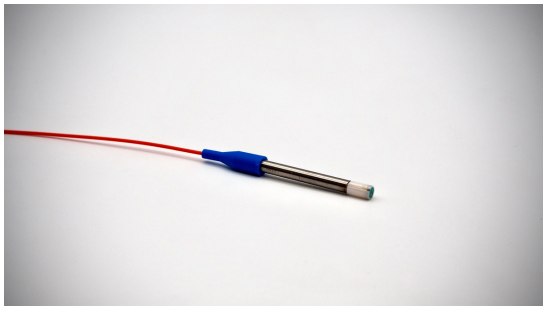
Fiber optic dynamic pressure sensors Alpheus100

High Frequency Version



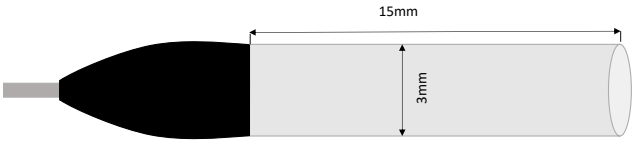
DESCRIPTION

This sensor has been designed to be used in harsh environment with high sensitivity and high frequency. This sensor is fully calibrated for sensitivity and frequency bandwidth

Thanks to its small size, it makes possible the study of acoustic waves at high frequency in pipes

Typical applications:

- Turbine analysis (Compressor stall analysis)
- Non-destructive testing
- High voltage measurements (Overhead line, electrical transformer)
- Arc or HF welding process
- Measurements in ATEX environments



Acoustic

Transducer type	Silicon membrane
Operational Mode	Differential (front-vented)
Natural frequency	>100kHz
Frequency range	100Hz-100kHz
Dynamic maximum pressure	0.5 Bar (10^5 Pa) (≈190dB SPL)
Static maximum pressure	Not limited. May change frequency response
Self-noise	50dB SPL (BW: 1Hz, over full bandwidth). 40dB SPL with low noise conditioning unit
Damage threshold	>1 Bar (≈200dB SPL)
Sensitivity	0.3mV/Pa (10V/Bar)
Polar pattern	Omnidirectional
Sound field optimization	Pressure-field
Calibration	Calibrated at factory. Adapter available

General

Pressure Media	Any gas
Rated Optical Excitation	150 µW @1310nm
Fiber type	Multimode 50/125 OM2
Sensor head dimensions	3.2 mm (2.5mm possible) x 10 mm
Sensor head weight	0.5 gram
Fiber cable length	Standard 2 meters.

Environmental

Operating Temperature Range	-40° C to 350° C
Peak short-term	420° C
Temperature influence	<1% of response sensitivity
Environmental humidity	100% RH
EMI/RFI	Full immunity. No influence

