Xsens

Avior GNSS/INS

High-accuracy positioning and orientation in a compact OEM module

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

Xsens Avior GNSS/INS combines the Xsens high-performing OEM inertial core with advanced sensor fusion and an external u-blox GNSS receiver to deliver accurate, calibrated and stable orientation and navigation in a compact, low SWaP-C form factor.

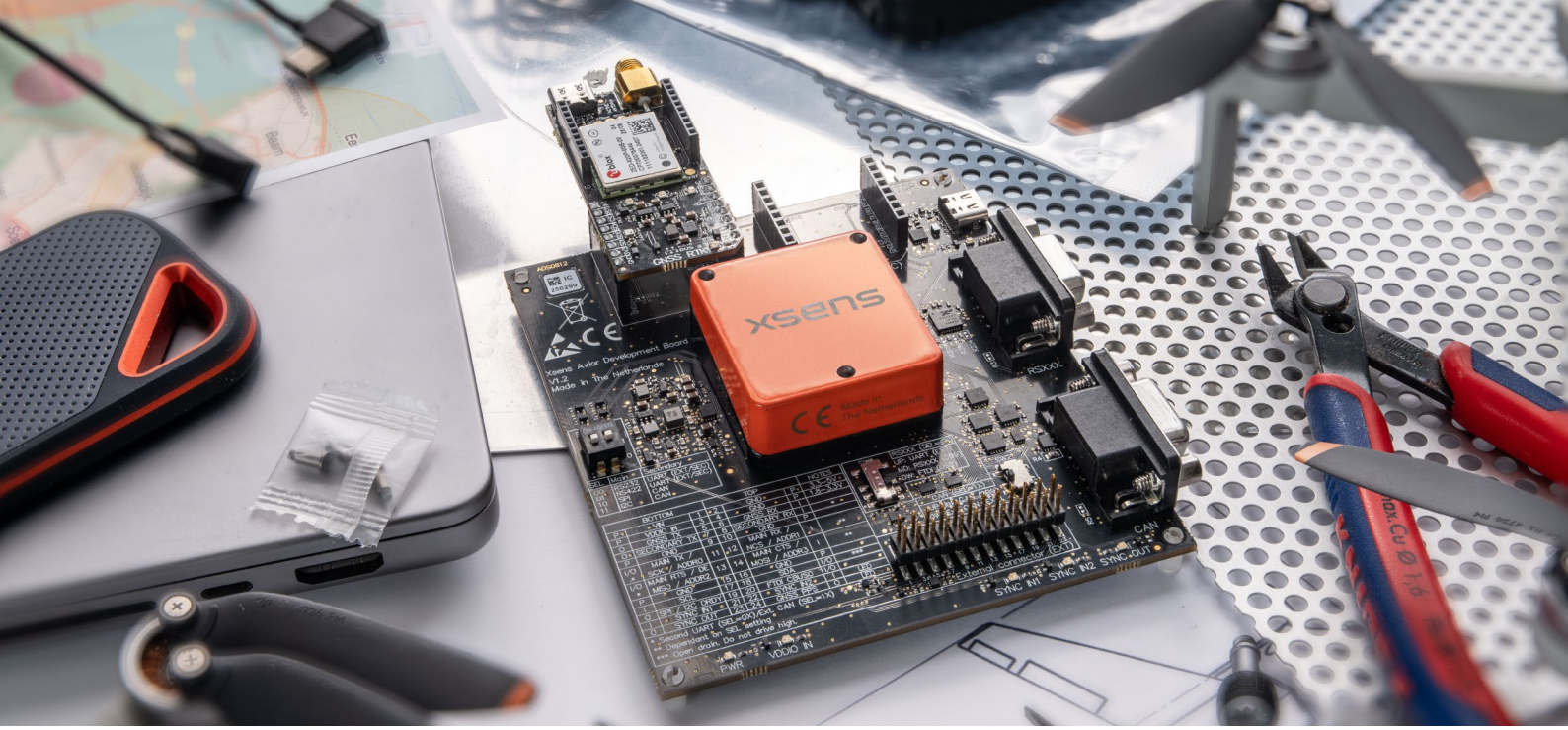
Engineered for reliable OEM navigation in GNSS-challenged environments

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.

- **Highest-performing Xsens OEM inertial core for stable orientation and reduced drift**
- **External u-blox MAX-F10S GNSS receiver for robust dual-band GNSS positioning**
- **Compact aluminum OEM housing with low SWaP-C design**
- **Broad embedded interface set: UART, SPI, I2C, CAN and CAN-FD**
- **Development board support for easier evaluation and simultaneous interface testing**
- **Heave output for marine and offshore applications**
- **Covariance output for downstream localization and state-estimation stacks**
- **SDI output up to 400 Hz and output frequency up to 2 kHz**

Applications:

- 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	0.8° 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	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 MAX-F10S
RTCM input port	n/a

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, (RS232, RS422 with Xsens Avior DK or external transceiver)
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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