OXTS
Inertial+GPS

RT2000

Cost-effective GNSS/INS for vehicle dynamics testing

The RT2000 family of inertial navigation systems from Oxford Technical Solutions combine high-grade gyros and accelerometers with cost-effective GNSS technology to deliver a complete dynamics solution on a budget.

>> Key features

>>RT2002 v2

- 1 cm position accuracy
- 0.2° slip angle

>>RT2500/RT2502

- 50 cm position accuracy
- Single or dual antenna

>>RT2000 common features

- High accuracy orientation
- GLONASS option
- Optional CAN acquisition
- OxTS gx/ix performance technology
- Multiple slip points
- Driving robot interface
- Tightly coupled GNSS/INS
- ISO 17025 calibration available

>> Applications

- Vehicle dynamics analysis
- ADAS validation
- NHTSA regulation testing
- Tyre testing
- Driving robot control
- Acceleration testing
- Electronic power steering tests
- Slip angle measurement

>> Experts in GNSS and inertial technology

Advanced algorithms in the RT2000 seamlessly blend the inertial and GNSS data to provide smooth, robust, real-time outputs. Even in poor GNSS environments the RT2000 remains accurate with low latency outputs of position, velocity, orientation and more. Now with OxTS gx/ix technology, we have improved position, velocity and orientation measurements making the performance even better than ever before.

>> One box, turnkey solution

Combining GNSS receivers, an inertial measurement unit, internal storage and a real-time on-board processor all in one compact box, the RT2000 delivers everything you need for a complete dynamics solution. The optional CAN acquisition upgrade eliminates the need for 3rd party acquisition systems making the RT2000 a true one-box solution for vehicle test engineers. All cables and antennas are included, and the RT2000 comes with an extensive software suite so you can post-process and plot your data at no additional cost.

>> Simple, flexible, reliable

With secure mounting options available and simple software wizards, installing and using the RT2000 is quick and easy. Data can be output at up to 250 Hz over Ethernet, serial or CAN in a range of formats. Packed with features to improve performance and functionality, including wheel speed input, driving robot interface, and heading lock, the RT2000 ensures reliable performance in all situations.

>> Worldwide standard

OxTS inertial navigation systems are recognised as a symbol of precision and performance around the globe. With a large number of systems in operation wordwide, you can be sure of the quality to expect from the RT2000. Now with ISO 17025 calibration available, our inertial measurements are traceable to national standards.

>> RT2000 models

100 Hz model	RT2500	RT2502	RT2002 v2
250 Hz model[1]	RT2500–250	RT2502–250	RT2002–250 v2

>> Performance[2]

Positioning	GPS L1 GLONASS[1] L1	GPS L1 GLONASS[1] L1	GPS L1, L2 GLONASS[1] L1, L2
Position accuracy (CEP)			
SPS	2.0 m	2.0 m	1.5 m
SBAS	1.0 m	1.0 m	0.6 m
DGPS	0.5 m	0.5 m	0.4 m
RTK			0.01 m
Velocity accuracy (RMS)	0.1 km/h	0.1 km/h	0.1 km/h
Roll/pitch accuracy (1σ)	0.05°	0.05°	0.05°
Heading accuracy (1σ)	0.2°	0.15°[3]	0.1°
Track angle accuracy (1σ)[4]	0.15°	0.15°	0.1°
Slip angle accuracy (1σ)[4]	0.3°	0.25°	0.2°
Dual antenna	x	✓	x

>> Interfaces

Ethernet
Serial
CAN
Digital I/O:

    Odometer input

    Event input trigger

    1PPS output

    Odometer simulation output

    IMU sync output

>> Hardware

Dimensions	234 x 120 x 76 mm
Mass	2.3 kg (RT250_) 2.4 kg (RT200_)
Input voltage	10–25 V dc
Power consumption	15 W
Operating temperature	–10° to 50° C
Vibration	0.1 g^2/Hz, 5–500 Hz
Shock survival	100 g, 11 ms
Internal storage	2 GB

>> Sensors

Type	Accelerometers	Gyros
Technology	MEMS	MEMS
Range	10 g	100°/s
Optional	30 g	300°/s
Bias stability	5 µg	3°/hr
Linearity	0.01%	0.05%[5]
Scale factor	0.1%	0.1%
Random walk	0.005 m/s/√hr	0.2°/√hr
Axis alignment	<0.05°	<0.05°

[1] Optional upgrade.
[2] Valid for open sky conditions.
[3] 2 m antenna separation. Wider separation will improve accuracy. Supports up to 5 m separation.
[4] At 50 km/h.
[5] With SuperCAL adjustment.

OXTS
Inertial+GPS