SENTEK INSTRUMENT

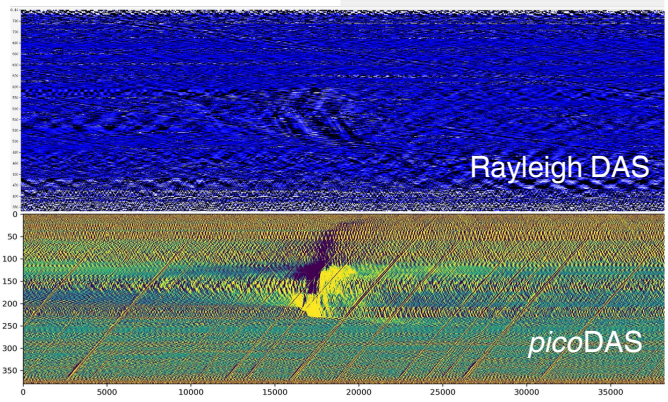
Advanced Optical Sensing

High Performance Fiber Optic Distributed Acoustic Sensing System (DAS)

*pico*DAS is a fiber optic distributed acoustic sensing system (DAS), designed for applications where sensitivity is of paramount importance. The following key features make this product a unique tool to produce unmatched acoustic data quality:

Key Features

- Exceptionally high sensitivity
- Excellent channel-to-channel sensitivity uniformity
- No sensitivity deterioration caused by distance
- Zero cross-sensitivity between neighboring channels



*pico*DAS completely overcomes the fundamental limitations of traditional DAS by innovations in fiber fabrication, interrogator design and signal processing. This product offers unprecedented sensitivity that does not decline with increasing fiber distance and does not exhibit any cross-sensitivity between neighboring sensing channels.

*pico*DAS™



Unlike common DAS systems that use Rayleigh scatter to generate signals in an optical fiber "transducer," Sentek's *pico*DAS uses patented, ultra-high sensitivity fiber, creating the industry's most sensitive and highest performance DAS.

Ideal For Challenging Applications

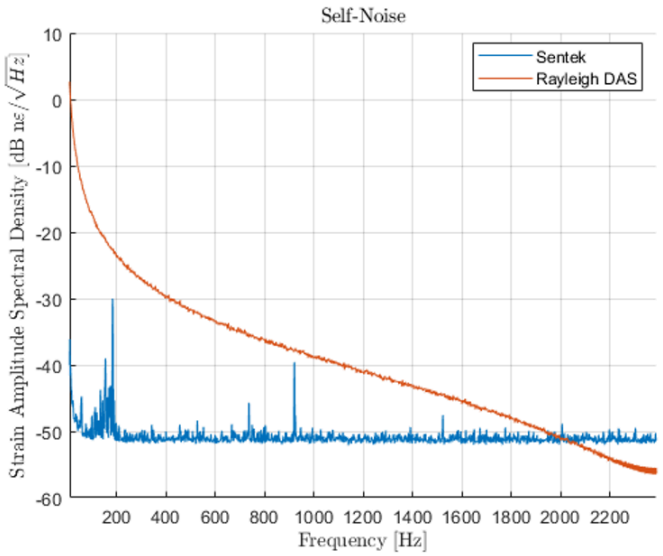
- Oil and Gas
  - Borehole seismic and well integrity monitoring, production and injection monitoring, fracture performance monitoring
- Geotechnical
  - Geothermal modeling, embankment dam monitoring
- Security
  - Intrusion detection, border security monitoring, strategic asset protection
- Natural Environments
  - Hydrology, seismology, near-surface geophysics
- Carbon Capture
  - CO_2 storage monitoring
- Mining
  - Tailings dams, microseismic, process flow and rock-mass monitoring

*pico*DAS

Self Noise

Here we have a comparison of system noise floor, or “self noise” for *pico*DAS and a common rayleigh DAS system. Self noise determines the smallest vibration or strain that the DAS can detect. Lower self-noise → higher sensitivity → the system can detect weaker seismic or acoustic events.

Note the drastically improved performance of *pico*DAS, especially at lower frequencies, which represent the most challenging measurements crucial for seismic monitoring, reservoir monitoring, geohazard detection, train and rail infrastructure monitoring, perimeter monitoring and detection.



*pico*DAS has superior performance vs. traditional DAS for low frequency signals (e.g., microseisms, small leaks, subtle structural vibrations).

