



GeoWAN™

Product Data Sheet

GeoWAN 2.0 Optical Displacement Sensor with integrated Triaxial Tilt Sensor (High-G) Node



The GeoWAN 2.0 Optical Displacement Sensor with Triaxial Tilt Sensor (High-G) Node is an instrument which uses optical means to take high precision displacement measurements and pass these through Senceive's GeoWAN wireless communications network to a GeoWAN Gateway.

It can also be combined with Senceive's world-leading triaxial tilt sensor to obtain high precision tilt measurements that are linked to an external reference.

Successfully applied in many applications, including those measuring:

- Convergence/divergence for tunnel/arch intrados or bridge abutments
- Vertical movements for structural settlement or heave
- Lateral movements such as rail track slew
- Earthworks and embankment movement

Integrated software:

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

Key features

- Fully integrated unit
- Extremely low noise performance
- Internal antenna
- Optical sensor resolution of 0.1 mm and repeatability of ± 0.15 mm
- Tilt sensor resolution of 0.0001° (0.0018 mm/m) and repeatability of $\pm 0.0025^\circ$ (± 0.0436 mm/m)
- Changeable batteries
- Up to 10 year battery life
- Easy to align with target when using the magnet triggered aiming mode
- Integrated temperature sensor
- Versatile mounting options
- Waterproof to IP66 / IP68



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GeoWAN 2.0 Optical Displacement Sensor Node

Physical Specifications

Parameter	Value
Dimensions (L x W x H)	105 x 105 x 64 mm
Total Mass	440 g (approx.) including D-size battery
Housing Material	PC plastic body and lid cover with die cast aluminium base
Internal Protection Marking	IP66 IP68 (1m 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	-10°C to +40°C (full functionality) -25°C to +70°C (temperature and tilt only)

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	10 years at 1 hour reporting interval when using radio preset 1 8 years at 30 minute reporting interval when using radio preset 1 <i>Consult with Senceive for your application</i>
Recommended options*	Senceive: SP-C03282-1 Saft: LS33600

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

Optical Sensor Specification

Parameter	Value
Resolution	0.1 mm
Repeatability	±0.15 mm
Range	0.05 - 50 m (natural surface) 0.05 - 100 m (white target) 40 - 150 m (reflecting target)
Laser Type	Class 2, 655nm (visible red)

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GeoWAN Radio Specifications

Table with 2 columns: Parameter, Value. Rows include Communication Type (Star Topology), Frequency Band (868, 902, 915 variants), Maximum Transmit Power (14, 18 dBm), Internal Antenna Maximum Gain (+0.17 dBi), and Range (up to 12 km).

Tilt Sensor Specification

Table with 2 columns: Parameter, Value. Rows include Resolution (0.0001°), Repeatability (±0.0025°), and Range (±90°).

Sampling and Reporting

Table with 2 columns: Parameter, Value. Rows include Maximum Reporting Frequency (30 seconds) and Sample Storage* (Stores up to 40,000 sampling cycles).

*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 ISSED Canada Certificate: 24373-LR3N
- RCM (Australia and New Zealand)

Ordering Information and Accessories

Model	Description
L3N1-LDS-IXH(868)	GeoWAN 2.0 Optical Displacement Sensor with integrated Triaxial Tilt Sensor (High-g) Europe
L3N1-LDS-IXH(902)	GeoWAN 2.0 Optical Displacement Sensor with integrated Triaxial Tilt Sensor (High-g) North America
L3N1-LDS-IXH(915)	GeoWAN 2.0 Optical Displacement Sensor with integrated Triaxial Tilt Sensor (High-g) Australia, New Zealand

Accessories	Description
FF-MP-PRLN-S	G2.0 Precision Optical Bracket with swivel mount
FF-MP-PRLN-M	G2.0 Precision Optical Bracket with magnetic mount
FF-MP-PRLN-RS	G2.0 Precision Optical Bracket with right angle swivel mount
FF-MP-PRLN-RM	G2.0 Precision Optical Bracket with right angle magnetic mount
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-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
FF-MK-N	G2.0 Magnetic mounting kit Perfect for steel or cast iron structures
FF-BK-xxxx FF-BE	Tilt beam kit See separate datasheet for more information
SP-C03282-1	G2.0 ER34615 3.6V 19Ah Battery Senceive provided, suitable for GeoWAN 2.0 nodes
FA-G2-SMA	Replacement G2.0 Lid for External Antenna (SMA)


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