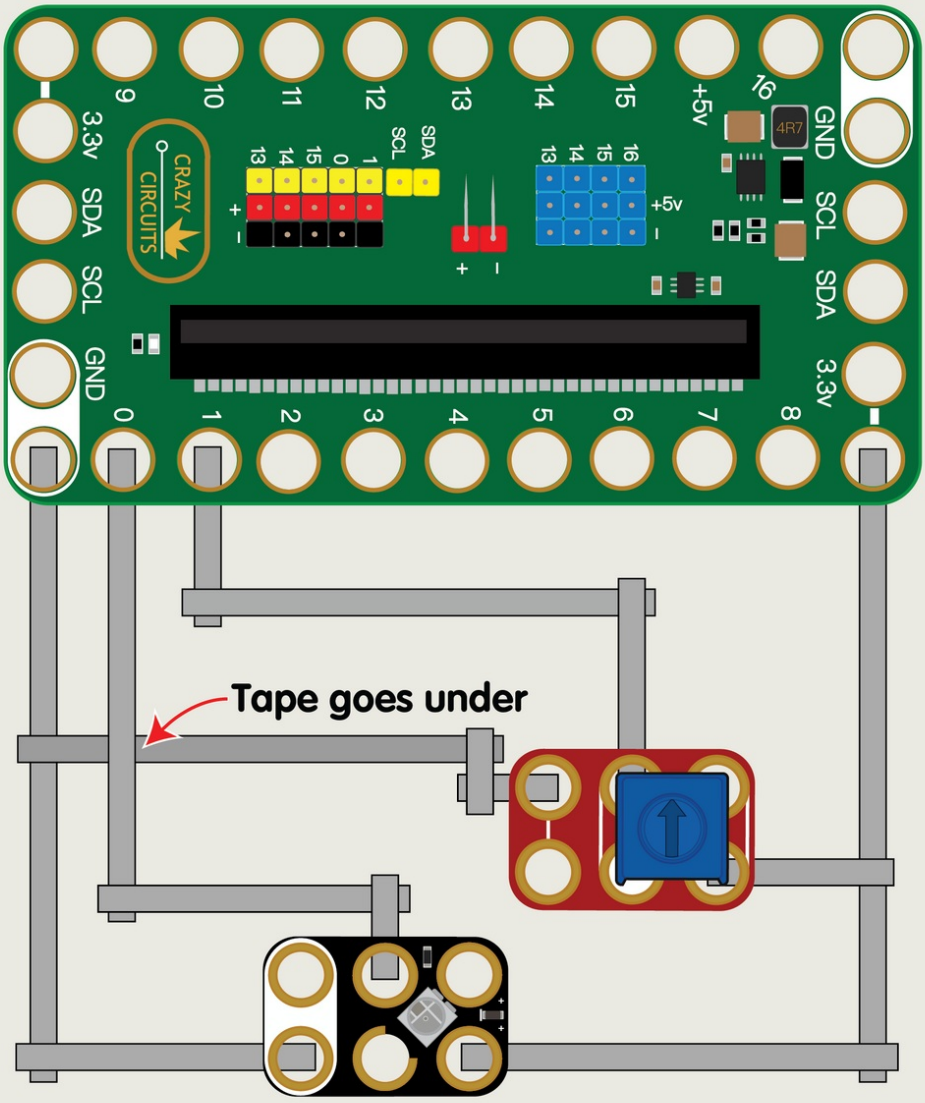
CH19-D - NeoPixel Potentiometer RGB3

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

Written By: Pete Prodoehl



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:

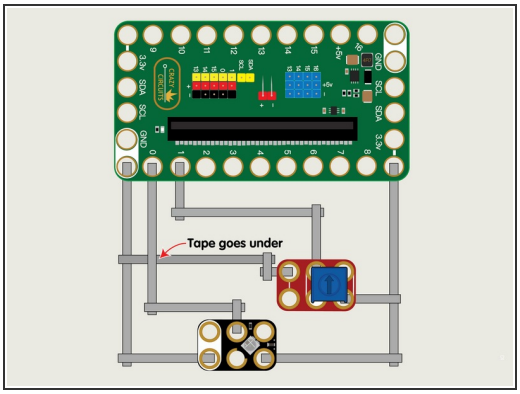
- Computer (1)
- Scissors (1)

