

fos4Acc 2D m (dyn, 13.5m, 1552nm, E-2000) Sensor



Product Description

The fos4Acc 2D m (dyn, 13.5m, 1552nm, E-2000) is a dynamic fiber-optical vibration sensor or accelerometer based on a fiber Bragg grating sensor.

The sensor is designed as a spring pendulum system, in which the spring is partly formed by a glass fiber in which a fiber Bragg grating is inscribed as the sensor element.

The fos4Acc consists of two sensor elements and is therefore sensitive in two directions.

Highlights

- Resonance frequency > 100 Hz
- Sensitivity 0.8 nm/g
- Inherent immunity of fiber-optical sensors to interference without EMC, ESD, or HV isolation problems

Measurement

Property	Value	Unit
Compatible measuring devices from fos4X	Blackbird OECD, nSens	-
Required channels	2	-
Acceleration sensitivity ^{1 2} (k_a)	515 ± 65	ppm/g
	0.8 ± 0.1	nm/g
Temperature sensitivity ^{1 2} (k_T)	29 ± 3	ppm/K
	0.045 ± 0.005	nm/K
Measuring range ¹	± 3	g
Frequency range	0.1 ... 50	Hz
Resonance frequency	> 100	Hz
Overload protection ¹	± 40	g

1 g = 9.81 m/s²

2 At $\lambda_0 = 1552$ nm

Optical Data

Property	Value	Unit
Connector type (external)	E-2000/APC	-
Connector type (internal)	LC/APC	-
Fiber type	SMF 28 compatible	-
Target wavelength*	1552 ± 1	nm
Reflectivity	50 ... 90	%
Side lobe suppression	>12	dB
Spectral width	0.55 ± 0.1	nm

* At 23 °C ambient temperature and 0 g acceleration.

Cable Data

Property	Value	Unit
Length*	13.5 -0/+0.5	m
Diameter (cable with step protection)	6 ± 0.5	mm
Min. Bending radius (cable with step protection)	50	mm
Min. bending radius (fan-out cable)	15	mm
Cable exchangeable	Yes	-
Connector type	E-2000/APC	-

* Length from sensor end to connector end.

Environmental Conditions

Property	Value	Unit
IP protection class*	IP67	-
Maximum operating altitude	3000	m
Permitted temperature (Transport and storage)	-40 ... +80	°C
Permitted relative humidity (Transport and storage)	0 ... 95	%
Permitted temperature (Operation)	-40 ... +55	°C
Permitted relative humidity (Operation)	0 ... 95	%

* The specified protection class only applies if the cable connections have the same or a higher protection class.

Load cycles and MTBF

Property	Value	Unit
Load cycles at 1 g	10 ⁸	-
MTBF	>400	Years

Mechanical Data

Property	Value	Unit
Length	120	mm
Height	70	mm
Width	80	mm
Total weight*	0.5	kg

* fos4Acc without cable and packaging

Installation

Property	Value	Unit
Installation method	Glued	-

Dimensions

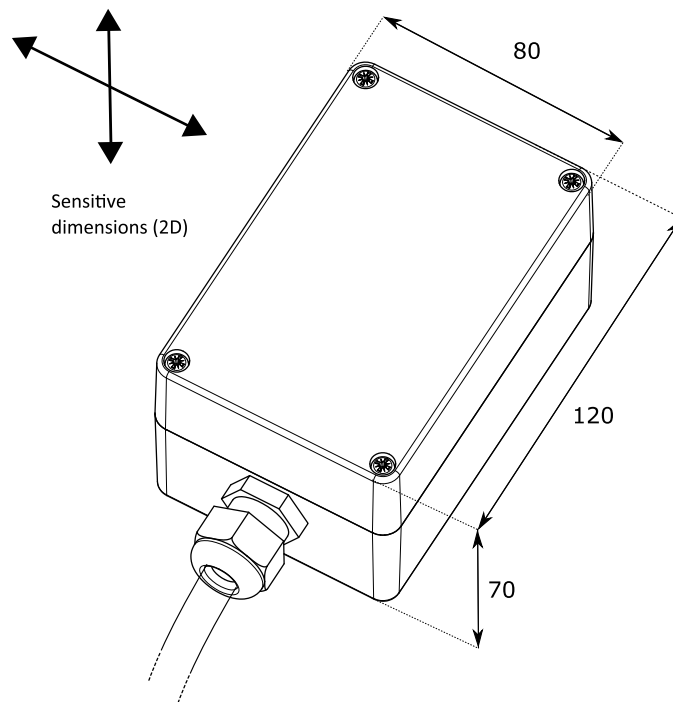


Figure 1: Dimensions