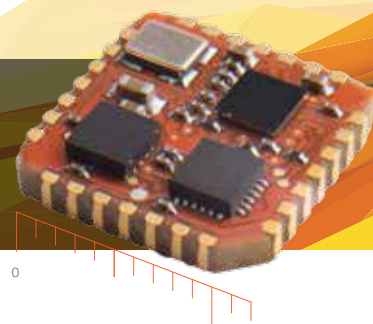# MTi 1-series

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

0   12mm

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 1.0 deg under dynamic conditions allow for integration in demanding applications.

Miniature aerial vehicles

- Delivery drones
- Video drones
- Agricultural UAVs

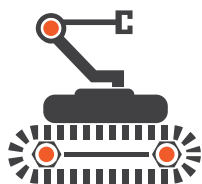**Ultra lightweight
Vibration rejection**

Machinery

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

**Extremely low power
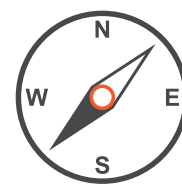Motion on Demand**

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-1-8A7G6T	IMU; inertial data	Tray (containing 20 modules)
MTi-2-8A7G6T	VRU; inertial data, roll/pitch, heading tracking	Tray (containing 20 modules)
MTi-3-8A7G6T	AHRS; inertial data, roll/pitch/yaw	Tray (containing 20 modules)
		Reels available from 250 units

MTi-3-8A7G6-DK	Development kit for MTi 1-series
	    - MTi-3-8A7G6 on board, incl. cabling
	    - MT Software Suite for Windows/Linux
		Development Kit

Specifications MTi 1-series

Orientation accuracy

Roll/pitch (dynamic)	1.0° 1σ RMS
Yaw (dynamic)	2° 1σ RMS

Inertial sensor performance

|	
Gyroscope full-scale range	±2000°/s
Gyroscope bias stability	10 deg/hr
Gyroscope noise density	0.01°/s/√Hz
Gyroscope non-linearity	0.1% FS
Accelerometer full-scale range	±16 g
Accelerometer bias stability	0.1 mg
Accelerometer noise density	200 µg/√Hz
Accelerometer non-linearity	0.5% FS

System specifications

Power consumption	44 mW @ 3V
Input voltage	2.16 to 3.45V
Package	28 pads on 12.1 x 12.1 mm SMD, compatible with JEDEC PLCC-28
Size	12.1 x 12.1 x 2.55 mm
Weight	0.66g
Packaging	Tray (20 modules) Reel (250 modules)

Interfacing

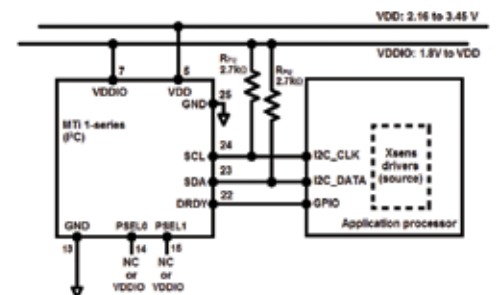|	
Hardware interface	I²C, SPI, UART (selectable)
Software interface	Xsens Xbus binary protocol Driver source code supplied
Output data rate	0-1000 Hz

PIN LAYOUT
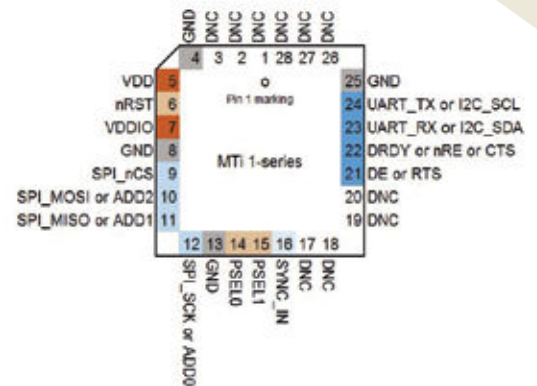
TYPICAL APPLICATION

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 (RS232, 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
- Drivers and examples on ARM® mbed™

WWW.XSENS.COM