ZITHA TECH SPECIALTY CABLES (Pty) Ltd

Intrusion Detection Fiber Optic Cable



Overview

Any impact to the sensor cable by an intruder''s hands, feet, or climbing aid will be detected by the system.

Key Takeaways

Fiber optic intrusion detection systems use optical fibers as sensors to detect disturbances along perimeters, pipelines, or critical infrastructure with high accuracy and environmental resilience.How Fiber Optic Intrusion Detection Works

Fiber optic intrusion detection systems (FOPIDS) operate by transmitting light through a fiber optic cable and monitoring changes in the light signal caused by physical disturbances. When the cable is disturbed—by climbing, cutting, digging, or vibrations—the system detects changes in light reflection or backscattering and triggers an alarm in real time . These systems can use single-mode fibers for long-distance monitoring or multi-mode fibers for shorter, localized applications . Advanced signal processing allows the system to distinguish between intrusions and environmental factors like wind, rain, or animals .

Applications

Fiber optic intrusion detection is widely used for:

• Perimeter security: Mounted on fences, walls, or gates to detect climbing, cutting, or tampering .

• Pipeline and conduit protection: Buried or wall-mounted fibers detect unauthorized access or tampering .

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

• Critical infrastructure: Powerlines, solar panels, and data networks benefit from cut-immune and distributed sensing configurations .

• Large-scale monitoring: Long-range systems can cover several kilometers, making them suitable for borders or industrial sites .

Advantages

• High sensitivity and accuracy: Detects even minor disturbances with precise localization, sometimes within ±1–2 meters .

• Environmental resilience: Immune to electromagnetic interference, extreme temperatures, corrosion, and lightning .

• Cut-immune configurations: Systems like FiberPatrol FP1150 continue detecting intrusions even if the cable is cut, reporting the exact location of the cut .

• Low false alarm rates: Advanced signal processing differentiates between real intrusions and environmental noise .

• Discreet installation: Cables can be hidden in fences, underground, or within walls, making them difficult for intruders to detect .

• Integration with security systems: Can interface with video management systems, alarms, and automated response protocols .

System Components

• Fiber optic cable (sensor): Acts as the detection medium, transmitting light and sensing disturbances along its length .

• Control host: Processes signals from the fiber, analyzes disturbances, and triggers alarms .

• Monitoring interface: Provides real-time visualization, GPS-based location reporting, and integration with other security systems .

Installation Options

• Fence-mounted: Suitable for welded mesh, chain link, palisade, and anti-climb fences .

• Wall-top or wall-mounted: Protects building perimeters or critical infrastructure .

• Buried: Ideal for pipelines, conduits, or underground cable protection .

• Distributed sensing systems: Protects communication lines and other critical assets with continuous monitoring . Fiber optic intrusion detection systems provide a robust, scalable, and highly reliable solution for securing perimeters and critical infrastructure, combining real-time detection, environmental resilience, and precise localization to enhance overall security effectiveness .

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

Article Content

FiberPatrol FP1150

When an intruder moves across the ground above a buried fiber

Home | Fiber SenSys Inc.

By co-locating our sensor with data fibers, we can detect disturbances created when an intruder tries to tap or compromise the data

What Is Fiber Optic Intrusion Detection and How Does It

These systems use fiber optic cables to monitor for changes caused by physical

Fiber Optic Sensors for Intrusion Detection – FiberPatrol FP1150

Any impact to the sensor cable by an intruder''s hands, feet, or climbing aid will be detected by the system. For the highest security,

A comprehensive review of using optical fibre interferometry for ...

Expanding upon these discoveries, an additional study investigates a unique engineering use of an interferometric fiber

Measurement of optical fiber sensors for intrusion detection and ...

This research explores innovations in the measurement of optical fiber sensors for intrusion detection, focusing on

Fiber Optics Used in Intrusion Detection | Learning Tree

Learning Tree examines fiber optic cables in physical intrusion detection systems, which can detect intruders by analyzing

Buried Cable vs Fiber Optic vs Fence vs Laser Beam:

What is a fiber optic intrusion detection system? Fiber optic cables that are buried

RaySense Buried Fiber Optic Intrusion Detection System

A fiber optic buried intrusion detection system is a point-reporting intrusion detection system

Fiber-Optic Multizone Intrusion Detection System Based on

This article introduces a new type of fiber-optic multi-perimeter zone (PZ) intrusion detection system with a sensing fiber (SF)

Fiber IDS Monitoring | NTest Intrusion Detection Sensors

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

Intrusion detection System (IDS) NTest fiber optic sensors deliver a sophisticated, non-electrical solution for safeguarding critical

Fiber Optic Perimeter and Data and Network Security

Fibre optic cables can be attached to any type of fence to detect and pinpoint the location of disturbances

Harnessing Light for Security: A Comprehensive Analysis of Optical ...

