Advantech AE Technical Share Document

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Category	■ FAQ □ SOP	Related OS	NA
Abstract	Connect load cells to Advantech analogue input card		
Keyword	Load cell, Advantech DAQ card, Analogue input		
Related Product	PCI-1706U, PCI-1710, PCI-1710HG, PCI-1710HGL, PCI-1711, PCI-1711L, PCI-1712, PCI-1712L, PCI-1713, PCI-1714, PCI-1715U, PCIE-1744, PCI-1716, PCI-1718, PCIE-1810, PCIE-1816, ADAM-3016		

■ **Problem Description**:

This document will show how to connect a load cell to Advantech analogue input cards.

■ **Problem Analysis**:

Load cell is a type of common components which is often used in measuring pressure and force. There are lots of types of load cell with different working principles. Among these types of load cells, the type "strain gauge" is widely applied.

A strain gauge is used to measure the strain when a material is applied a bunch of forces. It is a variable resistor indeed. The strain gauge must be well-stuck on the right place and right direction on the work piece. As the force is applied to the work piece, the strain gauge would be deformed as the work piece and then the impedance would be changed.

A load cell is normally assembled by 4 strain gauges and connected as a Wheatstone bridge to amplify the signal like figure below. An excitation voltage must be applied to the bridge and there will be voltage output as the impedance is changed.
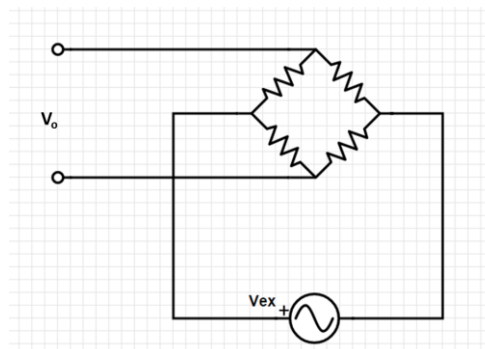
■ **Brief Solution - Step by Step**:

For measuring the signal from the load cell, an excitation voltage must be provided. ADAM-3016 is an isolated strain gauge input module which can do the job to provide the excitation voltage and amplify the signal simultaneously. The connection would be like below figure:

Load Cell