

Applications

A manual inclinometer probe is used to measure lateral ground movement and deformation in a borehole. The probe calculates tilt measurements at multiple depths that can be used to track changes in substrata over time.

The probes are available in uniaxial or biaxial models as required.

Typical applications include:

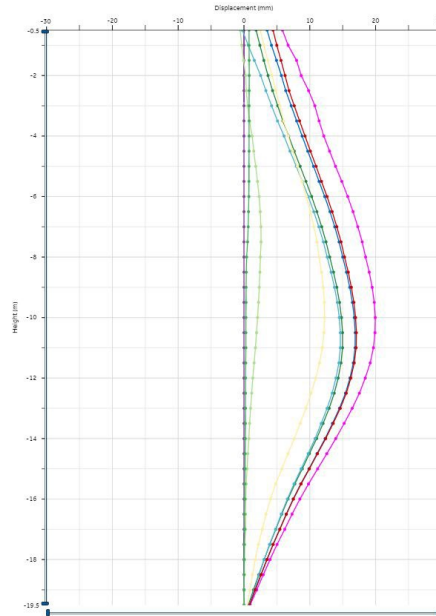
- Measuring deformation in Retaining Walls and Deep excavations
- Monitoring movement in Slopes, Embankments and Ground Improvement Schemes
- Monitoring of ground movement around Tunnels and Shafts.

Operation

Manual Inclinometer surveys are conducted by lowering the probe to the bottom of the monitored borehole, aligned with the direction of expected movement using the keyways in the inclinometer casing.

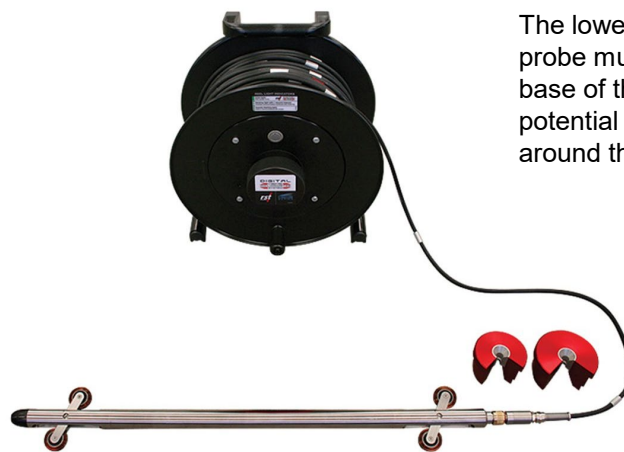
The probe is systematically lifted out of the casing in 0.5m increments, pausing at each interval to take an inclination reading. Care must be taken to let readings stabilise before recording a value using the connected mobile device.

Upon completion of the initial set of readings, the probe is rotated and re-inserted to record a second set.



Specifications

Sensor Type:	MEMS
Probe length:	680mm
Probe weight:	1.32kg
Gauge Length:	500mm
Resolution:	0.0017% Full Scale
Repeatability:	0.007% Full Scale
Accuracy:	0.0125% Full Scale



Installation

Manual inclinometer readings require the installation of specially designed inclinometer casing into the measured borehole.

The casing is installed within a reservation tube or similar and then grouted in place. To ensure accurate measurement of ground movement the grout strength must be similar to the strength of the monitored substrate.

During installation, the casing is oriented so a keyway in the side of the tube is pointed towards the direction of expected movement.

This is marked as the primary keyway that will be measured using the inclinometer probe during future readings.

After installation is complete and the grout securing the casing has cured, a manual baseline reading consisting of three measurements is taken.

Additionally, a spiral survey in undertaken to measure the down-hole helical deformation of the casing within the borehole.

The lowest level to be measured by the probe must be at least 0.5m above the base of the casing to account for potential movement of the ground around the borehole.

Key Advantages

Versatility:

Inclinometer readings can be combined with extensometer data to provide multi-dimensional movement data.

Compatibility:

Inclinometer casings can also be used with IPI installations, allowing changes in monitoring systems and different project phases.

Portability:

Manual Inclinometer probes are easy to transport and deploy on-site, meaning measurements can be as and when necessary.