Ontoto

Your data, anywhere

GNSS Tilt Sensor Data Logger

Fully integrated low power satellite/NB-IoT telemetry

Overview

The Ontoto GNSS tilt sensor is a compact, lightweight, solar-powered sensor designed for long-term remote monitoring of deformation and slip. The device utilises both low earth orbit (LEO) satellite and NB-IoT communication, enabling data transmission from any location—even the most remote. Energy harvesting is used to optimise the energy extracted from the available sunlight. With the Ontoto Connect App, the device is easily configured and deployed on-site using a smart phone or tablet. Being an edge device the sensor can be configured to monitor tilt and position and transmit should an alarm event occur. All devices are remotely managed through the Ontoto Web Portal.

General Specifications

Power Source	• Solar powered hybide supercapacitor
Supercapacitor	• Voltage: 2.5-4.2 V • Capacity: 2500 mAh • Lifespan: >10000 cycles
Service life	• >10 years
Solar panel	• 8 x 0.1 W monocrystalline
Transmission	• Satellite via Astrocast (L-band) • NB-IoT
BLE	• BLE 4.2
Clock accuracy	• ± 2 seconds per day, automatically resynced on a transmission
Operating temperature	• -40°C to +85°C
Dimensions	• 200mm x 60mm
Mounting	• Via a 5/8”-11 UNC thread

GNSS Specifications

GNSS bands	• GPS: L1, L2, L5 • GLONASS: L1, L2 • Beidou: B1, B2, B3 • Galileo: E1, E5, E6 • QZSS: L1, L2, L5
Number of channels	• 1100
Sensitivity	• Acquisition: -144 dBm • Tracking: -154 dBm
Raw measurement accuracy	• Carrier phase: < 1 mm (rms) • Pseudorange: < 0.1 m (rms)
Antenna	• Gain: > 25 dB • VSWR: < 2 • Axial ratio: < 2.5 dB at zenith • Phase center variation: < 3 mm

Positioning Specifications

GNSS positioning accuracy [1]	• Horizontal: < 10mm + 1ppm [2] • Vertical: < 15mm + 1ppm
Tilt (<±20°, 25°C)	• Resolution: 5 arcsecond • Accuracy: 20 arcseconds
Heading accuracy (magnetometer)	• < 2°

1. Post processed with local base station
2. ppm: 1 mm/km relative to base station