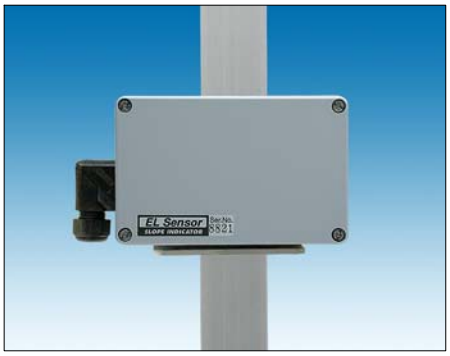
EL Beam Sensors & Tiltmeters

Horizontal Beam Sensor



Vertical Beam Sensor

Tiltmeter with Rotating L-Bracket

Applications

Tiltmeters and beam sensors employ narrow-angle, high-resolution EL tilt sensors to monitoring changes in the inclination of a structure. Typical applications include:

- Monitoring stabilization measures, such as pressure grouting and underpinning.
- Monitoring structures for the effects of tunneling and excavating.
- Monitoring the behavior of structures under load.
- Monitoring the deflection and deformation of retaining walls.
- Monitoring the rotation of retaining walls, piers, and piles.
- Monitoring convergence and other movements in tunnels.

Operation

The EL tilt sensor consists of an electrolytic tilt sensor housed in a compact, weatherproof enclosure. The sensor can be configured as a beam sensor or a tiltmeter.

Beam Sensors: Anchors are installed in the structure. Beams are fitted to the anchors. Beams serve as long gauge lengths for the sensor. A tilt sensor is mounted to each beam. Beam sensors can be linked into an array to monitor differential movements.

Tiltmeters: An anchor is installed in the structure. A bracket is bolted to the anchor and the tilt sensor is mounted on the bracket. The right angle bracket holds the tilt sensor perpendicular to the wall. The flat bracket holds the tilt sensor parallel to the wall.

Advantages

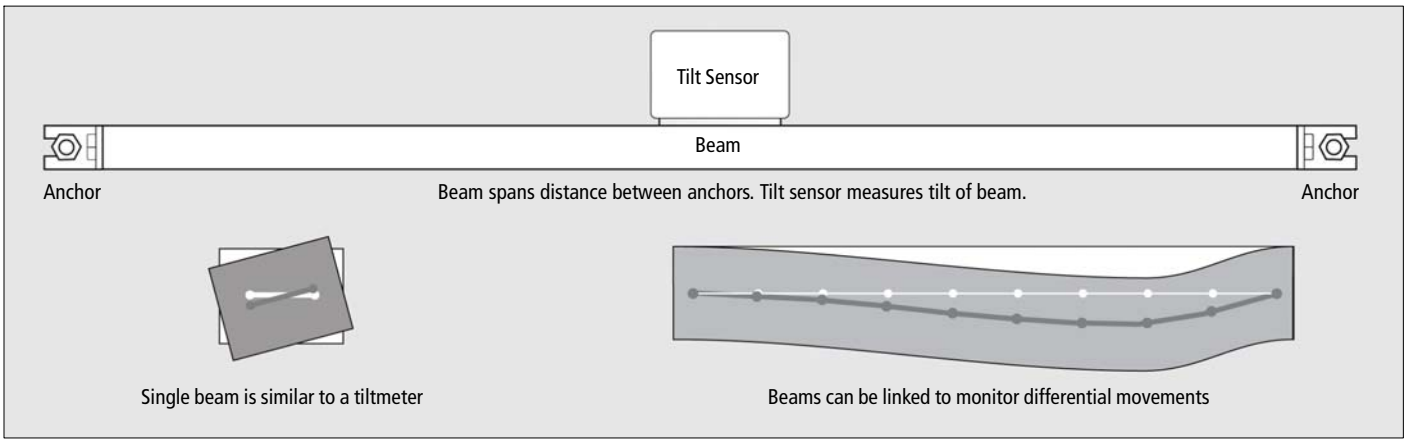
High Resolution: The EL tilt sensor can detect a change in tilt as small as one second of arc.

Robust & Reliable: The sensor has no moving parts and is protected by a weatherproof enclosure.

Easy to Install: Versatile brackets allow quick and easy placement of the sensors.

