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(54) Title: PROCESS PRESSURE MEASUREMENT DEVICES WITH IMPROVED ERROR COMPENSATION

(57) Abstract

A device and method provide for improved error compensation in the measurement of process pressure. The device and method are able to compensate for diaphragm deformation (offset) and varying dielectric constants present in a process field environment. The pressure sensor (56), filled with a dielectric fill-fluid (95), includes at least three capacitor plates (144, 146, 148, 150), disposed about a diaphragm (102). At least two capacitor plates (144, 146) are placed on one side of a conductive diaphragm (102), and one capacitor plate (148, 150) is placed on the other side of the diaphragm (102). The method compensates for both diaphragm offset and variances in the dielectric constant of the fill-fluid (95). An error compensated measurement of differential pressure is a function of the amount of diaphragm deflection detected at the edge region (194) subtracted from the amount of diaphragm deflection detected at the center region (140). One way of measuring diaphragm deflection is to measure the changes in capacitances from two capacitors on each side of the diaphragm (102), and to combine these values to achieve an error compensated output (R) representative of the applied differential pressure.

