MICRON OPTICS

Sensor Information Sheet

os3200 | Non-Metallic Optical Strain Gage

Part # os3200-wwww-1xx-1yy

Serial #

Nominal Wavelength, λ_0 (nm) @22°C 0000.0

Certified by: _____

Variable	Description	Value	Units
F_G	Gage Factor	0.796 @ 22°C	-
C_1	Gage Constant 1	6.156 @ 22°C	µm/m-°C
C_2	Gage Constant 2	0.70	µm/m-°C
ΔT	Temperature Change	Measured	°C
CTE_S	CTE of Test Specimen	User Defined	µm/m-°C
$\Delta\lambda$	Wavelength Shift	Interrogated	nm
λ_0	Nominal Wavelength	Initial Value	nm

Strain (mechanically induced µm/m):

$$\varepsilon = (\Delta\lambda/\lambda_0)\ 1x10^6 / F_G - \varepsilon_{TO}$$

Thermal Output (thermally induced apparent strain, µm/m):

$$\varepsilon_{TO} = \Delta T\ [C_1 / F_G + CTE_S - C_2]$$

Thermal Output and Temperature Compensation

Fiber Bragg grating (FBG) based strain gages respond to both strain and temperature. Temperature induced strain results from a combination of two factors.

1) Thermal expansion of the substrate on which the gage is mounted.
2) Thermally induced index of refraction changes in the FBG.

Both factors affect the FBG's center wavelength.

Several methods are available to decouple strain and temperature components in measurements using this gage. Popular methods involve using FBGs to measure change in temperature or employing dummy FBG strain gages (as with conventional electronic strain gages).

For additional information about temperature compensation techniques and converting wavelength values to strain and temperature, see*:*

http://www.micronoptics.com/support_downloads/Sensors/

Micron Optics Quality and Performance

TUNED

Products displaying the "Micron Optics Tuned" logo include Micron Optics tunable technologies thus ensuring high quality and performance. Certified sensors have been tested and qualified for use with Micron Optics Sensing Instruments.

Qualification Statement

CERTIFIED ISO 9001:2000

This sensor has been manufactured using procedures and materials documented under Micron Optics, Inc's ISO 9001:2000 qualification process. This Sensor Information Sheet is verification of conformance.

Patent Certification


MICRON OPTICS, INC.
INTERNATIONAL CERTIFICATION FOR FIBER OPTIC SENSING

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Installation Information

A os3200 gage may be bonded to a variety of surfaces. Successful installation requires careful attention to the details of gage installation. In particular, surface preparation and cleaning is extremely important in obtaining a secure bond.

The recommended adhesive for bonding os3200 gages to a specimen is a Loctite® Hysol® 1C-LV epoxy. This epoxy is available in an easy to use 50ml EPS Cartridge. Although it is possible to install gage with other adhesives, all performance data was obtained from gages installed with this epoxy.

The os3200 is qualified for dry environments. Installation instructions are available at:

http://www.micronoptics.com/support_downloads/Sensors/