometer to a Bit Board and control them with code.

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Back of NeoPixel Strip



INTRODUCTION

Connect a NeoPixel Stick and a Potentiometer to a Bit Board and control them with code.

We'll explore how to control an Addressable RGB LED Strip (also called "NeoPixels").



TOOLS:

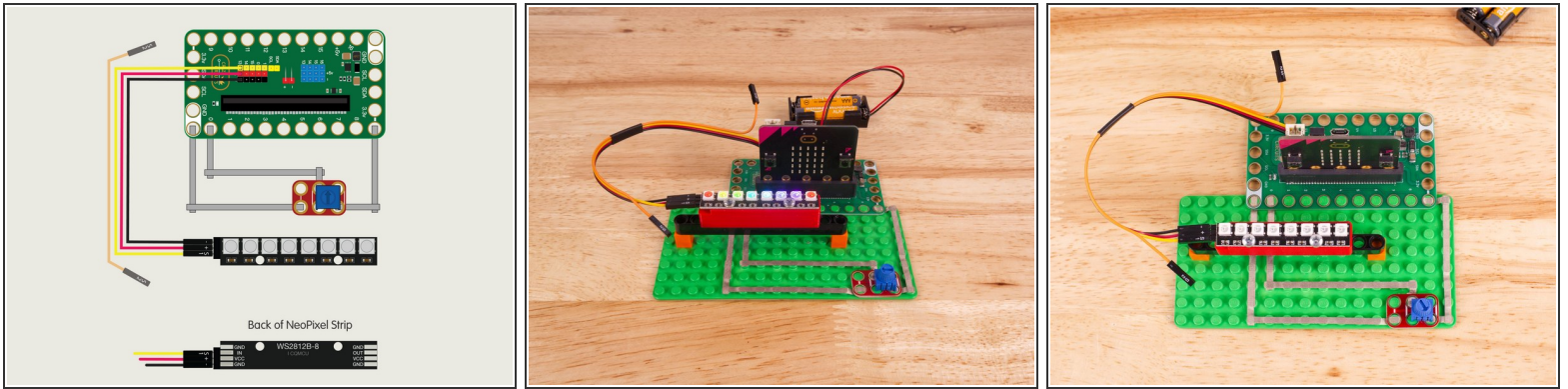
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

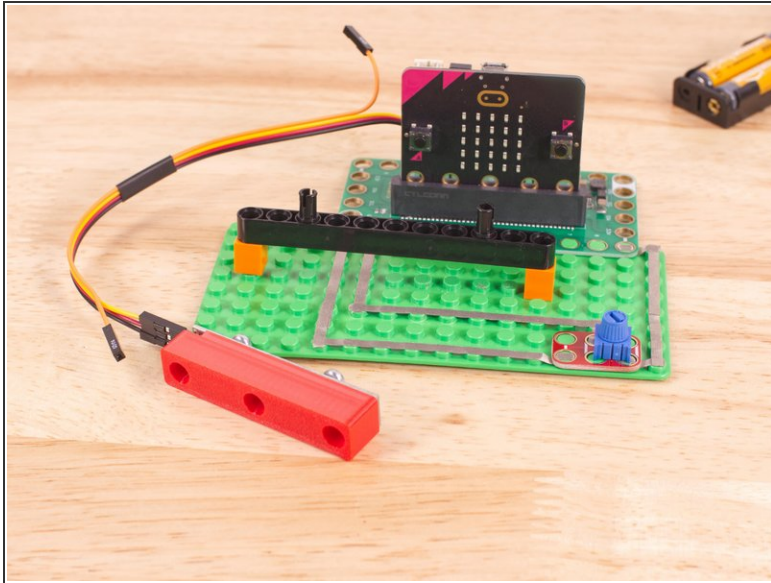
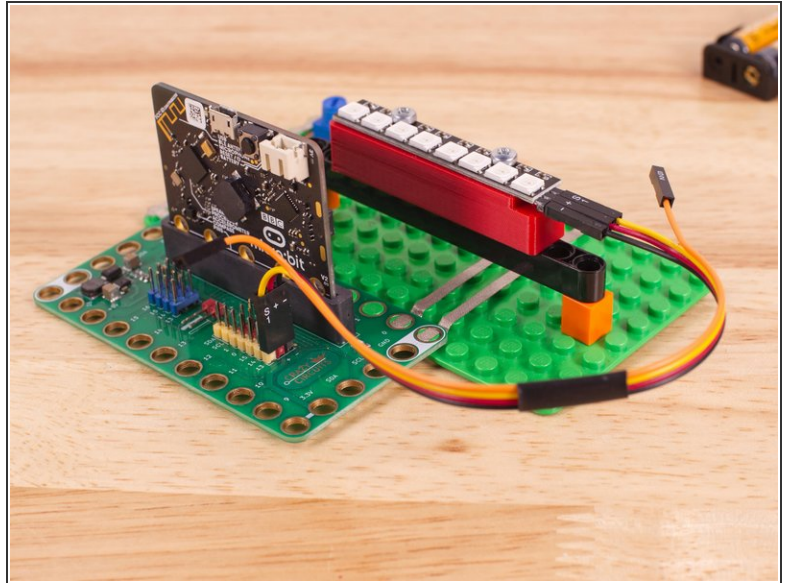
- [Crazy Circuits Bit Board](#) (1)
 - [micro:bit](#) (1)
 - [Addressable RGB LED Strip](#) (1)
 - [Crazy Circuits Potentiometer Chip](#) (1)
 - [Crazy Circuits Ribbon Cable](#) (1)
 - [Maker Tape](#) (1)
- 1/8" Wide

