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GCN524 Precise Positioning Sensor

Product Data Sheet

Description

The GCN524 is part of Omnisense's S500 geolocation system. It is a small credit card sized (10 mm thick) battery powered wireless sensor device which comprises 3 independently operating radios and provides high accuracy positioning and sensory information describing its motion and behaviour.

As part of Omnisense's S500 Geolocation system GCN524 sensors form a mesh network in which the devices measure the precise time-of-arrival (ToA) of radio signals transmitted by neighbours. The sophisticated Omnisense Joint Timing and Location Engine uses the ToA measurements to compute the positions of the nodes relative to others in the network to high precision (20 cm under good conditions), both indoors and outdoors.

The GCN524 utilises 2 radios: Ultra Wideband (UWB) for precise positioning and Chirp Spread Spectrum (CSS) for medium range positioning. It is also Bluetooth Low Energy (BLE) capable for future personal area communications and beacon applications (not activated). In addition, each GCN524 device contains a combined three-axis accelerometer, magnetometer and gyroscope as well as an altimeter and temperature sensor. These sensors are used to measure motion and behavioural metrics.

Each device has a unique identity, and is recharged using a contactless charging mat. An LED indicates operating status. Between 1 day and several weeks battery life is provided depending on the application.

Ordering

Normally supplied as part of a S500 Geolocation System, GCN524 devices are completely configurable through the omniWhere GUI running on the omnisense whereBox.

A system usually comprises: a whereBox, one or more GCN554R gateways and four or more GCN524 devices.

A range of accessories and variants are also available, such as the application of the GCN524 with a custom designed internal daughter module and external battery as a robust long life animal tracking tag.

Example Applications

The GCN524 is primarily designed for personnel use. It can also be used for tracking animals and mobile assets.

- Locating people on site
- Worker protection for health and safety
- Mustering – mining, maritime, industrial sites
- 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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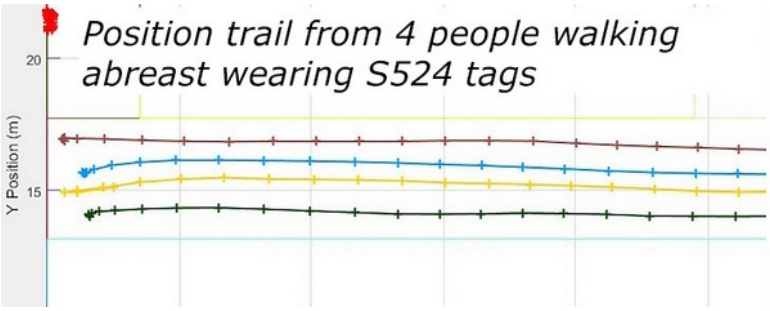
	Specifications
Accuracy	±50 cm 95%, ±20 cm CEP under good propagation conditions using UWB radio: line-of-sight or near-line-of-sight in a relatively uncluttered environment. CSS radio giving 1-2 m accuracy. Full 3D positioning.
Range	CSS - typical outdoor working range is 200 m. UWB – up to 80m since PA added to product design in GCN535 (2021)
Antenna	Internal chip antennas, omnidirectional.
Frequency of operation	Ultra WideBand – 6 RF bands from 3.5-6.5 GHz using IEEE802.15.4-2011 Chirp Spread Spectrum - 2.4 GHz ISM band using IEEE 802.15.4a Bluetooth Low Energy - 2.4 GHz ISM band (not activated)
Radio	UWB -42 dBm - CSS +17 dBm - BLE +4 dBm (not used)
Network Protocol	Cluster Tree and Mesh architectures, supporting mobility in networks deployed over kilometre ranges.
Measurement	0.5 ms - 8 ms duration depending on configuration. Repetition rate dependent on network, typical intervals between 0.5 s and 20 s.
Battery	Li-Ion rechargeable, via Qi contactless charging coil.
Battery life	Applications from 1-30 days. Actual battery life depends on usage profile and other factors. Battery voltage reporting and low battery warning.
Recharging time	Approximately 2 hours
Sensors	3 axis accelerometer, 3 axis magnetometer, 3 axis rate gyroscope Altimeter and Temperature sensor
Motion detection	Mean and peak activity levels in each measurement cycle. Fall detection and alerting. Behaviour extraction: walking, running, step counts, etc. Full attitude: heading, pitch and roll
Processor	ARM Cortex M4
Display	One bi-colour LED indicating network connectivity and operational status
Size	87 mm x 53 mm x 10 mm (below credit card size)
Weight	Approximately 42 g
Environmental	-25°C to +65°C, non-condensing, IP55 rated
Approvals	CE, ETSI and FCC compliant (pending).



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