

fos4Strain patch (nSens, custom)

Fiber optic strain sensor



Product highlights

The features of fos4Strain patch (nSens, custom) include:

- Over 10^7 load cycles with $\pm 3000 \mu\epsilon$
- Immune to lightning and electromagnetic interference
- Quick installation
- Operation under inhomogeneous strain field conditions and on anisotropic structures

1 General description

The fos4Strain patch (nSens, custom) 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.

- Thanks to its fiber-optic technology the sensor is able to measure surface strain reliably over 10^7 load cycles at strain levels of $\pm 3000 \mu\epsilon$
- 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.
- Operation under inhomogeneous strain field conditions and on anisotropic structures

2 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 .

3 Application examples

Target applications in the test & measurement industry include:

- Energy converters
- High power applications (e.g. pantographs, high power switches, transformers, generators)
- Geological applications (e.g. drilling and exploration)

4 Product specifications

Sensor parameter	Unit	fos4Strain patch (nSens, custom)
Bragg wavelength at 23 °C (λ_0)	nm	custom (1510 nm-1595 nm)
(k_ϵ)		0.76 ± 0.02
(k_T)	ppm/K	11.13 ± 0.3
Temperature Sensitivity	nm/K	0.017 ± 0.001
Measurement range	$\mu\text{m}/\text{m}$	± 3000
FBG parameter	Unit	fos4Strain patch (nSens, custom)
Spectral width	nm	0.55 ± 0.1
Reflectivity	%	60 ± 10
Side mode suppression	dB	> 12

General specifications	Unit	fos4Strain patch (nSens, custom)
Suitable fos4X measurement device		fos4Test nSens
Sensor type		Fiber Bragg grating
Optical connector type		LC/APC
Fiber type		SMF 28 compatible
Minimal bending radius	mm	30
Storage temperature	°C	-40 ... +80
Operating temperature	°C	-30 ... +70
Dimensions	Unit	fos4Strain patch (nSens, custom)
Mounting		adhesive
Height x width x length	mm	3 x 10 x 25
Weight	g	2
Diameter of sensor cable	mm	1
Standard length of sensor cable	m	0.3