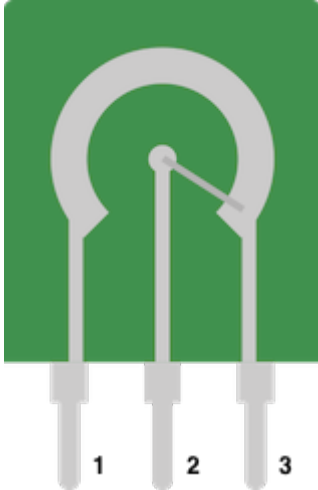


Connecting a Potentiometer

A potentiometer (often abbreviated to pot) is an electronic component with three connections, the main purpose of the pot is to create a variable voltage as an input to a circuit, for example controlling how loud your speakers should be.



Inside a potentiometer is a large resistive area between pin #1 and #3, the middle pin #2 is called the wiper, and by actuating the pot you can select a position along that resistive area to create a proportional voltage between pins #1 and #3.

For example if you have Ground (0V) on pin #1, and 5V on pin #3, you could select a voltage between 0V to 5V, at the half way the voltage on pin #2 would be 2.5V.

Different types

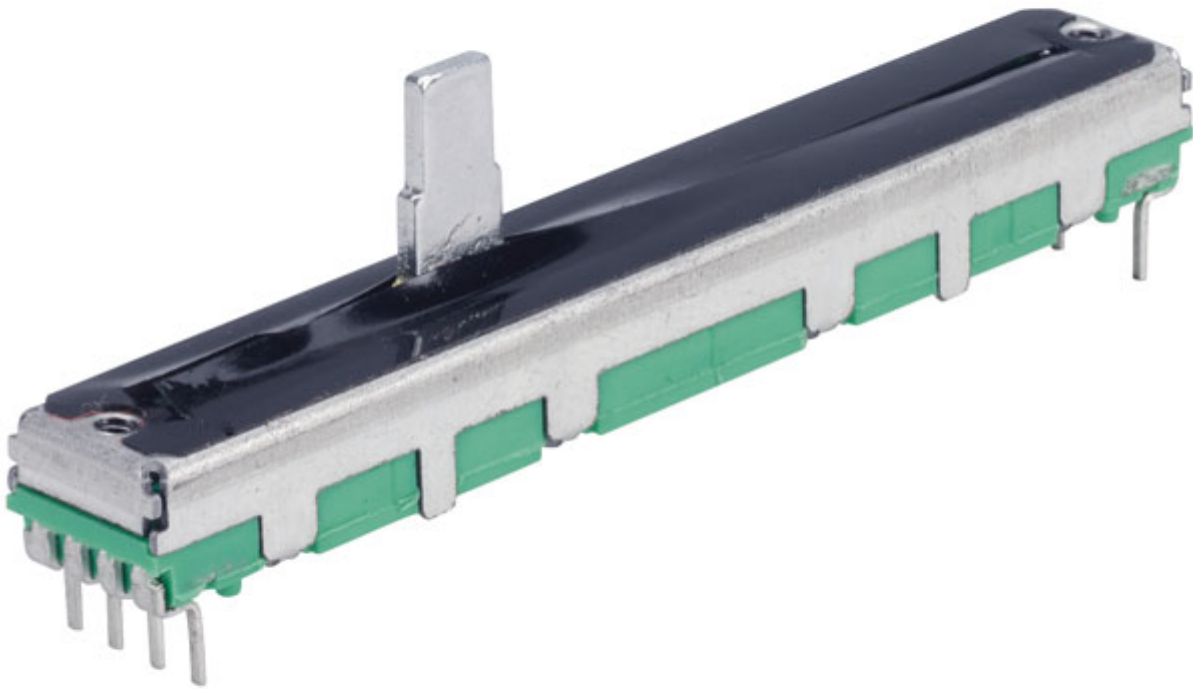
There are two main types:

Rotary Potentiometer



Rotary Potentiometers like those found on speakers to control the volume.

Slide Potentiometer



Slide Potentiometer like those found on audio mixing desks.

