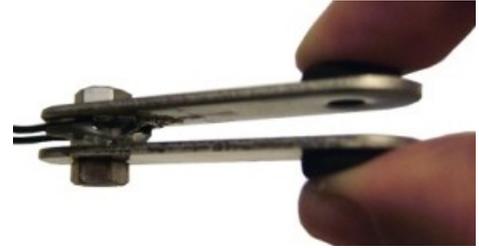


## Pinch Meter Assembly

A Pinch Gauge or Pinch Meter measures pinch strength in hands. It is a useful tool for the early detection of motor function loss. It comprises a strain gauge mounted on a bracket. It requires the

- bridge sensor application adaptor
- bridge completion network
- either the EMANT300 USB DAQ or EMANT380 Bluetooth DAQ



This Pinch Meter Assembly is used to demonstrate a typical application of the strain gauge. **It is not for medical/ diagnostic use on patients.**

## Strain Gauge Mounted Bracket

A strain gauge mounted on a bracket is used to construct the pinch meter assembly. The strain gauge consists of a metallic foil pattern etched onto a flexible backing. As the bracket is deformed, the foil pattern is deformed, causing its electrical resistance to change. The gauge factor of a strain gauge relates strain to change in electrical resistance. The gauge factor  $G_F$  is defined by the formula



$$G_F = \frac{\Delta R / R_G}{\epsilon}$$

where  $R_G$  is the resistance of the undeformed gauge,  $\Delta R$  is the change in resistance caused by strain, and  $\epsilon$  is strain.  $\Delta R$  is typically in the region of 0.1%. To measure such small resistance changes, a Wheatstone bridge is employed.

## Quarter Bridge Connection

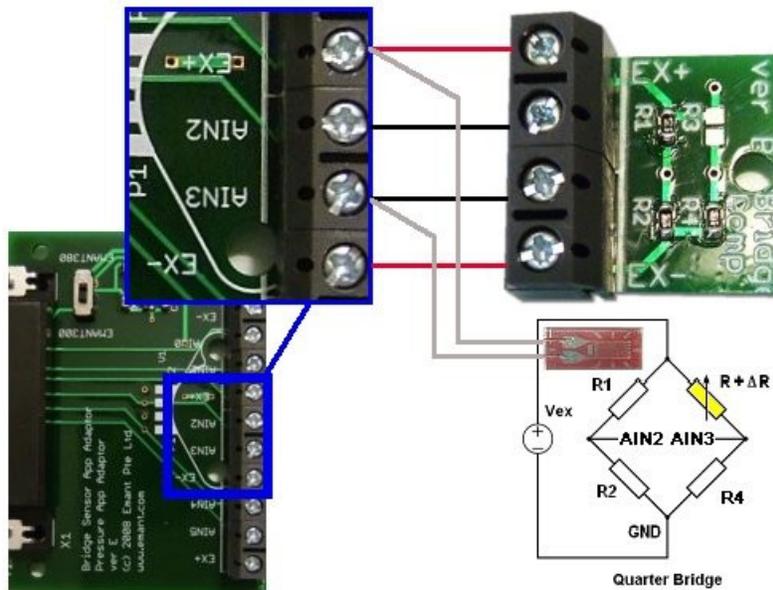


Fig 1: Connecting the strain gauge to the network and Bridge Sensor Adaptor