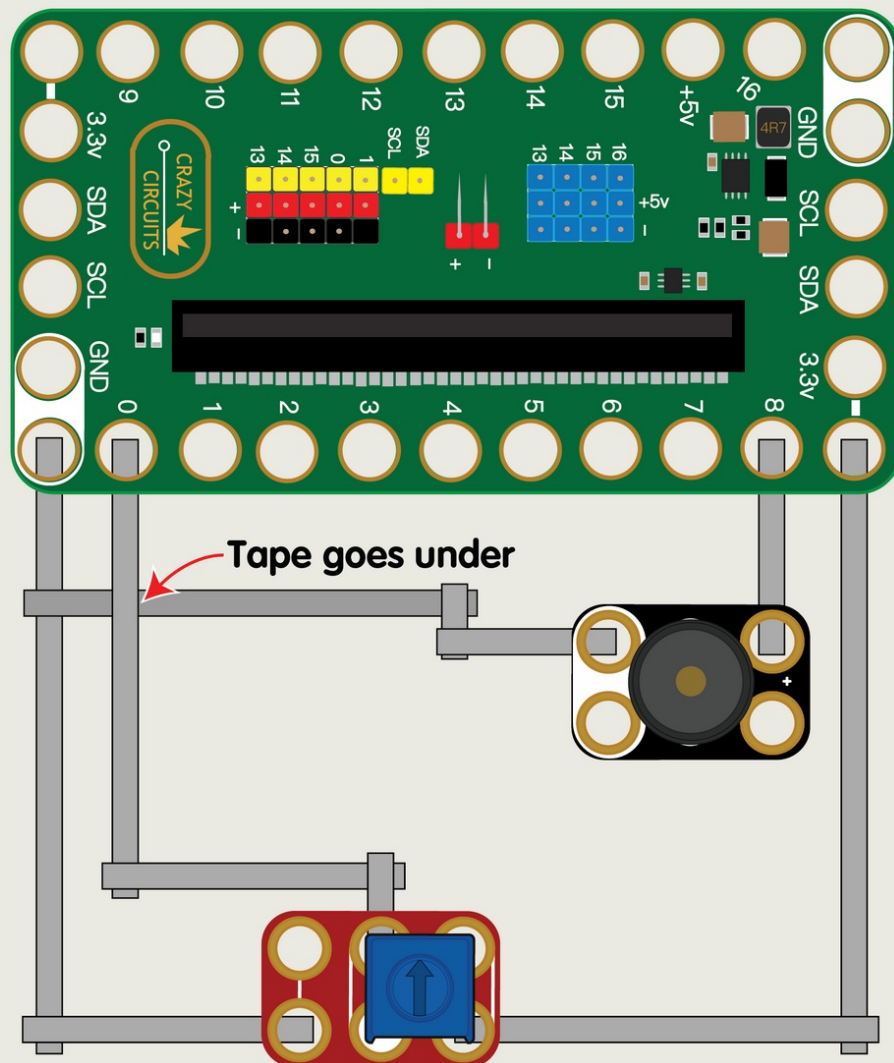




CH16-C - Potentiometer Piezo Delay

Connect a Potentiometer to a Bit Board and control a Piezo with code.

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INTRODUCTION

Connect a Potentiometer to a Bit Board and control a Piezo with code.

We'll explore how we can make sounds using a piezo speaker with a potentiometer.



TOOLS:

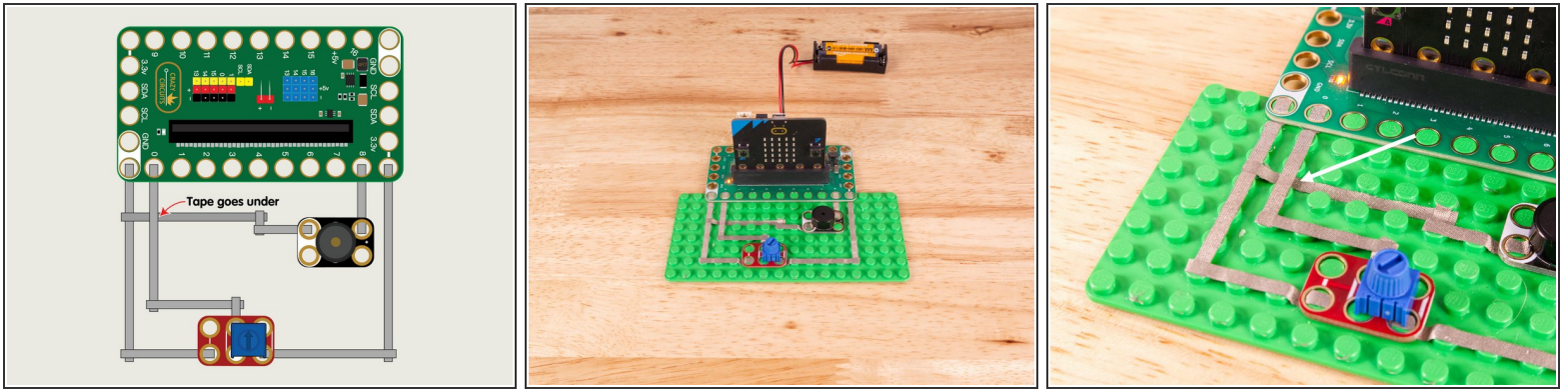
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