Step 1 — Connect the NeoPixel Stick and Potentiometer



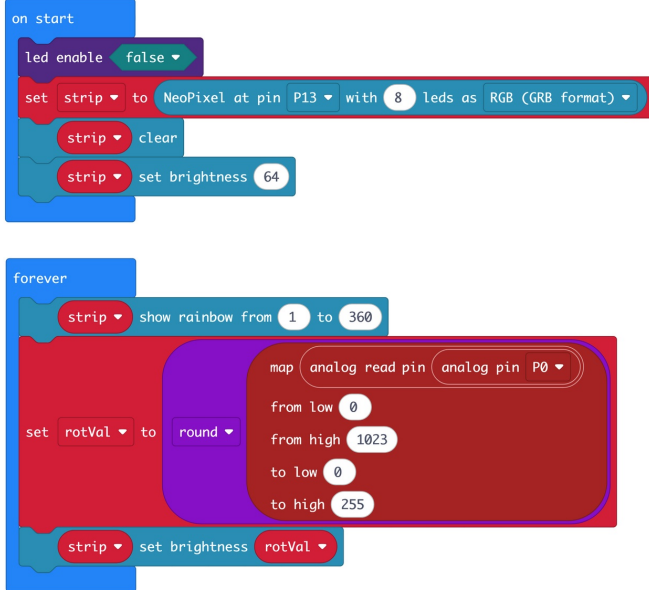
- The magical thing about these “Individually Addressable” LEDs is that you don’t have to connect each LED to an individual pin on your micro:bit, you just need **one signal wire** along with power (**Positive** and **Negative**) to light things up.
- So let's get connected! If you turn the **NeoPixel Strip** over you'll see labels for the three pins. You should see **IN**, **VCC**, and **GND**.
- Use the [Crazy Circuits Ribbon Cable](#) to connect the **NeoPixel Strip** to the **Bit Board**.
- The end with **S1**, **+**, and **-** can plug directly into the **Pin 13** row (make sure S1 goes into 13) and the other end should plug into the **NeoPixel Strip** as shown.
- ☑ We only need three wires for the **NeoPixel Strip** so you can leave **S2** (the Orange wire) unconnected.
- We'll also connect a potentiometer using Maker Tape. Connect it to **GND**, **Pin 0**, and **3V**. (The center hole connects to **Pin 0**.)

Step 2 — Mount the NeoPixel Stick



- To mount the NeoPixel Stick in place we used our [NeoPixel Beam Holder](#) with a long Technic Beam and two 1x1 LEGO bricks.
- You can always use rubber bands, tape, or some other method.
- The important thing is to make sure the connector is on the left hand side so the number index for the NeoPixel strip makes sense.

