

Title (en)

PIEZOELECTRIC SENSOR FOR MEASURING PRESSURE FLUCTUATIONS AND USE THEREOF

Title (de)

PIEZOELEKTRISCHER SENSOR ZUR DRUCKFLUKTUATIONSMESSUNG UND VERWENDUNG DAVON

Title (fr)

CAPTEUR PIEZO-ÉLECTRIQUE DE MESURE DE FLUCTUATIONS DE PRESSION ET SON UTILISATION

Publication

EP 2323545 A2 20110525 (DE)

Application

EP 09749661 A 20090717

Priority

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Abstract (en)

[origin: WO2009141171A2] The invention relates to a piezoelectric sensor for the improved measurement of mechanical variables such as force, pressure or measurement variables which are derived therefrom, particularly a PVDF film sensor exhibiting an improved sensitivity and temperature stability of the measurement signal for pressure measurements that vary in time and/or space, and for the one- and two-dimensional determination of the position and propagation speed of pressure fluctuations and pressure waves with a single measurement sensor at a measurement location. A preferred field of application of the invention is the non-invasive, low-strain and continuous measurement of the pulse rate and the systolic and diastolic blood pressure of humans and animals by determining the velocity and the signal form of the pulse waves. The aim of the invention is to allow the measurement of the blood pressure and the pulse rate, for example even in the case of emergency patients having only a very low blood pressure and patients having circulatory disorders in the extremities, for example patients which have developed diabetes or the "smoker's leg", by using only one sensor at a measurement location due to the improved measurement sensitivity of the piezoelectric sensor, with the result that the continuous application of a pressurized sleeve for continuously measuring and monitoring the blood pressure is not necessary. The present invention solves this problem by the fact that a plurality of parallel strips of a piezoelectric material (1) are associated as a measurement membrane in the pressure sensor according to the invention with a sensor base body (4) in such a manner that said parallel strips are pre-tensioned by traction in a one-dimensional and elastic manner in the direction of the piezo dipole orientation and that an empty hollow space (5) is present between the tensioned piezoelectric sensor material (1) in the measurement region and the sensor base body (4), formed by a recess/cut-out.

IPC 8 full level

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CPC (source: EP US)

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Citation (search report)

See references of WO 2009141171A2

Citation (examination)

- US 6200270 B1 20010313 - BIEHL MARGIT [DE], et al
- J A POULIS ET AL: "The optimization of measuring current through strain gauges", APPLIED SCIENTIFIC RESEARCH 44 (1987): 377-389, 1 January 1987 (1987-01-01), Dordrecht, The Netherlands, pages 377 - 389, XP055423563, Retrieved from the Internet <URL:https://rd.springer.com/article/10.1007/BF00418152> [retrieved on 20171110]

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