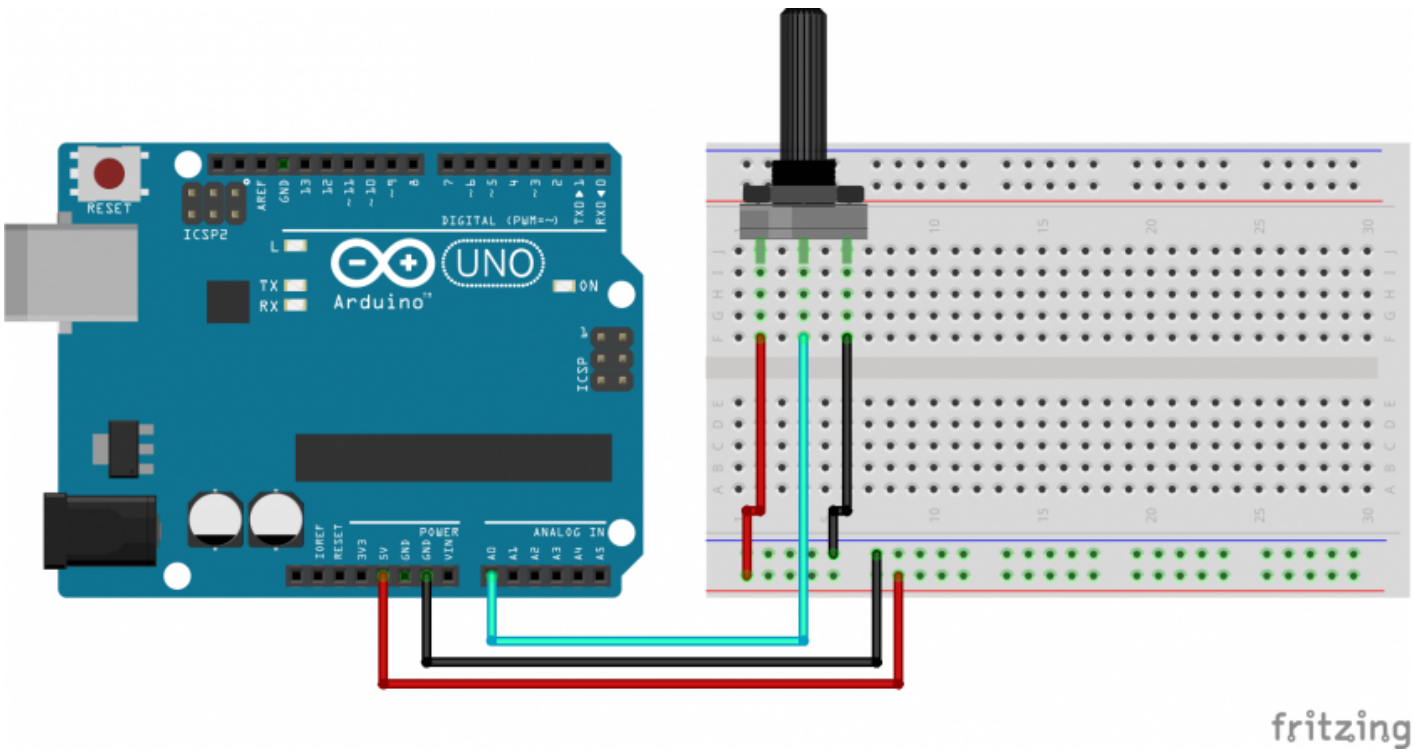
Wiring

Wiring up buttons and switches is simple, both are fundamentally the same, however it can be tricky identifying pins #1, #2, and #3 (more on this later).

