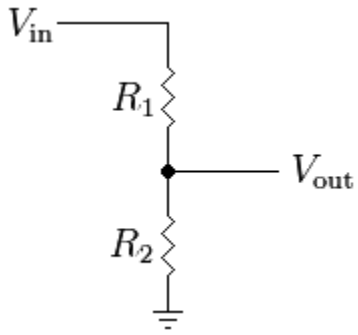
Calculating PPM



The circuit is setup as a voltage divider, with one channel of potentiometer as R_1 and one sensor as R_2.

V_{in} is the 5V from the Arduino

V_{out} measured by the Arduino ADC using analogRead()

R_1 is the AD5206 digital potentiometer ranging from 0 – 100kOhms, with 8-bits of precision controlled using SPI via the Arduino.

Equation for measuring R_2:

1. Set and match the potentiometer as closely as possible to the sensor
2. Take an initial reading plug into ➔ $R_2 = \frac{V_{out} * R_1}{V_{in} - V_{out}}$ and save the initial resistance of the sensor
3. Continue taking readings and calculate the percent change in resistance
4. Plug into ➔ $PPM = 6.2835 \ln(x) + 12.945$ where x is the change in percent