Xsens
Sirius
IMU/VRU/AHRS/MRU

Accurate inertial motion data even in the most challenging environments

High-accuracy motion data in an IP68 MIL-STD housing - shock & vibration resistance and magnetic immunity.

Xsens Sirius is more than just basic inertial sensing. It brings you high levels of accuracy, reliability and robustness that can perform in unpredictable terrain and under intense vibration and shock. For marine users, the Xsens Sirius MRU offers an advanced heave filter for Active Heave Compensation applications.

Engineered for autonomy in harshest conditions

Xsens Sirius is built to deliver consistent performance, providing the critical foundation for autonomous systems operating in demanding conditions.

- **Robust MIL-Standard IP68 housing**
- **High-performance IMU, VRU and AHRS options**
- **MRU version with heave output for marine/offshore applications**
- **Flexible interfaces: RS232, RS422, CAN**
- **Dual-processor design for accurate orientation data**
- **Vibration- and shock-rejecting signal pipeline**
- **Exceptional resistance against magnetic disturbances**

Applications:

- Marine surface vehicles: USVs, vessels, buoys
- Marine subsea vehicles: ROVs, AUVs
- Active Heave Compensation
- Outdoor mobile vehicles & robots – AgTech, mining, construction, logistics
- Industrial and autonomous ground vehicles (AGV, UGV)
- 3D Mapping & Survey Tools
- Aerospace and Defence platforms

Sensor fusion performance

Accelerometer	Calibrated
Gyroscope	Calibrated
Roll, Pitch	0.2° RMS only Xsens Sirius VRU/AHRS
Yaw/Heading	1° RMS only Xsens Sirius AHRS
Real-time Heave Output	< 5 cm accuracy until 29 seconds; < 6 cm accuracy until 40 seconds
Strapdown Integration (SDI)	Yes

Gyroscope

Standard full range	±300°/s
In-run bias stability	7°/h
Bandwidth (-3dB)	400 Hz
Noise density	0.003°/s/√Hz

Accelerometer

Standard full range	±8 g
In-run bias stability	15 µg
Bandwidth (-3dB)	470 Hz
Noise Density	15 µg/√Hz

Magnetometer

Standard full range	±8 G
Total RMS noise	1 mG
Non-linearity	0.2%
Resolution	0.25 mG

Mechanical

IP-rating	IP68
Operating Temperature	-40 to 85 °C
Casing material	Aluminum
Mounting orientation	No restriction, full 360° in all axes
Dimensions	56.50x40.90x24.75 mm
Connector	Main: ODU (AMC HD 12 pins)
Weight	78.5g
Certifications	CE, FCC, RoHS, MIL-STD-202, ITAR free

Electrical

Input voltage	4.5 V – 24 V
Power consumption (typ)	<1W

Interfaces / IO

Interfaces	RS232, RS422, CAN, CAN-FD
Sync Options	SyncIn, SyncOut, ClockSync
Protocols	Xbus, ASCII (NMEA), CAN
Clock drift	10 ppm (or external)
Output frequency	Up to 2kHz, 400HZ SDI
Built-in-self test	Gyr, Acc, Mag

Software Suite

GUI (Windows/Linux)	MT Manager, Firmware updater, Magnetic Field Mapper
SDK (Example code)	C++, C#, Python, Matlab, Public source code
Drivers	LabVIEW, ROS, GO
Support	Online manuals, community and knowledge base

Unless stated otherwise, all specifications are typical. Specifications subject to change without notice. This document is informational and not binding.
Complete and detailed specifications are available at mtidocs.movella.com. **Scan QR code for quick access.**

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