

Load Cell \ Strain Gage to MicroController amplifier

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This circuit was designed and built to match the outputs of load cells or strain gages (or gauges – it’s the same) to the input level of A/D converter of a microcontroller (0-5V).

Primary Goal is to make it work for a joystick so 2 Axis are combined over one board.

Also, a reference voltage of 2.5 volts was applied in order to make it possible to get a full axis for both sides rather than using it for one. (such as a pedal).

Circuit is based over instrumentation amplifier INA122.

Entire design was made under the concept of being compact and easy to make.

So... it’s very small and dense and it uses solder pads for the wires and SMD components.

All resistors are 330 ohm’s (unless you need different RG’s)
Both capacitors are 0.1uf (ceramic)

Resistor RG for each side of the circuit should be calculated to achieve the required gain according to the LOADCELL or STRAIN GAGE specifications.

Use this way to calculate:

$$\text{Gain} = 5 + (200000/\text{RG})$$

Where RG is OHM units.

The lower RG is – the higher is the gain.