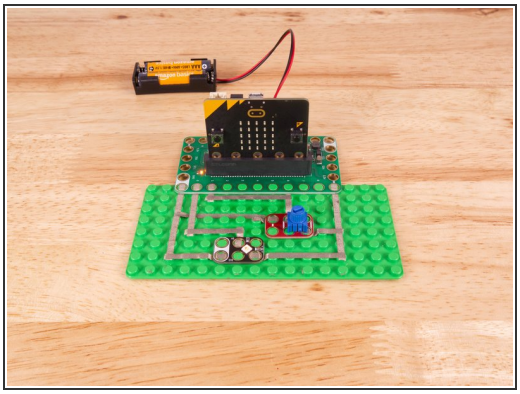
PARTS:

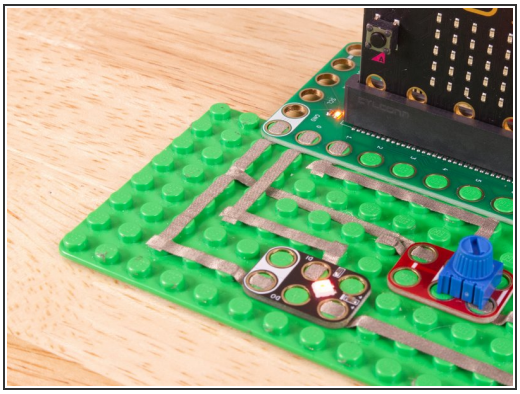
- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Maker Tape (1)
  1/8" Wide
- NeoPixel Chip (1)
- Crazy Circuits Potentiometer Chip (1)

© 2025

Step 1 — Connect the NeoPixel and Button





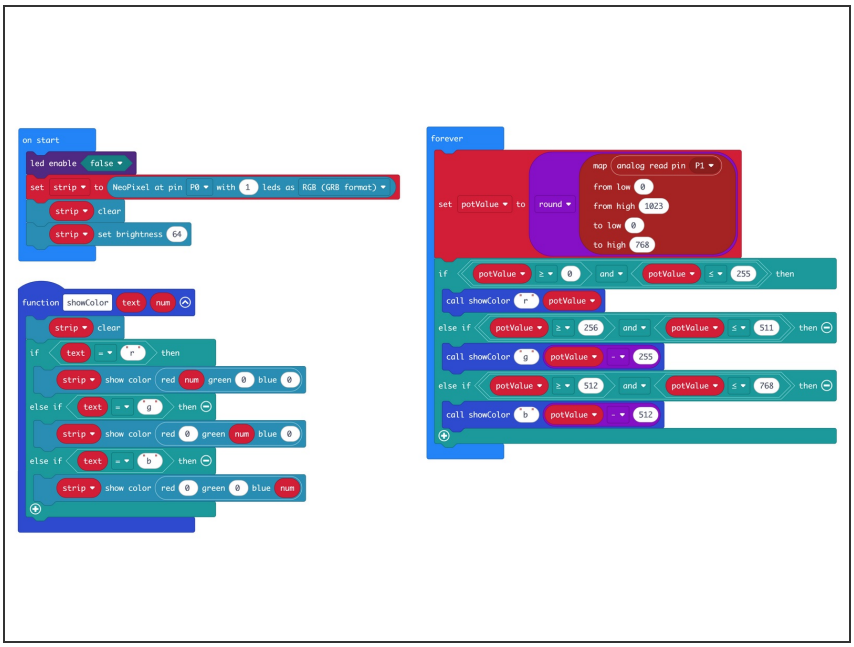


- We'll use **Maker Tape** to connect the NeoPixel and the Potentiometer to the Bit Board on a LEGO baseplate.
- We'll connect our **Potentiometer** to **Pin 1**, **Ground** (GND), and **3.3v BUT!** We're going to use the "gutter" between the LEGO baseplate studs so we can have two layers of tape that 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.)

