

# Distributed Acoustic Sensing Alarm Management Software (DAS AMS)

Harness the power of fiber sensing technology and Distributed Acoustic Sensing (DAS) to protect your critical infrastructure and assets



# DAS AMS provides accurate and actionable alarms and displays them on a map to help you protect your assets.

In an interconnected world, safeguarding critical infrastructure is paramount. From pipelines to power grids, bridges to tunnels, our societies rely on these vital systems. Fiber sensing technology and Distributed Acoustic Sensing (DAS) offer a powerful solution to enhance security and protection across various critical assets.

DAS AMS provides a suite of compelling advantages, from continuously monitoring critical infrastructure to detecting threats in real time. Whether it is a pipeline leak or unauthorized access, operators receive immediate alerts for rapid response to minimize damage and prevent disruptions.

## Benefits

- Accurate information on threats and integrity issues in real-time
- Advanced alarm management for minimal false alarms
- Multi-platform alarm support, for multiple users and third-party systems
- Actionable information for rapid and proportionate response
- Protection of critical infrastructure
- Manage multiple FTH-DAS units with a single AMS

## Features

- Real-time monitoring and alarming
- Pipeline leak, theft and damage detection
- Threat detection and localization
- People and vehicle detection
- Intrusion detection
- Fence cutting and climbing detection
- Tunneling and excavation detection

## Applications

- Border and perimeter security
- Critical infrastructure protection
- Oil, gas, water and chemical pipelines





## DAS Alarm Management Software with Fiber Test Head for Distributed Acoustic Sensing (FTH-DAS)

DAS AMS combined with FTH-DAS (aka an 'interrogator') can distinguish between background noise and genuine threats, ensuring you receive the critical information needed to respond safely and effectively. When acoustic events occur along a fiber optic cable, they are detected by the FTH-DAS which processes all received acoustic data and applies sophisticated detection algorithms to identify and classify events such as digging, climbing, and pipeline leaks.



DAS AMS User Display

# Event Assessment and Alarms

Each detected event is immediately transmitted to the DAS AMS, which evaluates the events by analyzing their persistence, cadence, movement and location. The DAS AMS determines whether an event poses a threat to the integrity of an asset and decides when to raise an alarm.

VIAT

All Alarms

ID

Time

Type

Threat level

Highest threat level

Status

Acknowledged on

by

Commands

292

2023-09-18 18:22:34

Vehicle

Amber

Amber

Resolved

290

2023-09-18 18:22:34

Vehicle

Amber

Amber

Resolved

289

2023-09-18 18:22:34

Vehicle

Amber

Amber

Resolved

304

2023-09-18 18:22:34

Vehicle

Amber

Amber

Resolved

295

2023-09-18 18:22:34

Vehicle

Amber

Amber

Resolved

301

2023-09-18 18:22:34

Vehicle

Amber

Amber

Resolved

286

2023-09-18 18:22:34

Vehicle

Amber

Amber

Resolved

287

2023-09-18 18:22:56

Walking

Clear

Green

Resolved

302

2023-09-18 18:22:56

Walking

Clear

Green

Resolved

293

2023-09-18 18:22:56

Walking

Clear

Green

Resolved

299

2023-09-18 18:22:56

Walking

Clear

Green

Resolved

284

2023-09-18 18:22:56

Walking

Clear

Green

Resolved

305

2023-09-18 18:22:56

Walking

Clear

Green

Resolved

290

2023-09-18 18:22:56

Walking

Clear

Green

Resolved

296

2023-09-18 18:22:56

Walking

Clear

Green

Resolved

288

2023-09-18 18:23:32

Digging

Red

Red

Resolved

2025-02-10 13:31:47

System Administrator

300

2023-09-18 18:23:32

Digging

Red

Red

Resolved

2025-02-10 13:56:39

294

2023-09-18 18:23:32

Digging

Red

Red

Resolved

2025-02-10 13:43:11

295

2023-09-18 18:23:32

Digging

Red

Red

Resolved

2025-02-10 13:27:22

296

2023-09-18 18:23:32

Digging

Amber

Amber

Resolved

2025-02-10 13:57:36

291

2023-09-18 18:23:32

Digging

Amber

Amber

Resolved

2025-02-10 13:37:52

287

2023-09-18 18:23:32

Digging

Amber

Amber

Resolved

2025-02-10 13:47:14

303

2023-09-18 18:23:32

Digging

Red

Red

Resolved

2025-02-10 13:54:48

System Administrator

Delete selected

Acknowledge selected

Resolve selected

Download as CSV

(All times are given in GMT+0100.)