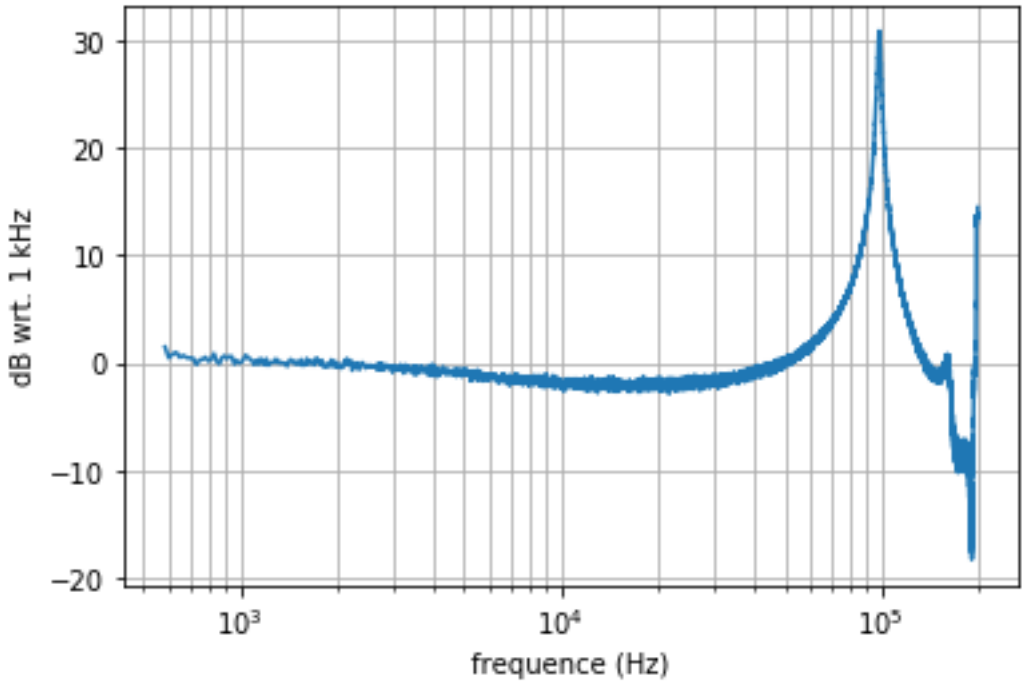


Figure 1- Frequency response measured thanks to electrostatic actuator method

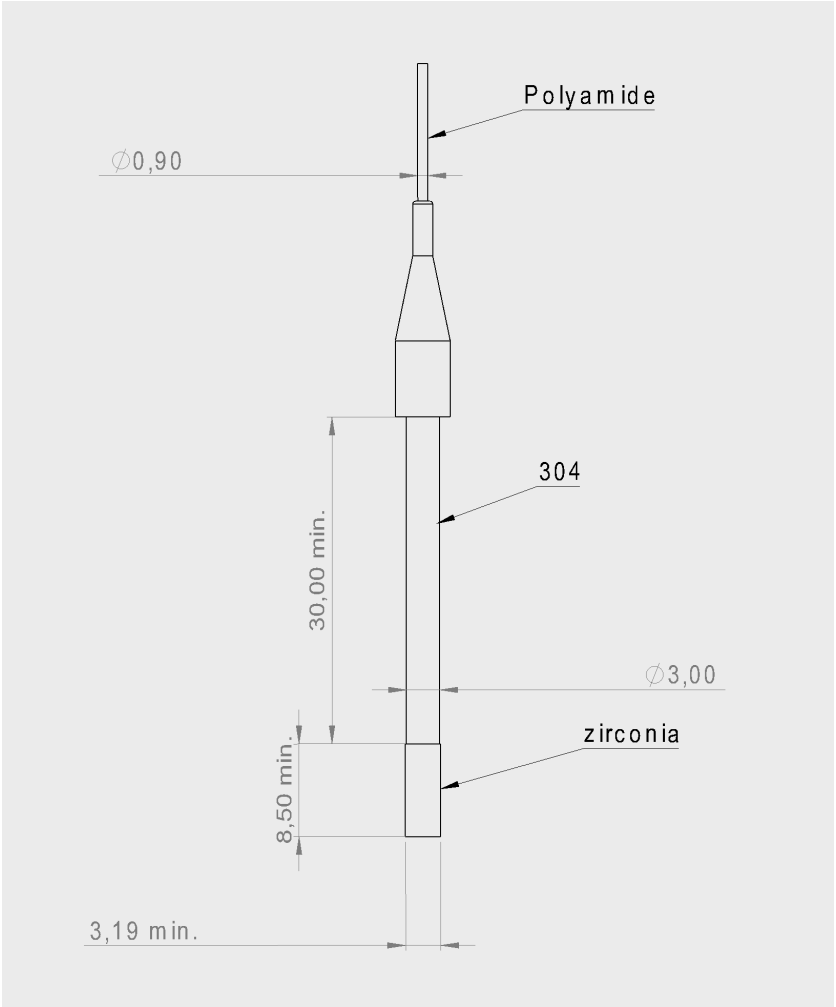


Figure 2 - Mechanical drawing