GeoWAN™

Product Data Sheet
GeoWAN 2.0 Triaxial Tilt Node (High-G Model)

The GeoWAN 2.0 Triaxial Tilt Sensor Node is an extremely high precision and exceptionally stable three axis tilt sensor which reports its measurements using Senceive's GeoWAN wireless communications network to a GeoWAN Gateway.

Successfully applied in many applications, including those measuring:

- Tunnel distortion
- Tunnel heave/settlement
- Embankment slippage
- Structural movement
- Rail track heave/settlement
- Rail trackbed cant and twist

Integrated software:

- WebMonitor (Data visualisation)
- Senceive.io (Data management)
- NFC (In-field hardware management tool)

Key features

- Integrated triaxial tilt sensor
- Extremely low noise performance
- Changeable batteries
- Resolution of 0.0001° (0.0018 mm/m) and repeatability of ±0.0025° (±0.0436 mm/m)
- Integrated long life battery
- Internal antenna
- Up to 12 year battery life
- Integrated temperature sensor
- Versatile mounting options
- Waterproof to IP66 / IP68

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GeoWAN 2.0 Triaxial Tilt Node

Physical Specifications

Parameter	Value
Dimensions	105 x 105 x 64 mm
Total Mass	414 g (including D-size battery)
Housing Material	PC plastic body and lid cover with a die-cast aluminium base
Internal Protection Marking	IP66 IP68 (1 m for 24 hours)
Mounting Options (size and number of holes for mounting plate connection)	M4 holes in bottom Plates and brackets available for magnetic fixing, trackbed, stake and pole mounting, and many other applications
Operating Temperature Range	-40°C to +80°C

Internal Battery

Parameter	Value
Battery Type	Lithium Thionyl Chloride, non-rechargeable, D-cell
Nominal Voltage	3.6 V
Nominal Capacity	19000 mAh
Typical Battery Life	12 years at 30 minute reporting intervals *Consult with Senceive for your application*
Recommended options*	Senceive: SP-C03282-1 Saft: LS33600

*Batteries from other suppliers may work but we provide no guarantee on performance

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GeoWAN Radio Specifications

Parameter	Value
Communication Type	Star Topology
Frequency Band (868 variant)	863 MHz - 870 MHz ISM Band
Frequency Band (902 variant)	902 MHz - 928 MHz ISM Band
Frequency Band (915 variant)	915 MHz - 928 MHz ISM Band
Maximum Transmit Power (868 variant)	14 dBm conducted
Maximum Transmit Power (902 variant)	18 dBm conducted
Maximum Transmit Power (915 variant)	18 dBm conducted
Maximum Antenna Gain	+0.17 dBi (internal)
Range (with internal antenna)	Up to 12 km depending on the environment Trackbed: 1 km Tunnel: 2 km Urban: 2.3 km Line of Sight: 12 km *Consult with Senceive for your application and/or external antenna options*

Tilt Sensor Specification

Parameter	Value
Resolution	0.0001° (0.00175 mm/m)
Repeatability (-IXH model)	±0.0025° (±0.0436 mm/m)
Range	±90°

Sampling and Reporting

Parameter	Value
Maximum Reporting Frequency	30 seconds
Sample Storage*	Stores up to 60,000 sampling cycles in a circular buffer

*Retrieval is only available locally via NFC. The unit is not intended to operate as an offline data logger and requires a network connection to maintain an accurate clock

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Certifications to be obtained

- Tested to conformity with all the essential requirements of the Radio Equipment Directive 2014/53/EU and RoHS Directive 2011/65/EU
- FCC Grant of Equipment Authorization
- ACB ISED Canada Certificate: 24373-LR3N
- RCM (Australia and New Zealand)

Ordering Information and Accessories

Model	Description
L3N1-IXH(868)	**GeoWAN 2.0 Triaxial Inclinometer (High-g)** Europe
L3N1-IXH(902)	**GeoWAN 2.0 Triaxial Inclinometer (High-g)** North America
L3N1-IXH(915)	**GeoWAN 2.0 Triaxial Inclinometer (High-g)** Australia, New Zealand

Accessories	Description
FF-MP-S360N	**G2.0 Swivel mounting kit with 360-degree adjustment range** Screw directly to vertical walls
FF-MP-RSN	**G2.0 Right angle swivel mount** Screw to concrete tunnel linings and inclined walls
FF-MP-T2N	**G2.0 Trackbed two-part mounting plate kit**
FF-BK-xxxx FF-BE	**Tilt beam kit** See separate datasheet for more information
FF-MK-N	**G2.0 Magnetic mounting kit** Perfect for steel or cast iron structures
FF-MP-V (Order with FF-MP-S360N)	**Vertical mounting plate** Use U-bolts to fix to poles or stakes Use glue to fix to walls where drilling is not permitted
FF-MP-M2N	**G2.0 two-part magnetic mounting kit** High degree of adjustability, perfect for cast iron lined tunnels
SP-C03282-1	**G2.0 ER34615 3.6V 19Ah Battery** Senceive provided, suitable for GeoWAN 2.0 nodes
FF-SK-N	**G2.0 Stake mounting kit for customer-supplied stake**
FA-G2-SMA	**Replacement G2.0 Lid for External Antenna (SMA)**

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