

Displacement Gage | os5100

Preliminary

Applications

- Measurement of displacement between two gage points
- Continuous monitoring of construction joints and crack/fissure growth in rock, concrete, and structural members
- Long-term measurement across key expansion joints in bridges, buildings and tunnels.

Features

- Rugged aluminum enclosure suitable for outdoor installations
- Qualified to same rigorous standards used for comparable electronic gages
- Designed for simple installation in a variety of applications
- Double ended design supports multiplexing of multiple gages on one fiber
- Fast response time, stable measurements, high resolution
- Fully temperature compensated over entire operating range
- Micron Optics' patented micro opto-mechanical technology
- Integrated junction box protects connectors/splices

Description

Based on fiber Bragg grating (FBG) technology, the os5100 is specifically designed to measure displacement between two gage points on a specimen surface. The gage design is flexible enough to allow for easy attachment to various substrates, making measurements on metal, concrete and other surfaces straightforward. The two FBG sensors that comprise the os5100 gage are located within the rugged hard-coat anodized aluminum enclosure which shields them from the elements and allows for installations in harsh environments.



os5100 Displacement Gage

This gage can be used alone or in series as a part of an FBG sensor array (which may include strain and temperature gages, accelerometers and other displacement gages). Cabling for such arrays is much less expensive and cumbersome than comparable electronic gage networks. Cables can be joined directly inside the enclosure, eliminating the need for separate junction boxes. The os5100 delivers the many advantages inherent to all FBG based sensors, including EMI immunity - something vibrating wire gages cannot offer.

With each gage, 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/.

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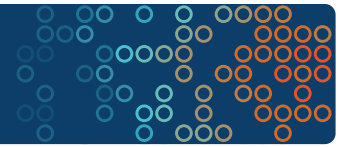
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<http://www.sensor-ic.com/>

Displacement Gage | os5100



Specifications β ¹

os5100

Performance Properties

Displacement Measurement Range	0 to 50 mm
Accuracy ²	0.03 mm in steady-state environment
Operating Temperature Range	-40 to 80° C
Water Resistance	Suitable for wet, high-humidity environments - IP67 rating optional
Fatigue Life	10x10 ⁶ cycles at 40 mm stroke
Maximum Speed	1050 mm/sec

Physical Properties

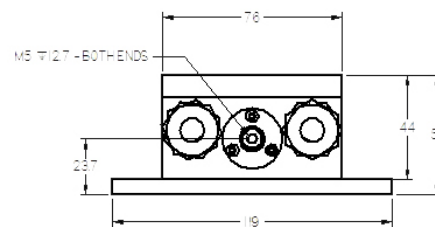
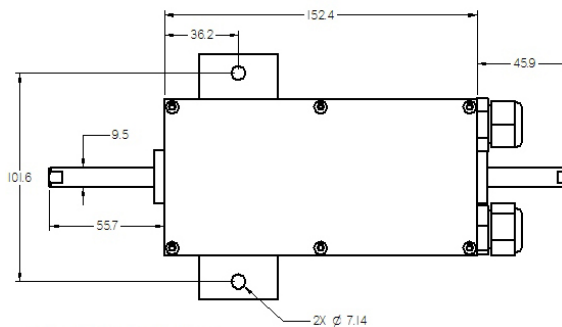
Dimensions	152.4 x 76.2 x 44.5 mm
Weight	1.0 kg
Material	Anodized Aluminum and Stainless Steel
Cable Length	Customer supplied
Cable Type	Terminate inside gage. Gage accepts two cables between 3 to 7 mm diameter
Fastening Method ^{3,5}	Bolt-on bracket for sensor body

Optical Properties

Peak Reflectivity (Rmax)	> 70%
FWHM (-3 dB point)	0.25 nm (\pm .05 nm; apodized grating)
Isolation	> 15 dB (@ \pm 0.4 nm around center wavelength)

Notes:

1. Denotes Beta product. For more details see www.micronoptics.com/product_designation.php.
2. Long term accuracy - 0.5mm based on 300 temperature cycles from -40 to +80°C and 1000 hours of humidity soak at 75°C - 75% relative humidity.
3. See http://www.micronoptics.com/support_downloads/Sensors/ for mechanical drawings and installation details.
4. Budget total of 15 nm per displacement gage.
5. Contact Micron Optics for information on installation accessories



Ordering Information

os5100-[www](http://www.micronoptics.com)/[www](http://www.micronoptics.com)-xx-ee

(Example: os5100-1521/1523-FC-64)

ww: Wavelength Pairs⁴
 min max min max
 1521/1523 1566/1568
 1536/1538 1581/1583
 1551/1553

xx: Connection Method
FC FC/APC Connector
FS Fusion Splice

ee: Environmental Option
64 Standard IP64
67 IP67 Ingress Protection



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