AV200

## *Compact GNSS-aided inertial navigation system (INS) for precision localisation in autonomous applications*

Dual antenna RTK GNSS and cutting-edge IMU technology provide uncompromising position, velocity, and orientation measurements in a compact economical package.

Ideal for autonomous applications, including:

- Aerial mobility and drones
- Autonomous mining vehicles
- Industrial automation
- Port and logistics robots
- Robo-taxis

The path to autonomous navigation starts here:
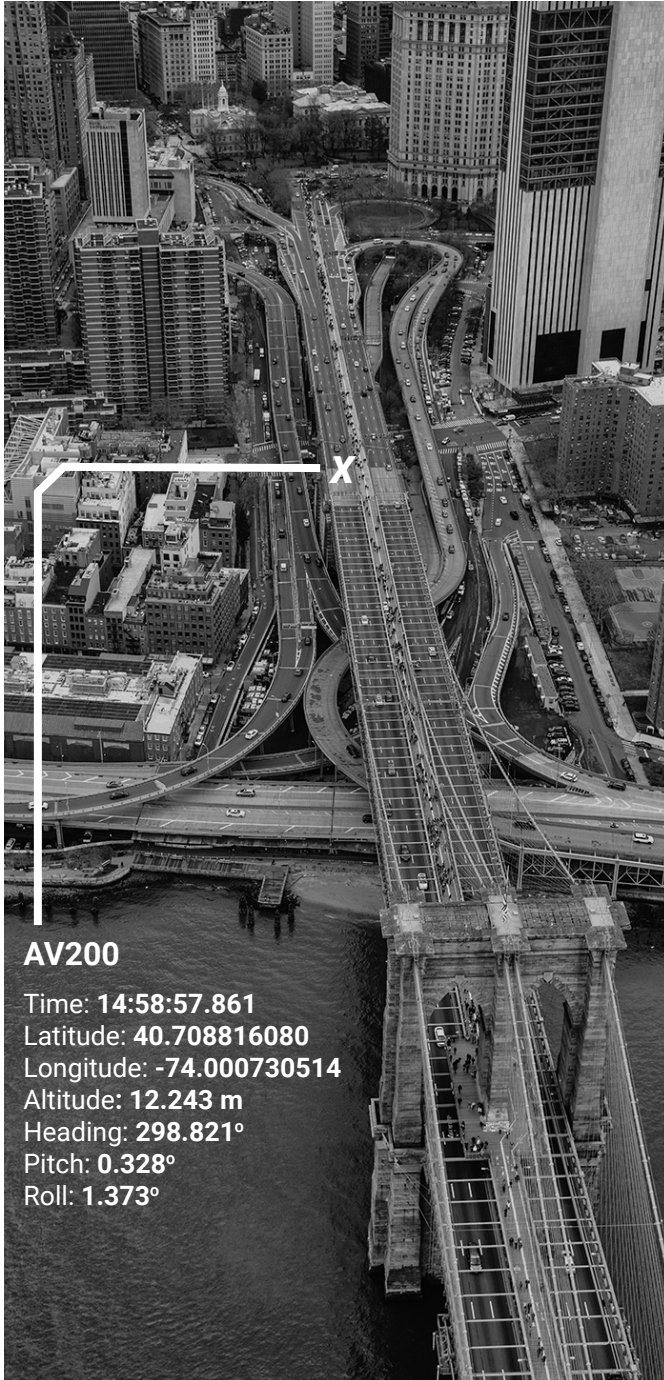
AV200

Time: **14:58:57.861**
Latitude: **40.708816080**
Longitude: **-74.000730514**
Altitude: **12.243 m**
Heading: **298.821°**
Pitch: **0.328°**
Roll: **1.373°**

A new standard for price/performance

The AV200 is a state-of-the-art inertial navigation system combining dual GNSS RTK receivers and a compact MEMS Inertial Measurement Unit (IMU) to deliver centimetre-level position and motion data in real time.

The new OxTS *multi-core IMU technology* achieves exceptional performance at a fraction of the size, power, and price of high-end systems, providing the accuracy and reliability that's required in demanding applications like autonomy.

Navigation you can trust

Multi-constellation dual frequency GNSS ensures global coverage and maximum satellite visibility at all times, whilst *gx/ix™ tight-coupling technology* ensures errors are minimised, even in the harshest environments.

The onboard navigation engine, which uses the industry trusted OxTS Kalman filter, intelligently blends the inertial data with information from other available aiding sources for uninterrupted output.

