



The Luna ODiSI-B delivers high speed, fully distributed strain and temperature measurements with millimeter spatial resolution.

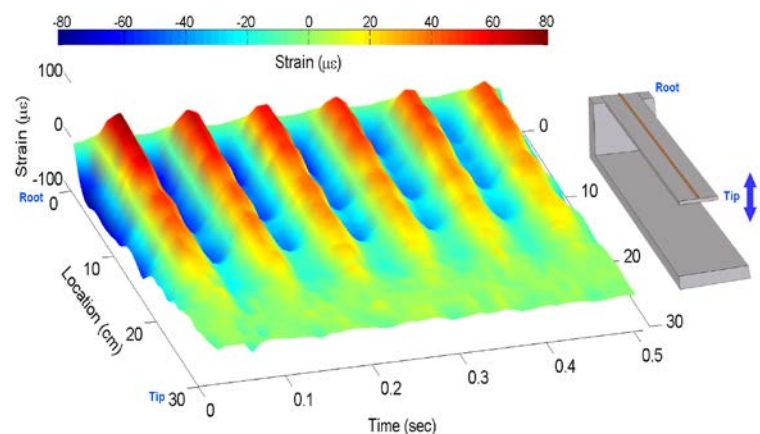
KEY FEATURES AND PRODUCT HIGHLIGHTS

- Industry-leading combination of measurement speed, range and repeatability with extraordinary spatial resolution
 - 23.8-250 Hz acquisition over entire fiber
 - Up to 30 Hz active display over 1 meter
 - Up to 20 meter sensing range
 - Measurement ranges of $\pm 10,000 \mu\text{Strain}$, -268 to $900 \text{ }^\circ\text{C}$
 - Repeatability of $\pm 5 \mu\text{Strain}$, $\pm 0.4 \text{ }^\circ\text{C}$
 - As small as 1.28 mm spatial resolution
- Inexpensive optical fiber sensors
- Thousands of sensing locations using a single optical fiber
- Interrogation of entire fiber and all sensing locations with a single scan
- Characterization of both temperature and strain at different points along a single fiber sensor

The Luna **ODiSI-B** saves time and cost, while adding new capability to sensing measurements with its unprecedented combination of high density sensing and dynamic acquisition over an optical fiber sensor. The ODiSI-B interrogates hundreds of sensing locations per meter on a single optical fiber simultaneously at a rate of up to 250 Hz. Reduce cost and better characterize your system by instrumenting many sensing locations with an unaltered, inexpensive optical fiber. With up to 20 meters maximum sensing length and down to 1.28 mm spatial resolution, the ODiSI-B is the paramount tool for your strain and temperature sensing applications.

APPLICATIONS

- Load, fatigue, and mechanical testing
- Composite manufacturing, engineering, and design verification
- Embedded sensing
- Model and simulation validation
- Thermal profile measurement
- Structural Health Monitoring



The ODiSI-B recording the time response of the strain of a cantilever beam oscillating at its natural frequency. An optical fiber was bonded to the top surface. The system acquired distributed strain at 100 Hz with 2.56 mm sensor spacing.

PARAMETER	SPECIFICATION				UNITS
Performance					
Standoff	50				meters
Wavelength Accuracy ^{1,2}	1.5				pm
Strain Range ³	± 10,000				µStrain
Temperature Range ^{4,5}	-268 to 900				°C
Mode of Operation⁶	Standard	High-Speed	High-Resolution	Extended Length	
Maximum Sensing Length	10	2	10	20	meters
Acquisition Rate	100	250	23.8	50	Hz
Sensor Spacing	2.56	2.56	0.64	2.56	mm
Gage Length	5.12	5.12	1.28	5.12	mm
Strain Repeatability (Single-scan)	± 5	± 5	± 20	± 10	µStrain
Temperature Repeatability (Single-scan)	± 0.4	± 0.4	± 1.6	± 0.8	°C
Electrical Trigger					
Acquisition	TTL compatible				
Event	TTL compatible				
Physical					
Dimensions	14.42 x 13.60 x 6.55				in
Weight	17.1				lb
Power Consumption	50				W

- 1 Calibration is performed internally using a NIST-traceable HCN gas cell.
- 2 Temperature and strain accuracies from spectral shift of Rayleigh scatter are 0.15 °C and 1.25 µStrain, calculated using the default conversion coefficients 1 GHz = 0.8 °C = 6.58 µStrain [Othonos and K Kalli, Fiber Bragg Gratings (Artech House, Boston, 1999)].
- 3 Based on an effective spectral range of +/-12000 pm.
- 4 Based on realistic physical limitations of typical optical fiber as observed by Luna. Actual performance range will depend on sensor type, coating, and bonding adhesive used in application.
- 5 Luna's standard temperature sensors are polyimide coated, low bend loss fiber and operate in a temperature range of -50 to 200 °C. Please contact Luna for information regarding non-standard sensors.
- 6 Base configuration includes one mode of operation. Additional modes are upgrade options.

CLASS 1 LASER PRODUCT