

## Flexible Installation & Advanced Architecture

FOTAS DAS stands out with its easy installation and adaptability to the security needs of different environments. The system offers three installation options: fence-mounted, buried, or hybrid installation. The hybrid configuration provides additional design flexibility and security by incorporating both fence-mounted and buried sensing, creating a dual-layer detection mechanism for enhanced accuracy.

### Security Installation Design Options

- **Fence-Mounted Installation:** Ideal for detecting climbing or cutting activities on fences in perimeter security
- **Buried Installation:** Suitable for early warning detection and classification of TPI (Third Party Intrusion) approaching fiber optic cables. It detects excavation activities and human movement. It can perform leak detection and pig tracking in pipeline monitoring.
- **Hybrid Installation:** A combination of fence mounted and buried methods, providing dual detection zones for customized alerts.

### Architectural Durability Options

- **Single or Dual Channel:** The system can operate with single or dual fiber optic cables, ensuring redundancy and reliability.
- **Cut Resistance:** The system remains operational even if the fiber optic cable is cut.
- **Fault Tolerance:** The system is resilient to component failures, enhancing reliability.



# FOTAS™

## DAS

Fiber Optic Distributed Acoustic Sensing System



<b>S-10</b>	<b>S-50</b>	<b>D-5</b>	<b>D-30</b>	<b>D-50</b>
Single Channel	Single Channel	Dual Channel	Dual Channel	Dual Channel
10 km	50 km	5 km	30 km	50 km

### Our Global Presence

- |            |              |
|------------|--------------|
| Türkiye    | Kenya        |
| Mexico     | South Africa |
| Brazil     | Australia    |
| France     | USA          |
| Czech      | Italy        |
| Romania    | Tunisia      |
| Israel     | Nigeria      |
| India      | Azerbaijan   |
| Angola     | and more ... |
| Mauritania |              |



**Advanced Security Through Real-Time Monitoring**



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## What is FOTAS DAS?

### Acoustic Detection DAS Unit



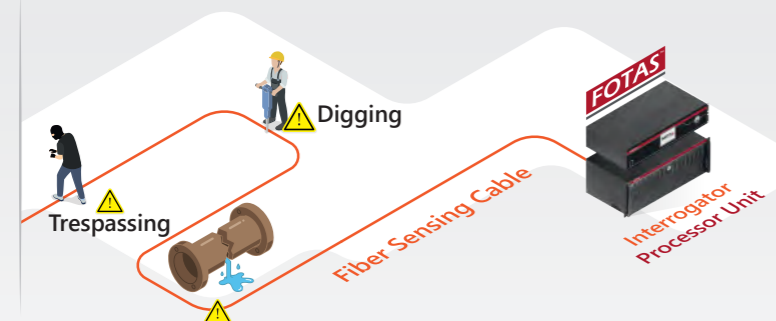
FOTAS DAS (Fiber Optic Distributed Acoustic Sensing System) is an advanced security technology capable of real-time detection and monitoring over long distances. This system utilizes fiber optic cables as passive sensors to detect mechanical and acoustic effects, identifying third party intrusions.

### Primary Applications

FOTAS DAS is used to ensure the security of critical infrastructures, pipelines, border areas, and telecommunications infrastructure. It enables real-time detection of activities such as digging, human movement, vehicle passage, fence cutting, and climbing, allowing security teams to respond immediately.

### Why is FOTAS DAS Essential?

- Provides a wider coverage area compared to traditional sensor systems.
- Includes AI-powered analysis mechanisms to reduce false alarm rates.
- Operates with passive sensing technology, requiring no electrical power.
- Offers long lifespan, durability, and low maintenance requirements.
- Resistant to environmental factors and immune to electromagnetic interference.



