

# Optical Strain Gage | os3100



## Description

The os3100 is a spot-welded or epoxy-mounted optical strain gage based on fiber Bragg grating (FBG) technology.

The os3100 Optical Strain Gage is designed to make fiber handling easy and sensor installation fast and repeatable. Its 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. For temperature compensation, the os3100 may be connected in series with an os4100, FBG Temperature Compensation Gage or an os4350, FBG Temperature Sensors.

Two mounting options provide for either weld or epoxy attachment to a structure's surface. Installation time is just a few minutes with welded gages and can be used immediately after attachment. Epoxy gages typically cure in less than 24 hours at room temperature, similar to electronic foil strain gages.

In side by side comparisons with foil strain gages, the os3100 is equally sensitive and accurate, while providing for greater strain range and 100 times more fatigue life. The os3100 strain gage is qualified for use in harsh environments and delivers the many advantages inherent to all FBG based sensors. 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. Multiple optical strain gages can be arranged in close proximity at 0, 45 and 90 degrees for strain rosette measurements.

## Key Features

**Fast, simple, repeatable** installation with either weldable or epoxy mounted design.

**Cable integrated** with sensor package for fiber protection and strain relief.

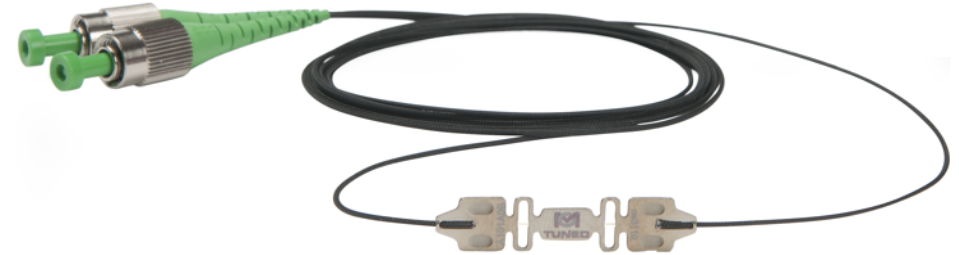
**Double ended** design supports multiplexing of many sensors on one fiber.

**Qualified** to same rigorous standards used for comparable electronic gages.

**Gage installation and protection** achieved with same methods as conventional electronic gages.

**Micron Optics'** patented micro opto-mechanical technology.

**Included in ENLIGHT's sensor templates** - allows for quick and easy optical to mechanical conversions.



## Deployments

**Structures** (bridges, dams, tunnels, mines, buildings, oil platforms)

**Energy** (wind turbines, oil wells, pipelines, nuclear reactors, generators)

**Transportation** (railways, trains, roadways, specialty vehicles, cranes)

**Marine vessels** (hull, deck, cargo containers)

**Aerospace** (airframes, composite structures, wind tunnels, static and dynamic tests).

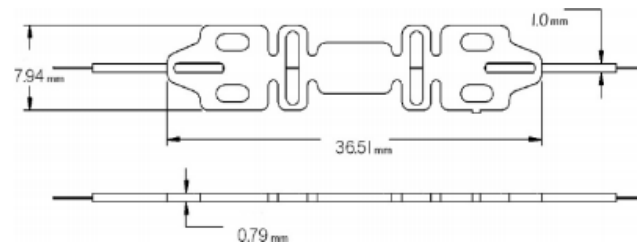
**Homeland security** (perimeter intrusion, heat detection, security gate monitoring)



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Performance Properties	os3110	os3120
Strain Sensitivity <sup>1</sup>	~ 1.4 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 106 cycles, ± 2,000 με	
<b>Physical Properties</b>		
Dimensions; Weight	See Diagram Below; 2.6 g	
Carrier Material	302 Stainless Steel	
Cable type / length	1 mm Fiberglass Braid / 1 m (± 10 cm), each end	
Fiber type	SMF-28	
Connectors	FC/APC optional	
Cable Bend Radius	≥ 17 mm	
Fastening Methods <sup>2</sup>	Spot Weld	Epoxy Mount
<b>Optical Properties</b>		
Peak Reflectivity (Rmax)	> 70%	
FWHM (- 3 dB point)	0.25 nm (± .05 nm; apodized grating)	
Isolation	> 15 dB (@ ± 0.4 nm around center wavelength)	



## Ordering Information

os31aa-wwww-1xx-1yy

<b>aa</b>	Model
10	Spot Weldable
20	Epoxy Mount
<b>wwww</b>	Wavelengths for (+/- 1nm) Standard - 1460 to 1620 nm in 4 nm intervals
<b>xx</b>	Termination type
1xx	Cable 1, Length & Connector
1	1 m Standard, Cable Length
UT	Unterminated
FC	FC/APC Connector
<b>yy</b>	Termination type
1yy	Cable 2, Length & Connector
1	1 m Standard, Cable Length
UT	Unterminated
FC	FC/APC Connector

## Ordering Information Example

o3110-1564-1FC-1FC

## Notes

<sup>1</sup> Actual gage factor provided with gage. Note: FG is different for os3110 and os3120.

<sup>2</sup> See [http://www.micronoptics.com/support\\_downloads/Sensors/](http://www.micronoptics.com/support_downloads/Sensors/) for installation details.