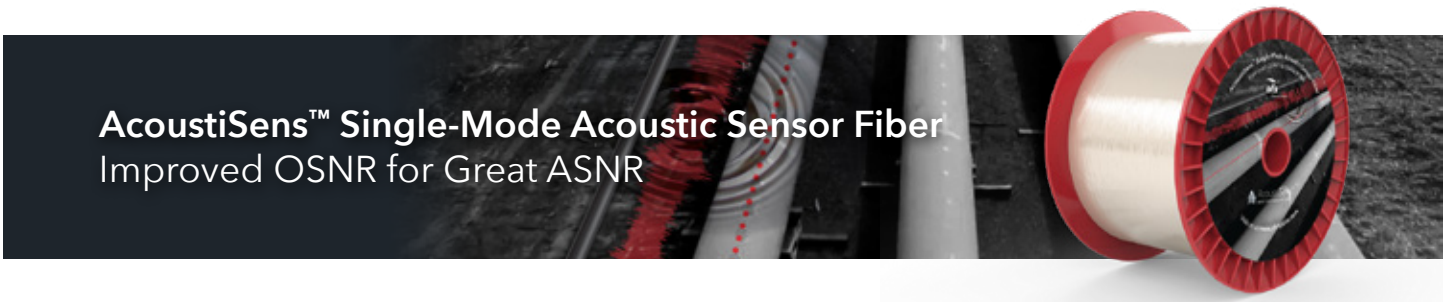
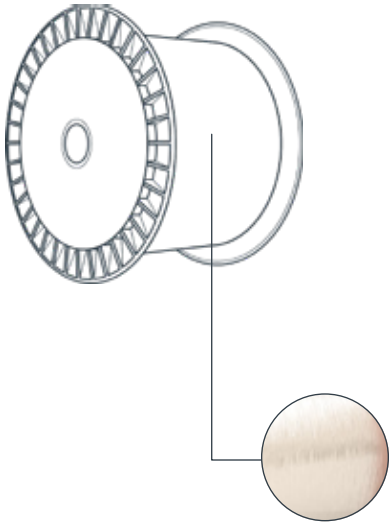
ofs
A Furukawa Company

LineaSens®
DISTRIBUTED SENSING TECHNOLOGIES FROM OFS

AcoustiSens™ Single-Mode Acoustic Sensor Fiber
Improved OSNR for Great ASNR



AcoustiSens™
PART OF THE OFS LINEASENS® FAMILY



AcoustiSens Optical Sensor Fiber	
Specifications	
Enhancement (over naturally occurring Rayleigh backscatter in G.652.D fiber)	10-15 dB
Base Fiber Type	G.652.D
Fiber Attenuation **@ 1310 nm** **@ 1550 nm**	 <0.7 dB/km <0.7 dB/km
Glass Outer Diameter	125 µm
Coating Outer Diameter	200 µm
Operating Temperature	-40 to +85 °C
Min. Bend Radius **Long Term** **Short Term**	 17 mm 10 mm
Proof Test	≥ 100 kpsi

Overview

AcoustiSens Single-Mode Optical Fiber, part of the LineaSens family, is an enabling component engineered to enhance and improve Distributed Acoustic Sensing (DAS) cables. With an optical waveguide based on the ITU-T G.652.D telecom-grade single-mode standard, AcoustiSens fibers are engineered to significantly improve Optical Signal to Noise Ratio (OSNR) by increasing Rayleigh backscatter while maintaining low attenuation. This groundbreaking technology, when coupled via sensing cables to commercially available DAS systems, enables dramatic improvements in Acoustic Signal to Noise Ratio (ASNR). Furthermore, AcoustiSens fibers are splice compatible with G.652.D optical fibers, assuring smooth integration with commonly deployed sensing solutions.

Product Description

Next generation Distributed Acoustic Sensing (DAS) solutions rely on greatly improved ASNR. AcoustiSens optical fiber technology is engineered to boost sensing signals (Rayleigh backscatter) while minimizing the noise (attenuation) associated with standard and specially doped single-mode alternatives. The result is OSNR orders of magnitude better than other solutions. Engineered to give OSNR improvements without sacrificing fiber splice or connector attenuation, OFS AcoustiSens is a drop-in fiber replacement that provides improved sensing performance without the need for changes in interrogation equipment or complex optical amplification schemes. This translates into significantly improved acoustic sensing performance in DAS systems.

End-Use Examples

OFS AcoustiSens optical fibers are intended for use as components in optical and hybrid cables designed for vibration or acoustic sensing applications such as:

- Pipeline monitoring (midstream)
- In-well monitoring (upstream - low temperature wells)
- Rail monitoring
- Perimeter monitoring
- Subsea monitoring
- Highway monitoring
- Smart City applications

Patented and Patents Pending

AcoustiSens™ Optical Sensor Fiber
Improved OSNR for Great ASNR

As critical components within acoustic and vibration sensing cables for DAS, AcoustiSens fibers improve sensitivity by increasing Rayleigh backscatter while adding little attenuation, effectively boosting the ASNR of the sensing system.

With these advances, cables enabled by AcoustiSens provide:

Features	Benefits
Increased Rayleigh backscatter in 1530 to 1565 nm window	Fiber has greater sensitivity to environmental vibration (acoustics)
Little added attenuation over commercially available G.652.D optical fibers	Increased sensitivity with little added noise dramatically improves Signal to Noise Ratio (SNR) enabling improvements Distributed Acoustic Sensing (DAS) Systems
Simplified coupling	Splice-compatible with telecom grade G.652.D optical fibers
Dramatically improved OSNR for detection of vibration/ acoustics	Enables design of sensing cables for increased offset from assets being monitored: oil and gas pipelines, railroads, perimeters
	Detection of weaker acoustic/vibration events as compared to standard G.652.D fibers
	Improves effectiveness of DAS systems allowing extension of traditional sensing range

AcoustiSens Ordering Information

Part Number	Nominal Interrogator Wavelength Band (nm)	Optically Compatible with
GS80935	1540 ± 6	G.652.D
GS84362	1546 ± 6	G.652.D
GS82628	1550 ± 6	G.652.D

NOTE: Custom AcoustiSens designs are also possible. Please consult OFS with inquiries and for design guidance. Contact information shown below.

For additional information please contact Paul Toller at 860-678-6636.

You can also visit our website at **www.ofsoptics.com** or call 1-888-fiberhelp (1-888-342-3743) USA or 1-770-798-5555 outside the USA.

OFS Marketing Communications
Date: 02/19