

Non-Metallic Optical Strain Gage | os3200

Description

The os3200 is a small, non-metallic optical, epoxy-mounted strain gage based on fiber Bragg grating (FBG) technology.

The os3200 is based on fiber Bragg grating (FBG) technology. It has a self adhesive backing that holds the sensor body in place and protects the FBG while epoxy is injected. The epoxy encapsulates the FBG and bonds it to a structure's surface. Installation time is just a few minutes. Measurements can be taken after the epoxy cures in 24 hours at room temperature.

In side by side comparisons with foil strain gages, the os3200 is equally sensitive and accurate, while providing for greater strain range and 100 times more fatigue life. The os3200 strain gage is qualified for use in mild 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 cumbersome than comparable electronic gage networks.

Multiple optical strain gages can be arranged in close proximity at 0, 45 and 90 degrees for strain rosette measurements. With each sensor, Micron Optics provides a Sensor Information Sheet listing the gage factor and calibration coefficients needed to convert wavelength information into engineering units. Micron Optics' ENLIGHT Sensing Software provides a utility to calculate and then record, display, and transmit data for large networks of sensors. Installation, qualification and other sensor

information is available at: http://www.micronoptics.com/support_downloads/Sensors/.

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Key Features

Fast, simple, repeatable installation

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

Qualified to same rigorous standards used for comparable electronic gages.

Gage installation and protection achieved with same methods as conventional electronic gages.

Micron Optics' patented micro opto-mechanical technology.

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



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)



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Performance Properties

Strain Sensitivity¹

os3200

~ 1.2 pm/ $\mu\epsilon$

Gage Length

10 mm

Operating Temperature Range²

-40 to 60° C (80°C Max)

Strain Limits

\pm 5,000 $\mu\epsilon$

Maximum Drift³

50 $\mu\epsilon$

Physical Properties

Dimensions, Weight

See Diagram Below, 1.0 g

Carrier Material

Santoprene™

Cable Length

1 m (\pm 10 cm), each end

Fiber Type

SMF28-Compatible

Cable Type

1 mm Fiberglass Braid

Connectors

FC/APC optional

Cable Bend Radius

\geq 17 mm

Fastening Methods⁴

Epoxy

Optical Properties

Peak Reflectivity (R_{max})

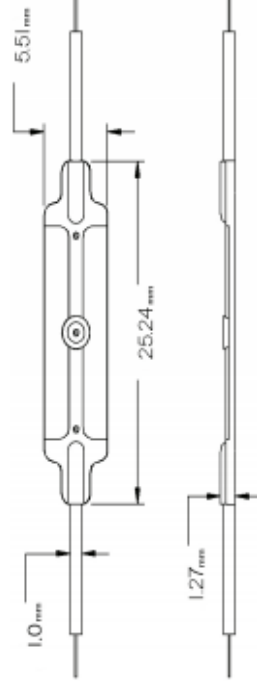
> 70%

FWHM (- 3 dB point)

0.25 nm (\pm .05 nm)

Isolation

> 15 dB (@ \pm 0.4 nm around center wavelength)



Ordering Information

os3200-**www**-1xx-1yy

www Wavelengths for (+/- 1nm) Standard - 1460 to 1620 nm in 4 nm intervals

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 1, Length & Connector
 1 1 m Standard, Cable Length
 UT Unterminated
 FC FC/APC Connector

Ordering Information Example

os3200-1552-1FC-1FC

Notes

- 1 Actual gage factor provided with gage.
- 2 Prolonged exposure to maximum temperature could reduce performance.
- 3 40 temperature cycles -40 to 60° C.
- 4 See http://www.micronoptics.com/support_downloads/ Sensors/ for installation details.