fos4Strain Patch

Strain measurement sensor

fos4Strain (single sensor for use with fos4Test dyn/nSens)

fos4Strain (in sensor chains for use with fos4Test nSens)

The fos4Strain sensor is a fiber-optic strain sensor based on a fiber bragg grating. It is designed to measure surface strains of anisotropic structures. It combines several features in a single sensor.

Properties

- Thanks to its fiber-optic technology the sensor is able to measure surface strain reliably over more than 10^7 load cycles at strain levels of ±3,000 µm/m.
- The optical working principle also makes the sensor immune to electromagnetic interference and lightning.
- Matrix materials such as glass-fiber reinforced plastics usually exhibit inhomogeneous strain distributions at their surface. The fos4Strain sensor measures the mean strain level over several millimeters to circumvent this effect.

Highlights

- Over 10^7 load cycles with ±3,000 µm/m
- Immune to lightning and electromagnetic interference
- Quick installation (<20 min.)
- Operation under inhomogeneous strain field conditions and on anisotropic structures

Installation

The sensor installation procedure is optimized for fast installation and easy handling. The installation time is less than 20 minutes in the field. Field application can be carried out at ambient temperatures down to -10 °C.

Application examples

Target applications in the test & measurement industry include:

- Energy converter
- Highpower applications (e.g., pantographs, highpower switches, transformers, generators)
- Geological applications (e.g., drilling and exploration)

Technical Specs - fos4Strain

Sensor parameter, FBG parameter		
Sensor parameter	**Unit**	**fos4Strain patch (dyn, 1.5 m, 1550 nm)**
Bragg wave length at 23 °C (λ_0)	nm	1550 ± 0.5
Sensitivity k-factor		0.84 ± 0.02
k_T	ppm/K	11.13 ± 0.3
Measurement range	µm/m	±3000

FBG parameter	**Unit**	**fos4Strain patch (dyn, 1.5 m, 1550 nm)**
Spectral width	nm	0.55 ± 0.1
Reflectivity	%	60 ±10
Side mode suppression	dB	>15

General	**Unit**	**fos4Strain patch (dyn, 1.5 m, 1550 nm)**
Suitable fos4X measurement device		fos4Test dyn / fos4Test nSens
Sensor type		Fiber Bragg grating
Optical connector type		LC/APC
Fiber type		SMF 28 compatible
Minimal bending radius	mm	50
Storage temperature	°C	-40 to +80
Operating temperature	°C	-20 to +70

Dimensions		
Parameter	**Unit**	**fos4Strain patch (dyn, 1.5 m, 1550 nm)**
Mounting		glue
Height x Width x Length	mm	3 x 10 x 25
Weight	g	1.5
Diameter of sensor cable	mm	1
Length of sensor cable	m	0.3