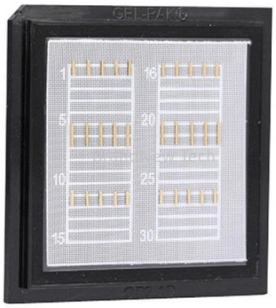
Experiment on measuring rotational speed using a fiber optic sensor



Overview

Abstract: In this paper, a fiber optic sensor system (FOSS) is proposed for the measurement of the rotational speed of a DC motor. It offers non-contact measurements. FODS is an intensity modulation based extrinsic type sensor. Introduction Measurement of mechanical parameters through application of optical fibers is gaining significant commercial. A recent breakthrough of optical metrology is the all-fiber rotational Doppler velocimetry using twisted light, which offers a compact, reciprocal, and ultra-broadband solution for measuring the angular velocity of rotating objects. The double-circle-coaxial (DCC) fiber probe was introduced in frequency. The effect of the angular velocity on the interference pattern of Mach-Zehnder interferometer by using Sagnac effect had been investigated in this study.

Article Content

Design and Development of Fiber Optic Sensor System for Rotational ...

A vision- and fringe pattern-based rotational speed measurement system was proposed to measure the instantaneous rotational speed (IRS) with high accuracy and reliability.

Design and Development of Fiber Optic Sensor System for Rotational ...

Abstract: In this paper, a fiber optic sensor system (FOSS) is proposed for the measurement of the rotational speed of a DC motor. It offers non-contact measurements. FOSS is designed using a fiber

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Fiber-Optic Sensors for Measurements of Torsion, Twist and ...

Recently, twist/torsion/rotation sensors have become a topic of intense fiber-optic sensor research. Various sensing concepts have been reported. Many of those have different properties and

Twist metrology with twisted light in fibers

Abstract: A recent breakthrough of optical metrology is the all-fiber rotational Doppler velocimetry using twisted light, which offers a compact, reciprocal, and ultra-broadband solution for

Compact and reciprocal probe-signal-integrated

Here we report the first all-fiber rotational Doppler velocimetry (AF-RDV) with a single probe based on a fabricated mode-sculpted fiber-optic element.

Fiber-Optic Rotation Sensors. Tutorial Review

A highly precise rotation sensor may be used to measure any changes in the length of the day and to detect torsional oscillations in the earth caused by earthquakes.

Theoretical and Experimental Study on Wide Range Optical Fiber

In this paper, a novel fiber turbine flow sensor was proposed and demonstrated for liquid measurement with optical fiber, using light intensity modulation to measure the turbine rotational

Fiber optic sensor embedded in robotic systems for 3-D orientation ...

We integrated three rotational sensors on a single optical fiber to measure rotation of roll, pitch, and yaw and installed on robot manipulator where three scenarios are considered.

Fiber Optic Sensor for Measuring Rotation

The two arms consist of optical fiber wounded in circular shape. Each laser beam propagates in opposite direction to the other. When the system was rotated, a time difference between these two laser

Fiberoptic Rotation Sensor: Analysis of Effects Limiting Sensitivity ...

For ease in alignment and to have more opportunities to perform experiments we have designed a symmetrical interferometer arrangement containing two lasers. However, we use only one laser at a

Dynamic Rotational Sensor Using Polymer Optical Fiber

A complex signal processing technique is usually required to process the data in most sensor design structures, and integration into real applications is

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Fiber optic sensor embedded in robotic systems for 3-D orientation ...

Moreover, optical fiber-based 3-D rotational sensors are still difficult to achieve as well as challenging to integrate into robotic systems for orientation measurement.

Instantaneous rotational speed sensing method based on cam angle

The core principle of this method is to use an optical coherence system to detect the changes in optical path difference (OPD) caused by the continuous diameter variation of a rotating

Rotational Speed Measurement Based on LC Wireless Sensors

In fiber measurement , an all-fiber rotation speed measurement structure based on dual-beam speckle interference has been proposed. In triboelectric measurement , a self

optical rpm sensor

Optical RPM Sensor: Revolutionizing Speed Measurement Abstract: In this article, we delve into the fascinating world of optical RPM sensors and their impact on speed measurement. From their

Highly sensitive fiber optic gyroscope senses rotational

The researchers assembled a prototype fiber-optic rotational sensor using standard laboratory instrumentation and components. To test it, they

US5204619A

A device for measuring the rotational speed of a shaft. A toothed wheel is connected to rotate with the shaft within a magnetic field. A birefringement optic fiber is connected to a light source, and passes

The Fiber-Optic Rotational Seismograph—Laboratory Tests and Field ...

The paper presents construction and laboratory tests, as well as the first field application of a new fiber-optic rotational seismograph. The system is based on a fiber-optic gyroscope (FOG),

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