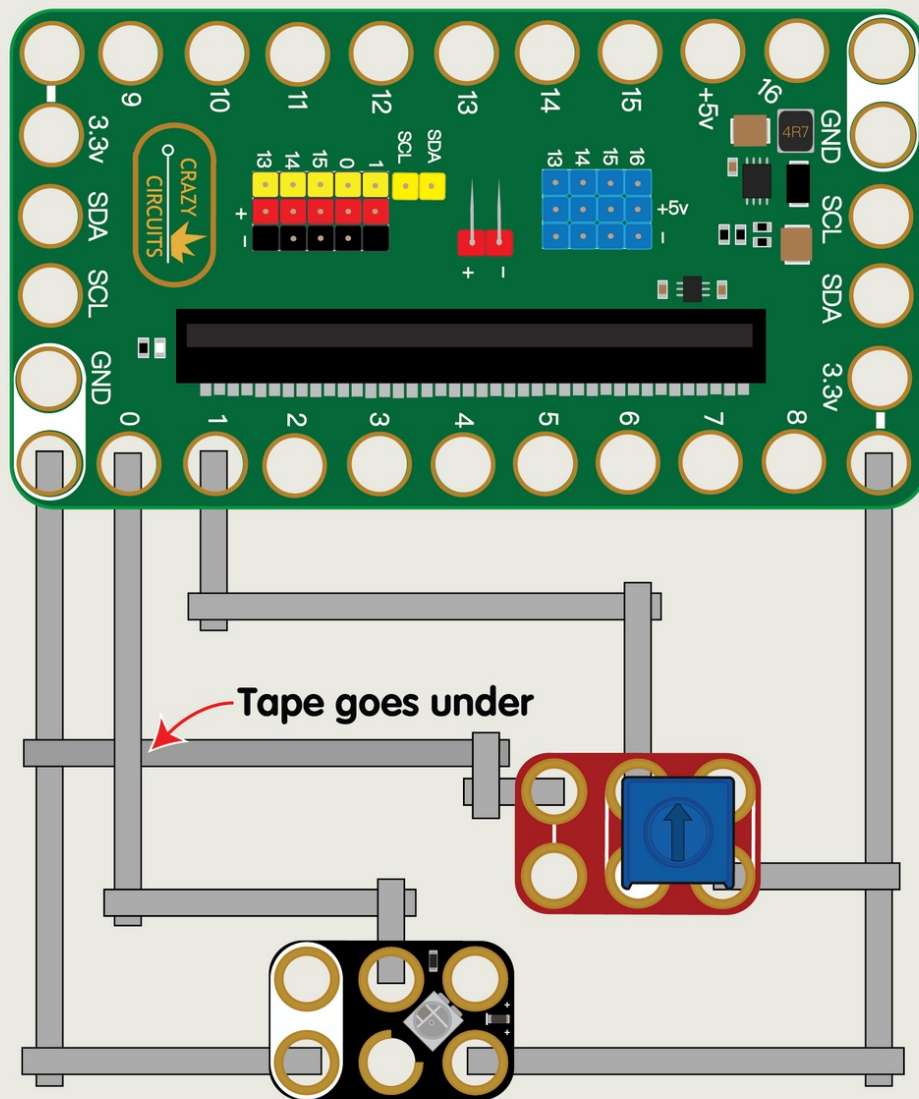


CH19-A - NeoPixel Potentiometer R

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

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INTRODUCTION

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

We'll explore how to control an RGB LED (a "NeoPixel") using a potentiometer.