50

per page

Events listing, historical and live

A photograph of a person wearing a high-visibility yellow safety vest and a dark jacket, standing with their back to the camera and looking out over a vast field of white wind turbines. The turbines are situated on rolling green hills under a clear blue sky. The person is holding a white hard hat in their left hand.

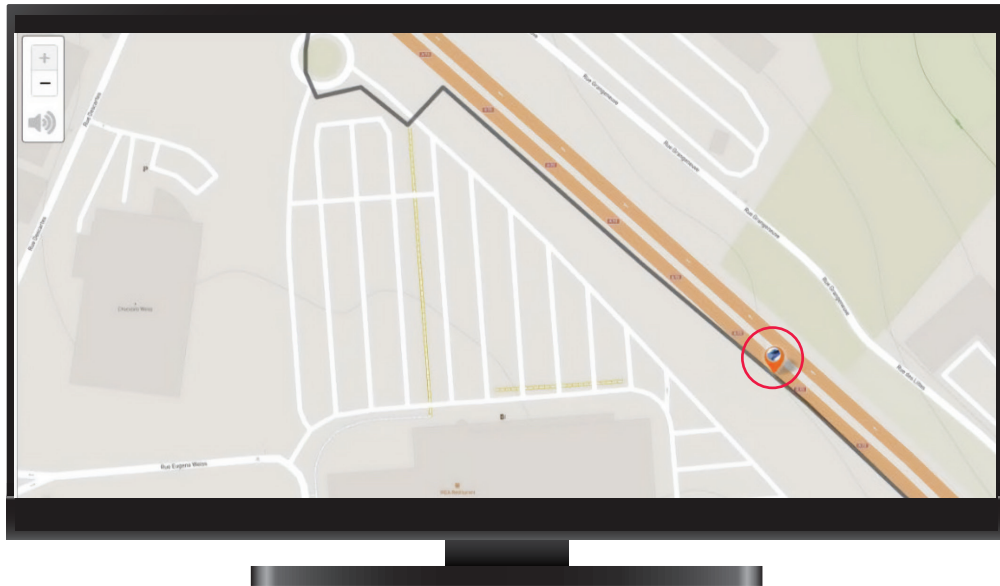
4



## Event Detection, Assessment and Alarm Management

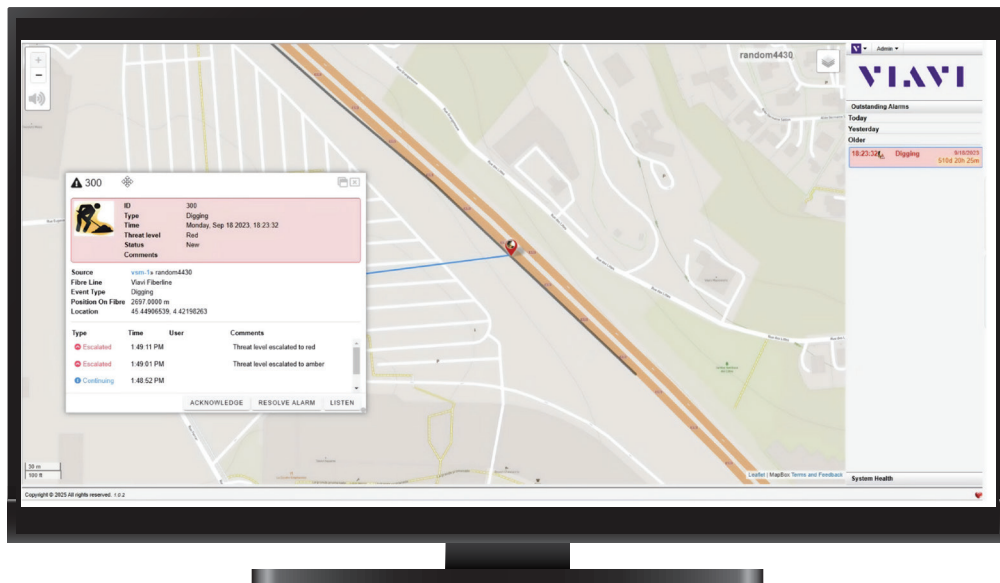
Events are assessed as they occur and develop, at each stage.

