

Datasheet TLT1

Electrolevel Beam Sensor

DESCRIPTION

The Electrolevel Beam Sensor measures rotation of structures in the vertical plane.

The sensor is based on the well established Fredericks 0711series electrolevel sensor. The sensor mounting incorporates an adjustment for zeroing and protects the sensor against thermal gradients.

The sensor is attached to a rigid beam for installation and various beam lengths are available. Both ends of the beam are fixed using anchor bolts.

When multiple beams are placed end to end, a differential displacement profile of the structure from anchor point to anchor point can be derived.

FEATURES

- ✓ Multiple beams in a chain give a complete displacement profile
- ✓ Simple, well proven device, ideal for measuring tilt in structures
- ✓ Accurate and precise
- ✓ Measures tilt along the whole length of a beam
- ✓ Measures vertical rotation

BENEFITS

- ✓ Easy to automate using data acquisition systems and software
- ✓ Removes the need for manual monitoring
- ✓ Recoverable and reusable
- ✓ Suitable for safety critical applications
- ✓ Low power consumption

OPERATION

The Electrolevel Beam Sensor consists of a precision glass electrolevel vial, mounted in an inert ceramic compound which is itself placed in an adjustable mount.

Both ends of the beam are attached to the structure using either expanding shells or groutable anchors. When multiple beams are placed end to end, a differential displacement

profile of the structure from anchor point to anchor point can be derived.

Once installed, thumbwheels allow the sensor to be adjusted to the zero position using a handheld readout such as the HELM.

Electrolevel Beams are easily automated via a data acquisition system and monitoring software.

Applications

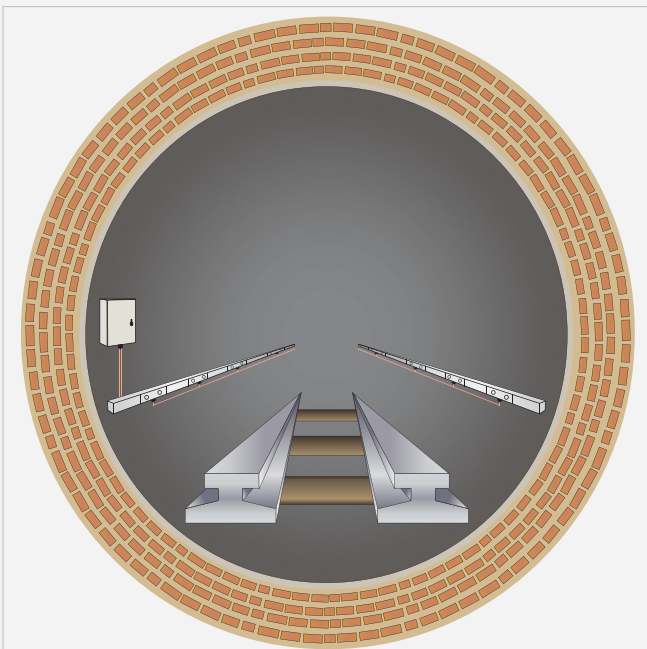
The Electrolevel Beam sensor monitors vertical rotations of structures. Its most common use is to monitor settlement and heave of existing structures and tunnels caused by adjacent excavations or tunnelling works.

- ✓ Brick and stone buildings
- ✓ Differential levels
- ✓ Vertical rotation and track deformation
- ✓ Heave and settlement due to adjacent construction activities

The sensor is especially useful where topographic measurements are precluded, or where access is restricted.

Typical monitoring applications include:

- ✓ Bridges and dams
- ✓ Pipelines
- ✓ Tunnels
- ✓ Impounding and loading effects in the short or long term



SPECIFICATIONS

Sensor Type	Horizontal	Vertical
Range		±45 arc minutes (±13mm/m)
Accuracy ¹		±0.1mm/m
Resolution ²		0.02% full scale
Repeatability		±0.05% full scale
Operating temperature		-20 to +50°C
Current consumption		< 1 µA
Output signal		Ratiometric AC
Ingress protection		IP66
Range	5°	±5° fine adjustment, ±25° Course

Cable Fitment

On site connection

Dimensions

L 180mm x H 31mm x W 25mm

L 135mm x H 127mm x W 60mm

Weight

210g

890g

¹Within precision range (±14 arc minutes)

²Dependent on readout (CR1000)

ORDERING INFORMATION

Electrolevel Beam Sensor

TLT1-1.1	Horizontal assembly
TLT1-1.2	Vertical assembly

Electrolevel Beam - Horizontal

TLT1-H.1	1metre length
TLT1-H.2	2metre length
TLT1-H.3	3metre length
TLT1-2.4	Fixing kit

Electrolevel Beam - Vertical

TLT1-V.1	1metre length
TLT1-V.2	2metre length
TLT1-V.3	3metre length
TLT1-2.4	Fixing kit
TLT1-2.6	Universal mounting plate

Connecting Cable And Fittings

CA-3.1-4-IC	Instrument cable, 4 core, 7/0.20, screened
CA-3.2-4-FR	Low smoke cable, 4 core

Handheld Electrolevel Levelling Tool - Helm

TLT1-3.1	Handheld electrolevel readout (HELM)
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Manuals

MAN-173	Electrolevel Beam, Tilt and Hand Held Electrolevel Readout (HELM)
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