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Ferran

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[54] DUAL BALANCED CAPACITANCE MANOMETERS FOR SUPPRESSING VIBRATION EFFECTS

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[57] ABSTRACT

A sensor measures an unknown pressure having to a sensitivity on the order of 1 micro-torr. The sensor includes two 10 micro-torr sensitivity capacitance manometers which each receive the unknown pressure. The capacitance manometers are positioned about a common axis around a common pressure chamber that receives the unknown pressure so that the flexible diaphragms of each of the capacitance manometers simultaneously deform either outwardly or inwardly from the common pressure chamber in response to changes in pressure. When a vibrational or gravitational force is applied to the sensor, one flexible diaphragm deforms outwardly away from the common pressure chamber and the other deforms inwardly towards the common pressure chamber. Hence, changes in pressure cause each of the capacitance manometers to produce a like change in their output signal; however, vibrational or gravitational forces produce an opposite change in their output signal. The capacitance manometers are also connected to an electrical circuit which nulls any changes resulting from vibration or gravity, and the electrical circuit is tuneable to account for any variations in the changes due to gravitational forces produced by the capacitance manometers.

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