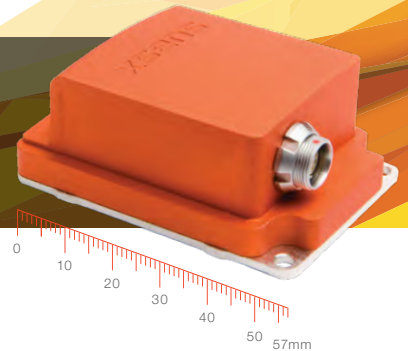# MTi 10-series

**The reliable industry standard for MEMS based IMU, VRU and AHRS**

- ✔ Industry-proven, cost-effective MEMS based orientation sensor
- ✔ Full-featured sensor fusion algorithm with easy to use SDK
- ✔ 3 integration levels available: IMU, VRU and AHRS

## Proven Xsens sensor fusion algorithm

- Superior heading tracking using Active Heading Stabilization (AHS)
- In-run Compass Calibration (ICC)
- XKF3 sensor fusion algorithm trusted by high-profile customers
- Selectable filter profiles for range of applications

## Easy software integration

- Extensive suite of configurable output formats, calculated onboard the MTi
- MT Software Suite with intuitive GUI
- Complete SDK for all operating systems
- Support for Robotic Operating System (ROS)
- Xsens Xbus protocol or ASCII (NMEA)
- Access to BASE (by Xsens), an extensive knowledge base and community forum

## Excellent hardware design

- High quality industrial grade components
- Signal processing pipeline, optimized for industrial applications
- Low latency for real-time applications
- 10 kHz simultaneous sampling, 2 kHz SDI algorithm with coning/sculling compensation
- Wide array of synchronization options

## Specification highlights

- Available as IP67 encased MTi or OEM board
- Choice of several interfaces and onboard USB
- All Xsens products are fully interchangeable
- Cost-effective system integrator solution

## Product Overview

| | | MTi-10 IMU | MTi-20 VRU | MTi-30 AHRS |
|---|---|---|---|---|
| **Calibrated Sensor Data** | | yes | yes | yes |
| Roll/pitch | Static | - | 0.2° | 0.2° |
| | Dynamic | - | 0.5° | 0.5° |
| Yaw | In homogenous magnetic field | - | Active Heading Stabilization (AHS) | 1.0° |

All above specifications based on typical application scenarios

# Sensor specifications

|  | Gyroscopes | Accelerometers |
|---|---|---|
| Standard full range * | +/- 450 °/s | +/- 20 g |
| Initial bias error | 0.2 °/s | 5 mg |
| In-run bias stability | 18 °/h | 15 µg |
| Bandwidth (-3 dB) | 415 Hz | 375 Hz |
| Noise density | 0.03 °/s/√Hz | 60 µg/√Hz |
| g-sensitivity (calibrated) | 0.006 °/s/g | N/A |
| Non-orthogonality | 0.05 deg | 0.05 deg |
| Non-linearity | 0.03% | 0.1% |

|  | Magnetometer |
|---|---|
| Standard full range | +/- 8 G |
| Total RMS noise | 0.5 mG |
| Non-linearity | 0.2% |
| Resolution | 0.25 mG |

\* Optional +/- 1000 °/s available on request.

# System specifications

| | | | |
|---|---|---|---|
| Input voltage | 4.5 to 34V or 3V3 | Interfaces | RS232/RS422/RS485/USB/UART |
| Typical power consumption | 550 mW @ 5V | Latency | <2 ms |
| IP-rating | IP67 (encased) | Sync options | SyncIn, SyncOut, Clock sync |
| Temperature (in use) | -40 to 85 °C | Interface protocol | Xbus or ASCII (NMEA) |
| Casing material | Anodized aluminum 6082 | Mounting orientation | No restriction, full 360° in all axes |
| Sampling frequency | 10 kHz/channel (60 kS/s) | Built-in self test (BIT) | Gyroscopes, accelerometers, magnetometer |
| Clock drift | 10 ppm or external reference | MTBF | 300,000 hours |
| Output frequency | Up to 2 kHz | | |

MTi 10-series
Development Kit:
MTi, software and cabling

MTi encased:
57x42x23.5 mm, 52g,
9-pins push-pull connector

MTi OEM:
37x33x12 mm, 11g,
16-pins header

HEXAGON | AutonomouStuff

MTi.Rev.D