



PROMOVE-mini

Product Datasheet

Overview

ProMove-mini is a wireless inertial motion sensor node specifically designed for multi-person, multi-object motion capture. A network comprises tens of devices that sample and transmit motion and orientation information at high data rates in a fully synchronized manner.

ProMove-mini features a complete set of 3-D digital sensors, offering 10 DOF sensor data: acceleration, turn rate (gyroscope), magnetic field intensity (compass), high-g acceleration and barometric pressure. Full 3-D orientation information, expressed as quaternions and Euler angles, is also made available to the user.

The sensor data is transmitted using the low-power 2.4 GHz wireless radio to a central node, Inertia Gateway, which connects to the computer through USB. Optionally, the sensor data can be stored on the on-board flash memory and retrieved later over USB or wirelessly.

The number of nodes in the network scales with the sampling rates, e.g. a network can have 39 nodes that sample at 200 Hz, or 19 nodes that sample at 500 Hz.

ProMove-mini is carefully designed for good ergonomics. The curved design makes mounting and wearing on body parts comfortable, without affecting stability in case of surface mounting.

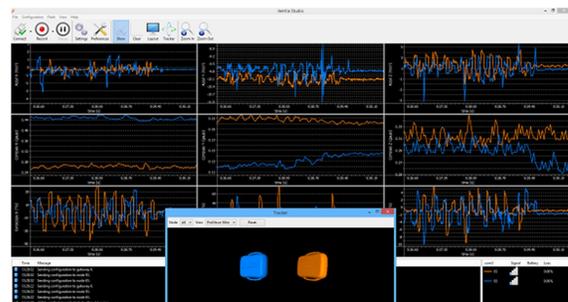
Alternatively, ProMove-mini can be equipped with a Bluetooth module for direct communication to PCs, smartphones and tablets. The GNSS option allows localization and tracking of the ProMove-mini sensor node on a map.

Key features & Benefits

- Supports large networks (tens of devices)
- Fully synchronized sampling (<100 ns)
- Up to 1 kHz sampling and communication rate per sensor axis
- Full 3-D acceleration, turn rate and magnetic field intensity measurements
- Full 3-D orientation information (quaternions and Euler angles)
- High-g accelerometer up to 400 g
- Barometric sensor
- GNSS
- RF transceiver in the 2.4 GHz band or Bluetooth
- Customized casing for good ergonomics
- Integrated USB interface
- On-board flash memory for data storage
- Internal rechargeable battery

Inertia Studio

The Inertia Studio software enables real-time visualization and configuration of sensors and wireless parameters. All data retrieved by the Inertia Studio software is logged for post-analysis.



Applications

- Multi-person, multi-object 3-D tracking
- Fine-grained, synchronized motion capture
- Activity monitoring and recognition
- Virtual reality and gaming
- Inertial navigation

Design

The ergonomic design of ProMove-mini allows for easy strap attachment and body mount.



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Specifications

Accelerometer	
Range	Selectable: ± 2 , ± 4 , ± 8 , ± 16 g
Resolution	62 μ g @ ± 2 g range
Sampling rate	1000 Hz
Non-linearity	± 0.5 %
Cross-axis	± 2 %
Noise power spectral density	300 μ g/ \sqrt Hz
Gyroscope	
Range	Selectable: ± 250 , ± 500 , ± 1000 , ± 2000 $^{\circ}$ /s
Resolution	0.007 $^{\circ}$ /s @ ± 250 $^{\circ}$ /s range
Sampling rate	1000 Hz
Non-linearity	± 0.1 %
Cross-axis	± 2 %
Rate noise spectral density	0.01 ($^{\circ}$ /s)/ \sqrt Hz
Compass	
Range	± 4912 μ T
Resolution	0.15 μ T
Sampling rate	100 Hz
Barometer	
Range	260 to 1260 hPa
Resolution	0.02 Pa
Sampling rate	25 Hz
Pressure noise	0.01 hPa RMS
High-g accelerometer	
Range	Selectable: ± 100 , ± 200 , ± 400 g
Resolution	49 mg @ ± 100 g range
Sampling rate	1000 Hz
Inertia Wireless Network Protocol	
Frequency band	2.4 GHz
Data rate	4 Mbps
TX power	10 dBm
Range	30 m line-of-sight
Data collection and storage	
Maximal number of nodes in a single network	39 nodes at 200 Hz each 19 nodes at 500 Hz each 9 nodes at 1 kHz each
Inertia Gateway	Central hub for synchronized data collection
Synchronization	< 100 ns
Wired interface	USB 2.0 full-speed compatible
Storage	16 GB flash memory
Software	
Inertia Studio	Real-time visualization, data acquisition and configuration; runs on Windows 10, 8, 7, Vista, Ubuntu Linux
Electrical characteristics	
Battery life	7 h in full streaming mode 3h with GNSS option
Miscellaneous	
Bluetooth	4.0 dual-mode BR/EDR/BLE (optional)
GNSS	1 - 10 Hz update rate (optional)
Attachments	Strap attachment
Dimensions	51 x 45.5 x 15.86 mm
Weight	22 g (including battery)