MICRON OPTICS

Sensor Information Sheet

os3120 | Optical Strain Gage – Epoxy Mount

Part # os3120-wwww-1xx-1yy

Serial #

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

Certified by: _____

Variable	Description	Value	Units
F_G	Gage Factor	1.00 @ 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

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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
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Installation Information

The os3120 Strain Gage is designed to be bonded to a surface using epoxy. Successful installation requires careful attention to the details of gage installation. The recommended adhesive for bonding os3120 gages to a specimen is a 100%-solids epoxy system designed for use with bonded resistance strain gages. This type of adhesive is widely available in kit form, often including: degreaser, conditioner, neutralizer, epoxy, and application instructions. Micron Optics offers instructions that demonstrate the use of M-Bond AE-10 Adhesive System from Vishay Measurements Group.

Detailed installation instructions are available at:

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