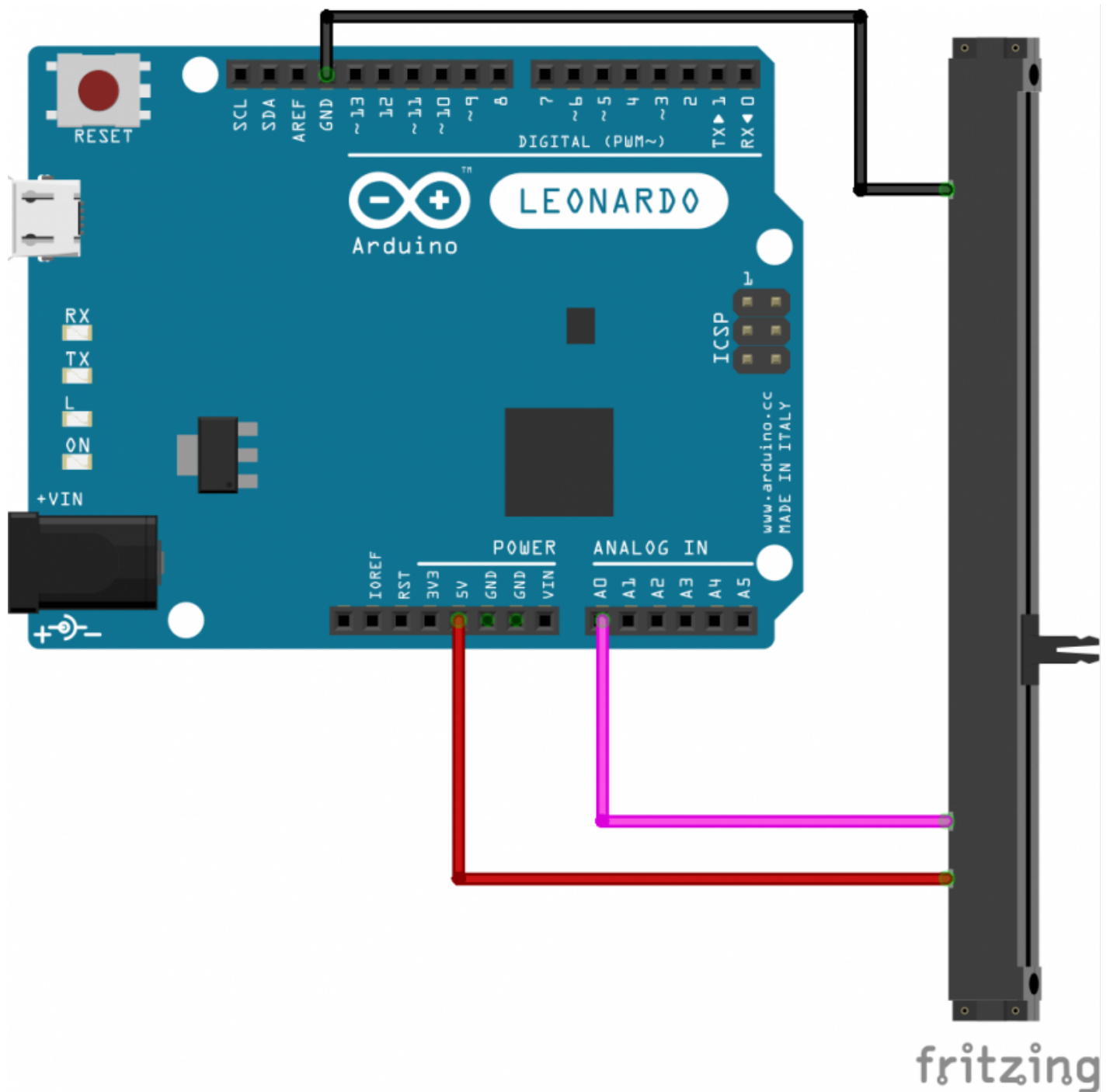
At its most basic, pins #1 and #3 need to be connected to Power and Ground, for example 5V and GND on an Arduino. Pin #2 the wiper needs to be connected to the analog input pins:



Rotary Potentiometer Wiring



Slide Potentiometer Wiring



Identifying the pins of a potentiometer

The most common type of potentiometer to use is a 10K Ω potentiometer, that means the resistance between pin #1 and #3 is fixed at 10K Ω or thereabouts, and that the resistance between pin #2 and either of the other two will be proportional to the position of the potentiometer rotation/sliding.

In other words, using a multimeter set to resistance/ohms/ Ω measurement you can find the two pins that don't change at all, and measure a resistance close to the rating marked on it. The remaining leg is likely the wiper.

Getting started

The following is a simple sketch that will get a potentiometer controlling the LED built into the Arduino.

This sketch will make the LED blink at a rate between 0ms to 1023ms, this is because the function `analogRead` returns a value between 0-1023.

```
#define ledPin 13
#define potPin A0

void setup() {
  pinMode( ledPin, OUTPUT );
  pinMode( potPin, INPUT );
}

void loop() {
  digitalWrite( ledPin, HIGH );
  delay( analogRead( potPin ) );

  digitalWrite( ledPin, LOW );
  delay( analogRead( potPin ) );
}
```

Revision #4

Created 10 July 2021 23:17:39 by Tom Lynch

Updated 29 April 2024 22:24:58 by Tom Lynch