- **Event detected:** Potential threat detected and displayed as a map icon



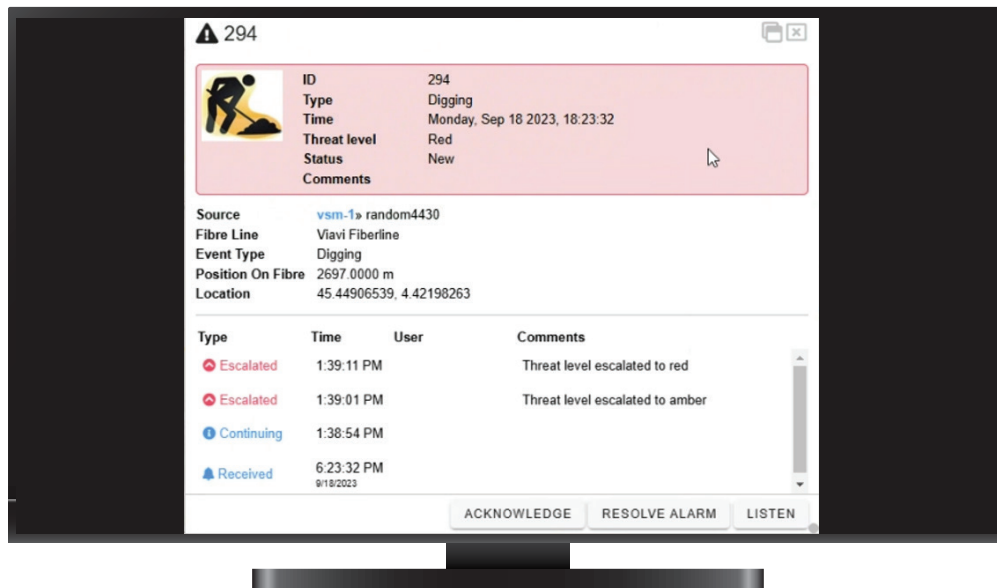
Event icons showing location, movement and threat level/severity

- **Pop-up warning:** Continues to monitor the potential threat and then notifies the operator of a developing situation via email and text sms



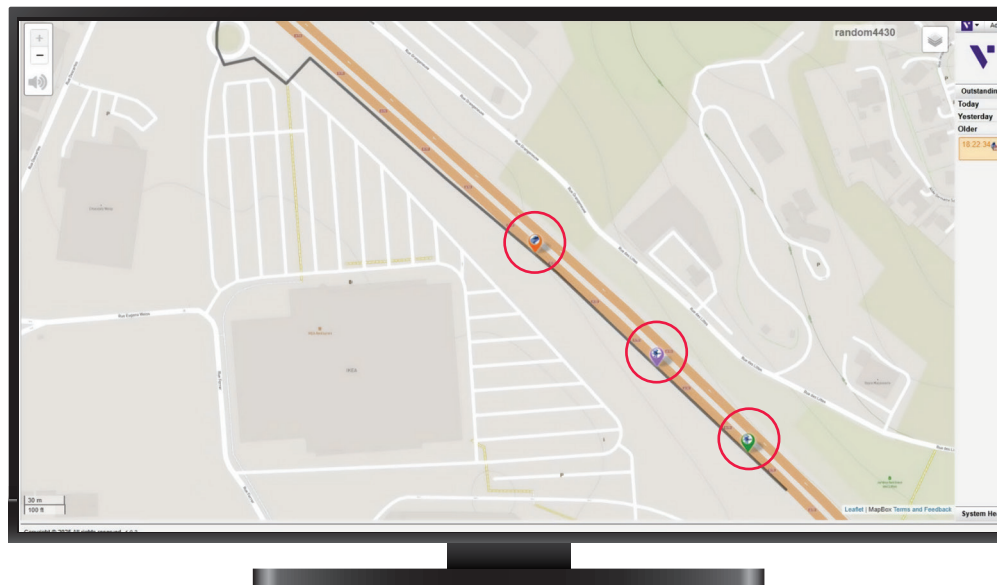
Event alarm pop up notification

- **Threat level alert:** Threat level escalated and alarm status set, with an audio warning and operator notified of the threat



Alarm escalation and response

Automatic assessment minimizes false and nuisance alarms, ensuring only accurate information about genuine threats is received. AMS manages alarms with user-defined thresholds (Green, Orange, or Red) allowing alerts to be tailored to what matters most in individual zones and at specific times of day.



