

Move. Prove. Improve

Smart Connected Sensors - SCS

Smart Connected Sensors is the platform for full-body motion tracking that *combines qualitative and quantitative movement feedback* to provide guidance on physical performance. Usable for a wide range of use cases, from fitness and rehabilitation to gaming and AR/VR applications, it can assist you improving your movement results for a higher level of fun, health, and experience.



Target applications



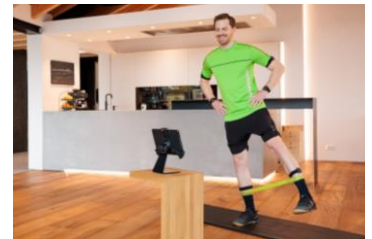
Wearables



Hearables



AR/VR Headsets



Rehabilitation

Benefits



Wide range of applications

Multi-sensor concept with hardware and software ensures high scalability.



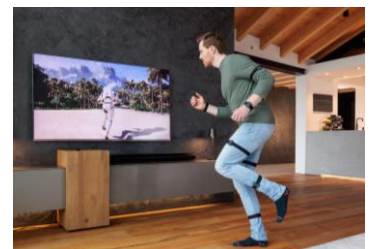
Fast time to market

Enabled by wearable and AI personalization tool saves time and costs.



Qualitative feedback

Ultra-fast guidance on exercise performance via integrated AI and Bluetooth Low Energy.



Gaming

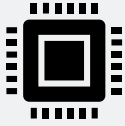


Sports

Technical features

SCS KPIs

Hardware



- Ultra-low power IMU-based smart sensor platform (**BHI380**) enabling **multi-device sensor fusion**: ARC EM4 CPU (up to 3.6 CoreMark/MHz)
- Compact footprint: 2.5 x 3 x 0.95 mm³
- Low power consumption:
 - Standby current: **8 μA**
 - Run mode (activity recognition with feedback): **< 600 μA**
- Various integrated software features:
 - sensor fusion
 - multi-device activity recognition algorithms
 - time-synchronization across connected nodes

Wearable reference design



- **Small form factor** wearable housing (36 x 22.2 x 10 mm³) and wristbands for easy mounting to body
- **BHI380** sensor with possibility to add additional capabilities magnetometer (BMM350) to enable 9DoF and pressure sensor (BMP581) to enable accurate relative vertical distance measurement
- **BLE 5.3 for low power connectivity**
- External flash memory for **logging and FW storage**
- **Certified for all regions**
- Smart power management for long battery life
 - Up to **40h lifetime** while streaming raw sensor data via BLE @ 25 Hz
- All hardware design files (PCB + housing) provided for reference

Features & software



- **Multi-device sensor fusion** of up to 8 sensor nodes
- **Time-synchronization** throughout entire network for all sensor nodes irrespective individual clocks
- Time synchronization with **1 ms accuracy** over 24 h, coming with minimal bandwidth, minimal power consumption and minimal memory overhead
- **Multi-device activity recognition** and feedback using up to 8 sensor nodes simultaneously, **easily scalable** by custom gestures and patterns
 - Minimal algorithm code size [multi-device-gesture recognition: 39 kB with ability to add new patterns, average complex pattern size of 2 kB)
- **Full body avatar** based on 6 DoF inertial live data combining sensors of up to 8 sensor nodes
- **Joint-Angle information** for complete body analysis
- **Raw sensor data stream via BLE** with up to 50 Hz & up to 8 sensor nodes simultaneously
- System coming with multiple easy-to-implement **applications** based on body area networks



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