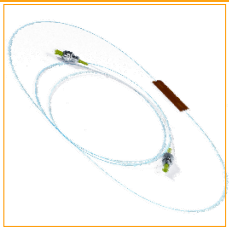
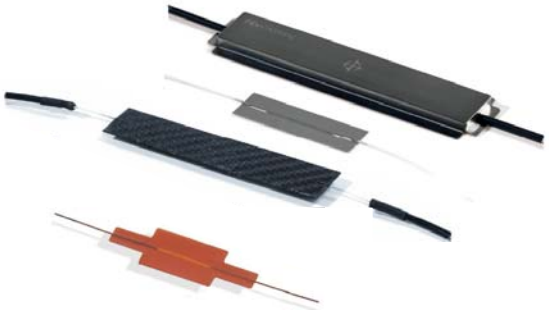
12.1020 MUST STRAIN SENSOR

Fiber Bragg Grating (FBG)


GENERAL DESCRIPTION

The FBG deformation strain sensors are transducers that transform a static or dynamic distance variation into a change in reflected wavelength of a pre-stressed Fiber Bragg Grating that can be measured with the Roctest Group's FBG reading units.



TECHNICAL DESCRIPTION

The strain sensors are designed to be bonded or spot welded to structures and components (metallic, concrete, etc.). These sensors are equivalent fiber optic versions of the conventional resistance strain gauges, but completely passive, offering inherent insensitivity to environmental induced drift.

The **polyimide** strain sensor is the equivalent of the electrical strain gauge and can be installed using the same supplies.

The **weldable** strain gauge is designed to be spot welded to metallic surfaces, offering a significant increase of productivity in the installation process. This sensor has an optional metallic protection cover for installation in severe environments.

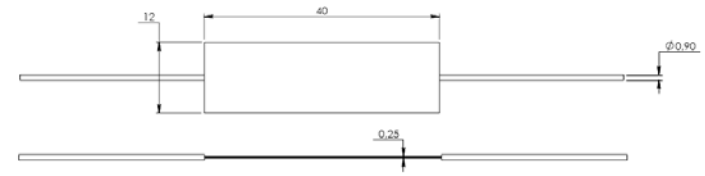
The **composite** strain gauge is a light-weight and rugged sensor for application in both steel and concrete structures, where the FBG optical fiber is encapsulated in CFRP material.

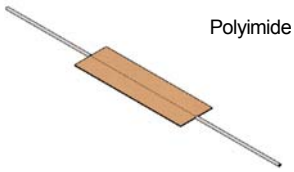
These sensors feature high accuracy and resolution, and immunity to electric sparks and EMI/RFI. They are compatible with most common FBG measurement units and suitable for remote sensing, being possible to install them kilometers away from the measurement unit and connect a large number of sensors in a single optical fiber.

FEATURES

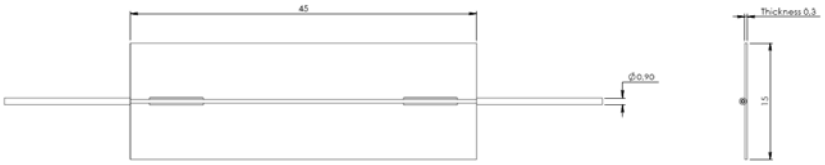
- High sensitivity
- Self-referenced
- Polyimide, stainless steel and composite housing
- Long-term reliability
- Large scale integration
- Intrinsically safe design
- Immunity to EMI/RFI
- Compatible with most FBG measurement units

SENSOR DRAWINGS

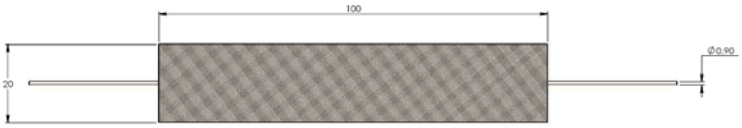


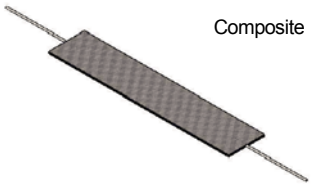


Polyimide



Weldable





Composite

SPECIFICATIONS

Central wavelengths	1510 to 1590 nm. Max. 12 sensors on same chain.
Measurement range	± 2,000 με
Accuracy	± 2 με
Resolution	± 1 με
Sensitivity	1.2 pm/με
Spectral width (FWHM)	< 0.2 nm
Reflectivity	> 75%
Insertion loss	< 0.1 dB
Relative humidity	< 90% at 80ºC
Operating temperature	-20 to 80ºC
Cross sensitivity	10 pm/ºC
Packaging	Polyimide film Stainless steel Composite material
Dimensions	Polyimide 40 x 12 x 0.25 mm Weldable 45 x 15 x 0.3 mm Composite 100 x 20 x 0.9 mm
Cable types	Ø 0.9 mm Ø 3 mm Indoor Ø 3 mm Outdoor
Weight	Polyimide 5 g Weldable 5 g Composite 25 g

Roctest Ltd. · 665 Pine Avenue, St.Lambert, QC, J4P 2P4, CANADA · **Tel.** 1-450-465-1113 · **Fax** 1-450-465-1938 · info@roctest.com · **www.roctest-group.com**
Telemac SAS · 10, avenue Eiffel, 77220 Gretz-Armainvilliers, FRANCE · **Tel.** +33-1-64-06-40-80 · **Fax** +33-1-64-06-40-26 · info@telemac.fr · **www.roctest-group.com**
Smartec SA · Via Pobiette 11, CH-6928 Manno, SWITZERLAND · **Tel.** +41 91 610 1800 · **Fax** +41 91 610 1801 · smartec@smartec.ch · **www.roctest-group.com**

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