Event specific icons, e.g., car, person walking, manual digging

With bespoke commissioning, which takes into account the type of asset, the threats and integrity issues faced, and the anticipated response time, AMS ensures you have the right information to make swift and proportionate responses.



## Features

- Multi-platform alarm delivery, including XML over HTTP, Binary, Email or SMS
- Acknowledge alarms and access supporting information using a remote web-interface
- Integrate into control rooms with SCADA over Modbus
- User calibration supported via the map interface
- Set and manage time/zone-based alarms
- Maintain system and alarm logs
- Alarm report management with enhanced user configuration options for alarm notifications
- Offline Maps, with multi-layer functionality for user annotations and markers
- User-defined event types and icons
- Support for multiple languages
- Remote operation on touch-screen mobile devices
- Enhanced redundancy features

## Fully Customizable

With DAS AMS software, users are in control. Manage your alarm thresholds/levels to tailor alarms to the 'what, where, and when' that is important to your asset.

Gain actionable insights into your unique activities and integrity issues, whether you are protecting pipes, monitoring borders, or maintaining roads. DAS AMS gives you the right information to make a quick and proportionate response based on your own security or maintenance arrangements.

Event Type	Electrical Power	Pipelines	Security/Protection
Third Party Interference (TPI)*	•	•	•
Cable Tampering	•		•
Cable Faults/Failure	•		•
Joint Fault/Failure	•		
Cable Bend/Stretching	•		•
Arching/Flashover	•		
Leak Detection		•	
Ground Deformation		•	

\* Detection of Third Party Interference (TPI) events includes:

Walking, manual digging, mechanized digging, fence climbing, fence cutting, vehicle movement, excavation, vessel detection, man-hole interaction.

## Perimeter Defense Reinforced

Installed along perimeters such as fences or underground DAS AMS and FTH-DAS provide unmatched sensitivity to vibrations and disturbances, offering precise detection and localization of unauthorized entries. Ideal for safeguarding expansive areas like airports and military bases, eliminating blind spots and enhancing perimeter security.

## Robust Pipeline Monitoring

Pipelines for gas, water, fuel, and oil serve as the lifelines of modern economies. Detecting leaks, intrusions, physical tampering or attacks is vital. Early detection capability is crucial for preventing environmental hazards and ensuring uninterrupted operations, especially in remote and hard-to-access locations.

## Threat Detection Increased

Detect threats from nearby construction activities and malicious actions to safeguard sensitive areas and infrastructure with precision and reliability. By embedding optical fibers in the vicinity of vulnerable sites you can capture any physical disturbances, such as vibrations and acoustic signals caused by nearby construction or unauthorized intrusions. With the ability to distinguish between ordinary environmental noise and potential threats, enabling real-time alerts that facilitate prompt response.

## Cable Infrastructure Protection

Telecommunication and data transmission cables are equally critical. Using existing fiber optic communication links to detect and localize acoustic events, such as cable interruptions or unauthorized access, operators can swiftly respond to incidents, ensuring uninterrupted service.







## **Railway and Transportation Safety**

Deploying along railway tracks, to detect track deformations or excessive vibrations, increases safety by ensuring the integrity of railway infrastructure and reducing the risk of derailments. Also allowing for better maintenance scheduling and operational efficiency.

## **Border Surveillance Enhanced**

Utilized to monitor extensive and remote border areas efficiently, FTH-DAS with AMS reduces the reliance on extensive human patrols, lowering costs and improving border security against unauthorized crossings.

## **Data Center Interconnect (DCI) Secured**

Implemented with DCI to monitor physical access and surrounding environmental conditions to protect sensitive fibers and data from unauthorized access and physical threats.

Overall, DAS AMS (with FTH-DAS) is revolutionizing critical infrastructure security, enhancing your ability to protect borders, perimeters, pipelines, cables, and other vital assets. As threats evolve, so does our defense.

## **VIAVI System Care**

VIAVI offer services to enable you to plan, install, activate, and maintain your systems over the lifetime of your project. Our system software and maintenance hotline is available globally with a standard 8x5 service level agreement. Our services team includes experts in project management, logistics, training, support, and process implementation.



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