

12.1030 MUST MONO-AXIAL TILTMETER

Fiber Bragg Grating (FBG)



PRELIMINARY

GENERAL DESCRIPTION

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.

TECHNICAL DESCRIPTION

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.

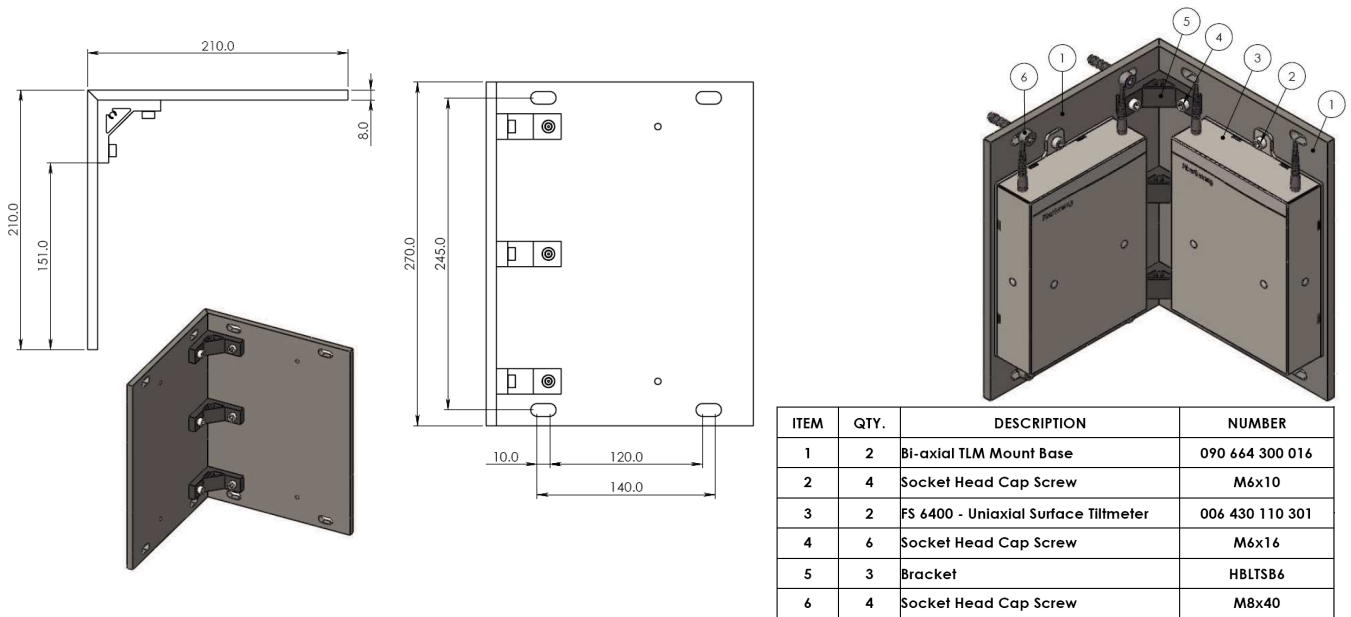
The sensor response shows good linearity, with no hysteresis and temperature effect is effectively compensated, even for large measurement times and temperature fluctuations.



FEATURES

- High sensitivity
- ± 3 deg and ± 6 deg measuring ranges
- Temperature self-compensation
- Intrinsically safe design
- Immunity to EMI/RFI
- Compatible with most FBG measurement units

SENSOR DRAWINGS



TECHNICAL CHARACTERISTICS

Sensitivity (WL difference)	±3 deg ±5 deg	450 pm/deg (typical) 292 pm/deg (typical)				
Measuring range	±3 deg ±5 deg					
Accuracy	±0.01 deg					
Resolution	±0.001 deg					
Spectral width (FWHM)	< 0.2 nm/FBG (~5 nm apart)					
Reflectivity	> 75%					
Operating temperature	-20 to 80° C					
Temperature drift	< 0.03%/°C					
Relative humidity	< 90% at 80 °C					
Dimensions	35 x 20 x 20 mm					
Packaging	Stainless steel					
Dimensions	220 x 140 x 42.5 (mm)					
Weight	~3 kg					
Standard Wavelengths ⁽¹⁾	Type	WL	Type	WL	Type	WL
	A	1528.9 nm	F	1560.8 nm	K	1516.1 nm
	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		
Max. 6 inclinometers on same chain.						

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⁽¹⁾ Two FBG required for each inclinometer

ORDERING INFORMATION

Needed option: Mounting plate in mono- / bi-axial configuration