Seamless integration

Building the AV200 into larger complex systems is quick and easy with Ethernet and CAN data interfaces, digital PPS for time synchronisation and PTP support. It also has a ROS2 driver available for data decoding.

Use the OxTS *generic aiding interface* to integrate external sensors into the navigation solution without spending time and money on creating custom interfaces and encoders for each new sensor device.

Accuracies at a glance:

0.05 m
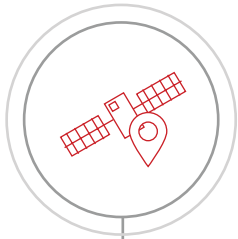position

0.2°
heading

0.2 km/h
velocity

0.1°
roll and pitch

Ready to navigate in:

Harsh GNSS environments

- Maximise satellite coverage at every point along the planned path with GPS, GLONASS, Galileo and BeiDou support on dual frequency RTK GNSS receivers.

- *Dual antenna GNSS* improves heading performance while stationary and during low dynamics.

- Minimise errors and maintain data accuracy in even the harshest GNSS environments with *OxTS' gx/ix™ tight-coupling technology.*
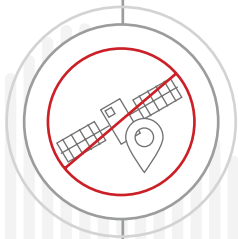
GNSS-denied environments

- Integrate LiDAR and other additional aiding sources into the navigation solution with ease and speed via the OxTS *generic aiding interface.*

- The OxTS navigation engine blends data from all aiding sources with inertial measurements for a continuous, seamless output.
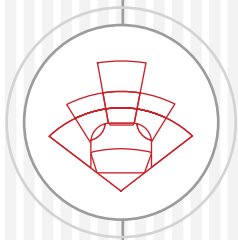
Fleet-volume vehicles

- Achieve high-end performance at a fraction of the typical price thanks to *OxTS multi-core technology.*

- Integrate within a larger system with ease via Ethernet and CAN interface, digital PPS for time synchronisation and PTP support, plus a ROS2 driver for data decoding.

Localisation and control applications

- Robust lane-level positioning and full dynamic output in real-time with high frequency and low latency

- OxTS navigation engine industry trusted for 20 years in active safety development and validation

- Built and calibrated at in-house facilities in the UK with ISO 9001 quality *assurance.*

- OxTS' *GNSS+IMU sensor fusion*, *gx/ix tight coupling*, and *multi-core IMU technology* provide additional layers of redundancy and reliability.
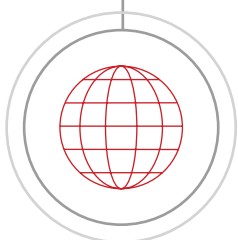
Any part of the world

- ITAR-free and no export licence required enables seamless global transportation.

- Temperature calibration assures reliable performance over wide temperature range.

Specification

Performance

	Accuracy
Accuracy	
Positioning	GPS L1, L2
	GLONASS L1, L2
	BeiDou B1, B2
	Galileo E1, E5b
Position accuracy (CEP) [1][2]	SPS - 1.5 m
	DGPS - 0.4 m
	RTK - 0.05 m
Velocity accuracy (RMS)	0.2 km/h RMS
Roll/pitch accuracy (1σ)	0.1°
Heading accuracy (1σ) [1][2]	0.2°
Max update rate	100 Hz

Hardware

Dimensions	77 x 63 x 24 mm
Mass	130 g
Input voltage	5 - 30 V dc
Power consumption	4 W
Operating temperature	-40° to +70° C
Vibration	10 - 500 Hz 1.42 g
Shock survival	15 g, 11 ms half sine
Internal storage	32 GB
I/O connector	15-way micro D-sub
GNSS antenna connector	SMA
Interfaces	Ethernet CAN PPS 2 x Event Triggers

Sensors

Type	Accelerometers	Gyros
Technology	MEMS	MEMS
Range	± 8 g	±480º/s
Bias stability	0.08 mg	5°/hr
Scale factor	0.08%	0.3%
Random walk	0.06 m/s/√hr	0.48°/√hr

[1] Typical values, subject to ionospheric/tropospheric conditions, satellite geometry, baseline length, multipath. Requires clear view of the sky and appropriate differential corrections to achieve full specification.

[2] Using dual antenna with 1 m separation baseline. Higher accuracy can be achieved with wider antenna separation.

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