

Xsens Sirius GNSS/INS

**High-accuracy positioning and orientation
in the most challenging environments**

**Next-generation GNSS/INS delivering
robust positioning and heading, even
under degraded GNSS conditions**

Xsens Sirius GNSS/INS combines a quad-band GNSS receiver with advanced sensor fusion to provide reliable, high-accuracy positioning and orientation in environments where GNSS performance is limited, such as urban canyons, near structures, or partially obstructed areas.



Engineered for reliable performance in harsh and GNSS-challenged environments

Xsens Sirius GNSS/INS is designed to maintain positioning accuracy and orientation stability where conventional GNSS/INS systems degrade. It provides the consistency and robustness required for autonomous systems and high-performance applications operating in real-world conditions.

- › Quad-band GNSS receiver (u-blox ZED-X20P) for improved satellite visibility
- › Support for modern high-precision services (PointPerfect, Galileo HAS)

- › Reliable positioning in urban canyons and partially obstructed environments
- › Advanced sensor fusion for stable orientation and reduced drift
- › MIL-STD-202 tested for shock, vibration, and environmental robustness
- › Flexible interfaces: RS232, RS422, CAN, CAN-FD
- › Heave output for marine and offshore applications
- › Uncertainty output for real-time data quality assessment
- › Future-proof support for next-generation GNSS signals

Applications

- › Autonomous ground vehicles (AGV, UGV)
- › Robotics and industrial automation
- › Marine surface and subsea vehicles (USV, ROV, AUV)
- › Offshore and marine heave compensation
- › Surveying and mapping systems
- › Construction, mining, and agriculture (AgTech)
- › Aerospace and defense platforms





Sensor fusion performance

Accelerometer	Calibrated
Gyroscope	Calibrated
Roll, Pitch	0.2° RMS
Yaw/Heading	0.8 deg RMS
Position	1 m CEP
Velocity	0.03 m/s RMS
Heave	< 5 cm for Heave periods up to 29s < 6 cm for Heave periods up to 40s
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

RTK GNSS Receiver

Brand	u-blox
Model	ZED-X20P
RTCM input port	n/a

Mechanical

IP-rating	IP68
Operating Temperature	-40 to 85 °C
Casing material	Aluminum
Mounting orientation	No restriction, full 360° in all axes
Dimensions	56.50x40.9x36.75 mm
Connector	Main: ODU (AMC HD 12 pins)
Weight	103 g
Certifications	CE, FCC, RoHS, MIL-STD-202, ITAR-free

Electrical

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

Interfaces / IO

Interfaces	CAN, CAN-FD, RS232, RS422
Sync Options	SyncIn, SyncOut, ClockSync
Protocols	Xbus, ASCII (NMEA), CAN, CAN-FD
Clock drift	1 ppm
Output frequency	Up to 2kHz, 400 Hz SDI
Built-in-self test	Gyr, Acc, Mag, GNSS

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 mtdocs.xsens.com. **Scan QR code for quick access.**

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