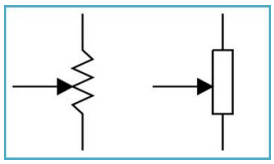
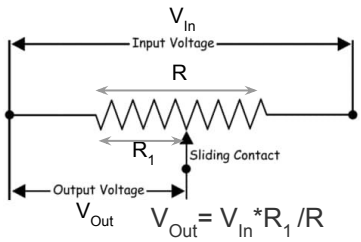
Potentiometer
(Technical Note)

Introduction

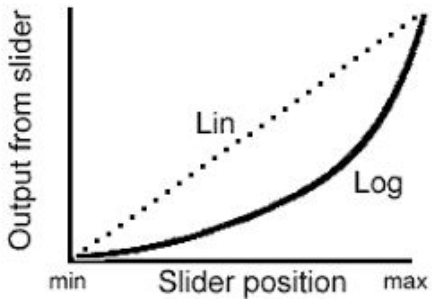


Schematic Symbols of a Potentiometer



A **potentiometer** is a variable resistance with a simple rotatable knob, which can provide variable voltage into the **Arduino** board as an analog value. In this example, that value controls the rate at which an LED blinks.

The variation of the resistance can be linear or logarithmic (also called "audio"). When a potentiometer is linear, the resistance will vary in a linear way when you turn the potentiometer, whereas a logarithmic potentiometer will vary in a logarithmic way. That means that the resistor will not change a lot at the beginning of the rotation, and the will vary a lot during the middle / end of the rotation.



Linear and Log Potentiometer

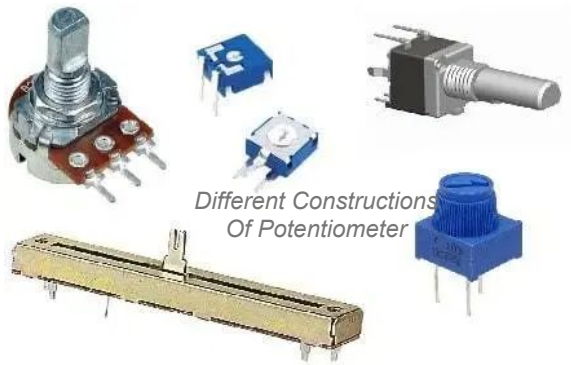
Applications

Voltage Divider

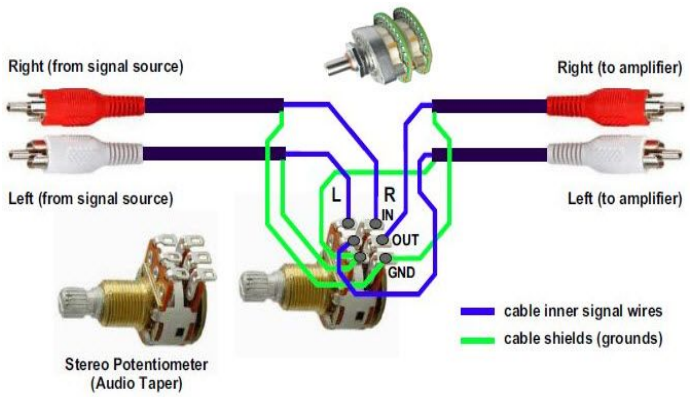
The potentiometer can be used as a variable voltage divider to obtain a adjustable output voltage from a fixed input voltage applied across the two ends of the potentiometer.

Audio Control

Potentiometers used for volume control is usually a log potentiometer that changes the sound level that matches the sensitivity of human ear. Stereo volume controller use tandem log potentiometer. Both sliding pots (faders) and rotary potentiometers (knobs) are regularly used to attenuate frequency, adjust loudness, and for different characteristics of audio signals.



Different Constructions Of Potentiometer



Audio control

https://www.coda-effects.com/

Z2M Part Number:
EDR-00002-20k0

Potentiometer
(Application Note)

Project

To control the rate at which an LED blinks.

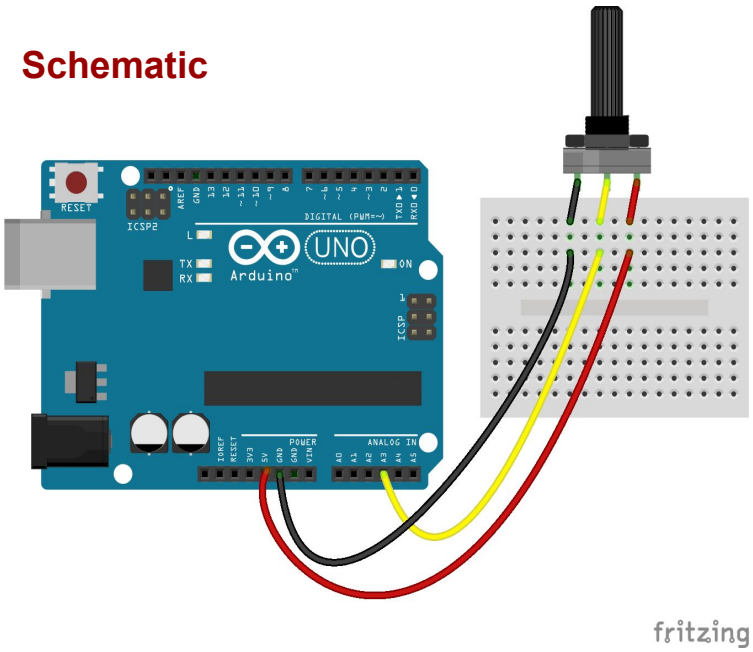
Components Required

Component	Part No.	Qty
Arduino UNO	EMX-00001-A	1
Potentiometer	EMR-00002-20k0	1

Procedure

1. Connect the potentiometer to the Arduino as shown in the schematic.
2. Upload the code

Schematic



Code

```
int potPin = A3;    /* select the
input pin for the potentiometer*/
int ledPin = 13;
/* select the pin for the LED*/
int val = 0;        /* variable to
store the value coming from the
sensor*/

void setup() {
  pinMode(ledPin, OUTPUT);
/* declare the ledPin as an OUTPUT*/
}

void loop() {
  val = analogRead(potPin);
/* read the value from the sensor*/
  digitalWrite(ledPin, HIGH);
/* turn the ledPin on*/
  delay(val);
/* stop the program for some time*/
  digitalWrite(ledPin, LOW);
/* turn the ledPin off*/
  delay(val);
/* Continue the loop*/
}
```

Challenge Yourself

- Use a buzzer and create variable sound pitch with a potentiometer
- Connect a series of LEDs and light them up sequentially as you turn the potentiometer