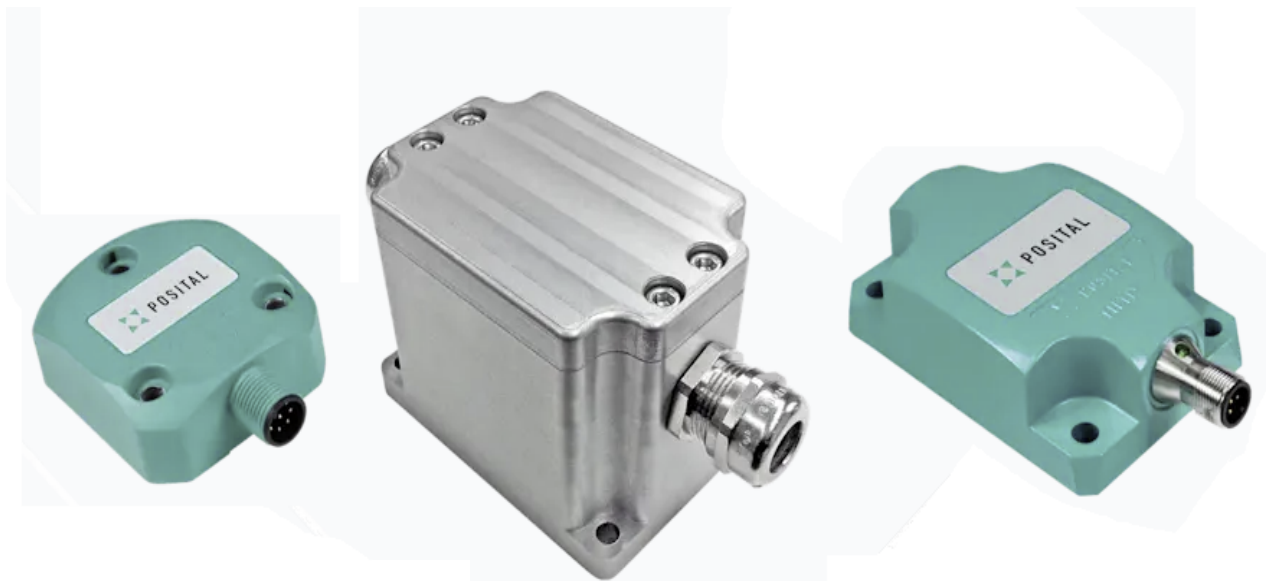


TILTIX INCLINOMETER



Precise Tilt Measurement



Static Inclinometer

POSITAL's inclinometers are equipped with dynamic MEMS (micro-electro-mechanical system) accelerometers that are used to measure inclination (tilt) by measuring gravitational force.

A 'micro mass' **A** is suspended in a flexible support structure **B**. Any movement will induce a displacement of the mass, resulting in a change of capacitance between the mass and the supporting structure. Changes of inclination are calculated from the changes in measured capacitance.

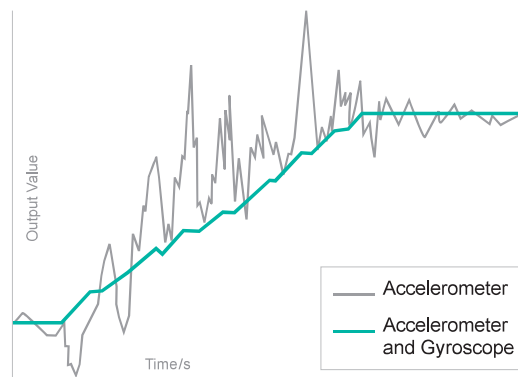
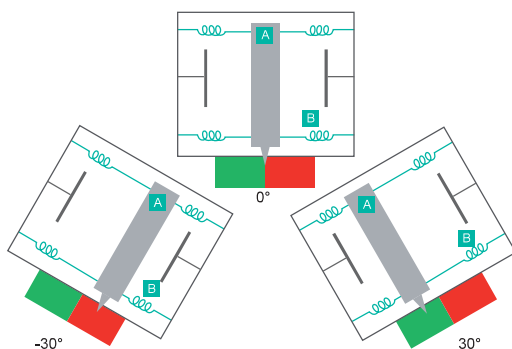
This proven method reaches accuracies of up to 0.1° over the measurement range of up to 360°. However, the measurement can be disturbed by external accelerations making the inclinometer capable of operating only in static applications.

Dynamic Inclinometer

POSITAL's acceleration compensated inclinometer use MEMS gyroscopes in addition to MEMS accelerometers. In contrast to accelerometers, gyroscopes are used to measure rotation rate. An algorithm combines signals of both sensors to identify external accelerations and ignore them. This feature dramatically reduces the influence of external accelerations, shocks and vibrations on the output signal.

The compensation of external acceleration forces is very critical for mobile machines and other applications that are constantly in dynamic movement.

POSITAL's dynamic inclinometer are featured with 3D sensors resulting in improved measurement range of the complete space (x-axis ±180° and y-axis ±90°).



