ACKCIO TILTMETER (LoRa Mesh)

Code : N625



- The Ackcio BEAM-TM is a wireless tiltmeter node engineered for high-precision angular measurement and deformation monitoring in geotechnical and structural applications.
- It integrates a self-compensated MEMS biaxial inclinometer developed by Sisgeo, providing accurate tilt readings with extremely low noise and excellent long-term stability.
- Designed to capture minute angular changes in structures such as retaining walls, tunnels, bridges, and buildings, the BEAM-TM ensures accurate real-time data collection through Ackcio's long-range wireless mesh network.
- The node supports a measurement range of ±15° with an exceptional resolution of 0.0001°, and accuracy up to ±0.003° for smaller ranges, ensuring precise performance in critical monitoring scenarios.
- Temperature effects are minimized through automatic thermal compensation, maintaining consistent accuracy between −20 °C and +80 °C.
- Wireless communication is powered by Ackcio Mesh, a secure, long-range, self-healing network that supports up to 50 nodes and 12 hops with AES-128 end-to-end encryption.

- The BEAM-TM operates autonomously using a high-capacity Li-$SOCl_2$ D-cell battery, delivering multi-year performance depending on sampling frequency and transmission settings.
- Configuration, setup, and data diagnostics are handled through Ackcio Nimbus, an Android application for quick deployment and network management.
- The IP67-rated aluminium enclosure provides superior environmental protection, making it ideal for long-term outdoor installations in challenging site conditions.
- Mounting options include both horizontal/vertical and rail mounting plates, designed for flexible installation and secure alignment in any orientation.

TECHNICAL SPECIFICATIONS

- Sensor Type: Sisgeo self-compensated MEMS inclinometer
- Measurement Axes: Biaxial
- Measurement Range: ±15°
- Accuracy: ±0.003° (for ±2.5°, ±5.0°, ±10° ranges); ±0.01° (for ±15° range)
- Resolution: 0.0001°
- Temperature Offset: ±0.003°/°C (−20 °C to +80 °C)
- Thermistor Range: −20 °C to +80 °C (3 kΩ sensor)
- Thermistor Resolution: 0.1 °C
- Thermistor Accuracy: ±0.5 °C (0 °C to +50 °C)
- Radio Band: ISM 863–870 MHz / 902–928 MHz
- Transmit Power: Up to 1 W (30 dBm)
- Modulation: 2-GFSK
- Data Rate: 50 kbps
- Network Capacity: Up to 50 nodes, 12 hops
- Range: Up to 5 km (line-of-sight), 1 km (urban), 500 m (subsurface)
- MCU: Arm® Cortex®-M3 48 MHz, 32-bit CPU
- Memory: 128 KB flash, 20 KB SRAM, 8 MB external flash
- Clock: High-precision RTC (10 ppm, −40 °C to +80 °C)

- Interfaces: USB 2.0 (Micro B, 5 V, 500 mA max), LED indicators (SYS, SENS), buttons (TEST, RESET, FORMAT)
- Operating Temperature: −40 °C to +80 °C
- Enclosure: Die-cast aluminium, IP67 rated
- Power Supply: 2.7–4 V DC internal battery
- Internal Battery: 1 × D-cell Li-$SOCl_2$ 3.6 V, 19 Ah
- Typical Current Drain: <20 µA (idle), <100 mA (RX), <300 mA (TX)
- Circuit Protection: Surge (60 V DC breakdown), impulse (500 V typical), reverse polarity, short-circuit, ESD 15 kV
- Firmware: Ackcio Mesh low-power networking firmware
- Software: Ackcio Nimbus Android setup and monitoring app

ORDERING INFORMATION

Item Name	Item Code
ACKCIO TILTMETER (LoRa Mesh)	N625X001B

OTHER PHOTOS



