

DATASHEET

# 6300 SERIES AE SENSORS





## Applications

Optics11 AE sensors have a wide range of applications, including:

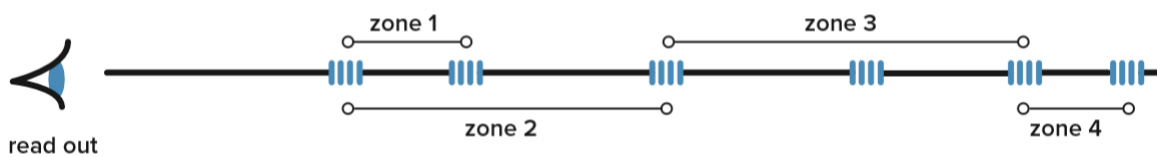
- Structural Health Monitoring
- Non-destructive testing
- Leakage detection
- Partial discharge detection
- Explosive endangered areas
- Radioactive areas
- High EMI or RFI areas
- R&D

## Description

All-optical fiber-based acoustic emission sensors are the ideal solution for applications in challenging environments where high performances are required.

Optical fiber sensors have proven to be of value in many industrial applications. This is mainly due to their intrinsic benefits such as ability to provide reliable data in strong EMI fields, extreme temperatures and remote operation without requirement of additional electronic equipment at the sensing location.

Optics11 acoustic emission sensors are designed to deliver long time reliable measurements up to 500 KHz. The innovative in-fiber interferometry approach makes Optics11 sensors the only all-optical solution that equals the SNR of classic electric AE sensors. Connecting several sensors in a network is possible by using our unique patented readout technology (ZonaSens).



These sensors are compatible with the ZonaSens technology

## Main characteristics

- *All-optical fiber based sensor*  
Inherent immunity to all electromagnetic effects (EMI, RFI, sparks, etc.), intrinsic safety, and operable in liquids and extreme temperatures.
- *High multiplexing capability*  
Connection of a large number of sensors to a single interrogator, reducing network and installation complexity.
- *Small dimensions and low weight*  
The sensors are packaged in small robust metal housing with low weight minimizing the impact on the structure.
- *Remote sensing*  
Up to 10s of kilometers between sensors and/or interrogator.

## 6300 Series A€ sensors

Performance <sup>1</sup>	
Dynamic range at 1 kHz	160 dB
Dynamic range at 300 kHz	80 dB
Sensitivity	-20 dB re nm/ $\mu$ bar
Equivalent sensitivity	-45 dB re V/ $\mu$ bar
Frequency range	1 kHz to 500 kHz
Resonance frequency	200 kHz
Spectral noise density <sup>2</sup>	150 f $\epsilon$ / $\sqrt$ Hz
Broadband noise floor <sup>2</sup>	105 p $\epsilon$
Acquisition frequency	Up to 1 MHz
MTBF	> 120 000 hours
Environmental	
Storage temperature	-40 to 80 °C
Operating temperature	-40 to 80 °C (ST version) -40 to 200 °C (HT version)
IP rating	IP68
Physical	
Dimensions	17.5 x 22 x 22 mm
Weight	16 gr
Housing material	Aluminum (Al6061) anodized
Mounting method	Magnetic clamp / Rubber clamp / Adhesive
Fiber type	SM1500 (6.4/80) PE
Sensitive fiber length	3.6 m
Standard cable length	1 $\pm$ 0.1 m
Cable jacket	PVC, 3 mm OD
Cable bend radius	$\geq$ 5 mm
Connector	FC/APC
Optical	
Visibility	90%
Operation wavelength	C Band

<sup>1</sup> Custom sensors available upon request.

<sup>2</sup> Based on ZonaSens interrogator noise floor.

## Mechanical drawing

Aluminum (Al6061) anodized / 16 grams / IP68

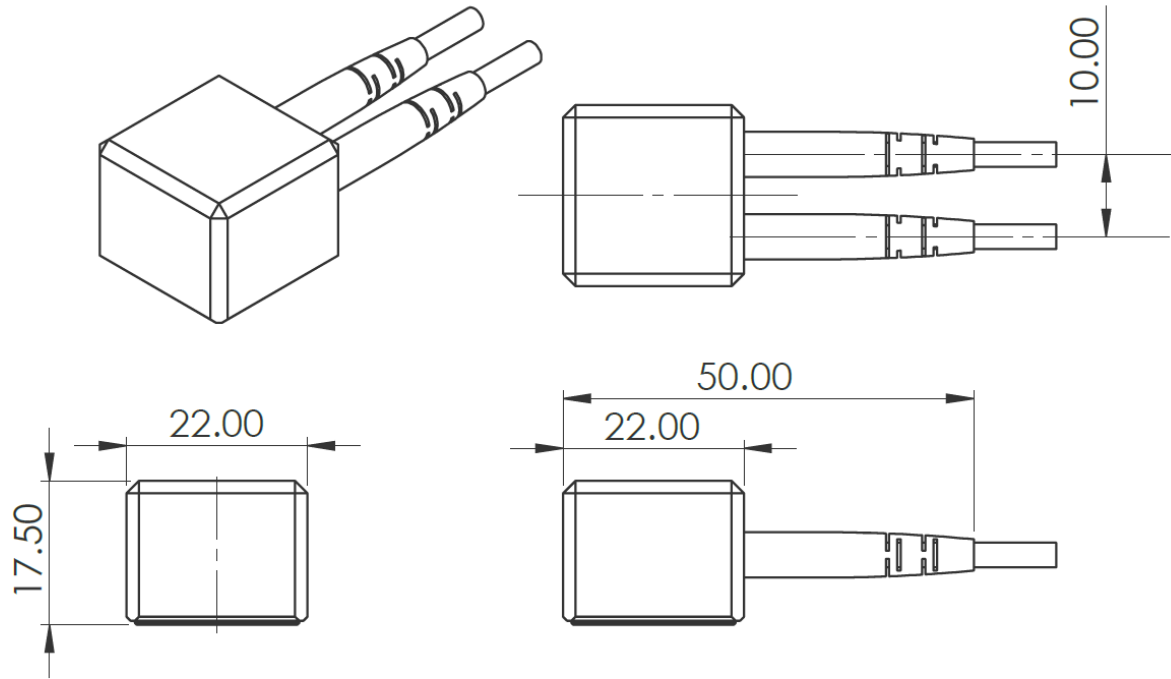


Figure 1: Sensor housing drawing, dimension in mm.

## Ordering information

### P/N 6300-1F-TLL

F	Sensor execution	S	Default
		A	ATEX (beta)
		N	Nuclear (beta)
T	Operating temperature	S	-40 to 80 °C
		H	-40 to 250 °C
		L	-196 to 40 °C (beta)
LL	Cable length	ST	1 ± 0.1 m
		02	2 ± 0.1 m
		03	3 ± 0.1 m
		...	...

*Note: cable lengths are available from 2 to 15 meters.*

#### Ordering examples

6300-1A-H05

- ATEX execution
- Standard temperature
- 5 m cable length

6300-1S-SST

- Default execution
- Standard temperature
- 1 m cable length

\* Please contact us for more information about ordering options.

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