

BIT - Borehole Inclusion Tester

All piling specifications prescribe the allowable deviation of the pile axis from the vertical. Typical limits vary between 1.33% (UK ICE) and 2% (US FHWA). In diaphragm and secant pile walls, the specification is typically more restrictive.

Unlike traditional systems, BIT uses the auger/bucket itself as a centralizer, thus eliminating the need for a bulky system. The BIT enables fast and accurate determination of inclination in both dry and wet boreholes, vertical or raked.

BIT is compliant with the ASTM D8232-18 standard.

Large boreholes and diaphragm-walls may be quickly tested several times during drilling to enable real-time corrective action. [Operation in a Borehole](#)

Finished pile inclination can be measured through the CSL access tubes. [Operation in a Pile](#)

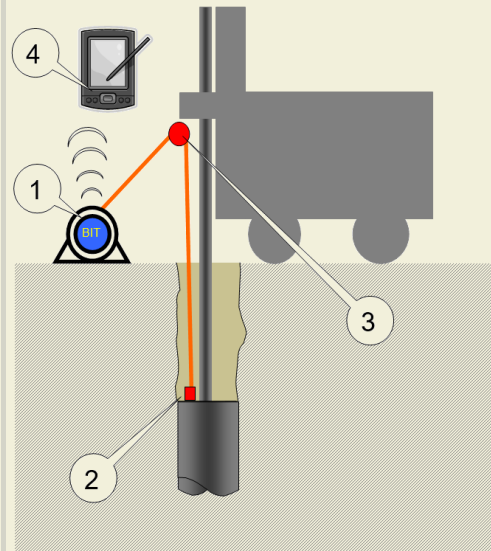
System components:

- (1) BIT instrument, microcontroller-driven, with wireless communication to peripherals and durable cable connection to the sensor.
- (2) Sensor including precision bi-axial inclinometer and a gyro, waterproof to 160m.
- (3) Wireless depth encoder.
- (4) Android smart-phone or tablet with software and Bluetooth communication (not included).
- (5) Access-tube adapter / centralizer (optional)

Operation:

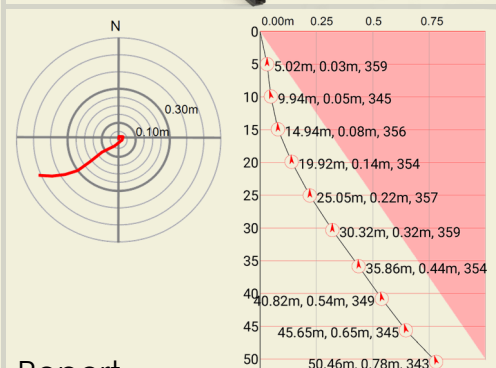
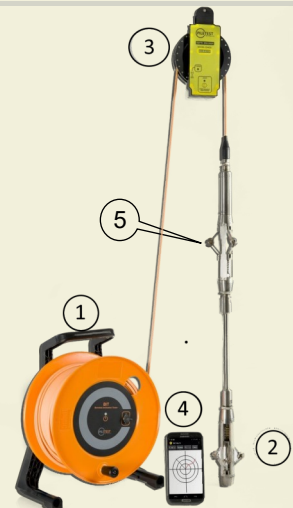
In the open hole, the inclinometer is rigidly attached to the drill bit (bucket or auger) and the depth encoder hung from the rig. The bucket is then lowered (with minimal axis turning) into the open hole. The descent is stopped at predetermined depths for inclination reading and the deviation calculated in real time by integrating the inclination over depth. When pulling the bucket upwards to the surface, the procedure is repeated. The resulting closure error is distributed over the whole depth.

With the optional access-tube adapter, the BIT can also check the as-made inclination of bored piles.



Schematic view

The BIT system with access



Report.
Top and side view

BIT - Technical Specifications

Physical	Housing	Sensor : Rugged metal case Instrument: Inside Schill cable reel
	Shipping weight	12Kg
	Temperature range	-10 ~ 50 °C
	Humidity	90% (non-condensing)
	Power	Internal Li-ion rechargeable battery, 7.4 V 500mAh, sufficient for a full day's work
	Waterproof	AC adapter/charger included Sensor: IP67, Protection against complete submersion in water Instrument: IP62, 90% condensation (light rain)
Technical	Wireless	Bluetooth, 2.4Ghz
	Depth meter	Wireless (Zigbee) with internal 1400mAh battery and magnetic charger adapter
	Inclinometer	MEMS, dual axis, temperature-compensated
	Gyro	MEMS, Automatic drift compensation
Performance	Cables	80m (150m optional) rugged Polyurethane
	Borehole depth	5m-140m
	Borehole diameter	Unlimited
	Productivity	10-20 minutes / borehole (Typical)
Output	Accuracy	Inclination: 0.1% (0.07°) Depth: 0.05m
	Reporting	Produced on office PC, including top view of pile axis, vertical section in the direction of maximum inclination and more
	Minimum computer	Android smartphone with Bluetooth hardware Android tablet with Bluetooth hardware No support for MS Windows system or Apple OS

