





Fibre Optic Linear Heat Detector for Fire Detection

Optimum Safety in Tunnels and Special Hazard Buildings



www.fire-protection.com.au

10000 m Detection range. Or 4times up to 6000 m.

LIOS DE.TECT is developed for efficient and pinpoint fire detection in road and rail tunnels. Since its initial introduction in 1997, it has revolutionized the safety standard in underground transport facilities as it enabled the complete monitoring of the entire tunnel length for the first time.

The line sensor is based on optical waveguides, which are immune to electromagnetic disturbances. Based on years of experience within the field of fibre-optic measuring techniques as well as the input of research partners and customers, multiple characteristics were added to offer reliable and adaptable measurement features for locally linear heat detection profiles.

LHD 4CH LINEAR HEAT DETECTION

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- A purely passive sensor unaffected by rough conditions and electromagnetic disturbances
- A system architecture that allows stand-alone operation
- Precise information about fire location, size and propagation

LIOS

- Easy to install
- Easy to integrate in fire management systems

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LIOS DE.TECT is the state of the art fire detection system to provide optimum safety for fire detection in tunnels and other special hazard areas due to its ability to cope with extreme environmental conditions. Rising demand for fire surveillance in facilities like rail and service tunnels, cable routes and ducts, storage facilities and warehouses or conveyor belts and many other special hazard facilities motivated LIOS Technology to offer a measuring system tailor-made for these industrial applications.

One single evaluation unit of the DE.TECT series provides fast and spatially well-resolved fire detection along optical fibres with ranges of up to 10 km per channel.

With DE.TECT temperatures are recorded as a continuous profile along the entire sensor cable compared to a conventional setup using single point-type sensors. The benefit of achieving highly accurate temperatures over great distances at short measuring times is combined with the ease in installation and data acquisition.

Technical Highlights

- Linear heat detector for quick fire detection and precise localization of the fire source
- Alarm and pre-alarm for each zone
- Selectable alarm and pre-alarm criteria
- High spatial resolution down to 0.25 m
- Signal processing based on OFDR-Technology (Optical Frequency Domain Reflectometry)
- Available with 1, 2 and 4 channels
- 1000 free programmable zones for each channel
- Information regarding magnitude and the direction of the fire spread
- Redundant sensor system applicable
- Suitable for wind speeds of up to 10 m/s
- Laser product class 1M according DIN EN 60825-1: 2007

Smart Sensor Design

LIOS Technology provides the appropriate sensor cable for every application. One vital component is a tube that accommodates 2 optical fibres. The coatings of the optical fibre can be tailored to optimally suit the required resistance to temperature conditions and mechanical impacts. The wall thickness of the tube sheathing, the material used and additional protective measures as stranded wires or coatings allow for an optimized design. Versions with an additional stranded wire layer upon the tube are available for fast temperature detection or if stricter requirements apply with regards to tensile strength and mechanical robustness. For applications with a high amount of electromagnetic disturbances like rail tunnels or power supply line tunnels LIOS offers a metal-free cable to minimize the risk of induced voltages. No electronic components are needed along the cable. The sensor is completely passive over its entire detection range.

The DE.TECT fibre optic linear heat detection can therefore be carried out in areas where high safety risks exist, e.g. in areas with a risk of explosion.



Practical, Field-tested and Approved

Driven by demanding requirements from today's safety market LIOS DE.TECT provides a highly proven product based on fulfilling international quality standards recognized by the

- VdS (Association of German Property Insurers)
- prEN 54-22
- ISO 9001 and ISO 14001
- TÜV Rheinland
- CE (Electromagnetic Compliance, Europe)

Through Our Local Partners

- FM (USA)
- IBS (Austria)
- VKF (Switzerland)
- CNBOP (Poland)
- CNACL (Chinese State Bureau of Technology Supervision)
- KFI (Korea)

These institutions – most accredited according to the European Standard EN 45001 – are unbiased and competent partners for type testing of our products.

Their laboratories perform tests under controlled conditions regarding the mechanical environment and ambience evaluating electrical and electronically devices for compliance with EU and other international standards.

In addition, our implemented quality management certified according to ISO 9001 and the repeated quality audits ensure the steady quality of our products and pave the way to achieve these highly reputed approvals.





Good Connections

In case of fires developing intense heat and dense smoke, the fire must be kept subdued until the fire brigade arrives. DE.TECT can be coupled to operate with modern fire suppression systems on the basis of water mist that dissipate the heat energy from the fire. DE.TECT pinpoints the fire location and ensures that these fire suppression systems are selectively actuated at the fire location and in the direction of the propagation to allow the fire fighting forces maximum accessibility and to minimize the heat impact on the structure. Extensive tests have confirmed the efficiency of these combined systems in tunnel fires.

Convincing Visualisation

When measuring temperature with a high spatial resolution on long sensor lengths at short measuring cycles, efficient handling and compression of the measuring data volume is important. The software for configuration and visualization of the DE.TECT systems is just designed to fulfil this purpose. It can easily be adapted to specific requirements and offers numerous options for displaying and processing the recorded measurement data. The DE.TECT visualisation tool enables one to create zone views as subdivisions of the entire sensor lengths. These zones can be building sections of the facility as well as technically driven such as deluge zones. Since they are freely configurable the possibilities for zone-related alarm scenarios and event-handling are manifold.



LIOS Technology GmbH – Linear Optical Sensors is a dynamic and internati onal operating company based in Cologne, Germany. It is the global leader in the development and supply of state of the art frequency domain based distributed linear heat detection. Starting in 1997 LIOS was the first to-intro duce "fibre optical linear heat detection". With more than 2500 installations worldwide, LIOS sets the benchmark in reliability and track record.

Certified according to ISO 9001 / Edition 12 / 2008 and ISO 14001 I Made in Germany





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