FlatMesh™ Laser Distance Node

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The FlatMesh data acquisition network consists of a number of wireless nodes and an internet gateway. The FlatMesh laser distance node, also called an ODS optical displacement sensor, 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.

The FlatMesh ODS node also provides tilt measurements.

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.

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.