Technical Specifications

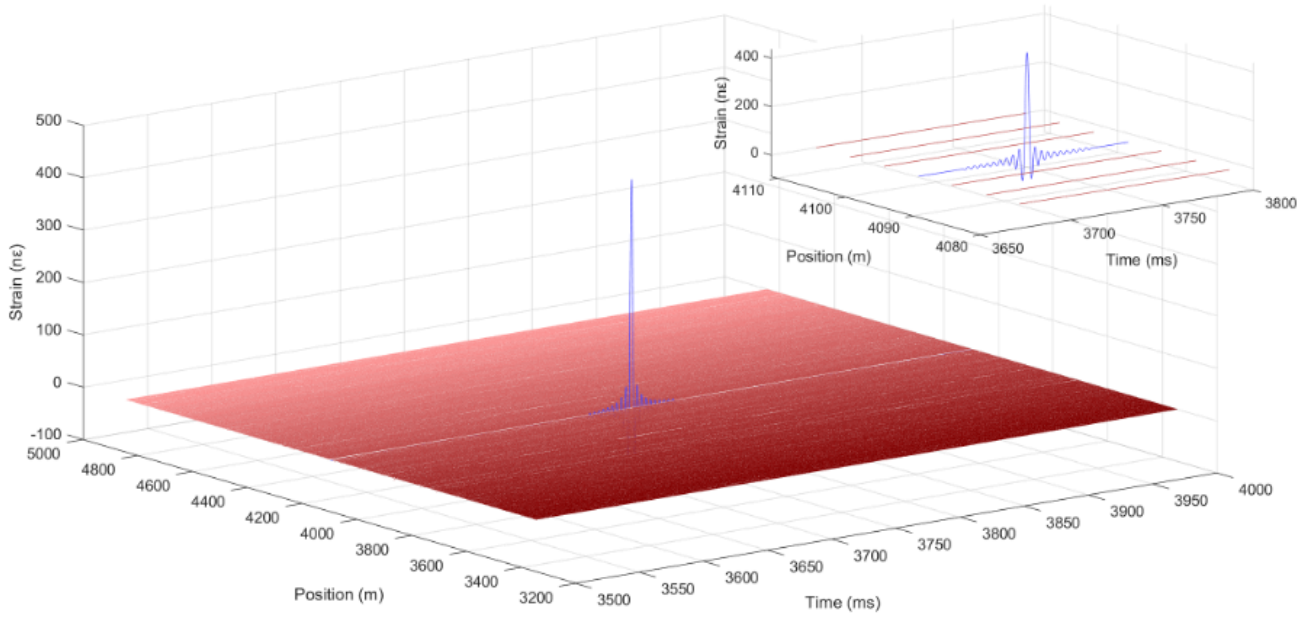
Model	*pico*DAS
Spatial Resolution[1]	2m or 5m
Maximum Sensing Range	10km
Sampling Rate	6-125kHz
RMS Sensitivity	< 0.15nϵ typical, <0.5nϵ max
Self Noise at 1kHz	<2pϵ√Hz median
Sensitivity Disparity	<20%
Interrogator Dimensions and Weight	15 x 45 x 44cm, 7.5kg
Computer Interface	Ethernet
Power	240/110V, 50/60Hz
Power Consumption	35W Max
Operating Temperature	0 to 45°C
Humidity	5-95%
Fiber Connector	E-2000/APC

[1] Custom resolution options available.

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*pico*DAS



No Cross Talk

This measurement highlights the power of *pico*DAS to deliver both long-range sensing and highly uniform acoustic performance. Using a 5km sensing fiber with 5m spatial resolution, the system generated 1,000 discrete sensor outputs. The red “carpet” plot shows 360 representative channels with remarkably consistent noise floors, all maintained within ±20% of the mean.

A 4.95m fiber segment positioned 4.2km from the interrogator was then wrapped around a piezoelectric cylinder and excited with an impulse strain signal. The resulting response, shown in blue, confirms picoDAS’s ability to capture high-frequency events with excellent fidelity while maintaining strong spatial isolation and **no measurable cross-talk from adjacent sensing segments**.

*pico*DAS has been deployed in multiple wells for microseismic event detection. The graph on the right shows a representative microseismic event captured with high signal quality using fiber deployed in a water-filled borehole. This result is especially significant because the acoustic signal was already strongly attenuated by the well casing before reaching the fiber. The clarity of the data demonstrates *pico*DAS’s suitability for demanding downhole acoustic measurements, including weak events that may be undetectable by conventional DAS systems.

