

Improvement of Piezoresistive Pressure Sensor Accuracy by Means of Current Loop Circuit Using Optimal Digital Signal Processing

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Abstract : The paper presents the advanced digital modification of the conventional current loop circuit for pressure piezoelectric transducers. The optimal DSP algorithms of current loop responses by the maximum likelihood method are applied for diminishing of measurement errors. The loop circuit has some additional advantages such as the possibility to operate with any type of resistance or reactance sensors, and a considerable increase in accuracy and quality of measurements to be compared with AC bridges. The results obtained are dedicated to replace high-accuracy and expensive measuring bridges with current loop circuits.

Keywords : current loop, maximum likelihood method, optimal digital signal processing, precise pressure measurement

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