GEO INSTRUMENTS

Tiltmeters can be mounted on stakes or poles and used to trigger alarms when sudden movement occurs.

Tiltmeters can be mounted on structures to monitor stability. Brackets are available for nearly every environment.

Tiltmeters can be installed on vertical or horizontal arrays of beams to monitor differential settlement and deformation.

Tiltmeter Applications

Triggering Alarms
- Landslides & Rockfalls
- Embankment Failure

Monitoring Stability
- Stability of piles & shoring
- Stability of structures potentially affected by excavations or tunneling
- Stability of piers during bridge renovations
- Stability of building facades during interior renovations

Monitoring Deformation
- Effects of pressure grouting
- Differential settlement and heave

Types of Tiltmeters

Wired Tiltmeters are electrolevel-based devices that are connected to a datalogger. The logger supplies powers and obtains readings. When used in arrays, electrolevel tiltmeters can be supplied with an RS-485 interface to simplify cabling and connections.

Wireless Tiltmeters are MEMS-based, self-powered digital devices that provide high-resolution measurements with built-in logger and communications capabilities.

Wireless tiltmeters are preferred for their simplicity of operation, ease of installation, and high performance.

Wireless Laser-Tiltmeters monitor stability of bridge piers as bumper system is replaced.

Wireless Tiltmeters monitor stabililty of MSE wall during major repair work.

Airport jetbridge monitored by wireless tiltmeter during adjacent foundation work.

Wireless tiltmeters monitor stability of 40-foot retaining wall above public parking lot.

FlatMesh Wireless Tiltmeter

Sensor: 3-axis MEMS accelerometer integrated with wireless node. Reports two axes of rotation from horizontal.

Range: ±90° in each axis.

Resolution: 0.0001°.

Repeatability: ±0.0005°.

Environmental: IP68, -40°C to +85°C.

Power: Internal batteries, 12 year battery life, 25 min intervals.

Communications: 2.4Ghz FlatMesh wireless network with cellular gateway to internet.

LoRa Wireless Tiltmeter

Sensor: 3-axis MEMS accelerometer integrated with wireless logger. Reports two axes of rotation from horizontal.

Range: ±90° in each axis.

Resolution: 0.0001°.

Repeatability: ±0.0003°.

Accuracy: ±0.005° @ 4° of tilt,

± 0.013° at 15° of tilt.

Environmental: IP 68, -40°C to +85°C.

Data Memory: 140,000 readings

Power: Internal batteries, 3 year battery life, 5 minute intervals.

Communications: 900Mhz LoRaWan wireless network with cellular gateway to internet.

EWS Satellite Tiltmeter

Sensor: 3-axis MEMS accelerometer integrated with wireless logger. Reports two axes of rotation.

Range: ±5° in each axis.

Resolution 0.0001°

Repeatability ±0.0002°

Data Memory: 256,000 measurements.

Environmental: IP67, -20°C to +60°C.

Power: Internal batteries (2x LiSOCL2 long-life D-Cell batteries).

Communications: Satellite version transmits directly to Iridium satellites. Cellular version transmits directly to LTE-M cellular networks. Choose the satellite version for remote locations. Choose the cellular version for urban areas with cellular infrastructure.

Electrolevel Tiltmeter (Wired)

Sensor: Uniaxial electrolytic sensor.

Full Range: ± 3°.

Calibrated Range: ± 0.68°.

Resolution: 0.0003°.

Accuracy: ≤1% FS calibrated range.

Temp Rating: -20 to +50 °C.

Power: Supplied by datalogger.

Communications: Cabled connection to Campbell Scientific dataloggers.