GeoCloud Wireless Sensors

GeoCloud sensors and interfaces provide high precision, low noise measurements, wireless communications, and a 15-year battery life.

Powered by Senceive’s FlatMesh technology, GeoCloud sensors feature advanced dynamic routing algorithms, extremely efficient power management, and high quality hardware.

GeoCloud sensors include tiltmeters, mini-tiltmeters, and laser extensometers. GeoCloud interfaces are available for vibrating wire, millivolt, and RTD sensors.

Traditional vs Wireless Sensors

Traditional sensors require cables to carry power and measurement signals. Cables are costly to install, vulnerable to damage from construction activities, and subject to noise that degrades the measurement.

GeoCloud wireless sensors eliminate these issues. On-board circuits remove noise and digitize measurements. Internal batteries supply power and simplify installation. And the robust flatmesh network ensures reliable transmission of measurements.

Sensor to GeoCloud

The FlatMesh network consists of a number of nodes and an internet gateway. Nodes are GeoCloud wireless sensors and interfaces.

Nodes obtain measurements, embed them in packets addressed to the gateway, and transmit them to neighboring nodes. The nearest neighbors forward the packets to the gateway or to their own nearest neighbors if the gateway is out of range.

Milliseconds later, the packets arrive at the gateway, which forwards them to GeoCloud servers via a cellular connection to the internet.

GeoCloud integrates data from a wide range of sensors, including AMTS, vibration monitors, and any sensors that can be connected to data loggers. GeoCloud operates 24 hours a day, processing measurements, checking for alarms, and generating graphs, reports, and alerts. Users can access the GeoCloud using browsers on their PCs, tablets, and smartphones.

Advantages

Precise: On-board circuits provide low noise, high precision, digitized measurements.

Robust: GeoCloud wireless sensors and nodes are rated IP68 at 1m for 24 hours and operate at temperatures from -40°C to +85°C. Battery life for most nodes is 12 to 15 years with data transmissions every 20 minutes.

Reliable: The proprietary Senceive FlatMesh protocol shortens the range needed for transmissions, with each node transmitting to its nearest neighbor. If the nearest neighbor fails, the next nearest neighbor forwards the data.

Extendable: The network can be extended over longer distances and wider areas simply by adding more nodes. No reprogramming of the network topology is needed.

Easy Installation: GeoCloud sensors eliminate power, communication, and cable issues. A wide range of mounting brackets is available for quick and convenient installation anywhere.

GeoCloud Services: GeoCloud provides internet access to data. GeoCloud services operate 24 hours a day, processing measurements, checking for alarms, and generating graphs, reports, and alerts.

GeoCloud Wireless Interfaces

These mini-tiltmeters are examples of wireless sensors.

GeoCloud Wireless Sensors

These crackmeter interfaces are examples of wireless interfaces that provide power and communications to an external sensor.
Tiltmeter Sensor
Tiltmeters and mini-tiltmeters are used to monitor inclination, structural rotation, and differential settlements.

Laser Extensometer Sensor
Laser Extensometers monitor deformation and displacements. The high-precision extensometer also includes a tiltmeter.

Millivolt Interface
The Millivolt node works with resistive bridge sensors.

Vibrating Wire Interface for 1 Sensor
The VW interface works with all types of vibrating wire sensors. The single-sensor node is useful for piezometers.

Vibrating Wire Interface for 4 Sensors
This VW interface is useful for applications that have multiple sensors in close proximity, such as displacement sensors or strain gauges.

RTD Interface
The RTD node provides precision temperature monitoring of PT100 temperature sensors.

Cellular Gateway
The Cellular gateway connects GeoCloud sensors and nodes to the internet.

USB Gateway
The USB Gateway provides local connections to a PC or tablet.

Pipeline and Railway Applications
Reliable node-to-node transmissions allow mesh networks to span long distances.