TILTIX INCLINOMETERS

Explosion Proof Certified Inclinerometers



Rugged and Reliable Certified Inclinometer

POSITAL has extended its TILTIX family of inclinometers (tilt sensors) to include explosion-proof models designed to operate safely in environments that contain potentially dangerous levels of explosive dust or gases. These devices have been certified in compliance with IECEx and ATEX directives and are suitable for use in mines, oil and gas facilities, agricultural applications, chemical plants, woodworking factories and milling operations.

Like other TILTIX inclinometers, the new models are available in single (0-360°) or dual-axis ($\pm 80^\circ$) versions and feature resolution as high as 0.01° and 0.1° accuracy. Available communications interfaces include DeviceNet, CANopen, Modbus RTU, SSI and analog output. Analog models can be programmed so that a predetermined range of mechanical motion is set span the full electrical output range. Rugged aluminum and 316 stainless steel housings are offered, with other materials available by special order.

Certified to the Following Atex Ratings

> Group I (Mining)

Ex I M2 Ex e mb I Mb

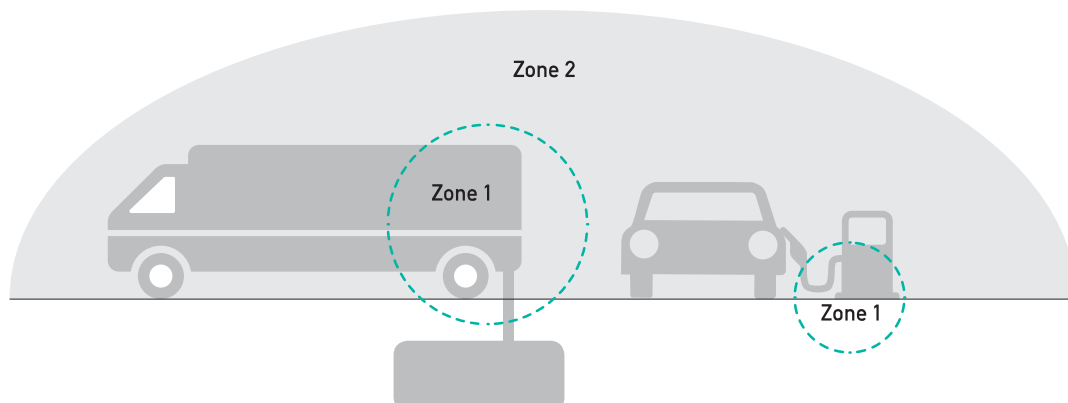
> Group II (Above Ground Operations)

EX II 2G Ex e mb IIc TX Gb (explosive gases)

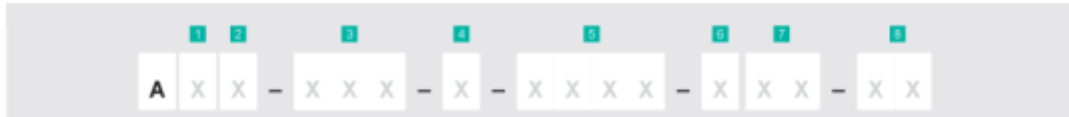
EX II 2D Ex tb IIIB T80°C Db (flammable dust)

Advantages

- > ATEX and IECEx Certified
- > Zone 1/21 Mining or Oil and Gas
- > High Vibration and Shock Resistance
- > $\pm 80^\circ$ (Dual Axis) or 360° (Single Axis)
- > CANopen, DeviceNet, Analog, SSI, SAE J1939 and ModbusRTU
- > Rugged Aluminum and 316 Stainless Steel Housings
- > Usage in Gas (2G) and Dust (2D) Hazardous Locations
- > Accuracy 0.1° and resolution 0.044°



Product Selection Guide



1 Technology

- C** Accuracy Static 0.1°
- K** Accuracy Static 0.3°, Dynamic 0.5°

2 Certificate

- S** CE
- M** ATEX Zone 1 & 21 (Mining)
- E** ATEX Zone 1 & 21 (Oil+Gas)

3 Measurement Range

1 Axis

- 90
- 120
- 180
- 270
- 360

2 Axis

- +/- 10
- +/- 20
- +/- 30
- +/- 40
- +/- 60
- +/- 80
- +/- 90

4 Number of Axis

- 1** Single Axis
- 2** Dual Axis

5 Communication Interface

- AC00** 4-20mA
- AV00** 0.5-4.5V
- AV10** 0-5V
- AV20** 0-10V
- AV40** 0.5-9.5V
- CA01** CANopen
- C901** J1939

6 Mounting

- H** Horizontal (Dual Axis)
- V** Vertical (Single Axis)

7 Housing Material

- E3** Fibre-Reinforced Plastic
- K3** Aluminum
- W2** Stainless Steel (ATEX)

8 Connection Type

- CW** Cable: 1m
- 2W** Cable: 2 m
- 5W** Cable: 5 m
- AW** Cable: 10 m
- PM** Connector: M12
- PL** Connector: 2 x M12 Male with Status LED
- PN** Connector: 1 x M12 Male & 1 x M12 Female