

OL

Optical strain gauge

Special features

- Optical strain gauge - based on fiber Bragg grating
- Installation like electrical strain gauges
- Suited for high strain applications ($\pm 1\%$ deformation)
- Measurement on curved surfaces possible
- Insensitive to electromagnetic interferences
- Application in Ex-areas possible
- Lower wiring compared to electrical strain gauges
- Lower mass of glass fiber compared to standard connecting cables



Dimensions in mm (1 mm = 0.03937 inches)

Specifications OL

Design		OptiMet-OMF glass fiber with Bragg gratings symmetrically embedded in modified acrylic resin, potted in plastic material
Core diameter of glass fiber, approx.	µm	6
Diameter of fiber cladding, approx.	µm	125
Outer diameter of coating, approx.	µm	195
Diameter with jacket, approx.	mm	1.5
Dimensions		
Length	mm	40±1
Width	mm	12±0.5
Thickness	mm	2.0±0.5
Connector (plug) ¹⁾		FC/APC
Available Bragg wavelengths	nm	1520, 1525, 1530, 1535, 1540, 1545, 1550, 1555, 1560, 1565, 1570, 1575, 1580
Bragg wavelength tolerance	nm	±1
k factor		0.78
k factor tolerance	%	±2
Maximum degree of reflection	%	15
Transverse sensitivity ²⁾	%	0
Reference temperature	°C	23
Operating temperature range	°C	-10 ... +80
Storage temperature range	°C	-20 ... +100
Thermal cross sensitivity (TCS) thermal contribution of the sensor to strain signal	µm/m/°C	7.0
Tolerance of thermal cross sensitivity (TCS)	µm/m/°C	±1
Maximum elongation at reference temperature when using Z70 adhesive		
Absolute strain value for positive direction	µm/m	10,000 (1%)
Absolute strain value for negative direction	µm/m	10,000 (1%)
Fatigue life at reference temperature when using Z70 adhesive		
Achieved no. of load cycles L_w at Alternating strain ε _w = ±1000 µm/m and variation of zero point ≤30 µm/m		>>10 ⁷ (aborted after 10 ⁷ load cycles)
Alternating strain ε _w = ±3000 µm/m and variation of zero point ≤60 µm/m		>>10 ⁷ (aborted after 10 ⁷ load cycles)
Fatigue life at reference temperature when using X280 adhesive ³⁾		
Achieved no. of load cycles L_w at Alternating strain ε _w = ±5000 µm/m and variation of zero point ≤100 µm/m		>>10 ⁷ (aborted after 10 ⁷ load cycles)
Minimum radius of curvature longitudinal and transverse at reference temperature	mm	25
Applicable bonding materials Cold curing adhesives		Z70, X60, X280

¹⁾ Spliced fiber optic cable with plug and protective cover is available as an option (length as requested by customer).

²⁾ As per VDI/VDE/GESA 2635. A tolerance cannot be given as the transverse sensitivity is 0.

³⁾ Contact pressure when using X280 with optical strain gauge: 1 N/cm²

Achievable number of load cycles dependent on quality of installation and fatigue life of component under investigation.

Subject to modifications.

All product descriptions are for general information only. They are not to be understood as a guarantee of quality or durability.

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