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

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

Robust heading tracking
ROS node support

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

Unlimited possibilities
Flexible design

**Ordering information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output</th>
<th>Packing Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTi-1</td>
<td>IMU; inertial data</td>
<td>Tray (containing 20 modules)</td>
</tr>
<tr>
<td>MTi-2</td>
<td>VRU; inertial data, roll/pitch, heading tracking</td>
<td>Tray (containing 20 modules)</td>
</tr>
<tr>
<td>MTi-3</td>
<td>AHRS; inertial data, roll/pitch/yaw</td>
<td>Tray (containing 20 modules)</td>
</tr>
<tr>
<td>MTi-3-DK</td>
<td>Development kit for MTi 1-series</td>
<td>Development Kit</td>
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Ultra lightweight
Vibration rejection

Extremely low power
Motion on Demand

Ultra lightweight
Vibration rejection

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

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

### Specifications MTi 1-series

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

#### Inertial sensor performance
- Gyroscope full-scale range ±2000º/s
- Gyroscope bias stability 10 deg/hr
- Gyroscope noise density 0.007º/s/√Hz
- Gyroscope non-linearity 0.1% FS
- Accelerometer full-scale range ±16 g
- Accelerometer bias stability 0.03 mg
- Accelerometer noise density 120 μg/√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 I2C, SPI, UART (selectable)
- Software interface Xsens Xbus binary protocol
- Driver source code supplied

- Output data rate 0-800 Hz

DEVELOPMENT KIT

Unless stated otherwise, all specifications are typical. Specifications subject to change without notice. © Xsens, August 2018