

FlatMesh ODS Node

The FlatMesh data acquisition network consists of a number of wireless nodes and an internet gateway. The FlatMesh ODS (Optical Displacement Sensor) node includes a laser distance meter and a three-axis tiltmeter. Typical applications include:

- Monitoring pillars, bridge decks, retaining walls, tunnel profiles for deformation.
- Monitoring heave or settlement of floor slabs (changes in ceiling-floor distances).
- Monitoring structural movements at locations that are difficult or dangerous to access.
- Monitoring rotation with its built-in 3-axis tiltmeter.

Advantages

Remote measurements: The laser works with natural surfaces up to 165 feet away and with targets up to 500 feet away.

Easy Installation: The instrument is compact, easy to install, and requires almost no maintenance.

Cable-Free: Flatmesh nodes provide their own power and transmit measurements by radio, entirely eliminating the cost of cables, cable protection, and cable maintenance.

GeoCloud Services: GeoCloud Services on the internet server process the readings sent from the FlatMesh gateway, check for alarms, and update project websites to show current status, graphs, and reports.



The FlatMesh ODS node also provides tilt measurements.

Laser

Sensor: Laser Class 2, 655 nm (visible red).
Range: 165 feet from natural surface target, 330 feet from white target, 500 feet from reflective target.
Resolution: 0.004 inch.
Repeatability: ±0.006 inch.

Tiltmeter

Sensors: MEMS tilt sensors in three axes.
Range: ±90° in each axis.
Resolution: 0.0001°.
Repeatability: ±0.0005°.

Hardware

Battery life: 10 years at 1 hour reporting interval, 8 years at 30 minute reporting interval, including acting as a relay.
Environmental: IP68 at 1m for 24 hours, -10°C to +50°C for full functionality of laser, -25°C to +85°C for tiltmeter.
Dimensions: 3.5 x 3.5 x 2.4 inch high.

Communications

Protocol: Proprietary Senceive FlatMesh networking protocols, IEEE802.15.4 compliant.
Frequency: 2.4 GHz ISM Band. FCC Approved.
Max Transmit power: 6.5 dBm.
Max Antenna Gain: 2.2 dB.
Range: 980 feet point to point. Can be extended with nodes acting as relays.
Gateway to Internet: Cellular.

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