Step 3 — Load the Code

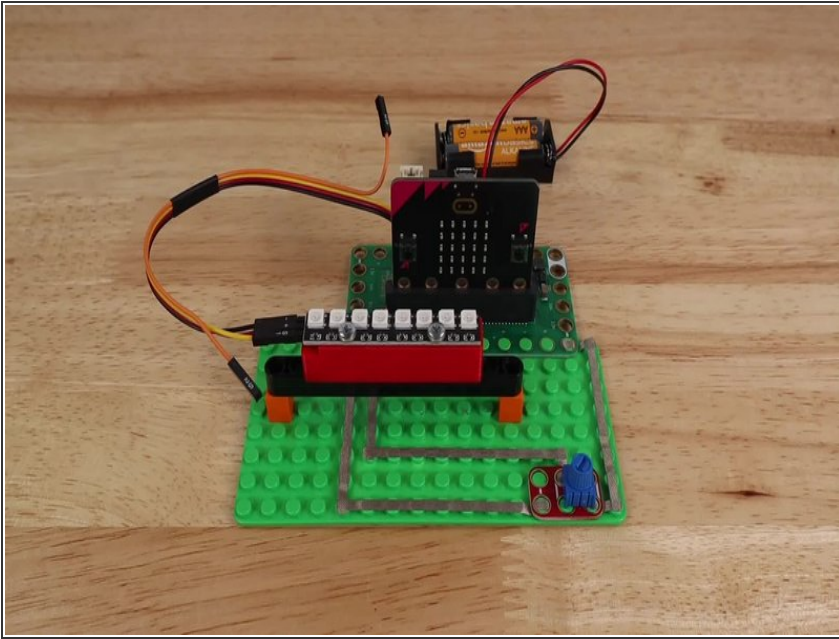


```
on start
  led enable false
  set strip to NeoPixel at pin P13 with 8 leds as RGB (GRB format)
  strip clear
  strip set brightness 64

forever
  strip show rainbow from 1 to 360
  map analog read pin analog pin P0
  from low 0
  from high 1023
  to low 0
  to high 255
  set rotVal to round
  strip set brightness rotVal
```

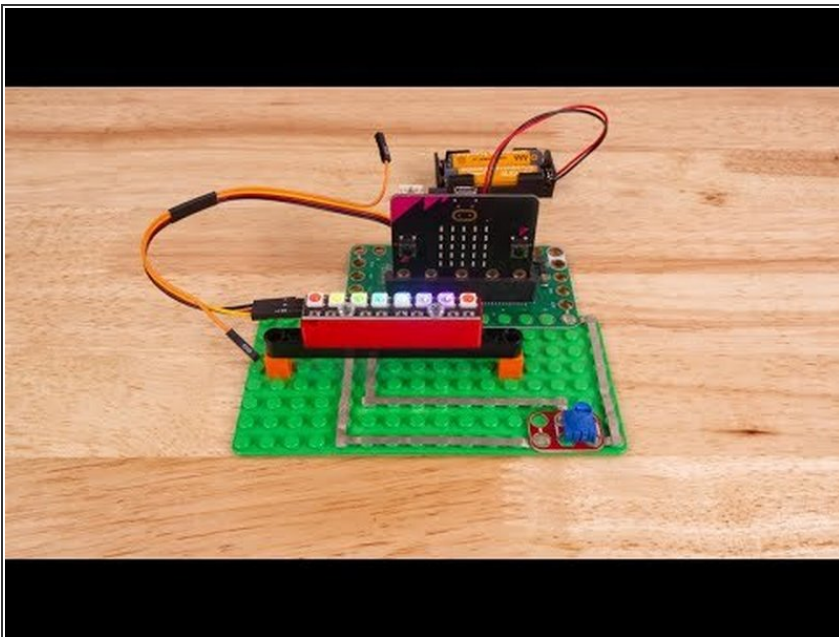
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **NeoPixel Bright** program:
https://makecode.microbit.org/_AqMidvbEH...
- We'll explore using the set brightness function in the forever loop.
- The forever loop first calls show rainbow to light up the pixels, then reads the potentiometer value (and uses round to get an **integer**) which we'll use to **set the brightness**.

Step 4 — Test it Out!



- Once the code is loaded it should start running immediately.
- ① You can power the micro:bit via the USB cable you used to load the code or you can use a battery pack plugged into the Bit Board.
- Turn the potentiometer anti-clockwise and it should lower the brightness of the NeoPixels.
- Turn the potentiometer clockwise and it should raise the brightness of the NeoPixels.

Step 5 — Follow Along



- Follow along with our recorded Live Stream!
- ① You can watch the full video of us walking through this project, along with explaining and exploring the code:
<https://www.youtube.com/live/-2ECPBjKX1Q>