

OPTIMAE

OPTICAL ACOUSTIC EMISSION  
SENSING SYSTEM





THE WORLD'S ONLY  
FIBER OPTIC ACOUSTIC  
EMISSION SYSTEM

ENABLES AE  
MEASUREMENTS  
IN THE MOST  
CHALLENGING  
ENVIRONMENTS

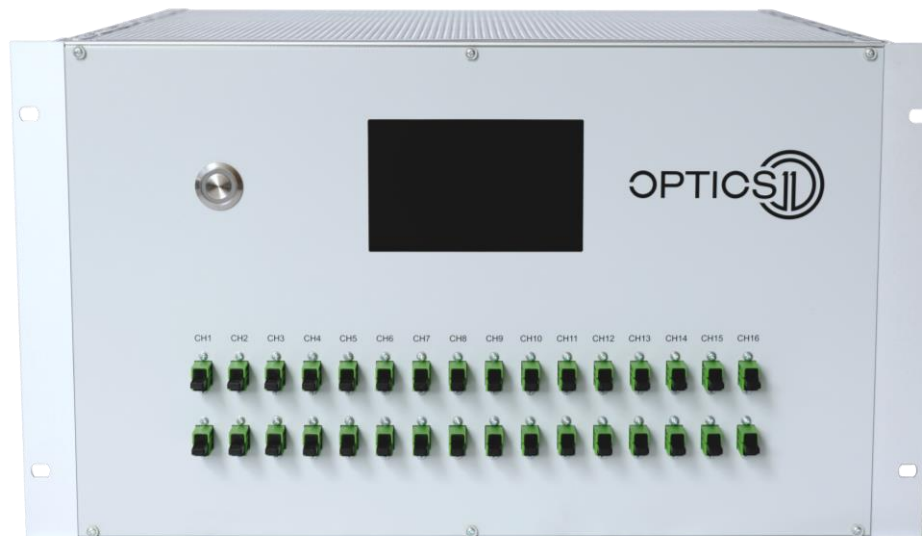


# MEET OPTIMAE

OptimAE is the world's only all fiber-optic Acoustic Emission sensing system. By nature, fiber-optic sensing systems are highly suitable to measure in extreme environments such as areas with high-voltages, ATEX zones, in presence of high EMI and/or in liquids.

OptimAE is a modular system which can be configured to a maximum of 16 channels, sampling each channel at 1 MS/s simultaneously. Besides continuous raw data acquisition, the system also provides automated event detection and AE features extraction.

Using interferometry as a measurement principle, the system achieves state-of-the-art sensitivity and can compete with the best electrical systems available on the market.



1 MS/s SAMPLING RATE



MODULAR SYSTEM,  
UP TO 16 CHANNELS



MAINTENANCE-FREE,  
EASY TO USE

# 6300 AE SENSORS

The 6300-series sensors incorporate the latest Optics11 advances in transducer design. They are the first all-optical AE product on the market, and capable of matching the performance of state-of-the-art piezoelectric sensors.

The completely-passive design allows the 6300-series sensors to withstand the harshest measurement conditions spacing from extreme temperatures, high voltages, radiations, to explosive hazardous areas.

6300-series sensors can be installed kilometers apart from the interrogator without any pre-amplifier. The optical signal is completely immune to EMI, providing crystal-clear signals even in the noisiest environments.

This unique set of features is packed in a small lightweight rugged housing, making the 6300 series the best choice for your challenging installations.

COMPLETELY  
PASSIVE

MEASURE IN  
THE HARSH  
CONDITIONS

NO  
PRE-AMP  
NEEDED

## Versions

Standard		-40 to 80 °C
High temperature	(beta)	-40 to 250 °C
Cryogenic	(beta)	-196 to 40 °C
Radiation hardened	(beta)	
ATEX	(beta)	

## Specifications

Sensitivity	-20 dB re nm/ $\mu$ bar
Frequency range	20 to 400 kHz
Resonance frequency	220 kHz
Housing material	Anodized aluminium
IP rating	IP 68
Dimensions	17.5 x 22 x 22 mm
Weight	16 gr



1 MS/s  
16 channels

# INTERROGATOR

The OptimAE interrogator brings acoustic emission measurements to a whole new level.

The 1 MS/s sampling frequency allows to capture the most prominent AE features getting the best out of the new 6300-series sensors. Demodulation of the optical signals is taken care by an embedded computing unit which frees your PC from most of the workload.

Due to its modular design the unit can be easily configured and expanded from 2 to 16 channels to meet the measurement needs of all users.

## Specifications

Sampling rate	1 MS/s
Signal resolution	32 bit
Multiplexing capability	16 sensors
Signal acquisition	true simultaneous
Versions	2, 4, 8, 12, 16 channels
Dimensions	19" rack, 6U
Weight	18 kg
Operating conditions	-5 to 50 °C
Accessories	Ruggedized case Tabletop housing



# SOFTWARE

The OptimAE software has been designed to get the best out of your OptimAE system. It integrates all the features an AE user could desire in an intuitive and user-friendly environment.

To meet the needs of advanced users, OptimAE file format is open. You can import the acquired data to your favourite environment to use custom detection and analysis algorithms.

