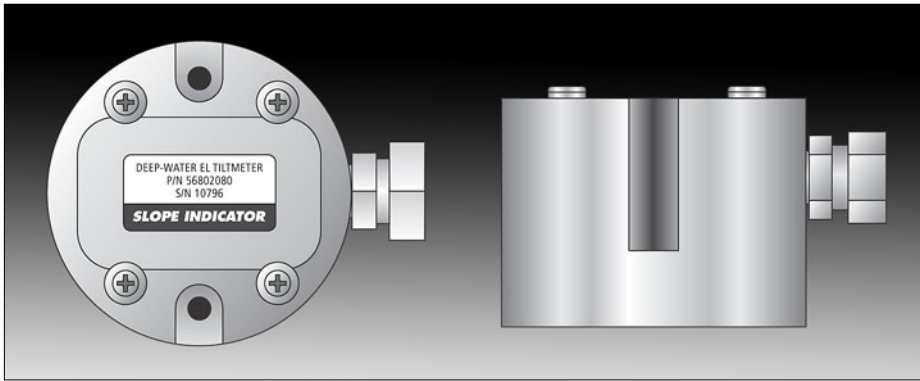


# Deep-Water EL Tiltmeter



## Applications

The Deep-Water EL Tiltmeter is a narrow angle, high resolution device for monitoring changes in the inclination of a structure. Rated waterproof to pressures greater than 3 MPa, the tiltmeter is suitable for applications such as:

- Monitoring the rotation of retaining walls, piers, and piles in an underwater location.
- Monitoring the behavior of the concrete face slabs of CFRF dams.

## Operation

The deep-water tiltmeter consists of an electrolytic tilt sensor housed in a compact, waterproof enclosure.

The tiltmeter mounting surface should be horizontal and flat. If the tiltmeter is to be mounted on an inclined surface, a horizontal mounting shelf should be constructed. Two anchors are installed in the structure and the tiltmeter is fastened to the anchors.

Since signal cable will be subjected to the same pressure as the tiltmeter, it must be encased in waterproof conduit that has the same pressure rating as the tiltmeter. Continuous tubing is recommended.

Tilt readings are obtained with a data logger or a portable readout. Readings are in volts and are converted to angles by applying conversion factors. Changes in tilt are found by comparing the current reading to the initial reading.

## Advantages

**High Resolution:** The deep-water tiltmeter can detect a change in tilt as small as three seconds of arc.

**Robust & Reliable:** The tiltmeter has no moving parts and its brass housing is impervious to most water chemistry.

**Rated for High Pressure:** The tiltmeter is rated for 3 MPa of water pressure. Signal cable must be encased in waterproof conduit rated for the same pressure.

**Ready for Data Logging:** The deep-water tiltmeter can be connected to a data logger that monitors movement continuously and can trigger and alarm when threatening movements are detected.

**DEEP-WATER EL TILTMETER****Deep-Water EL Tiltmeter . . . . .56802080**

Includes tilt sensor with calibration record, waterproof housing, and 1.8 m of signal cable. Cable is encased in flexible, waterproof conduit with fitting (1-inch IPS) for splice housing. Signal cable, anchors and bolts are ordered separately. Splice housing and conduit are supplied by user.

**Sensor:** Ceramic-body, uniaxial electrolytic tilt sensor with signal conditioner circuits.

**Range:**  $\pm 3$  degrees.

**Resolution:** 3 arc seconds.

**Linearity:**  $< \pm 2\%$  FS.

**Repeatability:**  $\pm 9$  arc seconds.

**Water Pressure Rating:**  $>3$  MPa when signal cable is encased in waterproof conduit with the same pressure rating.

**Output Signal:**  $\pm 2.5$  Vdc.

**Dimensions:** 102 mm x 76 mm (4" x 3").

**INSTALLATION ACCESSORIES****Anchor Kit . . . . . 56802090**

All components are made of brass or materials with like properties to avoid problems with electrolysis..

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

Shielded cable with seven 22-gauge tinned-copper conductors and polyurethane jacket. To achieve waterproof rating of sensor, signal cable must be protected by waterproof conduit.

**READOUTS & DATA LOGGERS****Campbell Scientific CR10X Data Logger**

Three tiltmeters can be connected directly to one CR10. Up to 16 tiltmeters can be connected to an AM16/32 multiplexer. See separate data sheet for more details.

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

Displays tilt readings in volts and temperature readings in degrees C. Includes software for transferring stored readings to a Windows PC. See separate data sheet for more details.