DATASHEET

Portable MEMS Inclinometer

Proven MEMS technology
Wireless communication to readout
Lightweight
Rugged construction
On board calibration in probe
Probes and reels are interchangeable

Portable MEMS Inclinometer

Overview

The MEMS Portable Inclinometer System utilises the very latest in Bluetooth and MEMS (Micro-Electro-Mechanical) technology to provide fast and highly accurate readings.

The system comprises a slimline probe (detachable), lightweight cable reel and a rugged PDA (Personal Digital Assistant) which is used to view and/or download data at the borehole.

The probe is fitted with guide wheels and contains MEMS accelerometers measuring tilt in two perpendicular planes: One in the plane of the inclinometer wheels is known as the A axis; the other, in a plane perpendicular to that of the wheels, is known as the B axis.

Kevlar® reinforced cable is mounted on a lightweight, tough plastic reel which houses the Bluetooth module for wireless communication to the PDA. The cable is attached to the probe via a waterproof (to 1500m) quick connection which allows the probe to be detached, significantly reducing transport costs when returned for re-calibration.

The probe contains 'on board' calibration making it completely interchangeable with any reel. A MEMS Spiral Sensor is also available and is also compatible with any reel.

System comprises:

- MEMS Digital probe & carrying case
- Reel and cable with case & spare battery
- PDA with data collection & transfer software
- Charger & accessories for reel & PDA
- 70 & 85mm inclinometer casing cable grips

APPLICATIONS

- Dams & embankments
- Retaining walls & deep excavations
- Slopes & embankments
- Tunnels & shafts
- Bridges
- Ground improvement

USED TO MONITOR

- Lateral displacement of soil or rock
- Lateral displacement of diaphragm walls
- Lateral displacement of retaining walls
- Lateral displacement of dam cores
- Downstream face of rock filled dams
- Settlement & heave under tanks

FEATURES

- High accuracy
- Fast stability of readings
- MEMS technology
- Wireless communication to readout
- Lightweight
- Rugged construction
- On-board calibration in probe
- Probes and reels are interchangeable
- Only probe needs to be returned for calibration
- Kevlar® reinforced cable with swaged cable marks

CE MEMS

Portable MEMS Inclinometer

Specifications

MODELS	
Orientation	**Full Scale Range[1]**
Vertical	±30° from vertical
Inclined	±15° from 45°
Horizontal	±30° from horizontal
PERFORMANCE	
Accuracy[2]	±2mm per 25m
Resolution	0.005mm per 500mm
Repeatability	±0.002°
Operating temperature range	-40 to +70°C
PROBE	
Wheelbase	0.5m
Probe diameter	25.4mm
Probe length (including connector)	719mm
Probe weight	1.06kg
Probe material	Stainless steel
CABLE	
Cable diameter	6.4mm (±0.1)
Cable weight	2.3kg / 50m
Cable tensile strength	5.90 kN
Cable jacket	Polyurethane
Cable stretch (in 50m dry borehole)	7.0mm
Cable lengths	30, 50, 75, 100 150m[3]
CABLE CONNECTOR	
Connector material made of 316 stainless steel	
Rating for underwater use,with wet connection at 1524m in salt water	
Includes a spring strain relief to enhance cable durability at the connector entrance	
CABLE REELS	
Up to 75m cable reel diameter	310mm
100 to 200m cable reel diameter	380mm
+225m cable reel diameter	460mm
Reel weight with 50m cable	4.7kg

1 Other ranges available on request
2 Using 3rd order polynomial
3 Longer available on request

Ultra-Rugged Field PC² & Accessories

Overview

The Ultra-Rugged Field PC² is a data collector which provides a high-level user interface, industry-leading memory, optional Flash data security, on-site data analysis and instant USB synchronisation with office computers. It also offers on-board wireless communication options for ease of use and reliability.

Support and interface software is available which enables the Ultra-Rugged Field PC² to be used with the following systems and data loggers:

- Digital MEMS Inclinometer System
- Digital MEMS Tilt Meters
- In-place Inclinometers
- Digital ThermArray Systems
- Single Channel Data logger
- 5/10 Channel Data logger

APPLICATIONS

On-site data collection

Compatible with several systems and dataloggers

FEATURES

Rugged design for use in extreme environments

Wireless options

Battery easily changed in the field

8GB flash storage, user-accessible micro SD/SDHC slot

Secure Digital (SD or SDIO) can be used with memory cards and other peripherals

Secure Hand Strap

On-board stylus for quick access

Compatible accessories

Ultra-Rugged Field PC^2 & Accessories

Specifications

OPERATING SYSTEM AND MEMORY
1.0GHz ARM Cortex A8 i.MX53 processor
Windows® Embedded Handheld 6.5.3
Microsoft® Office Mobile 2010
Bluetooth® Wireless Communication
Wi-Fi® 802 11b/g/n with extended range
Internal solid state 512 MB Flash memory
8GB flash storage, user-accessible micro SD/SDHC slot
Both USB Host and Client plus 9-pin RS-232
Real-time clock keeps correct date & time even without battery
DISPLAY
Active viewing area of 109mm diagonal
High visibility backlit LCD - brilliant contrast in direct sunlight
VGA LCD TFT (800 x 480 pixels). Portrait or landscape orientation)
Scratch resistant screen
On-board stylus with tether
Projected capacitive touch interface 'optically bonded' to display for increased visibility
POWER
Intelligent Li-Ion battery pack, 3.7VDC @ 10600mAh, 38.7Whr
20 hour battery life on single charge (2 to 4 hours charge time)
Battery easily changed in the field
ENVIRONMENTAL
Operating temperature -30 to 60°C
Size 91mm(w) x184mm(l) x 38mm(d)
Weight 590g
Port: Both USB Host & Client plus 9-pin RS 232
Bluetooth® rated to -20°C
Waterproof and dustproof, IP68
Shockproof: multiple drops from 1.5 m on to concrete
MIL-STD-810G: high/low temp, temp shock, rain, humidity, sand & dust, immersion, vibrations, altitude, shock