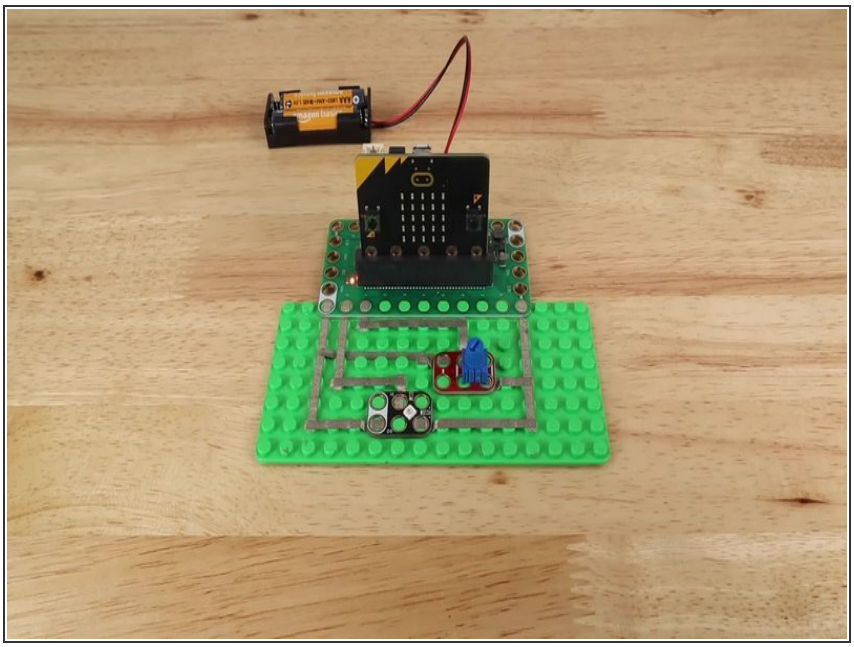
© 2025

Step 2 — Load the Code



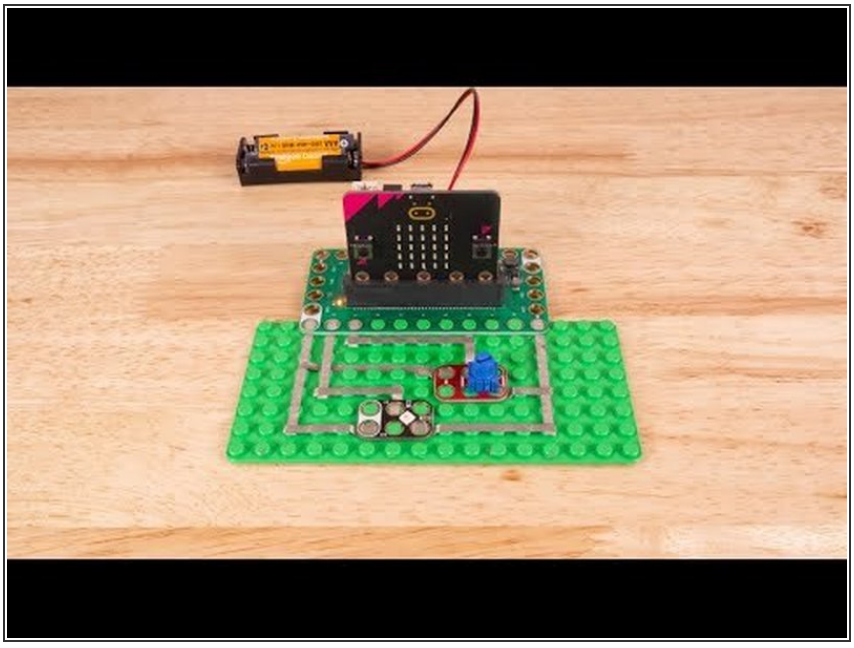
- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **NeoPixel Potentiometer RGB3** program: https://makecode.microbit.org/_ezeVMAek8...
- We will once again read (and map) the value from the potentiometer, but this time we'll combine the "selector switch" idea with the "brightness" control.
- We've also added a function named showColor that accepts two parameters: a letter ('text') and a number ("num").

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.
- The knob will now show the color red, or blue, or green, depending on the position of the dial... but the dial will *also* set the brightness of each color as you turn the dial. Multimodal controls!

Step 4 — Follow Along



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

© 2025