Embeddable Strain Sensor | os3600

Description

The os3600 Embeddable Strain Sensor measures average strain over the length of the gage while providing integrated temperature compensation.

The os3600 is based on fiber Bragg grating (FBG) technology and is available two gage lengths of 25 or 100 cm. It is intended exclusively for embedding in concrete structures. Disk ends form a solid bond to surrounding concrete or grout.

A rugged, Teflon and steel-shielded body, armored cables, and optional connector protection fittings make the os3600 suitable for harsh environments. Two FBGs are well protected inside the os3600 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 os3600 is equally sensitive and accurate, while providing 100 times more fatigue life. The os3600 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 a part of an FBG sensor array. Installation and cabling for such arrays is much less expensive and less cumbersome than comparable electronic gage networks.

Key Features

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

Two standard gage lengths of 25 and 100 cm

Fast, simple, repeatable installation

Qualified to same rigorous standards used for comparable electronic gages.

**Double ended design** supports multiplexing of many sensors on one fiber

Cable integrated with sensor package for fiber protection and strain relief

Connector protection fittings available for harsh environment

Micron Optics' patented micro opto-mechanical technology.

Included in ENLIGHT's sensor templates - allows for quick and easy optical to mechanical conversions.

IP67 rated for protection from dust and water ingress
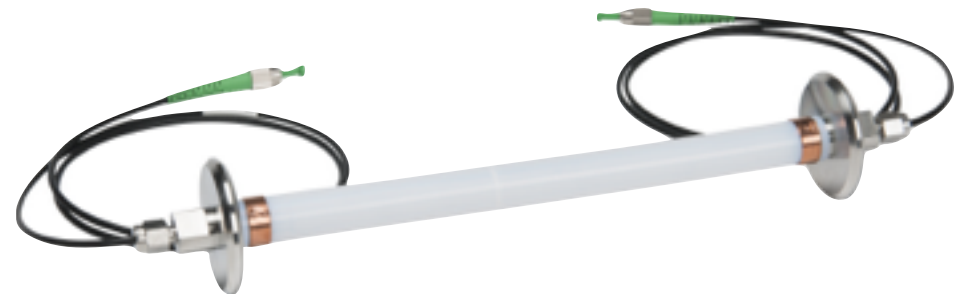
Deployments

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).

Homeland security (perimeter intrusion, heat detection, security gate monitoring)

MICRON OPTICS

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| Performance Properties	os3600
Strain; Temperature Sensitivity	1. pm/με 23. pm/°
Temperature Compensation	Integrated into each gage
Gage Length	25 or 100 cm
Operating Temperature Range	-40 to 80° C
Strain Limits	± 2,500 με
Water Resistance	Suitable for wet, high humidity environments (IP67)
Fatigue Life	>1x 10^8 cycles @ ± 2,000 με
Physical Properties	
Dimensions; Weight	See diagram below; 416 g (25 cm, disk); 740 g (100 cm, disk)
Material	Stainless steel/ teflon construction
Cable Length	1 m (± 10 cm), each end
Cable Type	3 mm armored cable
Cable Bend Radius	≥ 17 mm
Anchoring Methods[2]	Embeddable only
Optical Properties	
Peak Reflectivity (Rmax)	> 70%
FWHM (- 3 dB point)	0.25 nm (± .05 nm)
Isolation	> 15 dB (@ ± 0.4 nm around center wavelength)
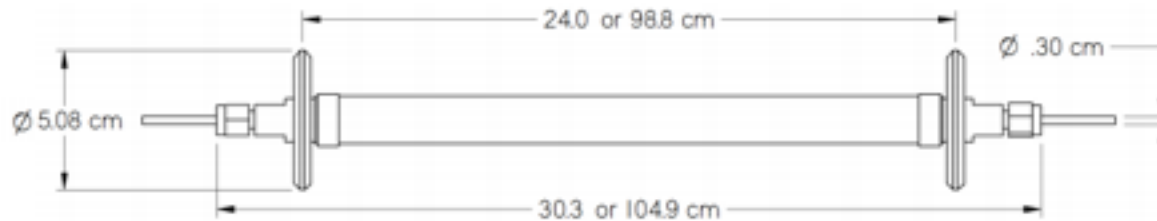
Ordering Information

os3600-ggg-tttt/ssss-1xx-1yy

ggg	Gage Length
	025 25 cm
	100 100 cm

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, 1582/1586, 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

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

Ordering Information Example

o3600-025-1512/1516-1FC-1FC

Notes

1   Actual gage factor provided with gage.

2   See http://www.micronoptics.com/support_downloads/Sensors/Sensors/ for installation details.