Jordan Fiber Optic Displacement Sensor



Overview

Fiber optic displacement sensor (LVDT), transducer and probeDesigned to deliver long term accuracy and reliability. Opsens displacement sensors offer high.

Key Takeaways

Jordan Fiber Optic Displacement Sensors are high-precision optical sensors designed for non-contact measurement of micro-scale displacements, offering fast response and flexibility for industrial and research applications.

Overview and Working Principle

Jordan Fiber Optic Displacement Sensors operate using chromatic-confocal or intensity-modulated optical techniques, where light is transmitted through a fiber to a target and the reflected or transmitted light is analyzed to determine displacement. These sensors are non-contact, making them ideal for delicate or moving surfaces, and are immune to electromagnetic interference, which is critical in industrial and aerospace environments.

Key Specifications

Fiber Connector: Diamond DIN or FC/APC for multimode fibers with 50 µm core diameter. Internal Magnification: Ranges from 1: 2 to 1: 5 depending on the model, balancing speed and lateral resolution. Numerical Aperture (NA): Typically 0.

3–0. 5, affecting light collection efficiency and sensitivity. Axial Measuring Range: From approximately 1 mm up to over 3 mm, depending on the sensor variant.

Wavelength Range: Operates effectively between 400 nm and 800 nm. Response Time: High-speed measurement capability suitable for dynamic applications.

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Applications

Jordan Fiber Optic Displacement Sensors are used in a wide range of applications, including: Industrial and mechanical engineering: Surface deformation, material thickness, and gap measurements. Aerospace and aviation: Structural monitoring of aircraft in-flight and on-ground. Civil engineering: Real-time monitoring of concrete structures and smart infrastructure.

Precision manufacturing: Micro-assembly, reverse engineering, and quality control. Turbine and confined-space measurements: Where direct laser access is impossible, the compact fiber design allows accurate displacement detection.

Advantages

Compact and flexible: Can be installed in confined or hard-to-reach spaces. High sensitivity and resolution: Capable of detecting sub-micron displacements. Non-contact measurement: Reduces wear and avoids mechanical interference.

Electromagnetic immunity: Suitable for environments with high electrical noise. Customizable configurations: Various fiber arrangements and magnifications allow optimization for specific measurement ranges and sensitivities.

Integration and Control

Jordan sensors can be integrated with control software and data acquisition systems, enabling automated monitoring and real-time analysis. The sensors typically use a silicon photodiode to detect transmitted or reflected light, with outputs processed via lock-in amplifiers or digital interfaces for precise displacement readings. In summary, Jordan Fiber Optic Displacement Sensors provide a versatile, high-precision solution for non-contact displacement measurement across industrial, aerospace, and research applications, combining fast response, high sensitivity, and adaptability to challenging environments.

Article Content

Fiber optic displacement sensor (LVDT), transducer and probe

Designed to deliver long term accuracy and reliability. Opsens displacement sensors offer high accuracy and sensitivity. Available in both 25mm and 10mm linear stroke, the design guaranties a long lifetime

Review of Fiber Optic Displacement Sensors

This article reviews specifically the advanced fiber optic displacement sensing techniques that have been developed in the past two decades.

Fiber Optic Displacement Sensors and Their Applications

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displacement, pressure, temperature and electric field. Recently, high precision fiber displacement sensors have received significant attention for applications ranging from industrial to medical fields

In-depth analysis of optical fiber displacement sensor

Our paper begins by describing the mathematical model that underlies advanced sensor configurations. We then explain our method for

A review of recent developed and applications of plastic fiber optic ...

This type of fiber sensor is heavily employed in various sensing areas, including measurement of displacement as well as the sensing of surface roughness, liquid refractive index,

Realization of fiber optic displacement sensors

In this paper the influence of distribution of transmitting and detecting optical fibers on sensitivity and linear range of operation of developed I-FODS were investigated.

Exhaustive analysis and simple model of an angular displacement

Here, we present a comprehensive analytical model for multi-axis tilt sensing based on intensity-modulated optical fiber sensors (OFDSs).

FS61DSP: Optical Displacement Sensor | HBM

The sensor uses two FBGs in a push-pull configuration for effective temperature compensation. It can be used in a large range of monitoring applications, like

A Fiber-Optic Displacement Sensor Based on High-Precision

A fiber-optic displacement sensing scheme based on high-precision detection of differential phase is proposed, with advantages of simple structure, low cost, high precision, large dynamic range,

Products

Our sensor systems deliver accurate, high-speed measurements in applications involving vibration, motion, displacement, cryogenics, vacuum systems, and

Optics, Lasers, Imaging | News, Products, Events

Photonics Spectra is a global photonics resource and magazine with news, products, research, and applications covering optics, lasers, imaging, and sensing.

A Fiber-Optic Displacement Sensor Using the Spectral Demodulation ...

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This paper reports a fiber-optic displacement sensor based on a Michelson interferometer using the spectral demodulation method. The displacement information is sensed

Long distance fiber-optic displacement sensor based on fiber collimator

A simple fiber-optic displacement sensor based on reflective intensity modulated technology is demonstrated using a fiber collimator. The sensing range is over 30 cm, which is over

In-depth analysis of optical fiber displacement sensor design process

Various optical fiber technologies, including intensity modulation-based systems, have been employed to develop displacement sensors. Intensity modulation-based displace-ment sensors represent the

Fiber Optic Displacement Sensors and Their Applications

Optical fiber-based sensor technology offers the possibility of developing a variety of physical sensors for a wide range of physical parameters (Nalwa, 2004). Compared to conventional transducers, optical

A review of recent developed and applications of plastic fiber optic ...

Abstract The recent developed and applications of plastic fiber optic displacement sensors (FODSs) based on intensity modulation technique are reviewed in this paper. In the evolvements of

A novel sensor design for displacement measurement using plastic ...

The development of displacement sensors is essential in the physical sensor field as the other physical sensors can be derived from the displacement sensor. Here we present a novel

Study on optical fiber based displacement sensor

Fiber optic sensor is commonly used in control and monitoring system for material deformation, strain, temperature, pressure and other industrial process parameters. Fiber optic

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