

# Temperature Compensation Sensor | os4100

## Applications

- Continuous lifetime health monitoring of bridges, dams, buildings, tunnels, ships, aircraft, trains, and other complex structures.
- Measurement of relative temperature for compensation of strain measurements.

## Features

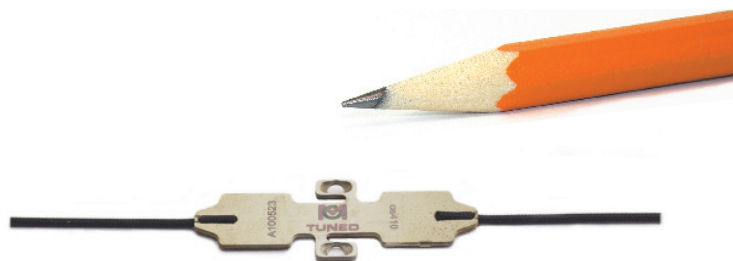
- Fast response time.
- Qualified to same rigorous standards used for comparable electronic gages.
- Cable integrated with sensor package for fiber protection and strain relief.
- Rugged, permanent weldable package.
- Fast, simple, repeatable installation.
- Designed specifically for temperature compensation of os3100 and os3200 strain gages.
- Connections for weld, epoxy, or screw attachment to structure.
- Double ended design supports multiplexing of many sensors on one fiber.
- Micron Optics' patented micro opto-mechanical technology.

## Description

The os4100 is specifically designed to provide temperature compensation data for strain measurements from FBG based strain gages installed on the same structure. Because its installation procedure is similar to the os3100 Optical Strain Gage, it is a convenient choice for compensation of the os3100. It is also compatible with the os3200 Optical Strain Gage. The os4100 Temperature Compensation Sensor is designed to make fiber handling easy and sensor installation fast and repeatable. It is based on fiber Bragg grating (FBG) technology.

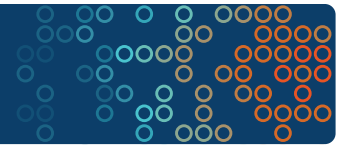
The os4100's stainless steel carrier holds the FBG in tension and protects the fiber during installation. Since there are no epoxies holding the fiber to the carrier, long term stability is ensured by design. The universal attachment feature on the os4100 carrier design allows fastening by weld, epoxy or screw.

This sensor can be used alone or in series as a part of an FBG sensor array. Installation and cabling for such arrays is much less expensive and cumbersome than comparable electronic gage networks. The os4100 Temperature Compensation Gage is qualified for use in harsh environments and delivers the many advantages inherent to all FBG based sensors.



With each sensor, Micron Optics provides a Sensor Information Sheet listing the gage factor and calibration coefficients needed to convert wavelength information into engineering units. Micron Optics' ENLIGHT Sensing Software provides a utility to calculate and then record, display, and transmit data for large networks of sensors. Installation, qualification and other sensor information is available at: [http://www.micronoptics.com/support\\_downloads/Sensors/](http://www.micronoptics.com/support_downloads/Sensors/).

# Temperature Compensation Sensor | os4100



## Specifications <sup>β</sup>1

os4100

### Thermal Properties

Operating Temperature Range	-40 to 120°C (150°C short-term)
Temperature Sensitivity	~ 28.9 pm/°C (+/-0.5pm/°C)
Cable Temperature Range	-40 to 150° C (Connectors: -40 to 80°C)
Short-Term Repeatability <sup>2</sup>	± 0.75°C (±21 pm)
Drift <sup>3</sup>	± 1.0°C (±29 pm)

### Physical Properties

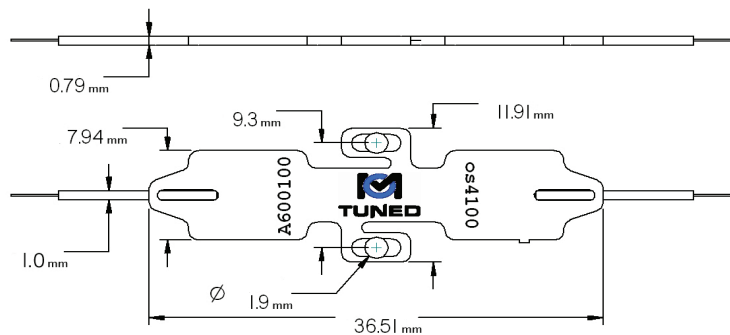
Dimensions	See Diagram Below
Weight	3.0 g
Frame Material	302 Stainless Steel
Cable Length	1 m (± 10 cm), each end
Fiber Type	SMF28-Compatible
Cable Type	1 mm Fiberglass Braid
Connectors	FC/APC optional
Cable Bend Radius	≥ 17 mm
Fastening Methods <sup>4</sup>	Screws [1-72 (M1.6)], Spot Weld or Epoxy

### Optical Properties

Peak Reflectivity (Rmax)	> 70%
FWHM (-3 dB point)	0.25 nm (± .05 nm)
Isolation	> 15 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).
2. Three thermal cycles from min to max temperature.
3. Typical: 50°C and 85% Relative Humidity. Extreme conditions: ±1.3°C (±36pm); 1,000 hour soak 75°C and 75% Relative Humidity.
4. See [http://www.micronoptics.com/support\\_downloads/Sensors/](http://www.micronoptics.com/support_downloads/Sensors/) for installation details.



## Ordering Information

os4100-**www**-1xx-1yy

(Example: os4100 -1563-1FC-1UT)

**www**: Wavelength (±1nm)

Standard: 1515 to 1587nm in 4nm intervals.

Extended: 1460 to 1620nm

**1xx**: Cable 1, Length & Connector

1 1m Standard, Cable Length

UT Underterminated

FC FC/APC Connector

**1yy**: Cable 2, Length & Connector

1 1m Standard, Cable Length

UT Underterminated

FC FC/APC Connector



Micron Optics, Inc.  
1852 Century Place NE  
Atlanta, GA 30345 USA

phone 404 325 0005  
fax 404 325 4082  
[www.micronoptics.com](http://www.micronoptics.com)