

# Optical Strain Gage | os3100

## Applications

- Industrial grade strain gages for automotive, aircraft/aerospace, structural, geotechnical, energy and medical equipment monitoring applications
- Core building block for higher level sensors such as Accelerometers, Inclinometers, Displacement, Pressure, Load Sensors and many other transducers

## Features

- 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 optical fiber, uses lightwaves not visible to the naked eye, no electromagnetic field generation by the sensors

## Description

The os3100 Optical Strain Gage is a surface mount strain gage based on Micron Optics' patented 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 has been tested to withstand over 100 million fatigue cycles of  $\pm 2000 \mu\text{strain}$ .

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 world 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.

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## Specifications <sup>β</sup> 1

os3100

### Performance Properties

Strain Sensitivity	~ 1.2 pm/με
Gage Length	22 mm
Operating Temperature Range	-40 to 120° C (150° C short-term)
Strain Limits	± 2,500 με
Fatigue Life	100 x 10 <sup>6</sup> cycles, ± 2,000 με

### Physical Properties

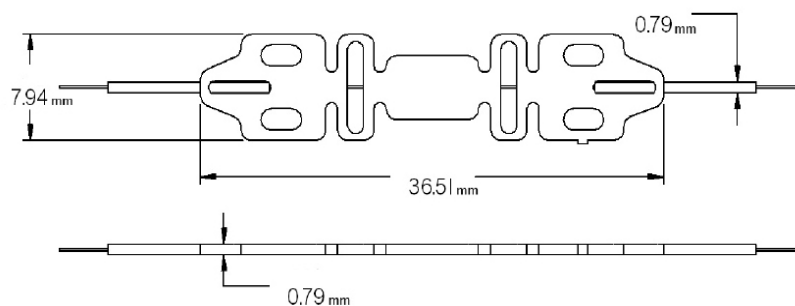
Dimensions	36 mm x 8 mm x 1 mm
Weight	2.6 g
Frame Material	302 Stainless
Cable Length	1 m (± 10 cm), each end
Fiber Type	SMF28-Compatible
Fiber Coating	Polyimide
Buffer Tube	0.9mm Fiberglass Braid
Connectors	FC/APC optional
Fastening Methods	Spot Weld or Epoxy

### Optical Properties

Center Wavelength	1465 to 1617nm available (± 1 nm)
Peak Reflectivity (Rmax)	> 70%
FWHM (-3 dB point)	0.25 nm (± .05 nm; apodized grating)
Isolation	> 12 dB (@ ± 0.4 nm around center wavelength)

#### Notes:

1. Denotes Beta product. For more details see [www.micronoptics.com/product\\_designation.php](http://www.micronoptics.com/product_designation.php).



## Ordering Information

os3100 - **www** - **1xx** - **1yy** - **m**

(Example: os3100-1563-1FC-1FC-S)

**www**: Wavelength (nm)  
Standard wavelengths:  
1515 to 1587nm in 4nm intervals.

**1xx**: Cable 1, Length & Connector  
1 1 m standard, Cable Length  
**UT** Underminated  
**FC** FC/APC Connector

**1yy**: Cable 2, Length & Connector  
1 1 m standard, Cable Length  
**UT** Underminated  
**FC** FC/APC Connector

**m**: Mounting Method  
**S** Spot Weld  
**E** Epoxy Mount