TOOLS:

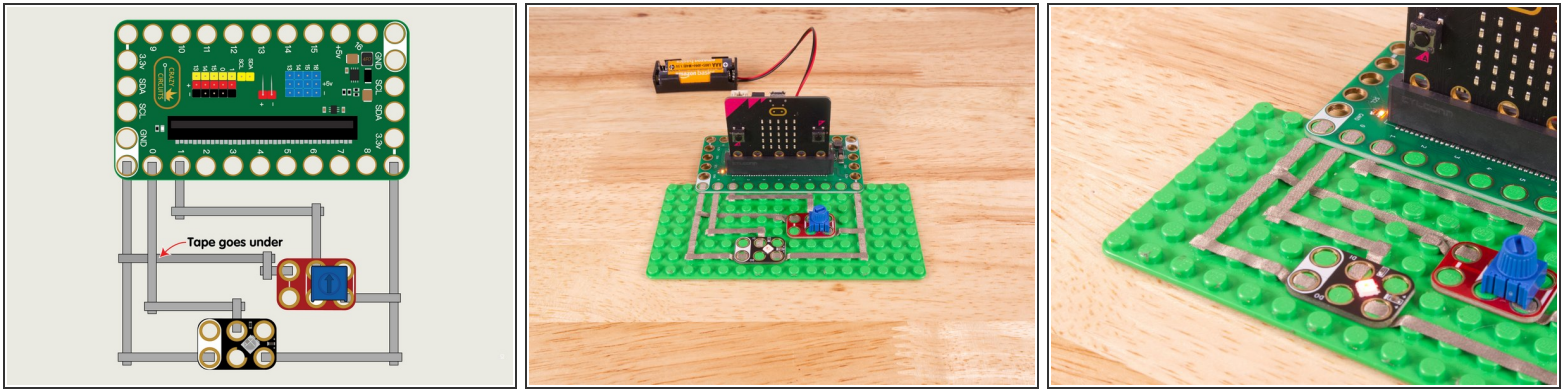
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

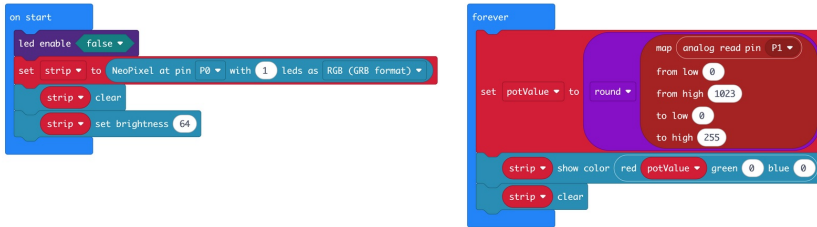
- [Crazy Circuits Bit Board](#) (1)
- [micro:bit](#) (1)
- [Maker Tape](#) (1)
1/8" Wide
- [NeoPixel Chip](#) (1)
- [Crazy Circuits Potentiometer Chip](#) (1)

Step 1 — Connect the NeoPixel and Button



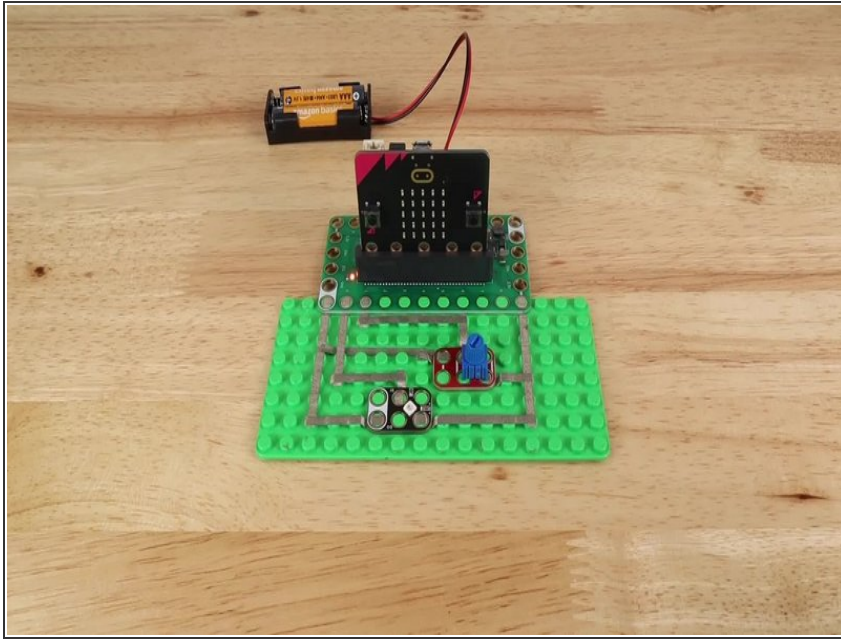
- We'll use **Maker Tape** to connect the NeoPixel and the Potentiometer to the Bit Board on a LEGO baseplate.
- We'll connect our **Potentiometer** to **Pin 1**, **Ground** (GND), and **3.3v** **BUT!** We're going to use the "gutter" between the LEGO baseplate studs so we can have **two layers of tape** that do not touch.
 - See the photos to show how this works. It's a technique we'll use for certain projects. It can also be used when you're tight on space for tape paths.
- Once the Button is connected we'll need to connect the NeoPixel. One side goes to **Ground** (GND) and the other side to **3.3v**
- We'll then connect the center pin labeled **DI** (for **Digital Input**) to **Pin 0**, which will control the NeoPixel. *Run the tape on top of the studs so it does not touch the tape connected to the Potentiometer.*
- ☑ You'll notice the **Ground** on the Bit Board (as well as the NeoPixel and other Crazy Circuits components we'll use) is color coded **White**.
- ☑ The **3.3v** hole on the Bit Board is labeled and is actually two holes right next to each other on the Bit Board. (There is a small line showing the connection between them.)

