

一种基于铁基非晶态合金压磁效应的膜盒式压力传感器

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摘要：

开发了一种基于Fe基非晶态合金薄带压磁效应的膜盒式压力传感器。首先，论述了这种传感器的结构、工作原理、输出特性以及主要参数的选择。然后通过试验，分析了传感器的静态特性以及磁场强度对输出的影响。试验结果表明，本文设计的传感器最大线性误差为1.29%F.S，最大不重复误差为1.56%F.S，最大灵敏度为0.3675mV/kPa。另外，这种传感器结构简单，温度稳定性好，工作可靠，成本低廉，测压范围宽。

关键词：压力传感器；压磁效应；Fe基非晶态合金薄带；压力试验；膜盒

An Aneroid Pressure Sensor Based on the Magnetoelasticity Effect of

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Abstract:

A new kind of aneroid pressure sensor based on the magnetoelasticity effect of Fe-base amorphous alloy ribbon was developed. At first its operation principle, structure, output characteristic and the choice of some major parameter were discussed. Secondly, through the pressure experiment, the sensor's static characteristic of as well as the influence of magnetic field strength on the output was analyzed. The experimental result shows the sensor the maximum linearity error is 1.29% F.S, the maximum repetitive error 1.56%F.S, and the maximum sensitivity is 0.3675mv / kPa. In addition the sensor has some characteristic such as,good temperature stability ,reliability, simpler structure, low costs and extensive measuring range.

Keywords: pressure sensor; Fe-base amorphous alloy ribbon; magnetoelasticity effect; pressure test; aneroid

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