LiveDETECT® II
Enhancing the world's most reliable real-time linear asset monitoring technology
About Fotech

With real-world experience in the energy, security and transport sectors Fotech continues to provide unrivalled sensory data to its customers to help them solve business-critical challenges. Our industry leading DAS technology and services are changing expectations, optimising traditional processes and creating new opportunities.

Established in 2008 to develop Distributed Acoustic Sensor (DAS) solutions for the energy, security and transport markets Fotech combines talent from across the globe with leading edge industrial photonics and technology expertise.
Harness the power of fibre optics to monitor asset health and react in real-time to mitigate integrity issues and threats with LiveDETECT® II.
LiveDETECT® II

Protect your linear assets against damage, illegal incursion and theft, or provide early warning when equipment, such as a cable, or conveyor belt is starting to malfunction.

LiveDETECT II delivers a fully integrated and networked sensing solution based on the world's most advanced fibre optic Distributed Acoustic Sensor.

- Detect, locate and prevent attempts to breach a fence, or wall
- Detect, locate and catch people crossing borders
- Detect, locate and target unwanted Third-Party Interference (TPI) on cables, critical infrastructure and roads
- Identify hardware faults and prevent further damage
- Protect against accidental damage by maintenance crews
- Be confident knowing that your asset is protected by a robust, reliable and proven technology

Perimeter Intrusion Detection Systems (PIDS) are recognised across the globe as a proven technology for the protection of assets, with thousands of kilometres of assets, perimeters, and borders being protected every day in harsh, densely populated and remote locations.

The LiveDETECT II dual channel technology delivers up to 100km* of continuous monitoring from each individual module enabling operators to monitor their asset, perimeter, or border with fewer DAS units compared with competitor solutions, delivering a significant economic saving.
LiveDETECT® II represents the next generation in LiveDETECT technology, harnessing the enhanced capability and functionality of the Helios X3 Distributed Acoustic Sensor (DAS) and EDAM (Enhanced Data and Acoustic Management) system to deliver smarter and more intuitive detection at industry leading range.

LiveDETECT II delivers unrivalled detection of threatening activities, including people walking, excavation, fence climbing and cutting, and potential failures, such as cables arcing or conveyor belts suffering bearing failure.

The Helios X3 dual-channel technology monitors two fibres along the asset up to 50 km* in length to deliver **100 km** of asset monitoring from a single DAS unit. The significant technical enhancements in LiveDETECT II are making it easier for operators to protect their assets than ever before, with a substantial economic saving compared with leading competitors.

*50km of fibre optic cable with a one-way optical loss of up to 12.5 dB. Range is dependent upon quality of fibre, local environment, and the specific detection streams required.*
A Modular Solution

LiveDETECT® II is a modular Distributed Fibre Optic (DFO) sensing solution based on the world’s most advanced Distributed Acoustic Sensing technology. Using the Helios X3 dual-channel technology to connect into an operator’s new or existing fibre optic network, LiveDETECT II modules can be rapidly deployed and networked together to deliver continuous and real-time monitoring along the entire length of an asset, perimeter, or border.

The LiveDETECT II solution can be configured and deployed using three types of LiveDETECT module:

- Monitoring and Sensing Module
- Sensing Module
- Monitoring Module

The robust modular design is not only readily configurable to deliver a best fit solution for your requirements but also enables you to easily extend its protection as you expand your network.

LiveDETECT II Alarm server, Panoptes, delivering an immediate notification of a fence intrusion event to a security operator, with Map view and accurate GPS coordinates.
Key Benefits

- Extended range of up to 100km from one Helios DAS interrogator
- Cost reduction for identical length of asset
- Listen to a section of the fibre sensor with headphones*
- Play back and analyse data files to interpret new threats*
- Options for system redundancy

* Requires EDAM module

LiveDETECT® II Features

- Modular design delivers a simple and flexible solution to fit any asset architecture and to adapt to an expanding network
- Fully integrated and networked sensing solution with simple installation, high reliability and low maintenance delivers a low total cost of ownership
- Continuous monitoring of up to 100 km† of fibre cable from a single module, using Fotech’s dual-channel technology
- A sensitive and resilient sensing solution that provides industry leading monitoring to protect critical assets
- Discrimination between threats, including mechanical excavation, manual digging, personnel or vehicle movements and fence climbing or cutting
- Specific alarms for equipment failures, including arcing in electrical cable and bearing failure on conveyor belts

† 50km of fibre optic cable with a one-way optical loss of up to 12.5 dB. Range is dependent upon quality of fibre, local environment, and the specific detection streams required.
EDAM (Enhanced Data and Acoustic Management) works with the Helios DAS (inside a LiveDETECT module) to identify and record segments of data that may be stored, replayed, listened to and used to write, or improve event detection algorithms.

