Fire-fighting heat-sensing cables are laid along the cable trays



Overview

Linear heat detection is a class of fire detection in which a cable, run continuously through the protected area, acts as the sensor along its entire length.

Key Takeaways

Heat-sensing cables, such as linear heat detection (LHD) or fiber-optic LHD cables, are installed along cable trays to detect fire or overheating at any point along the tray, ensuring early warning and protection of electrical infrastructure.

Cable Placement and Routing

For effective fire detection, heat-sensing cables should be installed directly on or adjacent to the power cables within the tray to maximize exposure to potential heat sources while avoiding mechanical damage or excessive tension. The cable should follow the contour of the tray and maintain consistent proximity to surfaces where heat from a fire would first appear. Proper routing ensures that the system can detect temperature changes quickly and accurately.

Types of Heat-

Sensing Cables

Electrical Linear Heat Detection Cables (LHDC): These consist of twisted-shield conductors insulated with heat-sensitive polymers. Analogue versions are resettable, while digital versions are fixed-temperature and non-resettable. They detect heat along their entire length and trigger alarms when temperature thresholds are exceeded.

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Fiber-

Optic Linear Heat Detection (FO-LHD) Cables: These use optical fibers to measure temperature profiles along the cable. They are lightweight, immune to electromagnetic interference, and suitable for harsh environments. FO-LHD cables can provide distributed temperature sensing and support sophisticated alarm algorithms, including rate-of-rise and difference-to-ambient detection.

Installation Considerations

Mechanical Protection: Cables should be protected against crush, impact, or rodent damage. Armored or Kevlar-reinforced cables are recommended in high-risk areas. Environmental Factors: Consider ambient temperature, humidity, chemical exposure, and radiation.

Fiber-optic cables may use silica or phosphorous-free coatings for high-temperature or nuclear applications. Zone Configuration: Properly define alarm zones along the tray to ensure accurate location identification and rapid response. Cable Diameter and Response Time: Smaller diameter cables (2–5 mm) generally provide faster thermal response, which is critical for early fire detection.

Certification and Compliance: Use certified cables compatible with the monitoring system (UL/FM, ATEX/IECEX) to ensure safety and reliability. Monitoring and MaintenanceHeat-sensing cables are connected to a control panel or distributed temperature sensing (DTS) interrogator unit. The system continuously monitors the cable for temperature changes, providing real-time alerts.

Regular inspection ensures cables remain intact, properly routed, and free from mechanical or environmental damage.

Summary

Installing fire-fighting heat-sensing cables along cable trays provides continuous, distributed fire detection, protecting critical electrical infrastructure. Proper selection, routing, mechanical protection, and system integration are essential for reliable performance, whether using electrical LHDC or fiber-optic LHD systems.

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Article Content

Linear Heat Detection Cable and Fibre Systems Explained

Linear heat detection is a class of fire detection in which a cable, run continuously through the protected area, acts as the sensor along its entire length. Heat anywhere along the cable triggers an alarm,

Linear Heat Detection Cable Installation Best Practices

Step-by-step guidance on cable routing, mounting, zone configuration, and end-of-line termination for LHD systems.

Linear Heat Detection Cable (LHDC) by Honeywell

Engineered to provide reliable fire safety regardless of application or use case, Honeywell''s LHDCs can help detect fires and overheating before there is any

Cable Installation Considerations for Fire Detection

This document provides guidance on best practice for the selection and installation of cables for distributed temperature sensing (DTS) in the fire detection domain.

Pocket guide to Linear Heat Detection

Fibre Optic Cables are highly durable, immune to electromagnetic interference, and suitable for harsh environments such as tunnels, industrial plants and power facilities, where early and reliable fire

Distributed Temperature Sensing vs Linear Heat Detection Cable:

A fire detection cable that senses unusual heat along its length is called a linear heat detection cable. It is often installed near cable trays, conveyor belts, storage racks, tunnels,

LHS Cable Fire Detection – Sri Hanumaa Protek

Hanumaa Protek''s LHS Cable Fire Detection system is an advanced fire detection solution using Linear Heat Sensing (LHS) cables. This system detects fire along the length of the cable, making it ideal for

PRODUCT DATA SHEET LHD Series Linear Heat Detection Cable

Trays, Warehouse Racking, Conveyor Belts and Escalators. Cables are flexible, allowing them to be easily installed along convey. r belts, in cable trays or wrapped around fan motors etc. 68oC - 88oC

Linear heat detection

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Linear heat detection (LHD) (also known as linear detection wire or linear heat detection cable or linear heat) is a very commonly used method of fire detection. It can detect a fire anywhere along the

Linear Heat Detection

Each of the conductive cables are coated in a heat sensitive polymer which, when heated to its rated temperature, melts, causing the two cables to touch. The resulting short sends a signal to the fire

Cable Tray Study

The Senkox HSD™ Linear Heat Sensors are installed on top of power cables in the cable tray. Should any unusual temperature increase occur, the user will know

Fire Safety in Cable Tunnels, Cable Trays, Overheating in Wiring

Typically, cable tunnels, risers and flats use multi-level cable trays / ladder racking for cable containment. Linear Heat Detection Cable may be economically applied to monitor above each level

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We''re on a journey to advance and democratize artificial intelligence through open source and open science.

Fiber Optic Heat Detection for Cable Trays

Cable trays are critical infrastructure but can be difficult to monitor due to their length and remote locations. Distributed temperature sensing uses fiber optic cables to continuously monitor

Overheat and Fire Detection in Cable Trays

A relatively minor cable fire can cause widespread disruption and consequential losses out of all proportion to the incident itself. Protectowire Linear Heat Detector detects the location of an overheat

How to Prevent Fire and Electric Hazards in Cable Tray

Safety of a cable tray is not a matter of compliance with codes, but a matter of saving human life and billions of dollars'' worth of infrastructure. Poorly

Fire behaviour and construction safety precautions for

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Cable tray type, ducts and conduits Although the type of cable and conductor is the determining factor in the fire behaviour of ducts and conduits,

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

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