

os1200

Optical Strain Gage

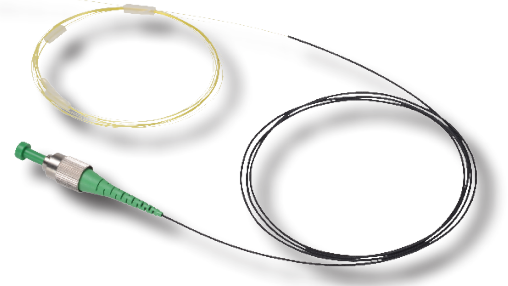
The os3100 is a spot-welded or epoxy-mounted optical strain gage based on fiber Bragg grating (FBG) technology.

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.

FIVE polyimide coated FBGs in an array



Key Features

Optional FC/APC connector and loose buffer tube for ease of handling

Clearly marked FBG locations

Splice-free array

Non metallic construction

Benefits

Longevity – resistant to lightning, corrosion, EMI.

Passive – no spark hazard, no power at sensor

Multiplexing – many sensors, few cables, long range

Versatility – small size, long distances and sense many properties with one system

Installation – weld, glue, embed, connect in series

Ruggedness – fatigue over 100 million cycles, wide temperature range

Properties

Performance Properties	
Physical Properties	
s1200	
Number of FBGs	5
FBG Length	10 mm
FBG Spacing	1 m \pm 50 mm
Strain Limit	5,000 $\mu\epsilon$
Strain Sensitivity	\sim 1.2 pm/ $\mu\epsilon$
Operating Temperature Range	- 40 to 120°C
Thermal Response	\sim 9.9pm/°C
Fiber Lead Length	1 m (\pm 10 cm), each end
Fiber Type	SMF28-Compatible
Fiber Coating	Polyimide
Fiber Re-Coating Diameter	145 - 165 μm
Buffer Tube	1 mm loose tube included with optional FC/APC connector
Fiber Bend Radius	\geq 17 mm
Optical Properties	
Center Wavelengths	1526, 1536, 1546, 1556 and 1566 nm (\pm 1 nm)
Peak Reflectivity (Rmax)	> 70%
FWHM (- 3 dB point)	0.25 nm (\pm .05 nm)
Isolation	> 15 dB (@ \pm 0.4 nm around center wavelength)

Ordering Information

os1200-**www**-1xx-1yy

xx Termination type
 1xx Fiber Lead 1, Length &
 1 Connector
 UT Standard Lead Length, 1 m
 FC Unterminated FC/APC Connector

yy Termination type
 1yy Fiber Lead 2, Length &
 1 Connector
 UT Standard Lead Length, 1 m
 FC Unterminated FC/APC Connector

Ordering Information Example

os1200-1FC-1UT



FFP-SI REV.1 12.27.19

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Specifications subject to change without notice.