MTi 10-series
The reliable industry standard for MEMS based IMU, VRU and AHRS

MTi 10-series
- Proven XKF3 sensor fusion algorithm
- Cost effective system integrator solution
- Coning and sculling algorithms @ 2 kHz
- Choice of integration levels
- Comprehensive SDK and straightforward system integration

Robust and accurate orientation data
- High-quality components, industrial-grade MEMS only
- Low latency (<2 ms), excellent for control and stabilization
- Proven and robust filter design
- Compensation against vibration and transient accelerations

Market leader
- Industry standard from the undisputed leader in MEMS AHRS
- Many high-profile companies fully rely on Xsens for control and stabilization, measurement correction and navigation

Maximum flexibility and versatility in mechanical and software interfaces
- Available as OEM board and IP67 encased MTi
- 24-pins connector for OEM
- Extensive suite of output formats, available directly from the MTi
- Choice of several interfaces, onboard USB, 2+ GPIO's
- Xsens' industry standard open Xbus protocol or NMEA (e.g. TSS1)
- All products from the MTi-series are fully interchangeable

Product Overview

<table>
<thead>
<tr>
<th></th>
<th>10-IMU</th>
<th>20-VRU</th>
<th>30-AHRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrated Sensor Data</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Roll/pitch</td>
<td>Static</td>
<td>-</td>
<td>0.2°</td>
</tr>
<tr>
<td></td>
<td>Dynamic</td>
<td>-</td>
<td>0.5°</td>
</tr>
<tr>
<td>Yaw</td>
<td>In homogenous magnetic field</td>
<td>-</td>
<td>Active Heading Stabilization</td>
</tr>
</tbody>
</table>
## Sensor specifications

<table>
<thead>
<tr>
<th>Gyroscopes</th>
<th>Accelerometers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Typ</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>Standard full range</td>
<td>+/− 450º/s</td>
</tr>
<tr>
<td>Bias repeatability (1 yr)</td>
<td>0.2º/s</td>
</tr>
<tr>
<td>In-run bias stability</td>
<td>18º/h</td>
</tr>
<tr>
<td>Bandwidth (-3 dB)</td>
<td>415 Hz</td>
</tr>
<tr>
<td>Noise density</td>
<td>0.03º/s/√Hz</td>
</tr>
<tr>
<td>g-sensitivity (calibrated)</td>
<td>0.006º/s/g</td>
</tr>
<tr>
<td>Non-orthogonality</td>
<td>0.05 deg</td>
</tr>
<tr>
<td>Non-linearity</td>
<td>0.03% FS</td>
</tr>
</tbody>
</table>

### Magnetometer

<table>
<thead>
<tr>
<th><strong>Typ</strong></th>
<th><strong>Max</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard full range</td>
<td>-</td>
</tr>
<tr>
<td>Noise density</td>
<td>200 µG/√Hz</td>
</tr>
<tr>
<td>Non-linearity</td>
<td>0.1% FS</td>
</tr>
</tbody>
</table>

## System specifications

### Input voltage
- 4.5 to 34V or 3V3

### Typical power consumption
- 480-570 mW @ 5V

### Start-up time
- 1.3 sec.

### IP-rating
- IP 67 (encased)

### Temperature (in use)
- -40 to 85 ºC

### Vibration and shock
- MIL STD-202 / 2000g

### Casing material
- Anodized aluminum 6060

### Sampling frequency
- 10 kHz/channel (60 kS/s)

### Clock drift
- 10 ppm or external reference

### Output frequency
- Up to 2 kHz

### Latency
- <2 ms

### Interfaces
- RS232/422/485/UART/USB (on board)

### GPIO’s and options
- SyncIn, SyncOut, 2x GPIO, Clock sync

### Interface protocol
- XBus or NMEA

### Mounting
- Free; orientation alignment available

### Built-in self test (BIT)
- Gyroscopes, accelerometers, magnetometer