The evolution of optical fiber technology and its myriad applications has led to transformative breakthroughs, one of

Fiber Optic Intrusion Detection & Physical Security Monitoring

FiberStrike® distributed fiber-optic intrusion sensor system physical security monitoring is used to sense pedestrians in specific

Understanding Fiber Optic Intrusion Detection: Benefits and Best

Fiber Optic Intrusion Detection marks a considerable advancement in security technology, offering a range of benefits,

Home | Fiber SenSys Inc.

Perimeter Intrusion Detection and Physical Data Security Fiber SenSys®, Inc., (FSI) is the market-leading manufacturer of fiber-optic

A comprehensive review of using optical fibre interferometry for ...

Expanding upon these discoveries, an additional study investigates a unique engineering use of an interferometric fiber

Measurement of optical fiber sensors for intrusion detection and ...

This research explores innovations in the measurement of optical fiber sensors for intrusion detection, focusing on

Fiber Optics Used in Intrusion Detection | Learning Tree

Learning Tree examines fiber optic cables in physical intrusion detection systems, which can detect intruders by analyzing

Buried Cable vs Fiber Optic vs Fence vs Laser Beam:

What is a fiber optic intrusion detection system? Fiber optic cables that are buried

RaySense Buried Fiber Optic Intrusion Detection System

A fiber optic buried intrusion detection system is a point-reporting intrusion detection system

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

Fiber-Optic Multizone Intrusion Detection System Based on

This article introduces a new type of fiber-optic multi-perimeter zone (PZ) intrusion detection system with a sensing fiber (SF)

FiberPatrol FP1150

When an intruder moves across the ground above a buried fiber

Home | Fiber SenSys Inc.

By co-locating our sensor with data fibers, we can detect disturbances created when an intruder tries to tap or compromise the data

What Is Fiber Optic Intrusion Detection and How Does It

These systems use fiber optic cables to monitor for changes caused by physical

Fiber Optic Sensors for Intrusion Detection – FiberPatrol FP1150

Any impact to the sensor cable by an intruder''s hands, feet, or climbing aid will be detected by the system. For the highest security,

FiberPatrol FP1150 Fiber Optic Intrusion Detection System

When an intruder moves across the ground above a buried fiber optic sensor cable, whether walking, running, or crawling,

Fiber Optic Intrusion Detection System

The Fiber Optic Cable (Sensor) acts as the detection medium, transmits optical signals and detects

Fiber Optic Perimeter Intrusion

FOPIDS systems are intrusion detection sensor system developed for the advanced perimeter security. Optical fiber advantages like

Fiber Optics Used in Intrusion Detection | Learning Tree

Learning Tree examines fiber optic cables in physical intrusion detection systems, which can detect intruders by analyzing

Fiber Optic Security System | Future Fibre Technologies

Future Fibre Technologies offers a comprehensive range of fibre optic intrusion detection and sensing solutions for the protection of

Fiber Optic Intrusion Detection System

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

HAWK''s Praetorian Fiber Optic system for perimeter security features fiber optic cables to detect, identify, and report movements at

FiberPatrol FP1150

When an intruder moves across the ground above a buried fiber

Home | Fiber SenSys Inc.

By co-locating our sensor with data fibers, we can detect disturbances created when an intruder tries to tap or compromise the data

What Is Fiber Optic Intrusion Detection and How Does It

These systems use fiber optic cables to monitor for changes caused by physical

Fiber Optic Sensors for Intrusion Detection – FiberPatrol FP1150

Any impact to the sensor cable by an intruder''s hands, feet, or climbing aid will be detected by the system. For the highest security,

FiberPatrol FP1150 Fiber Optic Intrusion Detection System

When an intruder moves across the ground above a buried fiber optic sensor cable, whether walking, running, or crawling,

Fiber Optic Intrusion Detection System

The Fiber Optic Cable (Sensor) acts as the detection medium, transmits optical signals and detects

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved

Contact Us

Continue your research online:

Website: https://zithatech.co.za
Technical inquiry: https://zithatech.co.za/contact.html

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 ZITHA TECH SPECIALTY CABLES (Pty) Ltd - All rights reserved