

Non-metallic Optical Strain Gage | os3200

Applications

- Core building block for fiber optic transducers for strain, temperature, displacement, pressure, and acceleration.
- Measurement of strain on a structure's surface.
- Experimental mechanics evaluations requiring many sensors.

Features

- Qualified to same rigorous standards used for comparable electronic gages.
- Cable integrated with sensor package for fiber protection and strain relief.
- Self adhesive backing for simplified installation process.
- Non metallic construction.
- Fast, simple, repeatable installation.
- Double ended design supports multiplexing of many sensors on one fiber.
- Gage installation and protection achieved with same methods as conventional electronic gages.
- Micron Optics' patented micro opto-mechanical technology.

Description

The os3200 Non-metallic Optical Strain Gage is designed to make fiber handling easy and sensor installation fast and repeatable. It is based on fiber Bragg grating (FBG) technology. The os3200 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.

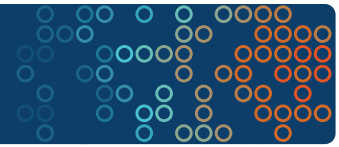
In side by side comparisons with foil strain gages, the os3200 is equally sensitive and accurate, while providing for greater strain range and 100 times more fatigue life. The os3200 strain gage is qualified for use in mild environments and delivers the many advantages inherent to all FBG based sensors.

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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Specifications B¹

os3200

Performance Properties

| | |
|--|------------------------|
| Strain Sensitivity ² | ~ 1.2 pm/με |
| Gage Length | 10 mm |
| Operating Temperature Range ³ | -40 to 60°C (80°C Max) |
| Strain Limits | ± 5,000 με |
| Maximum Drift ⁴ | < 50 με |

Physical Properties

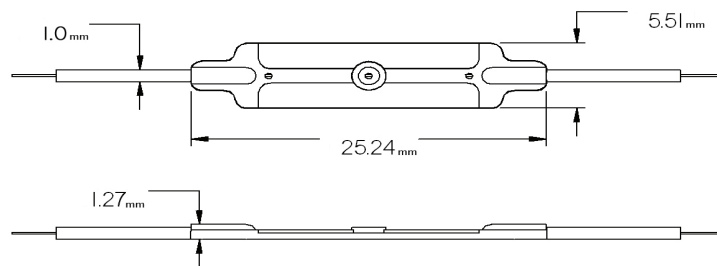
| | |
|-------------------------------|-------------------------|
| Dimensions | See Diagram Below |
| Weight | 1.0 g |
| Carrier Material | Santoprene™ |
| Cable Length | 1 m (± 10 cm), each end |
| Fiber Type | SMF28-Compatible |
| Cable Type | 1 mm Fiberglass Braid |
| Connectors | FC/APC optional |
| Cable Bend Radius | ≥ 17 mm |
| Fastening Method ⁵ | Epoxy |

Optical Properties

| | |
|--------------------------|---|
| Peak Reflectivity (Rmax) | > 70% |
| FWHM (-3 dB point) | 0.25 nm (± .05 nm) |
| Isolation | > 15 dB (@ ± 0.4 nm around center wavelength) |

Notes:

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



Ordering Information

os3200-**www**-1xx-1yy (Example: os3200-1560-1FC-1FC)

| | | |
|---|--|--|
| www : Wavelength (± 1nm) Standard: 1512 to 1588nm in 4nm intervals. Extended: 1460 to 1620nm | 1xx : Cable 1, Length & Connector 1 1m Standard, Cable Length UT Underterminated FC FC/APC Connector | 1yy : Cable 2, Length & Connector 1 1m Standard, Cable Length UT Underterminated FC FC/APC Connector |
|---|--|--|