Step 2 — Load the Code



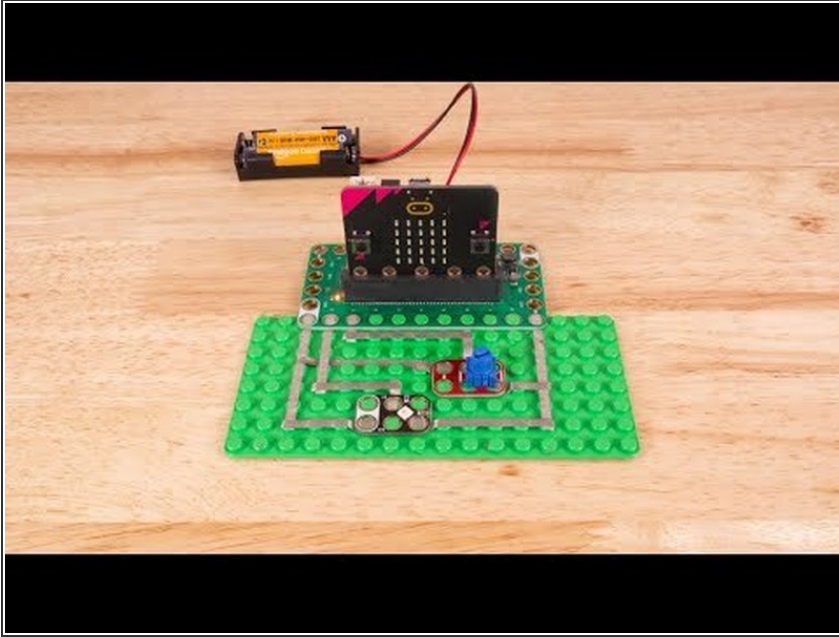
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **NeoPixel Potentiometer R** program: https://makecode.microbit.org/_aiqUpdW19...
- We'll use the Potentiometer to adjust the brightness of the NeoPixel's level of Red.
- ⓘ Since the NeoPixel expects a value between **0 and 255** we'll use the map function to change the **0-1023** scale from the potentiometer to **0-255** for the NeoPixel.
- ★ Note that we are using the round function so we get a whole number (an integer) and not a floating point (decimal) number.

Step 3 — Test it Out!



- Once the code is loaded it should start running immediately.
- ❗ 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 small blue knob on the Potentiometer and you'll see the brightness of the NeoPixel change. (It will only show red for this example.)
- Turning fully anti-clockwise should make the LED so dim it appear to be "off" and turning the knob fully clockwise should set it to the brightest it can go.

Step 4 — 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://youtube.com/live/KBatTBnfasY>