



Low-leakage diodes protect INA inputs from common mode voltages beyond the supply rails and differential voltages above 1V. Can handle 500mA until they overheat or about 40V to GND on the LoZ inputs.

33ohm resistors ensure protection diodes conduct before INA internal diodes, and form an RF low-pass filter with the capacitors. Could add a ferrite bead as well but be careful about resonance.

100:1 Attenuator
10k+100 || 1M = 9.999k

2 12V relays in series to run off the 30V input through a resistor.

Enable 100:1 Attenuator for 10X and 0.1X ranges.

Default gain of INA is 2000X. Absolute accuracy of INA internal resistors is 10X so need that much trim range.
100X = 315.8
10X = 30.15

Rigol MS05000 supports attenuations of {1,2,5} * 10ⁿ[-2..4]

TODO: Connect frame of switches to GND

Coarse Offset

Zero Offset Trim

Fine Offset

Power must be isolated from ground.

Zeners protect against input signal overvoltage to the power rails through the protection diodes.

Output saturation indicator LED. Detects when the INA output voltage is close to the maximum value.

Enclosure options: <https://www.digikey.com/short/h3nqjf73>

Note to future self:
This journal article is relevant and may be freely accessible on Aug 18 2021:
<https://iopscience.iop.org/article/10.1088/1361-6501/abb045/pdf>
"A low cost versatile differential preamplifier for electronic engineering"