

Displacement Measurement Method Using Fiber Optic Grating Sensors in Cameroon



Overview

In this study, we propose a novel type of optical fiber measurement method based on a reflective grating panel for lateral displacement. The signal subdivision model with the tangent and cotangent functions is given, and error analysis and processing are studied. The reflective panel is a homemade grating with a periodic variation of its refractive index, which is used to modulate the reflected light intensity. The device consists of a pair of FBGs with different central wavelengths fabricated by femtosecond laser phase mask method and a metal substrate with lever structure. The system structure and. With the development of fiber optical technologies, fiber Bragg grating (FBG) sensors are frequently utilized in structural health monitoring due to their considerable advantages, including fast response, electrical passivity, corrosion resistance, multi-point sensing capability and low-cost. Abstract: With the development of fiber optical technologies, fiber Bragg grating (FBG) sensors are frequently utilized in structural health monitoring due to their considerable advantages, including fast response, electrical passivity, corrosion resistance, multi-point sensing capability and.



Article Content

Jul 08, 2025

(PDF) Ground Movement Monitoring Using an Optic

The FBG-PSG system effectively monitors ground displacement with 60 FBGs on a 20m long PVC pipe. FBGs provide immunity to electromagnetic noise, enhancing

Aug 10, 2025

Optimizing Algorithm for Existing Fiber-Optic Displacement Sensor ...

This paper describes the optimal design of a miniature fiber-optic linear displacement sensor. It is characterized by its ability to measure displacements along a millimetric range with sub-micrometric

May 03, 2026

Simultaneous displacement and temperature measurement with

Several techniques have been proposed for the strain and temperature discrimination, such as the reference-grating technique , the dual-wavelength technique , and the hybrid

Jul 22, 2025

An Optical Fiber Lateral Displacement Measurement

In this study, we propose a novel type of optical fiber measurement method based on a reflective grating panel for lateral displacement. The signal

Jul 21, 2025

An Optical Fiber Lateral Displacement Measurement Method and ...

In this paper, an optical fiber measurement method for lateral displacement is presented, and a reflective grating panel is fabricated. The measurement method and system for displacement

Jun 02, 2026

Applications of fibre Bragg grating sensors for ...

In recent years, much attention has been paid towards optical fibre sensing technology for geotechnical health monitoring. This paper highlighted different types of optical fibre with a special

Oct 29, 2025

Orientation-dependent fiber-optics displacement sensor by a grating ...

We proposed and experimentally demonstrated an orientation-dependent fiber displacement sensor. The sensing device consists of a simple fiber Bragg grating (FBG) inscription

Nov 19, 2025

Review of Fiber Optic Displacement Sensors

Displacement measurements are of significant importance in a variety of critical scientific and engineering fields, such as gravitational wave detection, geophysical research, and

Jul 26, 2025

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.

Apr 09, 2026

An Optical Fiber Lateral Displacement Measurement Method and ...

An optical fiber sensing method based on a reflective grating panel is demonstrated for lateral displacement measurement. The reflective panel is a homemade grating with a periodic

Sep 14, 2025

(PDF) Fiber-Bragg-Grating-Based Displacement

In this article, the recent sensing advances and principles of detection of FBG-based displacement sensors are illustrated. Specifically, the latest FBG

Oct 27, 2025

A high-sensitivity fiber Bragg grating sensor for displacement ...

Aiming at the problems of low sensitivity and high temperature error of fiber Bragg grating (FBG) displacement sensors in displacement monitoring, this paper presents an adjustable cantilever

Mar 21, 2026

Measuring Soil Strain Using Fibre Optic Sensors

Soil displacement measurement is also helpful in understanding the formation of shrinkage cracks. Clay soils undergo shrinkage during drying and experience substantial stresses

May 07, 2026

Static Vertical Displacement Measurement of Bridges Using Fiber

On the other hand, in recent years, with the advancement of fiber-optic technologies, fiber Bragg grating (FBG) sensors are more commonly used in structural health monitoring due to their

Aug 21, 2025

Fiber Bragg grating sensors for monitoring of physical

Fiber Bragg grating technology is popularly used in measurements of various physical parameters, such as pressure, temperature, and strain for civil

Jul 23, 2025

Fiber Grating Sensors: Design, Fabrication, and Application

In this paper, a fiber-optic liquid pressure sensor is designed and developed by encapsulating the fiber Bragg grating (FBG) inside the adjustable

Sep 19, 2025

Fiber-Bragg-Grating-Based Displacement Sensors:

In this article, the recent sensing advances and principles of detection of FBG-based displacement sensors are illustrated. Specifically, the latest FBG

Jan 13, 2026

Application of fiber Bragg grating sensing technology and physical ...

Secondly, in response to the problem that electrical sensors are difficult to meet the long-term monitoring requirements of bridge structures, it is proposed to use fiber optic grating vibration

Apr 17, 2026

A high-precision fiber Bragg grating displacement sensor for structural ...

Comprehensive experiments were conducted to measure and assess the sensor's range and accuracy. The results of these experiments revealed that the fiber Bragg grating displacement

Jan 09, 2026

Fiber optic displacement sensor with a large extendable

The proposed fiber optic displacement sensor guarantees a stable reflected signal acquisition for application in real industrial fields. Through a

Nov 16, 2025

Review of fiber optic sensors in geotechnical health monitoring

Based on the measured strains, three algorithms for transforming monitored data to required displacement were investigated. Comparison analysis regarding typical advantages and

Feb 26, 2026

Fiber Bragg grating based displacement sensors: state of the art and ...

Abstract Purpose The purpose of this paper is to present the latest sensing structure designs and principles of information detection of fiber Bragg grating (FBG) displacement sensors.

Aug 28, 2025

Review of Fiber Optic Displacement Sensors | Request PDF

Of particular interest here, fiber optic displacement sensors have gained wide interest and have evolved from basic intensity modulation-based configurations to more advanced structures,

Apr 05, 2026

Development of a multi-interval displacement sensor using Fiber

We have developed a multi-interval displacement sensor using Fiber Bragg Grating (FBG) technology, which has potential for the long-term durability, high accuracy and ability to transmit data

Aug 25, 2025

(PDF) Static Vertical Displacement Measurement of

On the other hand, in recent years, with the advancement of fiber-optic technologies, fiber Bragg grating (FBG) sensors are more commonly used in

Apr 06, 2026

High sensitivity micro-displacement sensor based on fiber Bragg

The designed displacement sensor uses the strain sensing properties of the grating to measure the displacement. When the strain of FBG changes, the center wavelength of the resonant peak between

Feb 20, 2026

Review of fiber optic sensors in geotechnical health monitoring

Three algorithms for displacement calculation were discussed by numerical simulation. A comparison analysis of optical fiber sensors for geotechnical monitoring is given.

Aug 27, 2025

Fiber-Bragg-Grating-Based Displacement Sensors:

With the development of fiber optical technologies, fiber Bragg grating (FBG) sensors are frequently utilized in structural health monitoring due to their

Sep 01, 2025

Fiber-Bragg-Grating-Based Displacement Sensors: Review of Recent

In this article, the recent sensing advances and principles of detection of FBG-based displacement sensors are illustrated. Specifically, the latest FBG-based displacement technologies are examined

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://moletenare-ew.co.za>

Email: info@moletenare-ew.co.za

Phone: +86 138 1658 3346

Address: Ningbo, China

This document is for informational purposes only. Specifications subject to change without notice.