## AE module

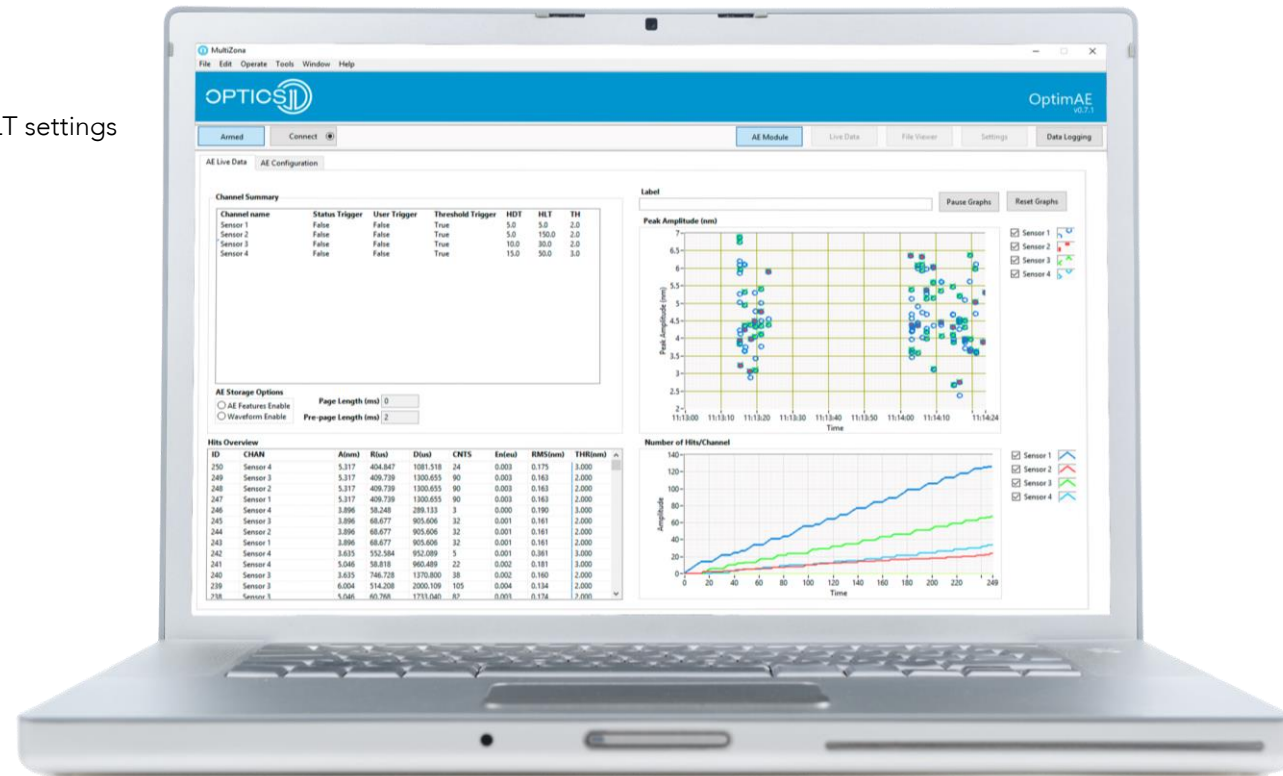
- Threshold-based event detection
- Duration-adapted waveform acquisition
- AE features extraction
- Independent channel threshold, HDT, HLT settings
- Status data acquisition
- Channel activity live chart
- Amplitude-time correlation live chart

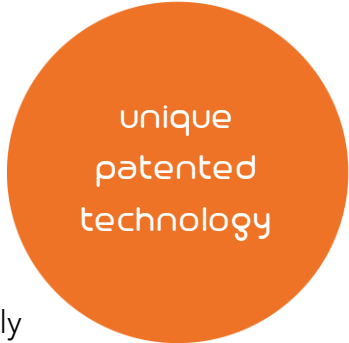
## Live data

- Live sensors signal visualization
- Live signal spectral analysis
- Continuous signal acquisition

## File viewer

- Acquired data time-domain visualization
- Acquired data spectral analysis



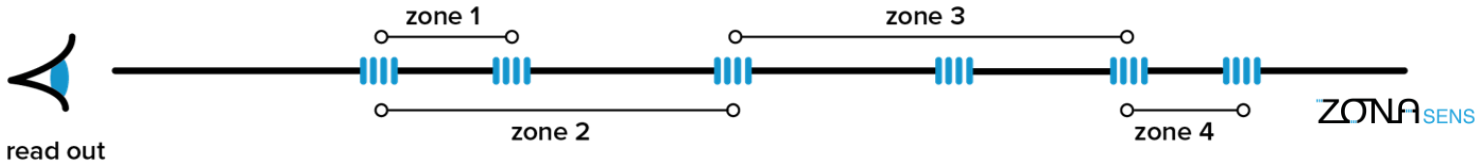


# TECHNOLOGY

Acoustic emission measurements are best performed with optical fiber technology, since it is highly sensitive and can measure with extremely low noise in exceptionally harsh environments. The underlying technology of the OptimAE system and the 6300-series sensors is the ZonaSens technology.

This patented interferometric principle measures between two reflective parts in a fiber (FBGs), therefore makes that part of the fiber extremely sensitive to strain. Minute changes to the fiber caused by acoustic waves will be detected.

Besides the optical advantages – such as the possibility to have kilometers of fiber between the readout and sensors, adding sensors without compromising measuring speed and the resistance to EMI – our sensors are fully passive. Just a small mandrel wrapped with optical fiber, with no electric signals involved. Simple and elegant.





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