It provides:
- The ability to listen into any activity happening anywhere along the fibre
- The ability to instantly listen to and view the sound field and spectral content of the noises leading up to and causing an alarm
- The automatic capturing of DAS data for an Area Of Interest (AOI) around an alarming activity
- The ability to access audio, spectral content and sound field information of any historical Alarm up to three months from occurrence
- The ability to manually create an AOI on the asset and access acoustic, spectral content and listen to the optical fibre, even if no alarm has been raised
**Dual Channel Configuration**

Using the Helios dual-channel technology, LiveDETECT® II offers both dual channel and corridor configurations to ensure that your security solution is uninterrupted in the event of a malicious fibre break.

Fotech’s dual-channel technology can be configured to monitor the cable around a perimeter in both directions. This ensures that if the cable is cut, both sections of the perimeter loop are monitored, without interruption to your perimeter monitoring solution.

![Dual channel configuration for a perimeter security application delivering fibre break redundancy.](image1)

With a corridor configuration, whether detecting people and vehicles crossing a border or monitoring multiple assets in a corridor, such as a road or a railway, LiveDETECT’s dual-channel technology ensures that the integrity of your asset or border is upheld.

![The LiveDETECT II corridor configuration monitors both sides of an asset corridor with parallel fibres, enhancing detection information (e.g. travel direction for borders) and providing fibre redundancy.](image2)
How LiveDETECT® II Works

LiveDETECT II uses the Helios DAS technology, which is an advanced variant of an Optical Time Domain Reflectometer (OTDR). Every second it sends thousands of pulses of light along an optical fibre cable and monitors the finely structured Rayleigh backscatter pattern in the reflected light. This reflected light pattern changes when acoustic or vibrational energy creates a strain on the optical fibre.

By using advanced algorithms and processing techniques the Helios DAS analyses these changes to identify and categorise the disturbance event, such as walking near the fibre, or interfering with a fence. By detecting disturbance events simultaneously along the entire fibre in real-time the Helios DAS is able to build a comprehensive image of your asset, detailing the type of disturbance event, its location and its evolution through time.
LiveDETECT® II Module Specifications
LiveDETECT Modules are fully integrated and networked solutions, built and tested in the factory, ready for rapid onsite deployment.

The modules can be configured with multiple Helios DAS units and Panoptes Alarm handling servers to facilitate the continuous monitoring of multiple sections of an asset.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Operation</td>
<td>Temperature Humidity</td>
<td>+5 to +40°C (41 to 104°F) 80% RH for temperatures up to 31°C (87.8°F) non-condensing</td>
</tr>
<tr>
<td>Energy Consumption</td>
<td>Power Consumption</td>
<td>Sensing &amp; Monitoring Module for temperatures up to 31°C (87.8°F) non-condensing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>960W (Typ)/1240W (Max) 720W (Typ)/980W (Max) 510W (Typ)/770W (Max) 350W (Typ)/500W (Max)</td>
</tr>
<tr>
<td></td>
<td>Voltage, Frequency</td>
<td>110-240 VAC / 50-60Hz</td>
</tr>
<tr>
<td>Rack Size</td>
<td>Meters</td>
<td>0.6 x 1.01 x 1.41</td>
</tr>
<tr>
<td>Network Capabilities</td>
<td>MODBUS, HTTP &amp; email notification</td>
<td>SCADA via third party vendors</td>
</tr>
<tr>
<td>Fibre Type</td>
<td>Single Mode ITU G652 Series</td>
<td>(Other types can be considered)</td>
</tr>
<tr>
<td>Service &amp; Warranty</td>
<td>24/7 Global Service &amp; Technical Support</td>
<td>12 month warranty</td>
</tr>
</tbody>
</table>

IEC60825-1, UL60950-1, CDRH-21CFR1040, FCC, RoHS certified

Note: Specifications are subject to change without notice. For further technical information please contact your local Fotech representative.
Contact us to discuss your requirements:

Head Office
Titan House, Redfields Industrial Park, Redfields Lane, Church Crookham, Hampshire, GU52 0RD, UK
Phone +44 1252 560 570

Calgary Office
Suite 280, 700 6th Avenue SW, Calgary, T2P 0T8, Canada
Phone: +1 403 852 5696

Houston Office
1001 S. Dairy Ashford, Suite 100, Houston, Texas 77077, USA
Phone +1 713 595 6604

www.fotech.com
Email: sales@fotechsolutions.com
Copyright © 2017 Fotech Solutions Ltd.
FS-LD-0117