



LEA_IT_TLT4001001

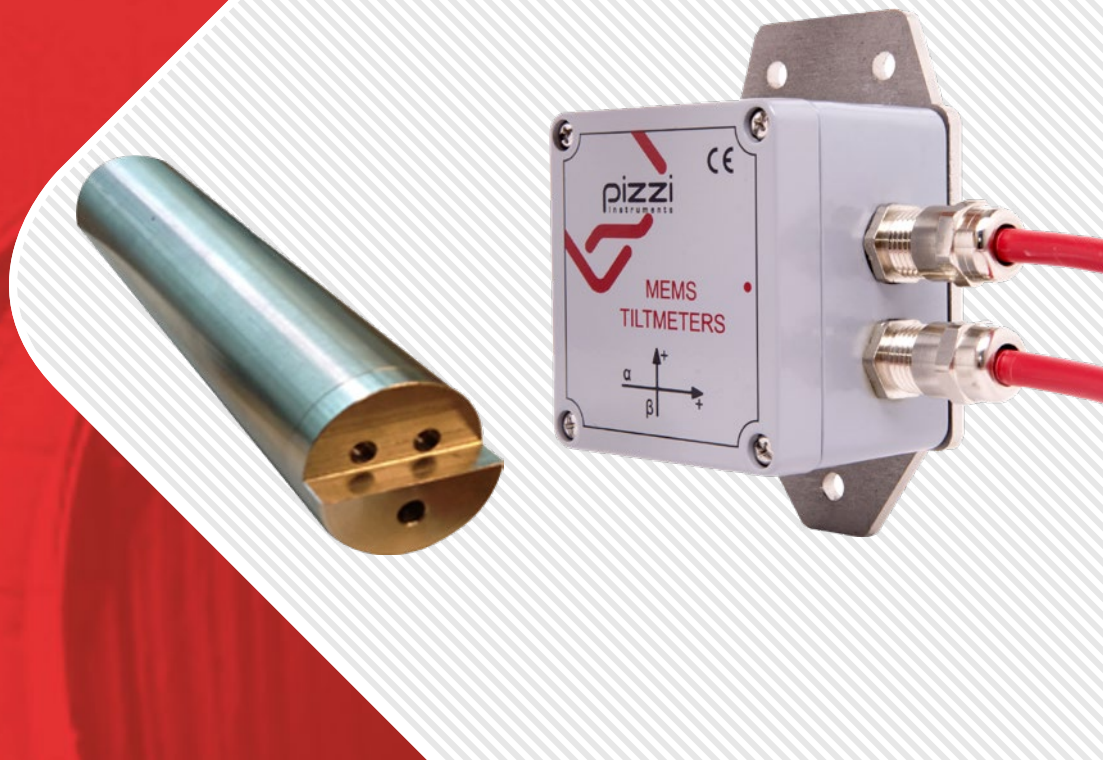


MEMS
Tiltmeter

www.pizzi-instruments.it
Instruments and Systems for Geotechnical and Structural Monitoring

LEA_IT_TLT4001001

MEMS Tiltmeter



Description

Our digital clinometer with MEMS technology sensors is used for the measurement of changes in tilt of a rigid body, in two orthogonal directions.

The instrument is fixed in-place and when connected to an automatic acquisition system allows long-term observation and periodic programming. Digital output allows the formation of clinometer chains made from "n" sensors connected by a single serial cable to the acquisition unit.

The instrument is available in single and dual-axis versions for horizontal and vertical application, both with temperature reading. In addition to the standard version with IP66 protection housing fully waterproof versions for immersion are available, including for great pressures.

Digital MEMS inclinometers, can be read with our portable units (DEC3000) and automatic (CUM3000) or simply read by PC with appropriate reading and programming software.

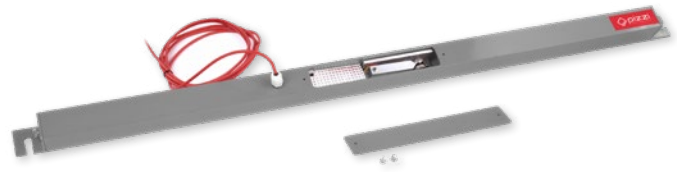
Applications

In its standard versions, this instrument, is used for measuring the tilt variation in structures.

