



### FIBER OPTIC ACCELEROMETER ROBUST AND EASY TO INSTALL

The single axis Accelerometer is a Fiber Bragg Grating (FBG) based sensor designed to measure acceleration at different frequencies from 0 to 50 Hz.

#### Description

The accelerometer is suitable for a large range of applications. This sensor is a fiber optic version of the conventional accelerometer but completely passive, offering inherent insensitivity to environmental induced noise

The accelerometer features high accuracy and resolution, and total fiber optic design ensuring intrinsic immunity to electric sparks and EMI/RFI.

The accelerometer can be used in a large range of monitoring applications, including measuring load induced vibration of civil structures. Connect two or three accelerometers at orthogonal directions for bi- or tri-axial acceleration measurements.

Compatible with most common FBG measurement units, the accelerometer combines compact size, high resistance to corrosion and harsh environments, and long-term reliability. It's also suitable for remote sensing being possible to locate it several kilometers away from the measurement unit. It offers intrinsic multiplexing capability that allows the concatenation of a large number of sensors in a single optical fiber. This sensor is therefore particularly suitable for difficult-to-reach locations and large scale sensing networks.

#### Key Features

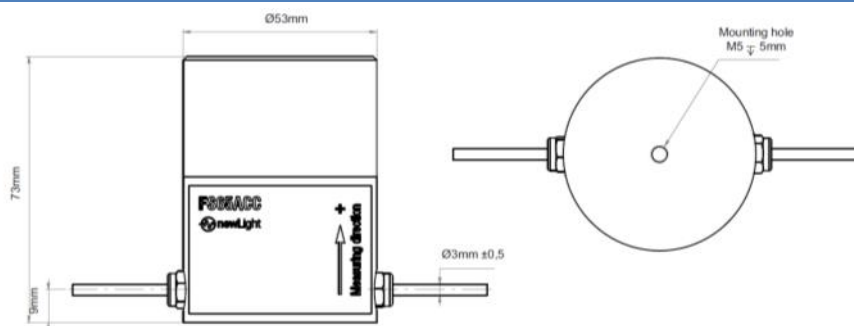
- Possibility to connect in series with other accelerometers for bi- or tri-axial measurements
- Suited for harsh environments
- Linear sensitivity at the full operation range
- Intrinsically safe design and passive (can be used in Ex-areas)
- Immunity to EMI/RFI
- Compatible with most FBG measurement units

#### Applications

- Bridge Structural Health Monitoring
- Building monitoring
- Dam instrumentation
- Tunnel deformation monitoring
- Pipeline local deformation analysis

### Specifications

<b>Sensitivity</b>	59 pm/g (typical value measured at 40 Hz)
<b>Measuring range</b>	±10 g
<b>Resolution (time based measurement) <sup>1)</sup></b>	17 mg <sup>1)</sup> for 1 pm resolution in wavelength measurement
<b>Resolution (frequency based measurement) <sup>2)</sup></b>	1 mg <sup>2)</sup> dynamic signals obtained with FFT analysis
<b>Frequency range</b>	0 ... 50 Hz
<b>Resonance frequency</b>	430 Hz
<b>Flatness</b>	< 2 %
<b>Transverse sensitivity</b>	< 0.1 %
<b>Maximum calibration error</b>	±0.1 g (calibrated at 40 Hz. Typical traceability uncertainty of ±0.4 g <sub>(0-pk)</sub> )
<b>Operation and storage temperature</b>	-20 ... +80 °C
<b>Temperature cross sensitivity <sup>3)</sup></b>	< 0.37 g/°C <sup>3)</sup> Temperature Cross Sensitivity (TCS) is the apparent acceleration induced by a 1°C change in temperature
<b>Degree of protection</b>	IP65 (DIN EN 60529)
<b>Attachment method <sup>4)</sup></b>	Bolted (M5) <sup>4)</sup> anchors and screws not included
<b>Dimensions</b>	Ø53 x 73 mm
<b>Weight</b>	338 g (with 2 m cable each side and no connectors)
<b>Main materials</b>	Aluminum, stainless steel, ormocer®
<b>Bragg wavelengths</b>	1500nm ... 1600nm (±0.5)
<b>Fiber core, cladding and coating diameter</b>	8/125/195 µm
<b>FWHM, reflectivity and side lobe suppression</b>	> 0.2 nm, 20±6%, > 7dB
<b>Cable type</b>	Ø 3 mm armor (Hytrek, stainless steel spiral, Kevlar® stainless steel mesh and PE)
<b>Cable bend radius</b>	> 10 mm
<b>Cable length</b>	0 ... 20±0.05 m (for cables longer than 2 m, a splice — Ø8x200mm — is included at 2m from the sensor)
<b>Connectors</b>	E-2000



### Ordering information

- Wavelengths, Cable length, Connector type

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Smartec SA reserves the right to make any changes in the specifications without prior notice