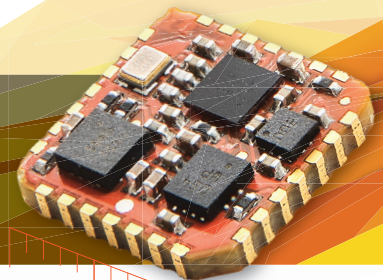




MTi 1-series

IMU, VRU and AHRS

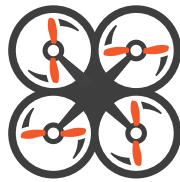
- ✓ Uniform software/hardware interface over product lifetime (no EOL)
- ✓ Always best-in-class inertial sensors incorporated
- ✓ Industry-leading signal processing pipeline and orientation algorithm
- ✓ API-compatible with all Xsens Motion Trackers



The MTi 1-series is a self-contained Attitude Heading and Reference System (AHRS), Vertical Reference Unit (VRU) and Inertial Measurement Unit (IMU) as a 12.1 x 12.1 mm module. The Xsens-optimized strapdown algorithm (AttitudeEngine™) performs high-speed dead-reckoning calculations at 1 kHz allowing accurate capture of high frequency motions. Xsens' industry-leading sensor fusion algorithm (XKF3™) provides high accuracy and sensor auto-calibration in a cost-effective module for a wide range of (embedded) applications. It relieves users from the design, integration and maintenance of gyroscopes, accelerometers and other sensors. The roll and pitch accuracy of 0.8 deg under dynamic conditions allow for integration in demanding applications.

Miniature aerial vehicles

- Delivery drones
- Video drones
- Agricultural UAVs



Ultra lightweight
Vibration rejection

Machinery

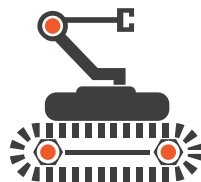
- Satcom on the Move (SotM)
- Construction machinery
- Ship monitoring



Extremely low power
Motion on Demand

Robotics

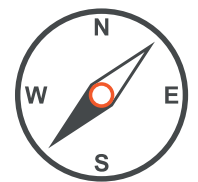
- Autonomous agriculture
- Warehouse automation
- Robotic arms



Robust heading tracking
ROS node support

Other applications

- Handheld devices
- Pedestrian navigation
- VR/AR and HMDs
- Navigation aiding



Unlimited possibilities
Flexible design

Ordering information

Part Number	Output	Packing Method
MTi-1	IMU; inertial data	Tray (containing 20 modules)
MTi-2	VRU; inertial data, roll/pitch, heading tracking	Tray (containing 20 modules)
MTi-3	AHRS; inertial data, roll/pitch/yaw	Tray (containing 20 modules)
		Reels available from 250 units
MTi-3-DK	Development kit for MTi 1-series	Development Kit

Specifications MTi 1-series

Orientation accuracy

Roll/pitch (dynamic)	0.8° 1 σ RMS
Roll/Pitch (static)	0.5 1 σ RMS
Yaw (dynamic)	2° 1 σ RMS

Inertial sensor performance

Gyroscope full-scale range	$\pm 2000^\circ/\text{s}$
Gyroscope bias stability	10 deg/hr
Gyroscope noise density	0.007°/s/ $\sqrt{\text{Hz}}$
Gyroscope non-linearity	0.1% FS
Accelerometer full-scale range	± 16 g
Accelerometer bias stability	0.03 mg
Accelerometer noise density	120 $\mu\text{g}/\sqrt{\text{Hz}}$
Accelerometer non-linearity	0.5% FS

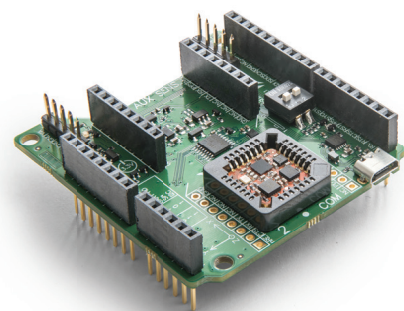
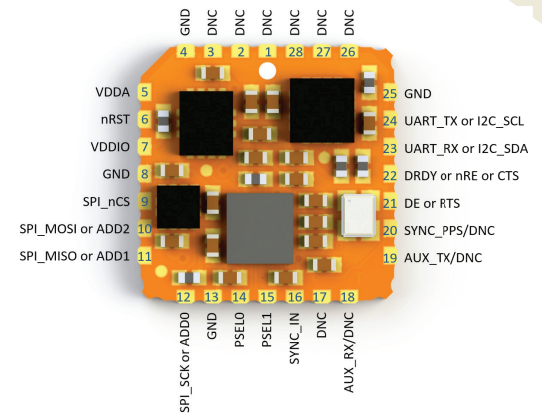
System specifications

Power consumption	44 mW @ 3V
Input voltage	2.19 to 3.6V
Package	SMD, footprint compatible with JEDEC PLCC-28
Size	12.1 x 12.1 x 2.55 mm
Weight	<1 g
Packaging	Tray (20 modules) Reel (250 modules)

Interfacing

Hardware interface	I ² C, SPI, UART (selectable)
Software interface	Xsens Xbus binary protocol Driver source code supplied
Output data rate	0-800 Hz

PIN LAYOUT



DEVELOPMENT KIT

In order to get started with the MTi 1-series, an extensive development kit for characterization and prototyping is available:

- Easy to use connection (micro USB), access to I²C/SPI/UART
- Full functionality and pin configuration
- Intuitive MT Software Suite (Linux / Windows GUI)
- SDK with drivers and embedded software examples
- Shield board including MTi-3 module and USB cable