Depending on the mode of installation, it is possible to use this instrument for the detection of deformation or movement of "bodies," both rigid and incoherent.

Particularly used in the railway engineering for the measuring of tracks; it also finds application in structural monitoring both during construction and in subsequent management. Also used for:

- **Support walls**
- **Walls and piles**
- **Bridges**
- **Dams**
- **Landslides**
- **Embankments**
- **Monuments**
- **Structures of archaeological interest**
- **Towers**
- **Chimneys**
- **Minarets**
- **Various**



Measurement principle

The clinometer is constituted of two single-axis MEMS sensors (Micro-Electro-Mechanical-System).

The sensitivity, reliability and robustness of the sensor, make this instrument a great low cost aid for systems which are monitoring deformation of structures and also rotation and tilt variations.

Installation is simple and immediate, fixed to the wall with the aid of 3 Fischer fixings and a simple initial check with an optical level

Adjustment and refinement plates are available for special applications.

Usually, systems with multiple sensors are produced,

the sensors being either separate from each other or interconnected by extension bars to allow the formation of chains for monitoring subsidence and structural deformation.

Instrument chains allow the monitoring of an entire profile (rather than single points) and also provide greater overall accuracy of measurement.

These sensors, both these ones with analogical and digital output with RS485 (MODBUS) exit, allow easy interfacing with our Data Logger CUM3000 and with various other reading and acquisition systems currently available on the national and international market.

Features and benefits

- Available in mono or biaxial form
- Installation on vertical walls or on the ground
- Digital output
- Digital bus
- Manual or automatic readings
- High accuracy and repeatability
- Easy to install
- Robust and compact
- Ideal for all applications
- IP67; on request: IP68

Technical specifications

Sensor

Type	Monoaxial or biaxial
------	----------------------

Digitizer

Type	2 Channel 24 bit – Sigma Delta ADC
Sampling rate	100 SPS per channel

General Specifications

Range	$\pm 2,5^\circ, \pm 5^\circ, \pm 15^\circ$ (other upon request)
Linearity	0,01°
Resolution	0,001°
Thermal Drift	0.01%/°C
Offset thermal drift -25...85°C (typical)	$\pm 0,002$ °/°C
Offset thermal drift -40...125°C (max)	-2,5 +1
Long-term stability	<0,004°
Output Measure	Rotation in 0,001° – Temperature in 1°C

Technical specifications

Welded case

Type	Stainless steel
Length	140mm
Diameter	Pipe Diameter = 30mm
Protection degree	IP68
Weight	500 gr about
Working Temperature	-40 to 85 °C

Case ORing

Type	Anodized and varnished aluminum
Maximum size	75x100x40
Dimensions	75x80x40 (h) mm
Protection degree	IP66
Weight	600 gr about
Working Temperature	-40 to 85 °C

Power Supply

Power Supply	10 to 25 VDC
Absorption	15 mA @ 15 VDC
Connector	On board
OVP	All relay contacts are protected

Communication

Serial port	RS-485 port
Sampling	2400, 4800, 9600, 19200, 38400, 57600
Communications protocol	MODBUS RTU
Security protocol	Checksum
Connecting current sensors	connection up to n°128 sensors with one cable type 2x2x0,5mmq

Analogical Tiltmeter

Range	±10	±30°
Power supply	9-30Vdc	7-35Vdc
Resolution	0,001°	0,005°
Accuracy	<0,2%	0,5%
Long term stability	<0,002°	<0,02°
Protection degree	IP67	
Operating temperature	-40°C +85°C	
Material	Painted die-cast aluminum	
Dimensions	73,6mm x123mm	
Output signal	0,5-4,5 Volt	

Technical assistance

If you have any requests or questions about our instruments or if you have special needs that require different solutions from the standard, please contact us. Our team will provide all the necessary information and will be very happy to work with you to study, develop and customize instruments and solutions suitable for your specific needs.

LEA_IT_TLT4001001

MEMS Tiltmeter

The product information may be subject to variations at any time.
Please carefully check the release and contact Pizzi Instruments for further details.

Pizzi Instruments S.r.l.
Via del Fornaccio, 46
50012 fraz. Vallina - Bagno a Ripoli (FI)

Tel/Fax: +39 055 6810722
info@pizzi-instruments.it
www.pizzi-instruments.it