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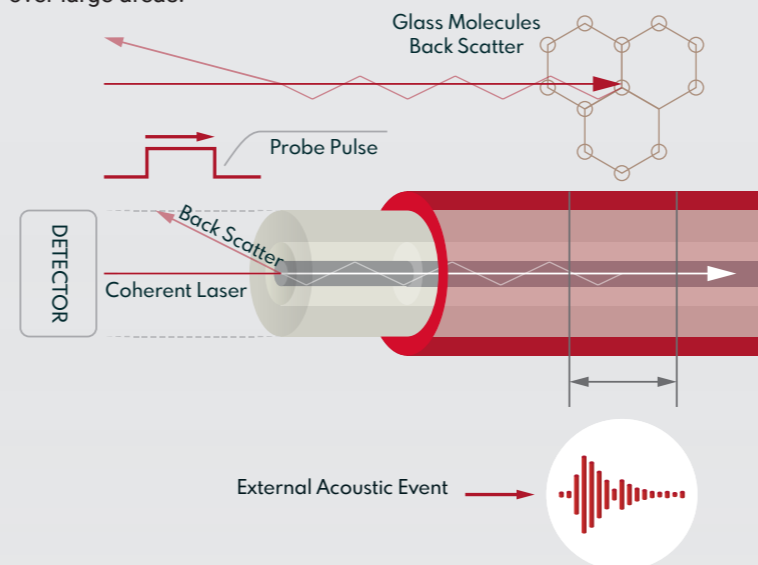


## Technology Behind FOTAS

### Distributed Acoustic Sensing (DAS) and Phase-OTDR

FOTAS DAS utilizes Phase-Sensitive Optical Time-Domain Reflectometry ( $\Phi$ -OTDR) technology to detect acoustic and mechanical disturbances around fiber optic cables. This technology works by sending laser pulses through fiber optic cables. The light signals are scattered back due to microscopic irregularities within the fiber. When a vibration or acoustic change occurs near the cable, the phase of the backscattered light experiences minor shifts.

These changes are analyzed in real-time by the FOTAS DAS system to determine the source of the mechanical disturbances. AI algorithms process this data to classify the type of event. Unlike conventional acoustic sensors, this process allows the entire fiber optic cable to function as a sensor, providing continuous and uninterrupted monitoring over large areas.



### Technical Features

- Real-Time Monitoring & Precision:** Covers distances up to 100 km with meter-level accuracy in location detection.
- Artificial Intelligence:** The system supports hybrid installation for both buried and fence applications, utilizing deep learning AI models to classify events such as digging, walking, vehicle movement, intrusion, climbing, and fence cutting.
- False Alarm Prevention Algorithms:** Smart filtering system reduces false notifications by eliminating environmental noise.
- Durability & Maintenance Requirements:** 20+ years of sensor lifespan with passive sensing, ensuring low maintenance costs.
- Integration with Existing Systems:** Compatible with security platforms such as Genetec Security Center, Milestone XProtect, and other third-party security applications.
- Web Interface:** User-friendly experience through a Web 2.0-based interface.
- Integration Support:** Easily integrates with different security systems through ONVIF camera support, SMTP, SNMP, REST API, and SDK compatibility.
- Alarm Notification System:** Sends real-time alerts via email and SMS.

## Application Areas



### Pipeline Security

Detects third-party interventions and leaks



### Leak Detection

Detects potential leakage, sabotage, and unauthorized intrusions.



### Perimeter Security

Protects critical facilities such as airports, power plants, and prisons.



### Border Security

Monitors illegal crossings along national borders.



### Telecom Infrastructure Monitoring

Identifies third-party interventions and excavations affecting fiber networks.



