Tunnel Detection Optical Cable Price



Overview

The sensing optical cable used in the fully DFOS technology is inexpensive, currently priced at approximately USD 2 per meter, and can be widely adopted.

Key Takeaways

Tunnel detection optical cables, particularly fiber optic and linear heat detection types, are priced based on technology, length, and installation complexity, with market trends indicating growing demand and premium costs for high-sensitivity systems.

Types of Tunnel Detection Optical Cables

Fiber Optic Fire Detection Cables These use Distributed Temperature Sensing (DTS) to continuously monitor temperature along the tunnel length. They are highly sensitive, immune to electromagnetic interference, and suitable for long tunnels or high-value installations like data centers and oil & gas facilities. Linear Heat Detection (LHD) Cables LHD cables detect temperature changes along their length and are widely used in transportation and power distribution tunnels.

They are cost-effective, reliable, and provide continuous coverage.

Thermistor-

Based or Armored Temperature Sensing Cables These cables have thermosensitive insulation that triggers an alarm when a preset temperature threshold is reached. They are robust, precise, and suitable for harsh industrial environments.



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Pricing Considerations

Cable Length and Coverage: Longer tunnels require more cable, increasing cost. Fiber optic systems can cover several kilometers per channel, while LHD systems may require multiple zones. Technology Type: Fiber optic DTS cables are generally more expensive than traditional LHD or thermistor-based cables due to higher sensitivity, real-time monitoring, and integration with smart systems.

Installation Complexity: Costs rise with difficult tunnel layouts, armored cable requirements, or integration with automated fire management systems. Market Trends: The global cable tunnel fire detection market reached USD 1. 57 billion in 2024 and is projected to grow at a CAGR of 7.

4% through 2033, reflecting increasing demand for advanced, high-reliability systems.

Supplier Options

Custom DT

S and armored temperature sensing cables are available from manufacturers who can provide sample orders and tailor products to specific tunnel requirements. DE.

TEC

T Linear Heat Detection systems offer ranges up to 10 km per channel with high sensitivity and precise localization, suitable for large tunnels and hazardous environments. Integration with IoT and smart monitoring is increasingly common, adding value but also influencing pricing.

Summary

While exact unit prices vary depending on length, technology, and installation requirements, fiber optic DTS cables are typically premium-priced due to their high sensitivity, long-distance coverage, and integration capabilities.

LH

D and thermistor-based cables offer more cost-effective solutions for standard tunnel fire detection. For precise pricing, contacting suppliers with tunnel specifications is recommended to obtain quotes tailored to your project.

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Article Content

Cable Tunnel Fire Detection Cable Market Research Report 2033

The global cable tunnel fire detection cable market was valued at $993 million in 2025 and is projected to reach $1,938 million by 2034, expanding at a compound annual growth rate (CAGR) of 7.8%

Linear Ground Detection Border Security Monitoring

The OptaSense LGDS converts a standard telecoms fiber-optic cable into an array of distributed sensors capable of detecting changes in pressure, temperature,

DE.TECT Linear Heat Detection

DE.TECT is a robust linear heat detection system based on optical fibers. With a range of up to 10 km and a sampling interval down to 25 cm, the system is ideal for fire detection in tunnels and metros as

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The sensing optical cable used in the fully DFOS technology is inexpensive, currently priced at approximately USD 2 per meter, and can be widely adopted. The regular monitoring

Linear Heat Detector Cable & Distributed Temp Sensing | Fike

For many applications, Protectowire linear heat cables offer the most cost-effective solution to provide heat detection along a very large environment, such as a tunnel, refrigerator or conveyor belt.

Distributed fiber optic sensors for tunnel monitoring: A state-of-the ...

Addressing the spatial limitation is crucial for the optimization of conventional tunnel monitoring, and the distributed fiber optic sensor (DFOS) offers a competent solution to this challenge.

Wire & Cable Prices

CRU provides comprehensive, accurate and up-to-date price assessments and research reports for bare optical fibre across various key regional markets, combined with insights into the

Cable Tunnel Fire Detection Cable Market Research Report 2034

The cable tunnel fire detection cable market was valued at $1.2 billion in 2025 and is projected to reach $2.0 billion by 2034, growing at 7.2% CAGR.

Fiber Optic Sensor Cables for Advanced Monitoring | AP Sensing

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AP Sensing''s fiber optic sensor cables enable real-time, precise monitoring of temperature, strain & acoustics in harsh environments with minimal maintenance.

Fibresense

It is a passive fibre optic cable that acts as a continuous heat sensor, detecting hot spots and temperature changes without electrical currents, making it safe for hazardous areas.

The Sensing Performance of a Novel Optical Cable for Tunnel Water ...

To overcome the shortcomings of the existing water leakage monitoring methods for traffic and public utility tunnels, such as the high probability of missed detection and significant difficulty in automatic

Tunnel Monitoring with Optical Sensor Technology

Tunnels are at the core of our infrastructure. But how safe are they? Today, modern monitoring systems allow reliable condition monitoring of tunnels using optical sensor technology, based on fiber Bragg

Increasing Tunnel Safety with High Performance Fire Detection

System Configuration Solution & Benefits Tunnel safety monitoring 24 hours a day, 365 days a year. The DTSX system acquires temperature from a fiber optic cable installed along the tunnel length

Railway and Metro Tunnel Safety with Fiber Optic Detection Systems

Fiber optic detection now enables continuous, real-time monitoring, transforming cables into distributed sensors that detect vibration, strain, temperature, and movement with precision. This

Advancements in Optical Fiber Sensing Systems for Pipeline and Tunnel ...

Optical fiber sensing technology plays a pivotal role in modern monitoring systems, particularly in the realm of pipeline and railway safety inspections.

(PDF) Distributed fiber optic sensors for tunnel ...

Review Distributed fiber optic sensors for tunnel monitoring: A state-of-the-art review Xuehui Zhang a, Honghu Zhu b, Xi Jiang c, Wout Broere a, * a Geo-Engineering Section,

High-sensitivity water leakage detection and localization in tunnels ...

Installation along tunnel joints also enables leakage detection. In summary, the distributed SAP-UWFBG cable sensing system offers high sensitivity, real-time leakage monitoring capabilities

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Fiber Optic Linear Heat Detection (LHD) | Raman-OTDR | AP Sensing

A fiber optic Linear Heat Detection system essentially consists of the interrogator unit and the sensor element, i.e. the fiber optic sensor cable itself. By utilizing a single optical fiber within a sensor cable,

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