



### FIBER OPTIC TILTMETER ROBUST AND EASY TO INSTALL

Ideal for long-term structural monitoring.

#### Description

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The inclinometer is an inclination sensor based on fibre Bragg gratings (FBGs). It is designed to measure small variations of angle towards the vertical without the need for temperature compensation by using two FBGs in an innovative push-pull configuration. The sensor total fibre optic design ensures intrinsic immunity to electric sparks and EMI/RFI.

The sensing principle is based on two FBG's that are actuated in a push-pull configuration by a pendulum mass, so that for a given tilt one sensor experiences an increasing strain while the other experiences a decreasing strain. The sensor is designed in such way that temperature changes are common to both gratings, so the compensation of this effect is straightforward.

The sensor response shows good linearity, with no hysteresis and temperature effect is effectively compensated, even for large measurement times and temperature fluctuations.

#### Key Features

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- High sensitivity
- $\pm 3$  deg ( $\pm 5$  deg non-standard, available upon request)
- Temperature self-compensation
- Intrinsically safe design
- Immunity to EMI/RFI
- Compatible with most FBG measurement units

#### Applications

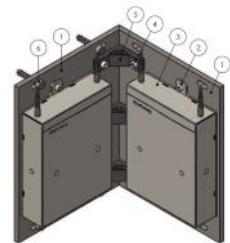
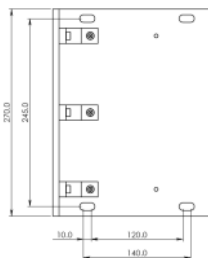
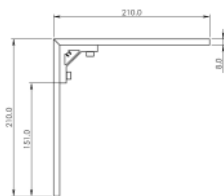
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- Bridge Structural Health Monitoring
- Building monitoring
- Dam instrumentation
- Tunnel deformation monitoring
- Pipeline local deformation analysis

### Specifications

<b>Sensitivity (WL difference)</b>	±3 deg 450 pm/deg (typical)
<b>Measuring range</b>	±3 deg (±5 deg non-standard, available upon request)
<b>Accuracy</b>	±0.01 deg
<b>Resolution</b>	±0.001 deg
<b>Spectral width (FWHM)</b>	< 0.2 nm/FBG (~5 nm apart)
<b>Reflectivity</b>	> 75%
<b>Operating temperature</b>	-20 to 80° C
<b>Temperature drift</b>	< 0.03%/°C
<b>Relative humidity</b>	< 90% at 80 °C
<b>Dimensions</b>	35 x 20 x 20 mm
<b>Packaging</b>	Stainless steel
<b>Dimensions</b>	220 x 140 x 42.5 (mm)
<b>Weight</b>	~3 kg

	Type	WL	Type	WL	Type	WL
<b>Standard Wavelengths <sup>(1)</sup></b>	A	1528.9 nm	F	1560.8 nm	K	1516.1 nm
Max. 6 inclinometers on same chain.	B	1535.1 nm	G	1567.2 nm	L	1522.5 nm
	C	1541.5 nm	H	1573.8 nm		
	D	1547.9 nm	I	1580.2 nm		
	E	1554.3 nm	J	1586.6 nm		



ITEM	QTY.	DESCRIPTION	NUMBER
1	2	Bi-axial TLM Mount Base	090 464 300 016
2	4	Socket Head Cap Screw	Max10
3	2	FS 4400 - Uniaxial Surface Tiltmeter	004 430 110 301
4	4	Socket Head Cap Screw	Max14
5	3	Bracket	HB1384
6	4	Socket Head Cap Screw	M8x40

### Ordering information

- Measuring range, Wavelengths, Cable type, Cable length, Connector type, Mounting support

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