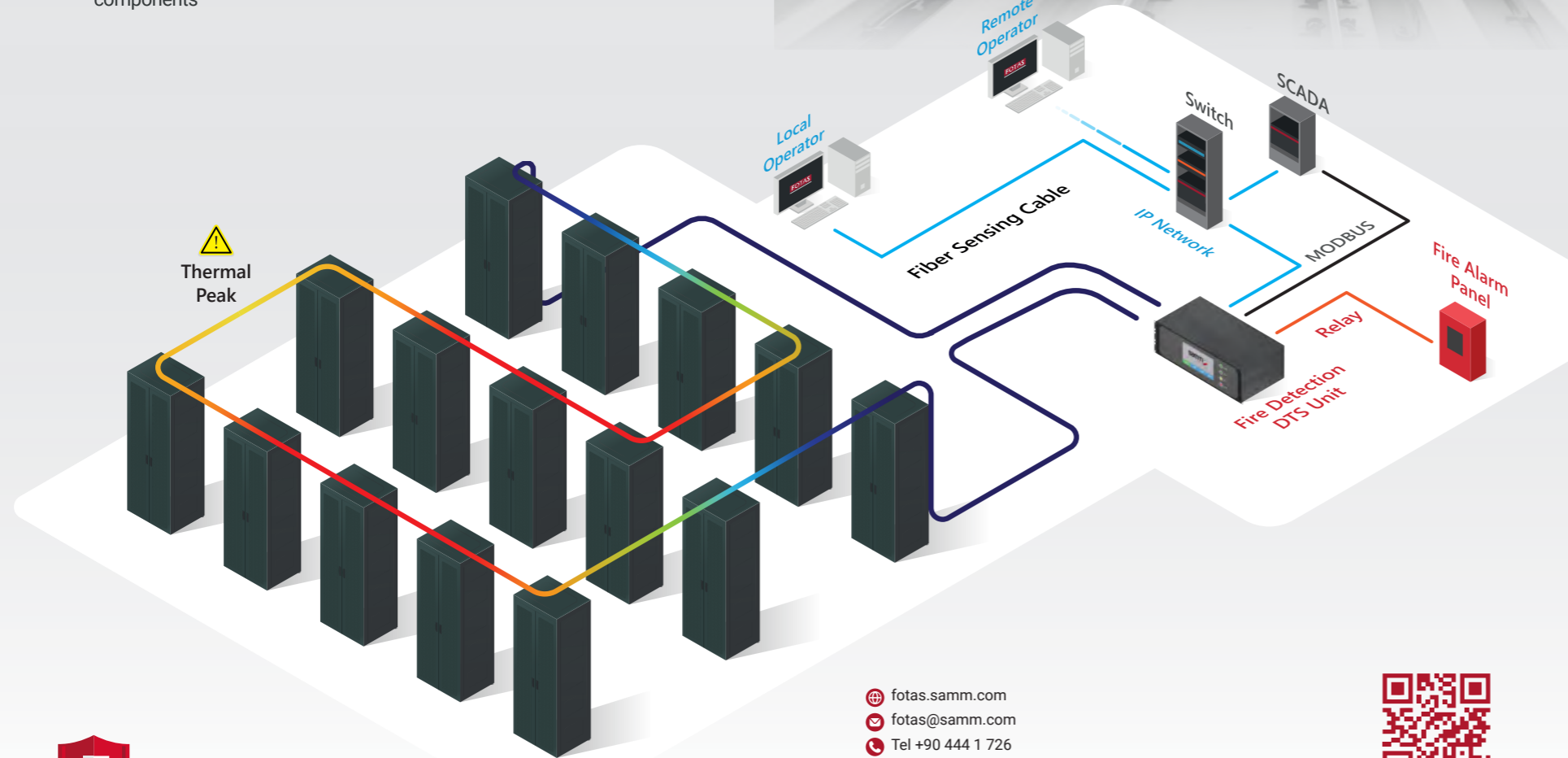
### Advantages of Fiber Optic Sensors

Fiber optic-based DTS systems offer numerous advantages over traditional methods:

- **Early Detection:** Capable of detecting heat rise faster than traditional systems, enabling early fire detection
- **Truly Distributed Detection:** Provides full coverage without gaps, thanks to the continuous structure of the fiber
- **Versatile Use:** Resistant to electromagnetic interference and intrinsically safe, making them suitable for various industrial environments
- **Low Maintenance:** Completely passive, corrosion-resistant, and with no moving parts, minimizing maintenance requirements

