



Midstream GAUTENG
john@networksense.tech
+27 (0) 83 376 8427
www.networksense.tech

Introduction to DAS

WHAT IS DAS?

Distributed Acoustic Sensing (DAS) is an advanced technology that transforms fiber optic cables into highly sensitive acoustic and vibration sensors. By leveraging standard or specially designed fiber optic cables, DAS creates thousands of virtual microphones along the entire length of the fiber, delivering real-time, high-resolution monitoring with virtually unlimited sensing points.

HOW DOES DAS WORK?

DAS operates by sending short pulses of laser light through an optical fiber. As the light travels, it interacts with microscopic variations in the fiber's refractive index-natural characteristics formed during manufacturing. These variations cause a small portion of the light to scatter back toward the source. When external sounds or vibrations, such as footsteps or vehicle movement, interact with the fiber, they alter the backscattered light pattern. Advanced processing algorithms analyse these changes, enabling precise detection and interpretation of acoustic activity.

WHERE CAN DAS BE USED?

DAS is an ideal solution for monitoring long, linear infrastructures such as pipelines, railways, highways, borders, and fences. Using sophisticated algorithms, it can detect and track various activities, including vehicle movement, human footsteps, digging, or tunnelling. Additionally, DAS plays a crucial role in asset condition monitoring by identifying pipeline leaks, broken railway tracks, and other potential failures before they become critical issues.

WHY CHOOSE DAS?

DAS offers a range of advantages over traditional sensing technologies:

- **WIDE COVERAGE:** A single DAS unit can monitor up to 45 km (30 miles) of fiber-double that with twin-headed devices.
- **MINIMAL POWER REQUIREMENTS:** Unlike traditional sensors, DAS requires little to no field power.
- **COST-EFFECTIVE:** Existing unused "dark fibers" can be repurposed for monitoring, reducing infrastructure costs.
- **MULTI-FUNCTIONALITY:** New fiber deployments can serve dual purposes, such as enabling broadband access while simultaneously providing real-time monitoring.
- **SIMPLIFIED INSTALLATION:** DAS eliminates the need for multiple point sensors, streamlining deployment and maintenance.

With its ability to deliver real-time, high-resolution acoustic monitoring across vast distances, DAS is transforming the way industries monitor and protect their critical assets.