



Fixed inclinometer with 3 segments

Fixed Inclinometers

Fixed inclinometers are deployed to monitor structural rotation, differential settlements, and deformation.

Applications

- Monitoring the stability of structures adjacent to excavations.
- Monitoring deformation of shoring walls.
- Monitoring differential settlements.

Operation

Similar in principle to shape arrays or in-place inclinometers, the fixed inclinometer is an array of tilt sensors mounted on rigid segments of tubing that are anchored to the structure.

Movement or deformation of the structure changes the spatial position of the anchors and the inclination of the rigid segments attached to the anchors.

The length and inclination of each segment is used to calculate lateral deviation. Summing the deviations over the length of the array provides a profile. Changes in the profile indicate displacement, deformation, or rotation.

Configurations

Each segment of the fixed inclinometer is instrumented with a high resolution, narrow angle, electrolytic tilt sensor. Sensors are typically uniaxial, but biaxial sensors can be supplied as needed.

Segment length can be varied to suit the application. Lengths between 3 and 6 feet are most common and provide good coverage and rigidity. Longer lengths are possible but less rigid.

Advantages

High Resolution: Fixed inclinometers can reliably detect changes as small as one second of arc.

Proven Technology: Fixed inclinometers are robust and reliable with minimal electronic components.

Compatible: Fixed inclinometer data is fully compatible with GEO's automated monitoring platform (AMP), which processes the measurements, checks for alarms, and posts plots and planviews on the project website.

Tilt Sensor

Sensor Type: Electrolytic. Uniaxial tiltmeter contains one sensor, Biaxial tiltmeter contains two sensors.

Full Range: $\pm 3^\circ$.

Calibrated Range: $\pm 0.68^\circ$ or 12 mm/m.

Resolution: 1 arc second or 6×10^{-5} inch per foot (0.005 mm/m)

Accuracy: <1% FS (calibrated range).

Temperature Rating: -20 to +50 °C.

Enclosure: IP 66, powder-coated metal.

Dimensions: Uniaxial enclosure measures 4.9 x 3.2 x 2.3" (125 x 80 x 59 mm).

Compatibility: Campbell Scientific Loggers.

Segments & Anchors

Segment: 38 x 38mm square-section aluminum tubing, supplied in specified lengths. Supplied with end brackets and low-friction bushings.

Anchors: Stainless steel all-thread. Length as required.