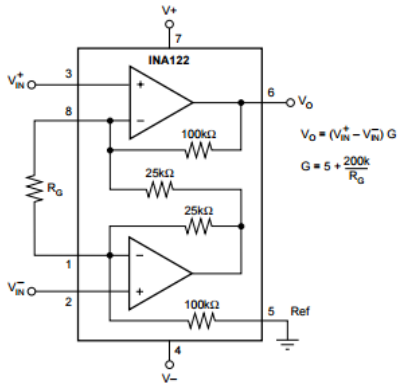
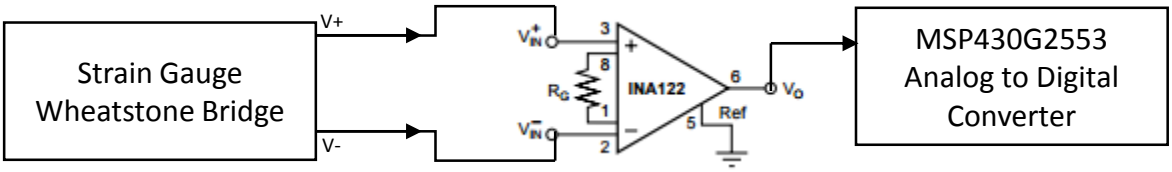
Amplifier Circuit

- An instrumentation amplifier chip will be used instead of designing one using operational amplifiers.
- The TI INA122 has been chosen for the design.
  - Allows for less wires on our board.
  - Only need a single resistor to adjust gain.
  - Wide power supply range.
  - Small footprint.
  - Low power consumption.





- Pin 7 will be tied to 3.3V supply from batteries, pin 4 will be shorted to pin 5.
- From Strain Gauge Wheatstone bridge calculations, maximum voltage output from bridge is $|V_{OS}| = V_{EX}\frac{\text{TOL}}{100}$.
- Based on specifications of strain gauges chosen, maximum input to amplifier circuit will be 3.3V * 0.01 = 33mV.
- Using standard resistor values, R_G is chosen to be 2.2k. This results in a gain of 95.9V/V, making the upper bound of input to microcontroller 3.165V.