

Wi-SOS 480 Laser Distance Meter Node

- Wireless sensor
- Accurate distance measurement
- Long battery life
- Visible Laser Class II laser with 655 nm
- High repeatability



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Overview



The laser distance meter node measures the relative distance between pairs of reference points. One of the two points can be a natural surface or target foils while the node can be placed at the other end point.

Measurement of tunnel convergence is one of the most important controls of the NATM (New Austrian Tunneling Method) construction. Portable devices like tape extensometers, levels and temporarily installed total stations allow sporadic measurements. On the other hand, one of the most commonly used methods, the measuring tape, disrupts construction activities due to the use of aerial work platforms.

Laser distance nodes can be easily relocated along the convergence cross sections up to the excavation front or until the measured relative displacements are stabilised when the required frequency of measurements is reduced. They can also be used when permanent monitoring is required.

In a similar way, the laser distance node measures deformations in underground excavations and mining without causing work disruptions and delays.

The laser distance node is capable of measuring the relative distance and transmitting the data via long-range radio to a gateway connected to the Internet. One gateway can support hundreds of nodes in the same network that is also measuring other sensors installed in the monitoring sections (borehole extensometers, pressure cells, load cells, strain gauges etc). It can be easily configured and connected with a USB cable and an Android phone.

APPLICATIONS

- Tunnel and mining convergence monitoring
- Deformations in underground excavations
- Remote monitoring of slope movements
- Fracture and faults surveillance
- Bearing and expansion joint movements
- Monitoring displacement in structures & buildings

FEATURES

- Wireless sensor
- Long-range communications (up to 15 km)
- Long battery life (>6 years @1h sampling rate)
- Compact (150 x 100 x 61 mm)
- Visible Laser Class II laser with 655 nm
- High repeatability
- User-friendly Android configuration app included
- Pointing mode for an easy installation
- Web browser software
- Reliable & robust
- Standard CSV download, FTP push, Modbus TCP and API access
- Robust, small and weather-proof box
- Easy configuration



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Specifications

GENERAL

Battery life – sampling rate 5 min	1.5 years	Lifetime estimates are based on distance measurements between 10 and 20 m and a model considering Barcelona temperature profile
Battery life – sampling rate 1 h	6.4 years	
Battery life – sampling rate 6 h	8.5 years	
Battery type	2 x 3.6V C-Size user-replaceable batteries (recommended Saft LSH 14)	
Sampling rate	30 seconds to 1 day	
Internal temperature collected and transmitted at each reading (Accuracy: ± 1 °C)		
Configuration software	Android App	
App features	Pointing mode and radio signal coverage tests for an easy installation	

LASER DISTANCE METER

Measuring range at favourable conditions	0.05 to 150 m	
Typical measuring accuracy	± 1 mm	
Resolution	0.1 mm	
Repeatability (1 sigma)	0.15 mm	
Laser type (light source)	Visible Laser Class II laser with 655 nm	
Accuracy	in favorable conditions*	in unfavorable conditions**
@ 1 m	± 1 mm	± 2 mm
@ 10 m	± 1 mm	± 2 mm
@ 20 m	± 1.5 mm	± 3 mm
@ 50 m	± 4 mm	± 7 mm
@ 100 m	± 9 mm	± 15 mm
@ 150 m	± 16 mm	not applicable

* On natural objects (white wall, low target illumination <3K lx, moderate temperatures)

** On natural objects (white wall, high target illumination with 30K lx, full specified operating temperature range)

MEMORY

Reading capacity	200,000+ readings
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Specifications

MECHANICAL

Box dimensions (WxLxH)	100x100x61 mm
Overall dimensions	150x100x61 mm (excluding antenna)
Operating temperature	-10°C to +50°C
Storage temperature	-25°C to + 70 °C
Weather protection	IP67
External antenna	100 mm length (including connector) LASER DISTANCE METER
External Port	Mini USB port for configuration and data access. Can also be used to power the node
Box material	Aluminium alloy

RADIO - ISM SUB 1 GHZ OPERATING FREQUENCY BANDS ADJUSTABLE

Range open field	15 km
Range city street	4 km
Range manhole in a city street	2 km
Tunnel	4 km
Bidirectional communications	Remote sampling rate change / Clock synchronization
Maximum link budget	151 dB / 157 dB
Configuration	Star (no repeaters needed)

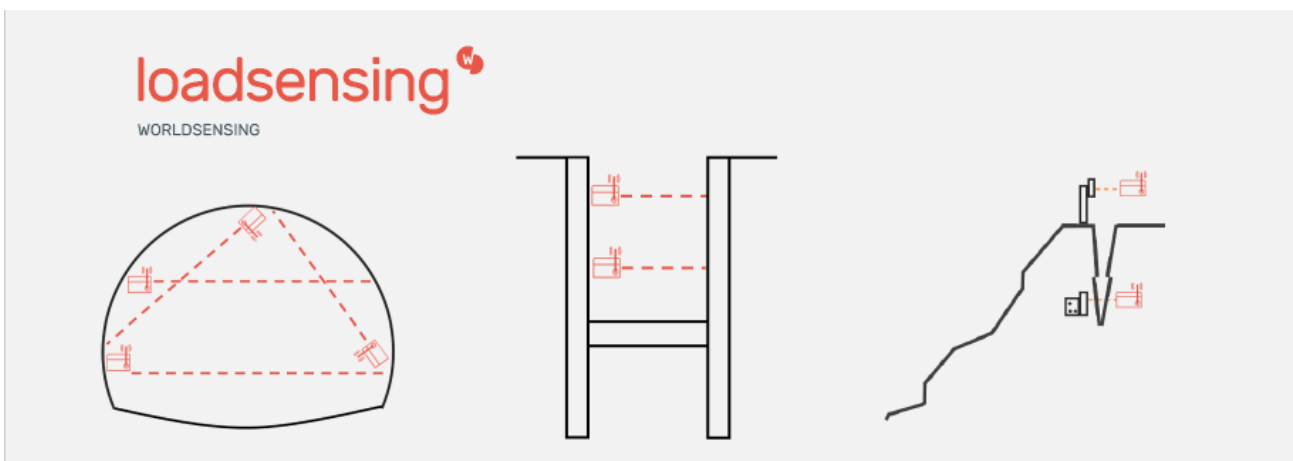
ACCESSORIES

Adjustable mounting plate for vertical surface

Adjustable mounting plate for horizontal surface

Swivel mounting bracket. It can be mounted on a wall or on a convergence bolt with 3/8" male thread

*** Other mounting brackets and accessories available on request



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