Hydrostatic Profile Gauge

Profiler is a hydrostatic profile gauge designed for settlement or heave monitoring beneath embankments or foundations.

The system consists of a settlement probe equipped with a high-sensitive pressure transducer connected by liquid filled tube to a reservoir.

The probe is pulled – meter by meter – through a pipe buried into the embankment. The profile of the pipe is relative to the reference point where the measuring unit is located.

The readings are shown in mm of settlement on a digital display.
HYDROSTATIC PROFILE GAUGE

WORKING PRINCIPLE
A tube is installed horizontally at the selected location. During operations the reel, containing the reference reservoir filled with liquid, is mounted on a tripod close to the tube end. All the measures of hydrostatic pressure along the tube is refered to the reservoir level and therefore to the reference benchmark. Comparison of data measurements taken at different time intervals provide settlements and/or heaves along the section where the tube is installed.

TECHNICAL SPECIFICATIONS

PROBE
- Material: Stainless steel
- Outer diameter: 34 mm
- Length: 280 mm
- Measuring range: 8.5 m
- Resolution: ± 20 mm
- Time lag: 3 - 10 sec.
- Temp. operating range: -10 °C + 60 °C
- Zero thermal shift: < 0.01% of F.S./°C
- Thermal sensitivity shift: < 0.01% of F.S./°C

READOUT
- Resolution: 0.005% F.S.
- Reading accuracy: ± 1 digit
- Total temperature drift: < 30 ppm/°C
- A/D converter: 14 bits + sign
- Sensor power supply: 12 V
- Input impedance: > 10 MOhm
- LCD: 4.5 digits
- Zero offset: external adjustable
- Power supply: rechargeable battery 12V DC
- Operating time: > 15 hours
- Temperature range: -10 °C + 50 °C

ELECTRO-HYDRAULIC CABLE
- Maximum length: 150 meter
- Tube: nylon 8 x 6 mm
- Marks: every meter
- Hydraulic fluid: deaired glicerine water mix
- Electrical cable: 6 x 0.22 mm
  Electric cable and tube are encapsulated in a common PVC jacket φ12.8 mm

REEL
- Material: fiber glass
- Diameter: 690 mm
- Height: 340 mm
- Tripod: aluminium
- Total weight: 25 kg with 50 m of tube

EXAMPLE OF INSTALLATION
A trench, (0.5÷1m deep and 0.3÷0.5m wide) is excavated along the profile to be monitored. The bottom of the trench is covered with a 150÷300 mm thick layer of thin sand levelled and compacted. The tube is laid on the sand layer and covered with further layers of compacted sand. Inside the tube a draw steel cable shall be left to pull the probe through the tube during measurements. At least one of the profile tube end must be accessible, although accessibility at both ends is advisable. A concrete block(s) fixing the end(s) of the tube is equipped with a bench mark providing absolute reference by topographic survey.