### Technical Features

- **Sensor Technology:** Fiber optic-based DTS
- **Detection Sensitivity:** Up to 0.1°C
- **Maximum Cable Length:** Up to 10 km, with 1/2/4 channel options
- **Response Time:** 5 seconds according to EN54-22; ideally 10 seconds.
- **Durability:** Immune to electromagnetic interference, suitable for explosion-prone environments
- **Maintenance Requirements:** Low maintenance cost due to passive components



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# FOTAS™

## DTS

Fiber Optic Distributed Temperature Sensing



**DTS-CH1** Distributed Temperature Sensing  
**DTS-CH2** Distributed Temperature Sensing  
**DTS-CH4** Distributed Temperature Sensing



Enhanced Safety Through Real-Time Temperature Monitoring

## What is DTS?

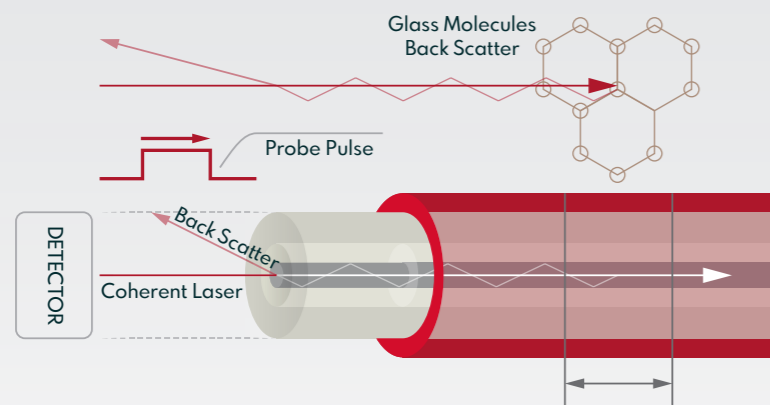
### Fire Detection DTS Unit



FOTAS Distributed Temperature Sensing (DTS) continuously measures temperature changes along optical fibers, detecting temperature variations with an accuracy of up to 0.1°C. This system enables real-time monitoring without the need to know the location of temperature changes in advance, providing continuous monitoring at every point along the fiber.

Conventional temperature measurement systems typically rely on point measurements at specific locations, but the FOTAS DTS system uses optical fiber as a sensor, enabling temperature measurement at every meter. This technology allows the system to cover distances up to 10 km and monitor temperature changes more efficiently.

FOTAS DTS detects temperature variations by utilizing the reflection properties of laser light within the optical fiber. The scattering rate at each point along the fiber is measured through a process called Raman scattering, and this data is used to determine the temperature value at that point.



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External Thermal Event

## DTS Usage in Data Centers

Data centers are critical infrastructures that require early detection of temperature fluctuations. DTS systems continuously monitor temperature changes in cable tunnels, electrical distribution systems, and HVAC (Heating, Ventilation, and Air Conditioning) ducts, minimizing fire risk.

### Advantages of DTS in Data Centers

- **Early Fire Detection:** Early warning through the detection of heat rise
- **Continuous Monitoring:** Continuous data flow thanks to the fiber optic cable's continuous structure
- **High Reliability:** Wider coverage area compared to traditional point detection systems
- **Energy Efficiency:** Prevents unnecessary activation of fire suppression systems, leading to cost savings



DTS technology detects overheating by constantly monitoring the temperatures of equipment in data centers, gives advance warning in case of possible fire, increases energy efficiency and prevents hardware failures.

## Application Areas



### Industrial and Manufacturing Facilities

Petrochemical Plants, Refineries, Power Plants



### Transportation Infrastructure

Tunnels, Railways, Airports



### Data Centers and Telecommunications

Cable management systems in data centers, Telecommunication infrastructure



### Storage and Logistics

Warehouses, Cold storage facilities, Hazardous material storage areas



### Energy Distribution Systems

High-voltage cable tunnels, Transformer stations

