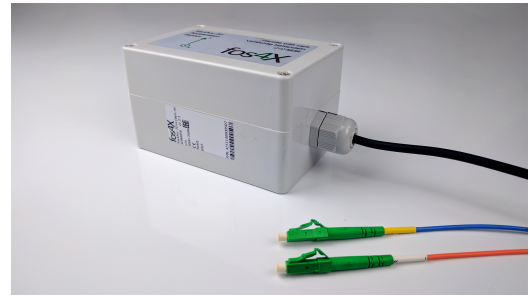


# fos4Acc 2D (dyn, 1550nm)

## Fiber optic vibration sensor



### Product highlights

The features of fos4Acc 2D (dyn, 1550nm) include:

- Immune to EMI, intrinsically isolated
- Resonance frequency > 180 Hz
- Sensitivity 0.320 nm/g

The fos4Acc 2D (dyn, 1550nm) sensor offers the following key features:

- **Optical working principle**  
The sensor is based on Fiber-Bragg gratings benefiting from all intrinsic features this optical technology has to offer.
- **Long lifetime at high strain levels**  
The sensor is due to its use of a highly durable fiber-optic sensing element capable of lasting **more than 10<sup>8</sup> load cycles at strain levels of 0,2%**.
- **Ease of installation**  
The sensor may be installed without particular installation tools in a very short time at a wide range of environmental conditions.

- **Overload protection**  
It features an overload protection for  $\pm 20 g$  and is thus well protected against incidental contact from service personnel.
- **High resonance frequency**  
The sensors high resonance frequency **more than 180 Hz** makes it suitable for highly dynamic structures.

advantages. Changes in temperature effect the sensitivity  $k_a$ .

The sensor is built as a spring pendulum system in which the spring is partially formed by an optical fiber in which a fiber Bragg grating is inscribed as a sensing element. The accelerometer is sensitive in one direction and can be screw mounted to the vibrating structure.

### 1 General description

The fos4Acc 2D (dyn, 1550nm) sensor is a dynamic fiber-optic acceleration transducer based on a fiber Bragg grating sensor. It is designed to measure accelerations under special environmental conditions as the optical working principle makes the sensor immune to electromagnetic interference and lightning.

The fiber-optic sensor allows measurement of dynamic signals. Also, sensing over long distances, as required in many structural monitoring or geological applications, is one of fiber-optic sensors' ad-

### 2 Application examples

Target applications include:

- Rotor blades of wind energy converters
- High power applications (e.g., pantographs, high power switches, transformers, generators)
- Geological applications (e.g., drilling and exploration)

Target applications do **not** include:

- Static acceleration measurements

### 3 Product specifications

Sensor parameter	Unit	fos4Acc 2D (dyn, 1550nm)
Bragg wavelength at 23 °C ( $\lambda_0$ )	nm	1551 ±0.5
Acceleration sensitivity ( $k_a$ )	ppm/g	206.31 ±32.24
Temperature sensitivity ( $k_T$ )	nm/g	0.320 ±0.05
	ppm/K	283.8 ±32
Resonance frequency	nm/K	0.045 ±0.005
Measurement range	Hz	> 180
Frequency range	g	±3
Overload protection	Hz	0.1 ... 100
	g	±40
FBG parameter	Unit	fos4Acc 2D (dyn, 1550nm)
Spectral width	nm	0.55 ±0.1
Reflectivity	%	60 ±10
Side mode suppression	dB	> 15
Variants	Cable length	fos4Acc 2D (dyn, 1550nm)
SEN0050	no cable	
SEN0496	20m included	
SEN0565	30m included	

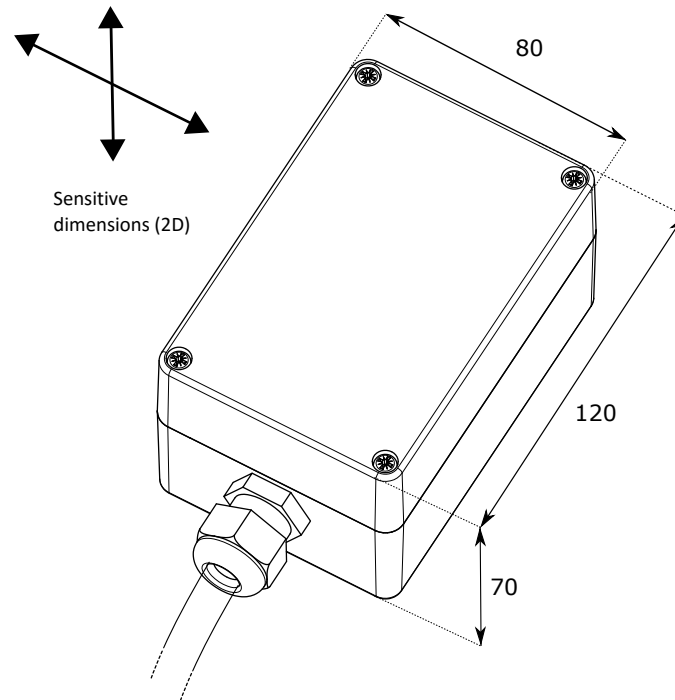


Figure 1: Sensitive directions of the fos4Acc 2D sensor

General specifications	Unit	fos4Acc 2D (dyn, 1550nm)
Sensor type		Fiber Bragg grating
Optical connector type		1x2 LC/APC
Fiber type		SMF 28 compatible
Minimal bending radius	mm	50
Storage temperature	°C	-40 ... +80
Operating temperature	°C	-20 ... +70
Dimensions	Unit	fos4Acc 2D (dyn, 1550nm)
Mounting		screw mount (2x M4) or glue
Height x width x length	mm	70 x 80 x 120
Weight	kg	1.50
Diameter of sensor cable	mm	6
Standard length of sensor cable	m	30