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### Applications

- Directly useable as Strain Gages for Automotive, Aircraft/Aerospace, Structural, Geotechnical, Energy and Medical Equipment Monitoring Applications
- Core OEM building block for higher level sensors such as Accelerometers, Inclino-meters, Displacement, Pressure, Load Sensors and many other transducers

### Description

The **os3100 Optical Strain Gage** is a revolutionary product based on patented **Micron Optics'** micro, opto-mechanical technology. To ensure long-term stability by design, this patch type sensor uses neither epoxies nor other glues as part of its structure and fuses materials science with Micron Optics' core optical technology in high-performance, tunable components which allows it to be branded "**Micron Optics Tuned**".

The **os3100** provides an ideal alternative to electrical strain sensors, featuring advantages such as high accuracy, long-term stability, premium performance under harsh environmental conditions, and record resistance to mechanical fatigue. Installation is easy as the **os3100** can be spot-welded or epoxied to most materials using conventional techniques.

This sensor can be used alone or in series as part of an FBG sensor array. The **os3100** is an industrial grade design targeting the harsh environments found in Energy, Civil, Transportation, Aerospace and Military applications.

The **os3100** sensor demonstrates excellent compatibility with **Micron Optics'** sensing instruments. Please feel free to contact **Micron Optics** or one of our Authorized Value-Added Resellers about your particular optical sensing application.

### Some Advantages of FBG-Based Sensors

- **Multi-Sensor Arrays:** Easily facilitates many sensors on a single optical connection
- **Remote Sensing:** Long distances between sensors or between sensors and instrument
- **Easy to Install:** In most cases, can be mounted directly to concrete or composite structures
- **Simple, Low Cost Installation:** Due to multi-sensor array feature
- **Non-Electrical Sensor Design:** Eliminates ESD and spark hazard, and immune to electromagnetic interference
- **Ideal for Harsh Environments:** Small in size, made of glass fiber, uses lightwaves not visible to the naked eye, no electromagnetic field generation by the sensor
- **Variety of Sensors Available:** Strain, temperature, displacement, pressure, etc...



PRELIMINARY

Specifications

os3100

Beta Prototype Specs<sup>1</sup>

Environmental & Mechanical

Gage Type	Surface-Mount Strain Gage Patch (select spot-weld or epoxy type)
Strain Sensitivity	~ 1.2 $\mu\text{m}/\mu\epsilon$
Active Gage Length	22 mm
Operating Temperature Range	-40 to 120° C (150° C short term)
Strain Limits	$\pm 2,500 \mu\text{m}/\text{m}$
Fatigue Life	$> 20 \times 10^6$ cycles, $\pm 1,000 \mu\text{m}/\text{m}$
Dimensions	36 mm x 8 mm x 1 mm
Pigtail Length	1 m ( $\pm 10$ cm)
Weight	1.1 g
Fiber Type	SMF28-C
Fiber Coating	Polyimide
Buffer Tube	Fiberglass Braid
Connectorization	None (FC/APC available)

Optical

Center Wavelength ( $\pm 1$ nm)	From 1465nm to 1617nm in 4nm Intervals
Peak Reflectivity (Rmax)	$> 70\%$
FWHM (-3 dB point)	0.25 nm ( $\pm .05$ nm; apodized grating)
Isolation	$> 12$ dB (@ $\pm 0.4$ nm around center wavelength)

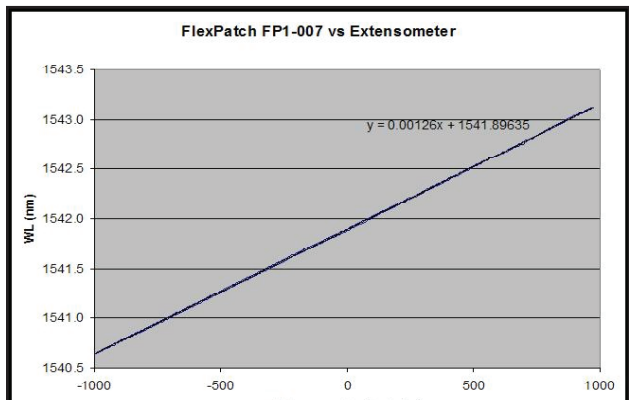
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Connectorization Options

Option 1: Fusion-Spliced FC/APC	Includes metal splice sleeve and loose buffer (adds ~1m to pigtail length)
Option 2: Splice-Free FC/APC	Includes loose buffer (adds no length to pigtail)
Option 3: Fusion-Spliced E2000	Includes metal splice sleeve and loose buffer (adds ~1m to pigtail length)
Option 4: Other	Contact MOI

<sup>1</sup> Specifications validated through design level testing.

Gage Factor



optical sensing



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