



RT1003 v2

Ready for challenging GNSS conditions

Featuring GPS, GLONASS, Galileo and BeiDou aiding, as well as the latest OXTS IMU technology, the RT1003 v2 is the cost-effective option to capture accurate position, orientation and dynamics data in all but the harshest GNSS environments.

Key Features

- + Open-road testing
- + Vehicle dynamics testing
- + Motorcycle dynamics testing
- + Slip angle measurement
- + Low profile VRU platforms
- + Driving robot control

Technical specification

Model	RT1003 v2
Positioning	GPS L1, L2C
	GLONASS L1, L2
	BeiDou B1, B2
	Galileo E1, E5
Dual Antenna	Yes
ITAR-free	Yes

Performance specification with GNSS^[1]

RTK/Post-process	
X,Y Position (CEP)	0.02 m
Velocity (RMS)	0.1 km/h
Roll & Pitch (1σ)	0.05 °
True Heading (1σ) ^[3]	0.1 °

Accuracy. Even in challenging conditions.

New OXTS IMU technology

Alleviates position drift during transient periods of complete GNSS outages.

Acceleration filters

Reduce unwanted noise on accelerations and angular rates.

OXTS gx/RTK inertial relock technology

Uses IMU measurements to reduce RTK reacquisition time from up to twenty seconds, to around five seconds, after every bridge, tunnel or stretch of dense tree canopy that interrupts GNSS visibility.

OXTS ix/single-satellite aiding technology

Ensures that each and every visible satellite is blended into the navigation solution for the most accurate solution possible.

Wheelspeed odometer interface

Enables input of real-time velocity updates to reduce position drift.

NEW quad-GNSS support

(GPS, GLONASS, Galileo and BeiDou) improves position data accuracy in challenging GNSS environments by providing maximum satellite coverage along your route.

Additional features

- + CAN acquisition facilitates 12 messages to be logged from a third-party CAN bus directly into the RT1003 v2, and viewed in real-time alongside the inertial measurements.
- + ISO17025 calibration offers performance that is traceable to national standards.
- + Precision Time Protocol (PTP) master capability enables time synchronisation with other devices over ethernet.
- + 250 Hz output delivers a higher rate than the 100 Hz default.

Test and validation features

- + Full NCOM outputs speed, acceleration, angular rate and all other relevant test and validation measurements which are unavailable in NCOM Lite.
- + Multiple slip points computes slip angle from up to eight user-configured points on the vehicle.
- + Local coordinates displaces data from an origin on a local coordinates grid.
- + Surface tilt compares roll and pitch to an inclined surface.
- + Driving robot interface enables compatibility with steering and platform robots.
- + RT-Range target compatibility offers an economical option for multi-actor scenarios.



Why choose the RT1003 v2

Maximise satellite coverage along your route

- + Dual-antenna GNSS receiver supports aiding from the four main GNSS constellations: GPS, GLONASS, Galileo, and Beidou.
- + OXTS ix/single-satellite aiding technology ensures that each and every visible satellite is blended into the navigation solution for the most accurate data possible.

Minimise drift during GNSS outage

- + OXTS IMU technology limits position drift during transient periods of complete GNSS outage.

Expedite RTK reacquisition

- + After transient GNSS outages, OXTS' gx/RTK inertial relock technology uses IMU measurements to expedite RTK reacquisition from up to 20 seconds, to around five.

Have everything you need

- + By combining GNSS receivers, an inertial measurement unit, internal storage and a real-time processor all in one box, the RT1003 v2 delivers everything you need to capture accurate data.
- + All OXTS INS devices include an extensive, free-of-charge software suite to configure, monitor, post-process and plot your data.
- + Free-of-charge support available for configuration advice and other technical assistance.

Export worldwide without hassle

- + The RT1003 v2 is ITAR-free meaning no export licence is required when shipping worldwide.

Features

- + GPS, GLONASS, Galileo and BeiDou aiding
- + gx/ix tight-coupling technology
- + Dual-antenna
- + ITAR-free
- + Driving robot interface
- + Wheelspeed odometer interface
- + RT-Range target compatibility

Options

- + 250 Hz output
- + ISO 17025 calibration
- + CAN acquisition
- + PTP Master
- + Motorsport high vibration filter



Technical specification

Model	RT1003 v2
Positioning	GPS L1, L2C
	GLONASS L1, L2
	BeiDou B1, B2
	Galileo E1, E5
Single/Dual Antenna?	Both
ITAR-free?	Yes

Performance specification with GNSS ^[1]

	RTK	Post-process
X,Y Position (CEP)	0.02 m	0.02 m
Altitude (RMS)	0.03 m	0.03 m
Velocity (RMS)	0.1 km/h	0.1 km/h
Roll & Pitch (1 σ)	0.05°	0.05°
True Heading (1 σ) ^[3]	0.1°	0.1°
Slip angle (1 σ) ^[4]	0.25°	0.25°

Performance specification without GNSS (RMS)

	Real-time ^[2]			Post-process ^[2]		
	10 s	30 s	60 s	10 s	30 s	60 s
X,Y Position (m)	0.29	1.08	2.52	0.06	0.30	0.78
Velocity (m/s)	0.06	0.08	0.10	0.02	0.06	0.07
Roll & Pitch (deg)	0.03	0.04	0.05	0.02	0.03	0.03
True Heading (deg)	0.13	0.27	0.41	0.06	0.15	0.25

Physical characteristics

Dimensions	142 x 77 x 41 mm
Mass	435 g
Input voltage	10 - 31 V
Power consumption	≤ 9 W
Internal storage	32 GB

OXTS Sensors

Type	Accelerometers	Gyros
Technology	MEMS	MEMS
Range	8 g	480 °/s
Bias stability	0.08 mg	5 °/hr
Scale factor (1 σ)	0.08 %	0.3 %
Random walk	0.06 m/s/ $\sqrt{\text{hr}}$	0.48 °/ $\sqrt{\text{hr}}$
Axis alignment	< 0.03 °	< 0.05 °

Interfaces

Ethernet	Ethernet 10/100 Base-T
CAN	Up to 1 Mbit/s
Serial	Configurable RS232

Environmental characteristics

Operating temperature	-40° to 70° C
Vibration	10-500 Hz 1.42g RMS
Shock survival	15 g, 11 ms
Environmental protection	IP65

- [1] Typical values subject to ionospheric/tropospheric conditions, satellite geometry, baseline length and multipath. Requires clear view of the sky and appropriate differential corrections to achieve full specification.
- [2] With differential corrections and DMI input
- [3] With two-meter antenna separation
- [4] At 50 km/h