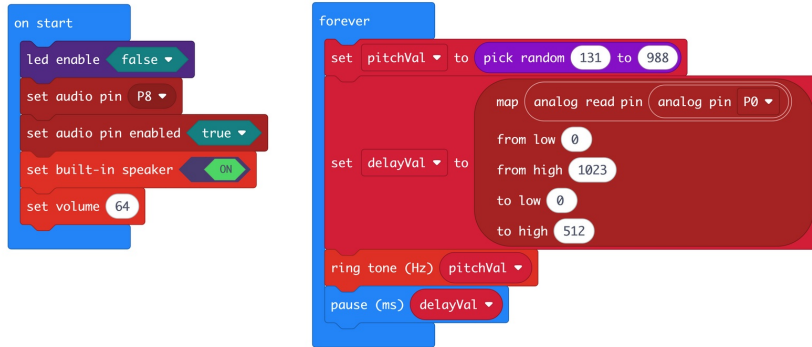
- [Crazy Circuits Bit Board](#) (1)
- [micro:bit](#) (1)
- [Maker Tape](#) (1)
1/8" Wide
- [Crazy Circuits Potentiometer Chip](#) (1)
- [Crazy Circuits Piezo Speaker Chip](#) (1)

Step 1 — Connect the Potentiometer and Piezo



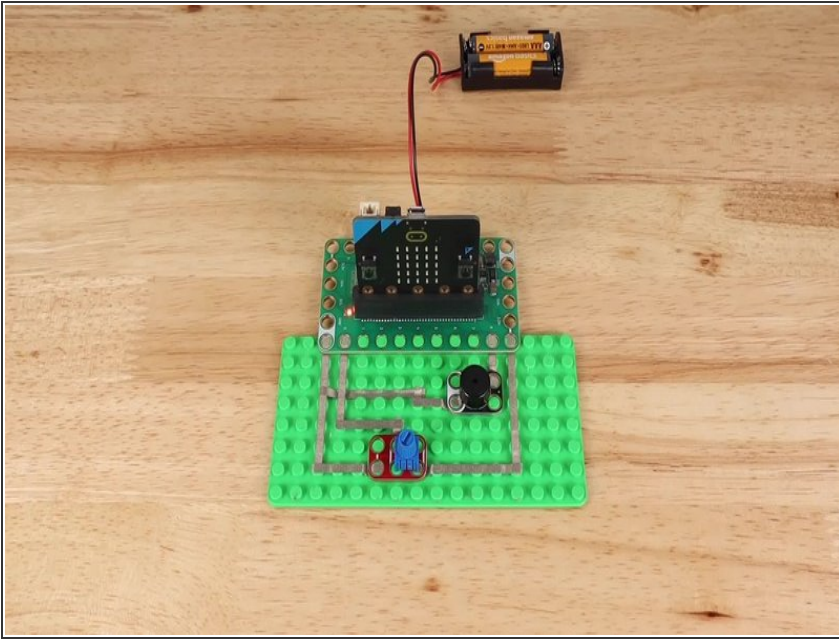
- We'll use **Maker Tape** to connect the Potentiometer and the Piezo to the Bit Board on a LEGO baseplate.
- The Piezo will connect to **Pin 8** and to **Ground (GND)** **BUT!** We're going to use the "gutter" between the LEGO baseplate studs so we can have **two layers of tape** that do not touch.
 - 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 Piezo is connected we'll need to connect the Potentiometer. One side goes to **Ground (GND)** and the other side to **3.3v**
- We will then connect the center of the Potentiometer to **Pin 0**. (Note that **Pin 0** is an **analog** pin.)
- ☑ You'll notice the **Ground** on the Bit Board (as well as the Potentiometer, Piezo, 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



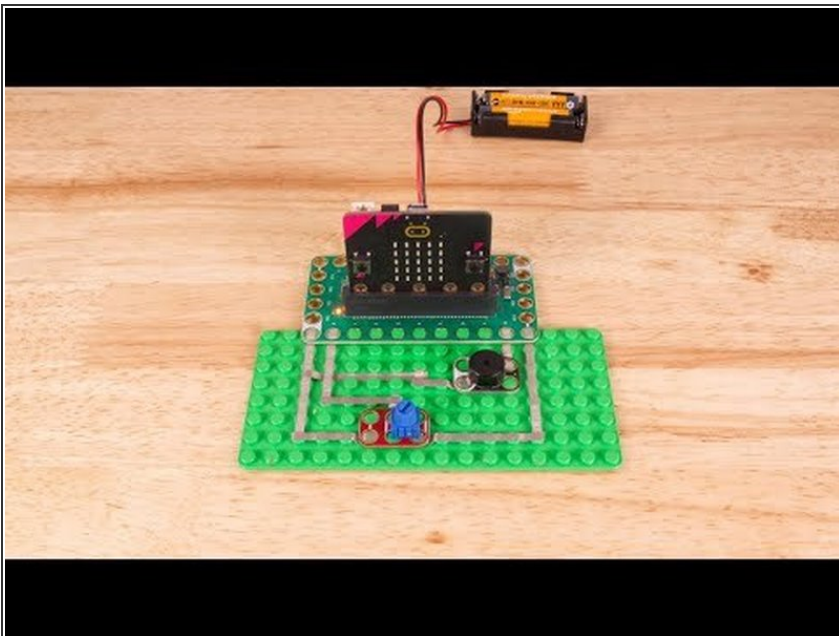
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **Potentiometer Piezo Delay** program:
https://makecode.microbit.org/_i8VA422r4...
- ⚠ The micro:bit (since the release of version V2) has included a built-in piezo speaker on the back. You can use the built-in Piezo on a V2 micro:bit or connect a Crazy Circuits Piezo with Maker Tape as we've shown in this guide.
- We'll use the random function to choose a numerical value (between **131** and **988**) and then play that tone and pause before choosing a new tone to play.
- The Potentiometer will set a **delay** between **0** and **512** (about half a second) by **mapping** the input, which will be between **0** and **1024**.

Step 3 — 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.
- The Piezo will create a different tone (randomly selected) and will change after a certain amount of time, as determined by the position of the Potentiometer.

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/g6-AnKVkcFk>