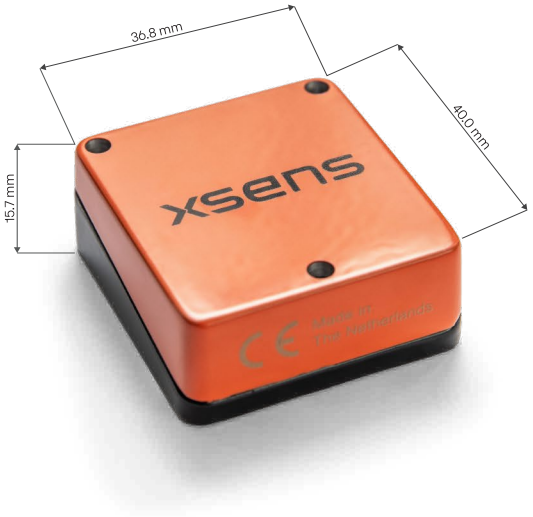
Xsens

Avior Dual Antenna

RTK GNSS/INS

Centimeter-level positioning and true heading for compact embedded systems



Compact dual-antenna GNSS/INS delivering precise heading, even at standstill and low speed

Xsens Avior Dual-Antenna RTK GNSS/INS combines advanced sensor fusion with dual-antenna GNSS input to deliver centimeter-level positioning, precise orientation, true heading and heave in a compact OEM module. It provides reliable heading without depending on magnetic measurements or requiring the platform to move, making it well suited for compact autonomous, slow-moving and stationary platforms.

Engineered for compact, precise navigation

Xsens Avior Dual-Antenna RTK GNSS/INS is designed for embedded applications that require accurate heading from startup, including during standstill and low-speed operation. Its compact form factor, low power consumption and flexible embedded interfaces enable straightforward integration into drones, autonomous ground vehicles, robots and other OEM navigation systems.

- **Dual-antenna GNSS input for true heading at standstill**
- **RTK capability for centimeter-level positioning accuracy**
- **Integrated heave output**
- **Advanced sensor fusion for precise orientation and reduced drift**
- **Lightweight design at 35.2 g**
- **Typical power consumption below 0.5 W**
- **Flexible interfaces: UART, SPI, I^2C, CAN and CAN-FD**
- **Wide operating temperature range from -40 to 85°C**
- **ITAR-free for integration into international programs**

Applications

- **Autonomous vehicles requiring high-precision navigation and heading**
- **Precision agriculture**
- **Drones and UAVs**
- **Robotics and industrial automation with precise positioning needs**
- **Surveying, mapping and geospatial data collection**
- **Marine and offshore operations requiring precise positioning, heave and static heading**
- **Infrastructure inspection and asset tracking**
- **Aerospace and defense platforms**

Sensor fusion performance

Accelerometer	Calibrated
Gyroscope	Calibrated
Roll, Pitch	0.2° RMS
Yaw/Heading (0.5 m baseline)	0.2° RMS
Yaw/Heading (1 m baseline)	0.1° RMS
Yaw/Heading (2 m baseline)	0.05° RMS
Position	0.6 cm + 1 ppm CEP[1]
Velocity	0.03 m/s RMS
Heave	< 5 cm for Heave periods up to 29s < 6 cm for Heave periods up to 40s
Wheel odometry aiding	Available[2]
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	0.8 mG
Non-linearity	0.2%
Resolution	0.25 mG

RTK GNSS Receiver

Supported protocols	UBX/NMEA
Model	External
Correction services	External GNSS receiver dependent

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, I^2C, CAN, CAN-FD
Extended interfaces	USB, RS232 and RS422 with Xsens Avior DK or external transceiver
Additional input	Wheel odometry[2]
Sync Options	SyncIn, SyncOut, ClockSync
Protocols	Xbus, ASCII (NMEA), CAN, CAN-FD
Clock drift	1 ppm with GNSS time reference; 10 ppm without GNSS time reference
Output frequency	Up to 2 kHz, 400 Hz SDI
Built-in-self test	Gyr, Acc, Mag, Baro, 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(2), GO
Support	Online manuals, community and knowledge base

[1] Achievable with RTK corrections under suitable GNSS conditions. [2] Planned for a future firmware release; unavailable at initial product release.
Preliminary specifications. Unless stated otherwise, values are typical and subject to change without notice.

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