Re-Configurable: The EL tilt sensor can be configured to site requirements. For example, it can be used as tiltmeter at one site and as a beam sensor at another site.

Cost Effective: The EL tilt sensor provides reliable, high-resolution measurements, installs quickly, can be removed and reused, and is available at a competitive price.



EL TILT SENSOR

EL Tilt Sensor, Standard 56802100
EL Tilt Sensor, SC. 56802120

Sensor: Uniaxial electrolytic tilt sensor housed in a weatherproof aluminum enclosure with terminals and cable gland for signal cable. Does not include bracket, beam, or anchors.

The standard version of the tilt sensor works with Campbell Scientific CR1000, CR800, and CR10X data loggers.

The SC version of the tilt sensor includes a signal conditioning board and a temperature sensor. It works with Campbell Scientific data loggers, the M-Logger, and readouts such as the EL/MEMS data recorder.

Range: ±40 arc minutes.

Resolution: 1 arc second using a Campbell Scientific CR1000 data logger.

Repeatability: ± 3 arc seconds.

Adjustment Range: The sensors provides an adjustment range of ±4° to ease installation.

Operating Temperature: –20 to +50°C.

Dimensions: 125 x 80 x 59 mm deep (4.9 x 3.2 x 2.3").

SIGNAL CABLE

Signal Cable for Standard Sensor .50612804

Shielded cable with four 24-gauge tinned-copper conductors and PVC jacket.

Signal Cable for SC Sensor 50613527

Shielded cable with seven 22-gauge tinned copper conductors and polyurethane jacket.

BEAM SENSOR CONFIGURATION

Order a tilt sensor, a bracket, a beam, and anchors to secure the beam to the structure.

Omni Bracket 56801355K

The Omni-bracket holds the tilt sensor onto horizontal, vertical, or inclined beams. Self-tapping screws are included to fasten the bracket to the beam.

1 meter Beam. 56801612
2 meter Beam. 56801614
3 meter Beam. 56801616
3 foot Beam 56801623
6 foot beam 56801626
10 foot Beam 56801630
Spare End-Bracket 56801815

38 x 38 mm square-section aluminum beam includes two end-brackets. Beams are sized to provide a gauge length that is measured from anchor to anchor. Anchors are not included.

Groutable Anchors. 56801910K

Groutable anchor for beam Includes one all-thread stud, low-friction bushings, and other hardware. For stand-alone beam sensors, order two anchors. For linked beams that share an anchor, order one anchor for each beam plus one additional anchor for the last beam.

TILTMETER CONFIGURATION

Order a tilt sensor, a bracket, and an anchor for each sensor.

Rotating L-Bracket. 56801350K

The L-bracket holds the tilt sensor perpendicular to the structure. The bracket rotates nearly 360 degrees, so it can be mounted on inclined structures, floors, and ceilings, as well.

Omni Bracket 56801355K

The Omni-bracket holds the tilt sensor parallel with the structure.

Expansion Anchor 57803128

The expansion anchor is installed in a 9.5 x 64 mm (3/8 x 2.5 in) drill hole and includes a bolt and washer to hold the L-bracket.

Groutable Anchor. 57803130K

The groutable anchor is installed in a 13 x 90 mm (0.5 x 3.5 in) drill hole and includes a bolt and washer to hold the L-bracket. Requires epoxy grout available locally or ordered below.

Epoxy Grout Kit 57803133

Includes plastic dispenser and cartridge of quick-set epoxy grout. Sufficient for 15 anchors.

DATA LOGGERS & READOUTS

Campbell Scientific Data Loggers

The CR1000 Logger can monitor 12 standard or 3 SC sensors directly. Up to 32 standard sensors or 16 SC sensors can be connected to an AM16/32 multiplexer. See separate datasheet.

M-Logger

The M-Logger can monitor one SC sensor directly or 16 SC sensors connected to an AM16/32 multiplexer. See separate datasheet.

EL / MEMS Data Recorder 56813500

This portable readout displays and records readings from SC sensors. Tilt readings are displayed in volts; temperature readings in degrees C. It can also be used for nulling the sensors. See separate datasheet.

EL Nulling Device 56803300

The EL Nulling device provides a convenient way to zero sensors at installation time. The nulling device is compatible with both standard and SC tilt sensors.