

# EL Monopod Tiltmeter



## Applications

The EL monopod tiltmeter is designed to monitor changes in the inclination of a structure. It features a unique, single-point anchor for easy installation anywhere. Applications for the tiltmeter include:

- Monitoring rotation of retaining walls, piers, and piles.
- Providing early warning of potential structural damage.
- Documenting any effects of nearby deep excavations.
- Monitoring the behavior of structures under load.

## Operation

The monopod tiltmeter is a uniaxial or biaxial electrolytic tiltmeter housed in a compact, waterproof enclosure.

The ceramic EL sensor used in the monopod tiltmeter measures tilt over a range of  $\pm 10^\circ$  from vertical. The biaxial model has a second sensor mounted  $90^\circ$  to the first. Each sensor has signal conditioning circuitry for easy connection to data loggers.

The single anchor is typically grouted into a hole drilled in the structure. The tiltmeter is then fixed to the anchor and zeroed, using the built in bubble level and swivel clamp.

The initial reading is used as a baseline. Changes in the inclination of the structure are found by comparing current readings to the initial.

## Advantages

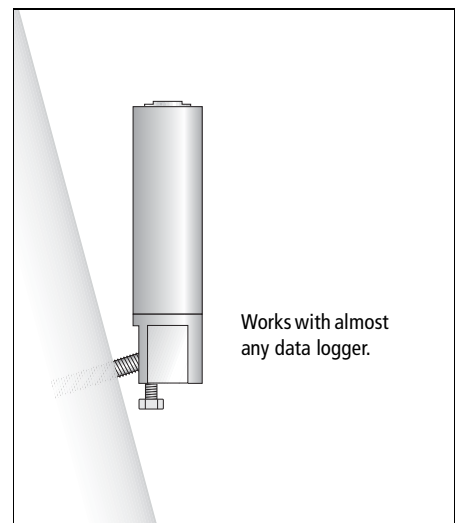
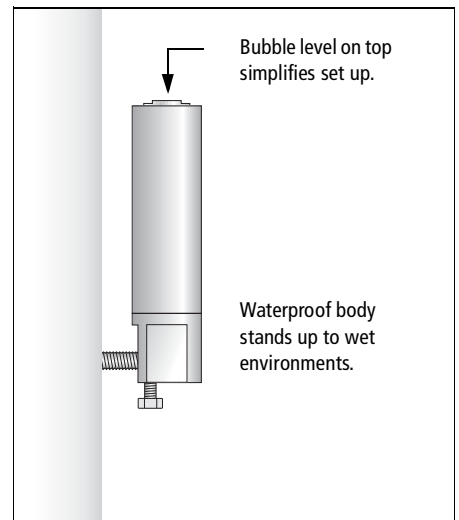
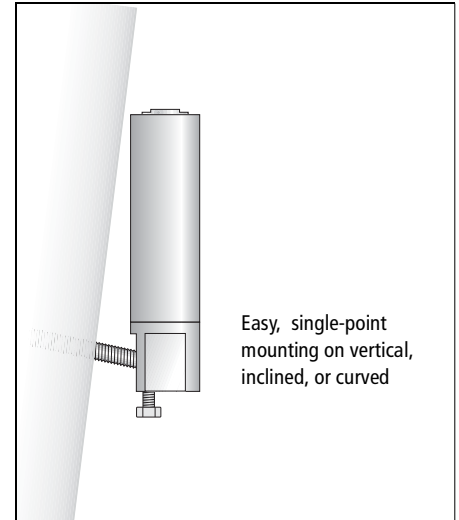
**Easy to Install:** One-point mounting, a built-in bubble level, and a swivel clamp make the monopod tiltmeter easy to install.

**Wide Range:** The tiltmeter has a range of  $\pm 10^\circ$ , so it can be installed off-vertical, if necessary. The wide range also eliminates the need for rezeroing when movement does occur.

**Uniaxial or Biaxial:** The monopod tiltmeter is available in uniaxial and biaxial versions.

**Robust and Reliable:** The EL tiltmeter sensor has no moving parts and its electronics are fully sealed inside the waterproof tiltmeter body.

**Suitable for Automatic Readings:** The tiltmeter outputs a signal that can be read by most data loggers. It can also be read manually with the EL Data Recorder.



**EL MONOPOD SPECIFICATIONS**

**Monopod Tiltmeter, Uniaxial . . . .56803101**

**Monopod Tiltmeter, Biaxial. . . . .56803102**

Uniaxial tiltmeter includes one electrolytic sensor with signal conditioning, a thermistor, 3 meters of signal cable, an anchor, and a manual.

Biaxial tiltmeter includes two electrolytic sensors, signal conditioning, a thermistor, 3 meters of signal cable, an anchor, and a manual.

**Sensor Type:** Electrolytic tilt sensor with hermetically-sealed ceramic body.

**Calibrated Range:** ± 10 degrees.

**Resolution:** 9 arc seconds, using a 13 bit readout device such as the CR10 datalogger.

**Repeatability:** ±22 arc seconds.

**Calibration:** 11 point calibration taken at five temperatures from -6 to 42 °C.

**Body:** Aluminum body, stainless swivel clamp with teflon liner, 38 x 150 mm (1.5 x 6").

**Anchor:** Stainless steel all-thread rod, 10 x 100 mm.

**SIGNAL CABLE**

**Signal Cable . . . . . 50613527**

Shielded cable with seven 22-gauge tinned-copper conductors and polyurethane jacket. Note that the tiltmeter is supplied with 3 meters of cable attached.

**READOUTS**

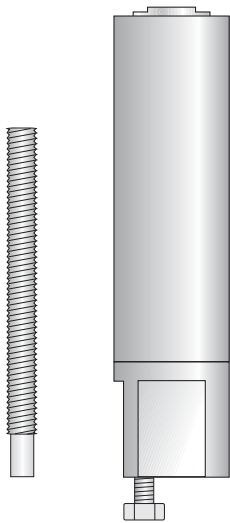
**EL Data Recorder . . . . . 56813500**

This readout displays and stores tilt readings in volts and temperature readings in degrees C. Includes software for transferring stored readings to a Windows PC.

**DATA LOGGERS**

**Campbell Scientific CR10X System:**

Up to 16 biaxial sensors or 16 uniaxial sensors can be connected to each AM16/32 multiplexer. See separate data sheet for details.



Monopod tiltmeter and anchor