Surface Mount Strain Sensor | os3510

Description

The os3510 Surface Mount Strain Sensor measures average strain over the length of the gage while providing integrated temperature compensation.

The os3510 is based on fiber Bragg grating (FBG) technology. The os3510 is intended exclusively for surface mounting. Each end of the os3510 is attached to the structure via rigid brackets that are either welded, bolted, epoxied, or grouted to the surface of a concrete, rock, steel, composite, or other structure.

A rugged, stainless steel body, ruggedized cables and optional connector protection fittings make the os3510 suitable for harsh environments. Two FBGs are well protected inside the os3510 body. One FBG measures strain, and the other provides for integrated temperature compensation. Since there are no epoxies holding the fiber to the carrier, long-term stability is ensured by design.

In side-by-side comparisons with vibrating-wire and foil strain gages, the os3510 is equally sensitive and accurate, while providing 100 times more fatigue life. The os3510 strain gage is qualified for use in harsh environments and delivers the many advantages inherent to all FBG based sensors.

This sensor can be used alone or in series as part of an FBG sensor array. Installation and cabling for such arrays is much less expensive and less cumbersome than comparable electronic gage networks.

> All the advantages of an **optical sensor** in a **conventional**, vibrating-wire type **package**

Key Features

Temperature compensation sensor integrated inside. Measurement of relative temperature for compensation of strain measurements.

Qualified to same rigorous standards applied to comparable electronic gages. Connector protection fittings available for **harsh environments.**

Fast, Simple, repeatable installation

Ruggedized sensor package.

Double ended design supports multiplexing of many sensors on one fiber

Micron Optics' **patented micro opto-mechanical** technology.

Deployments

Structures (bridges, dams, tunnels, mines, buildings, oil platforms)
Energy (wind turbines, oil wells, pipelines, nuclear reactors, generators)
Transportation (railways, trains, roadways, specialty vehicles, cranes)
Marine vessels (hull, deck, cargo containers)
Aerospace (airframes, composite structures, wind tunnels, static and dynamic tests)

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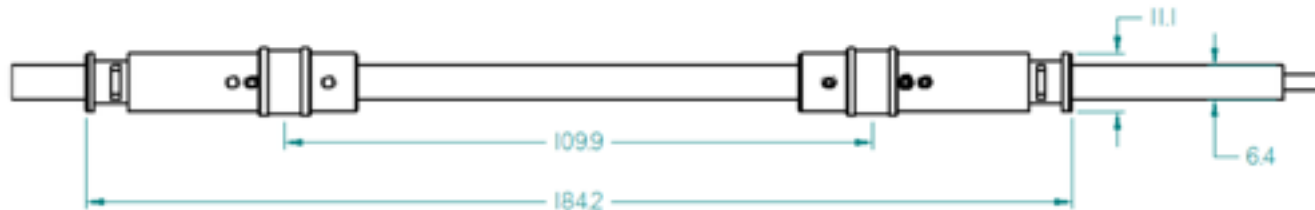
Performance Properties	os3510
Strain; Temperature Sensitivity [1]	~1.2 pm/ue; 22 pm/C
Temperature Compensation	Integrated into each package
Gage Length	110 mm
Operating Temperature Range	-40 to 80 C
Strain Limits	+/- 2,500 ue
Water Resistant	Suitable for wet, high humidity environments (IP67)
Fatigue Life	> 1x10^8 cycles @ +/- 2,000 ue
Physical Properties	
Dimension; Weight	See diagram below; 98 g
Material	Stainless Steel construction
Cable type / length	6 mm/1 m (+/- 10 cm), each end
Cable Bend Radius	≥40 mm
Anchoring Methods [2]	Bolt-on, grout-in brackets available
Optical Properties	
Peak Reflectivity (Rmax)	> 70%
FWHM (-3 dB point)	0.25 nm (+/- .05 nm)
Isolation	> 15 dB (@ +/- 0.4 nm around center wavelength)

Ordering Information

os3510-ggg-tttt/ssss-1xx-1yy

tttt/ssss	Strain/Temp Wavelengths (+/- 1nm) Standard - 1462/1466, 1472/1476 1482/1486, 1492/1496, 1502/1506, 1512/1516, 1522/1526, 1532/1536, 1542/1546, 1552/1556, 1562/1566, 1572/1576, 1582/1588, 1592/1596, 1602/1606, 1612/1616

xx		Termination type
	1xx	Cable 1, Length & Connector
	1	1 m Standard, Cable Length
	UT	Unterminated
	FC	FC/APC Connector
yy		Termination type
	1yy	Cable 2, Length & Connector
	1	1 m Standard, Cable Length
	UT	Unterminated
	FC	FC/APC Connector

Ordering Information Example

o3510-1512/1516-1FC-1FC

Accessories

PF	Universal IP67 Connector Protection Fitting
os3510_bob	Bolt-on Bracket
os3510_gib	Grout-in bracket

Notes

1 Actual gage factor provided with gage, 22pm/C on steel.

2 See http://www.micronoptics.com/products/sensing-solutions/support/ for installation details.