

SPECIFICATION FOR DURHAM GEO / SLOPE INDICATOR DIGITILT AT INCLINOMETER SYSTEM

General

The Contractor shall furnish and deliver, to become the property of the project owner, a complete Digitilt AT Inclinator System consisting of:

- MEMS-based inclinometer probe
- Lightweight AT control/suspension cable mounted on a Bluetooth reel
- Cable gate (depth control device)
- Reader device (Android tablet) running the Digitilt Reader App
- ABS inclinometer casing
- Data management and reduction software (DigiPro2)

A protective carrying case shall be supplied for the probe and accessories, designed to protect the equipment from mechanical shock, vibration, and incidental damage.

The Contractor shall provide a manufacturer-approved method of probe calibration.

7.1 Inclinometer Probe — Digitilt AT Probe

The inclinometer probe shall be the Digitilt AT MEMS-based probe (P/N 50332500 English, 50332510 Metric) manufactured by Durham Geo Slope Indicator (DGSI).

Probe Requirements

- **Sensor Type:** Dual-axis MEMS tilt sensors (replacing servo accelerometers).
- **Gauge Length:**
 - English version: 2 ft
 - Metric version: 0.5 m
- **Construction:** Rugged, waterproof stainless steel housing.
- **Tracking:** High-quality wheels with compact carriage allow excellent tracking through tight curves.
- **Orientation:** Probe contains two orthogonal tilt sensors allowing A-axis and B-axis measurements.
- **Operation:** Designed to survey casing at 2ft or 0.5 m increments.
- **Wheel Design:** Wheels sized and aligned for ATS (AT system) casing grooves, with excellent stability and minimal wobble.
- **Power:** Supplied via the Bluetooth reel.
- **Compatibility:** Fully compatible with Digitilt AT control cable, cable gate, Reader App, and DigiPro2 software.

7.2 Inclinometer Suspension / Control Cable — Digitilt AT Control Cable

The control/suspension cable shall be the Digitilt AT control cable, supplied mounted on a Bluetooth reel.

Cable Requirements

- **Graduations:** Clearly marked depth graduations every 2ft or 0.5 m, with indexing crimps every 2ft or 0.5 m for precise depth alignment.

- **Construction:** Lightweight, flexible, durable jacket designed for field use and resistance to abrasion and chemicals.
- **Power/Data:** Carries power to the probe via the Bluetooth reel's internal battery system.
- **Lengths:** Available in 100ft, 150ft, 200ft, 300ft or 30 m, 50 m, 75 m, 100 m and other specified lengths (P/N 50334100, 50334150, 50334200, 50334300, 50334303, 50334305, 50334307, 50334310). [\[durhamgeo.com\]](http://durhamgeo.com)
- **Reel:** The reel contains:
 - Rechargeable batteries ($\approx$ 40 hours operation)
 - Bluetooth module for communication with the Reader App
 - Power and status LEDs

7.3 Readout System — Digitilt AT Reader App + Tablet + Bluetooth Reel

The Digitilt AT system readout consists of:

- Android Tablet running the Digitilt Reader App
- Bluetooth Reel with battery and wireless communication
- DigiPro2 software for PC data management

7.3.1 Digitilt Reader App + Tablet

- Provides real-time display of depths, A-axis and B-axis tilt readings.
- Automatically detects stable readings.
- Stores readings in non-volatile memory.
- Allows resume of interrupted surveys without data loss.
- Provides checksum, profile, and change plots for validation.
- Exports data via email, Dropbox, or USB.

7.3.2 Bluetooth Reel

- Houses rechargeable batteries ($\approx$ 40 hours per charge).
- Includes power switch and LEDs for Bluetooth, battery, and power status.

7.4 Cable Gate Assembly

The Digitilt AT system uses the AT Cable Gate, which replaces the older pulley assembly.

- Provides precise depth control by aligning the cable's indexing crimps at the top of the casing.
- Prevents depth errors and ensures consistent placement.
- Easily attaches to the top of the casing.

7.5 Inclinometer Casing

Casing shall be standard ABS inclinometer casing with 4 orthogonal grooves.

- Manufactured to DGSI specifications for Digitilt systems.
- Designed for smooth probe tracking, including tight-radius bends.
- Typical AT-compatible casing sizes: 70 mm OD or 85 mm OD, depending on project requirements (matching legacy 70/85 mm listed in original spec).
- Couplings: Snap-together, grout-tight, no tapes or adhesives required.

7.6 Data Reduction Software — DigiPro2

The Data Reduction Software shall be DigiPro2, as supplied by DGSI.

- Compatible with Digitilt AT Reader App data.
- Produces plots of absolute position vs. depth, cumulative and incremental displacement, and displacement vs. time.
- Includes error-correction tools.
- Supports export to standard formats and printing via modern devices.

7.7 Installation

All inclinometer casing and system components shall be installed in strict accordance with Durham Geo / Slope Indicator Digitilt AT System installation manuals.