

# MOVESENSE SENSOR



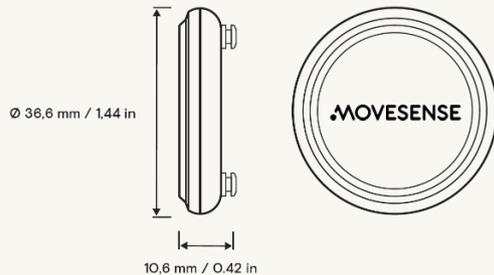
Versatile, light and small but extremely durable sensor capable of measuring any movement and much more. Customizable functionality through open APIs that enable development of unique in-device apps. The functionality can be tailored to fit the exact needs of the target use case.

- Swim and shock proof construction, suitable for any sports
- Low profile snap connection for smooth and subtle attachment to apparel or gear
- User replaceable coin cell battery
- State of the art ultra-low power components
- Small size, light weight and water proof
- Based on Suunto design and development
- Developed, designed and manufactured in Finland
- Available with custom branding

## Technical highlights

- 9-axis motion sensor: acceleration, gyroscope, magnetometer
- Heart rate, R-R- intervals, BLE heart rate service, optional: single channel ECG
- 1-wire expansion bus
- Temperature
- Data logging memory
- Bluetooth® 4.0 radio
- Tools for developing customized applications that run inside the sensor
- Software libraries for developing compatible mobile applications
- Wireless firmware update capability
- Recognizes its attachment base through unique ID in Movesense connector

# Movesense Sensor Technical Brief



## Dimensions

- ✓ 36.6mm/1.44" dia. x 10.6mm/0.42" thick
- ✓ Weight 10g / 0.35oz with battery
- ✓ Water resistant to 30m/100ft

## Sensors

- ✓ Acceleration & Gyroscope
  - $\pm 2/\pm 4/\pm 8/\pm 16g$  full scale
  - $\pm 125/\pm 245/\pm 500/\pm 1000/\pm 2000^\circ/s$  full scale, sampling frequency: 12.5/26/52/104/208Hz
- ✓ Magnetometer
  - $\pm 4/\pm 8/\pm 12/\pm 16$  gauss full scale
- ✓ Temperature
  - accuracy  $< \pm 0.5^\circ\text{C}$ ,  $0^\circ\text{C}$  to  $+65^\circ\text{C}$
- ✓ Heart rate, RR intervals, BLE HR service
  - Optional: non-medical 1 Ch ECG

## MCU

- ✓ Nordic Semiconductor nRF52832
  - 32-bit ARM<sup>®</sup> Cortex<sup>®</sup>-M4
  - 64kB on-chip RAM\*
  - 512kB on-chip FLASH\*
  - (\*) Memory is shared with the Movesense Os and the user application
- ✓ Bluetooth Low Energy radio

## Battery

- ✓ CR 2025 Lithium coin cell battery
- ✓ Operating time up to months, depending on the user application

## I/O

- ✓ Red led on the front, SW controllable
- ✓ Wake-up, heart rate and 1-wire expansion interface via Movesense studs, stud center-to-center distance: 27.0mm/1.06"
- ✓ Optional Smart Attachments with unique ID

## Logger memory

- ✓ 3Mbit EEPROM

## Software

- ✓ SDK for developing apps for the sensor
- ✓ Sensors and peripherals controllable via API
  - incl. BT advertising, power schemes
- ✓ Easy to use C++ Movesense Device API
- ✓ iOS and Android mobile libraries with wireless sensor firmware update capability
- ✓ GNU toolchain for embedded ARM

## Approvals and compliances

- ✓ CE, FCC, IC, C-Tick, CMIIT
- ✓ Conforms REACH, RoHS
- ✓ Bluetooth 4.0

## Patents

US 13/071,624, US 13/832,049,  
US 13/832,598, US 13/917,668,  
US 13/397,872, USD 667,127, US 8,386,009,  
US 8,750,959, US 8,814,574, US 8,886,281, others  
pending