Xsens

Avior RTK GNSS/INS

High-accuracy positioning and orientation in a compact OEM module

Next-generation OEM RTK GNSS/INS delivering reliable positioning and heading for deeply embedded applications.

Xsens Avior RTK GNSS/INS combines the Xsens high-performing OEM inertial core with advanced sensor fusion, RTK capability and an external u-blox ZED-X20P receiver to deliver centimeter-level positioning and highly stable orientation in a compact, low SWaP-C form factor.

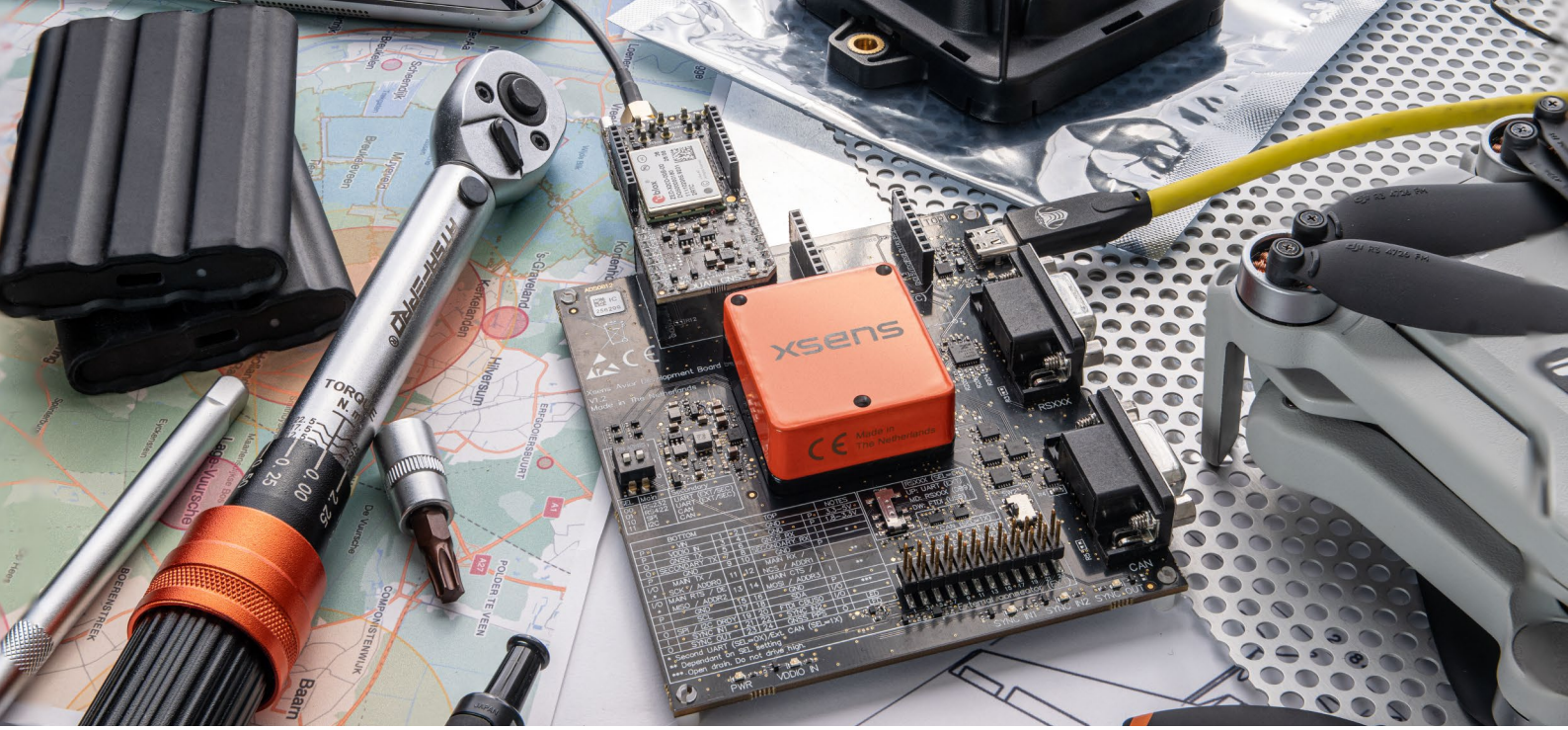
Engineered for high-precision OEM navigation in GNSS-challenged environments

Designed for embedded systems that need robust orientation and meter-level positioning, Xsens Avior GNSS/INS provides a stronger inertial foundation, broad interfaces and the established Xsens software ecosystem for fast evaluation and deep integration. The RTK version adds RTK capability for centimeter-level positioning accuracy.

- **RTK capability for centimeter-level positioning accuracy**
- **External quad-band u-blox ZED-X20P receiver for maximum satellite visibility**
- **Support for modern high-precision services such as PointPerfect and Galileo HAS**
- **Improved RTK convergence and re-acquisition after signal loss**
- **Highest-performing Xsens OEM inertial core for stable orientation and reduced drift**
- **Broad embedded interface set: UART, SPI, I2C, CAN and CAN-FD**
- **Heave output for marine and oshore applications**
- **Covariance output for real-time data quality assessment**

Applications:

- Autonomous vehicles requiring high-precision navigation
- Construction, mining and agriculture (AgTech)
- Drones and UAVs
- Outdoor mobile robotics
- Industrial and automated vehicles
- Marine systems (ROV, USV)
- Payload and platform stabilization
- Surveying, mapping and geospatial systems
- Embedded outdoor applications



Sensor fusion performance

Accelerometer	Calibrated
Gyroscope	Calibrated
Roll, Pitch	0.2° RMS
Yaw/Heading	0.5° RMS
Position	0.6 cm + 1 ppm CEP
Velocity	0.03 m/s RMS
Heave	< 5 cm < 6 cm
Strapdown Integration (SDI)	Yes

Gyroscope

Standard full range	±300°/s
In-run bias stability	8°/h
Bandwidth (-3dB)	400 Hz
Noise density	0.004°/s/√Hz
g-sensitivity (calibr.)	0.08°/s/g

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	External ZED-X20P
RTCM input port	n/a
RTK correction port	RTCM 3.x

Mechanical

IP-rating	IP51
Operating Temperature	-40 to 85 °C
Casing material	Aluminum
Mounting orientation	No restriction, full 360° in all axes
Dimensions	36.8 x 40 x 15.7 mm
Connector	Socket 1.27 mm pitch, 10x2 (vertical, SMD, with alignment pins)
Weight	35.2 g
Certifications	CE, FCC, RoHS, ITAR-free

Electrical

Input voltage	3.2 V to 5.1 V
Power consumption (typ)	<0.5 W

Interfaces / IO

Interfaces	UART, SPI, I2C, CAN, CAN-FD
Sync Options	SyncIn, SyncOut, ClockSync
Protocols	Xbus, ASCII (NMEA), CAN, CAN-FD
Clock drift	1 ppm
Output frequency	Up to 2 kHz, 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 mtidocs.xsens.com. **Scan QR code for quick access.**

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