

GCN-523 Geolocation Cluster Node

Product Data Sheet

Description

The GCN-523 Cluster Node is part of Omnisense's Series 500 geolocation system. It is a small credit card sized (10 mm thick) battery powered wireless sensor device which provides positioning and sensory information describing its motion and behaviour.

The Series 500 Geolocation system comprises a number of nodes which form a mesh network in which the devices measure the precise time-of-arrival of radio signals transmitted by neighbours. The sophisticated Omnisense Joint Time and Location Engine uses the measurements to compute the positions of the nodes relative to others in the network to high precision (1 m under good condition), both indoors and outdoors.

In addition to the 2.4 GHz IEEE 802.15.4a radio transceiver usable up to 400 m range in good conditions, each GCN-523 device also contains three-axis accelerometers and magnetometers, as well as an optional rate gyroscope and an altimeter. These sensors are used to measure motion and behavioural metrics for the node. The high performance version supports full strap-down inertial navigation capability for the most demanding real-time applications.

It has two front panel buttons that can be soft mapped to the needs of the application. It is recharged using a standard micro-USB charger and provides between 1 week and several months of battery life depending on how the device is used.

Ordering

The GCN-523 Cluster Node is normally supplied as part of a Series 500 Geolocation System. Two versions of the node are available:

- GCN-523, standard node used for applications requiring longer battery life;
- GCN-523P, higher performance variant used for hard real-time applications in which very long battery life is not required.

Each device has a unique identity, and for larger orders (or an additional charge) the front panel can be customised with an identity and branding specific to the customer or application.



Example Applications

The GCN-523 is primarily designed for personnel use although it can also be used for animal tracking or mobile assets.

- Locating people on site
- Worker protection for health and safety
- Healthcare: dementia, post operative care
- Emergency services personnel, fire, police
- Sport, real-time or training
- Defence: training, blue forces, GPS-denied
- Leisure and Events: visitors and/or staff
- Animal tracking and welfare monitoring

Contact Information

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Specifications	
Accuracy	± 2 m 95%, ± 1 m CEP under good propagation conditions: line-of-sight or near-line-of-sight in a relatively uncluttered environment. Accuracy is independent of distance between nodes. Full 3D positioning.
Range	Up to 400 m under ideal radio path conditions, less in obstructed conditions. A typical outdoor working range is 200 m.
Antenna	Dual internal chip antennas, omnidirectional with polarisation diversity.
Frequency of operation	2.4 GHz ISM band using IEEE 802.15.4a
Radio	50 mW (+17 dBm)
Network Protocol	Proprietary - tree and mesh architecture, supporting mobility
Measurement	2 ms duration, repetition rate dependent on network, typical intervals between 0.5 s and 60 s.
Battery	Li-Ion rechargeable, via standard micro-USB socket
Battery life	Typically 7 days. Actual battery life depends on usage profile and other factors. Battery voltage reporting and low battery warning
Recharging time	Approximately 4 hours
Sensors	3 axis accelerometer, 3 axis magnetometer, Temperature 3 axis rate gyroscope and Altimeter (optional: P version)
Motion detection	Mean and peak activity levels in each measurement cycle. Fall detection and alerting Behaviour extraction: walking, running, step counts, impact etc. Full attitude: heading, pitch and roll
Display	Two LEDs indicating network connectivity and operational status
User controls	Two push buttons, soft-mapped according to application need
Size	85 mm x 56 mm x 10 mm (credit card size)
Weight	Approximately 45 g
Environmental	-25°C to +65°C, non-condensing, IP54 rated
Approvals	CE, ETSI and FCC compliant (pending).

