

os3510

Surface Mount Strain Sensor

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, longterm 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.



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

Applications

Structures (bridges, dams, tunnels, mines, buildings, oil platforms)

Energy (wind turbines, oil wells, pipelines, nuclear reactors, generators)

Transportation (railways, trains, roadways, specialty vehicles, cranes)

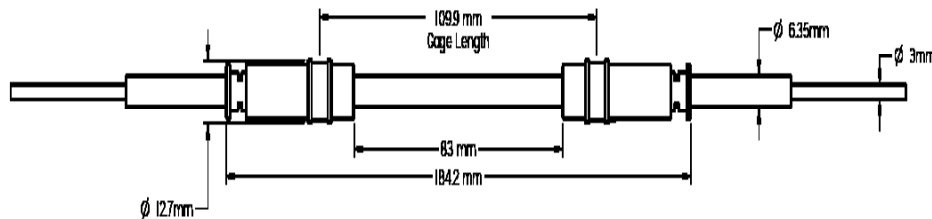
Marine vessels (hull, deck, cargo containers)

Aerospace (airframes, composite structures, wind tunnels, static and dynamic tests)

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

Properties

| Performance Properties | os3510 |
|--|--|
| Strain; Temperature Sensitivity ¹ | ~ 1.2 pm/με; 22pm/C |
| Temperature Compensation | Integrated into each package |
| Gage Length | 110mm |
| Operating Temperature Range | -40 to 80° C |
| Strain Limits | ± 2500 ue |
| Water Reistant | Suitable for wet, high humidity environments |
| Fatigue Life | >1x10 ⁸ cycles @ +/- 2,000 ue |
| Physical Properties | |
| Dimensions (mm) | See Diagram Below |
| Weight | 98 g |
| Carrier Material | Stainless Steel/Polyolefin construction |
| Cable type / length | 6 mm/1 mm ruggedized cable/1 m (+/- 10 cm), each end |
| Cable Bend Radius | ≥40 mm |
| Fastening Methods ² | Embeddable |
| 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

os3510-1512/1516-1FC-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.



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Specifications subject to change without notice.