



RT1003 v2

Ready for challenging GNSS conditions

Featuring GPS, GLONASS, Galileo and BeiDou aiding, as well as the latest OxTS multi-core 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.

Applications

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



Accuracy. Even in challenging conditions

NEW OxTS multi-core IMU technology alleviates position drift during transient periods of complete GNSS outage.

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 20 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.

Wheel Speed 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.

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 **multi-core 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

- / 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 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.

Specs at a glance:

- / 0.02 m position accuracy
- / 0.1° heading accuracy
- / 0.1 km/h velocity accuracy
- / 0.05° pitch/roll accuracy
- / 0.25° slip angle accuracy
- / 0.1°/s yaw rate
- / 100 Hz output

Features:

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

Options:

- / 250 Hz output
- / ISO17025 calibration
- / CAN acquisition
- / PTP Master
- / Motorsport high vibration filter

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.

Additional options:

- / **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.

Performance¹

Positioning	GPS L1, L2C
	GLONASS L1, L2
	BeiDou B1, B2
	Galileo E1, E5
Position accuracy (CEP)	
SPS	1.6 m
RTK	0.02 m
Velocity accuracy (RMS)	
0.1 km/h	
Roll/pitch accuracy (1 σ)	
0.05°	
Yaw rate ²	
0.1°/s	
Heading accuracy (1 σ) ³	
0.1°	
Slip Angle accuracy	
0.25°	
Warm up time	
≤ 3 minutes	
Position drift after GNSS outage without WSS ⁴	
10 s	<0.5 m
60 s	<20 m
240 s	<500 m
Position drift after GNSS outage with WSS ^{4,5}	
10 s	<0.4 m
60 s	<5 m
240 s	<20 m
Dual antenna?	
Yes	

Optional Accessories

RT-Strut

A quick and easy-to-use mounting system for vehicles

RT-Base S

A portable and weatherproof base station for GNSS corrections

RT-XLAN

Reliable long range WiFi communication between vehicles

Hardware

Dimensions	142 x 77 x 41 mm
Mass	435 g
Input voltage	10 – 31 V
Power consumption	≤ 9 W
Operating temperature	-40° to 70° C
Vibration	10-500 Hz 1.42 g RMS
Shock survival	15 g, 11 ms
Internal storage	32 GB
Environmental protection	IP65

Sensors

Type	Accelerometers	Gyros
Technology	MEMS	MEMS
Range	8 g	480°/s
Bias stability	0.08 mg	5°/hr
Scale factor	0.08%	0.3%
Random walk	0.06 m/s/√hr	0.48°/√hr
Axis alignment	<0.03°	<0.05°

Interfaces

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

¹ Valid for open sky conditions

² Filtered with 10 Hz cut-off frequency

³ Dual antenna heading valid for 2 m antenna separation

⁴ Simulated

⁵ 500 pulses/rev



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