

RT500

Cost-effective GNSS/INS for vehicle dynamics testing

The RT500 combines high-grade gyros and accelerometers with cost-effective GNSS technology to deliver a complete dynamics solution on a budget.

>> Key features

- 50 cm position accuracy
- Dual antenna
- High accuracy orientation
- GPS & GLONASS as standard
- Optional CAN acquisition
- Multiple slip points
- Tightly coupled GNSS/INS
- Onboard Wi-Fi
- CAN 2.0 and CAN-FD output
- Serial and Ethernet output
- ISO 17025 calibration available

>> Applications

- Vehicle dynamics analysis
- Ride and handling testing
- Coastdown testing
- Brake testing
- Tyre testing
- Acceleration testing
- Electronic power steering tests
- Slip angle measurement



>> Entry-level GNSS/INS

The RT500 combines the high data rate and robustness of inertial navigation systems with the absolute precision of GNSS data, at our lowest price point. It provides robust, precise and accurate real-time position, orientation and velocity measurements, even in poor GNSS environments. Meaning it is widely used across the automotive industry for vehicle dynamics applications.

>> Data monitoring without cables

The inclusion of an on-board Wi-Fi router in the RT500 allows for easy wireless connection to communicate and monitor device performance. This convenient functionality also simplifies set up, by reducing cabling, and allows the RT500 to be semi-permanently installed in an out-of-the-way location without impeding data access.

>> Data output flexibility

The RT500 can output data over Ethernet, serial, CAN and CAN-FD for real-time interfacing with Data Acquisition Systems. In addition, the RT500 can log external CAN signals, such as throttle position and steering angle.

>> Real-time data with powerful post-processing

Measurements can be displayed in real-time and logged internally for post-processing, with over two days' worth of data storage. And our advanced post-processing algorithms minimise position drift and apply satellite corrections, enabling accuracies to be further improved.

>> Output rates

100 Hz
200 Hz
250 Hz

>> Performance ¹ (dual antenna)

Positioning	GPS L1 GLONASS L1
Position accuracy (CEP)	
SPS	2.0 m
SBAS	1.0 m
DGPS	0.5 m
Velocity accuracy (RMS)	0.1 km/h
Roll/pitch accuracy (1 σ)	0.05°
Heading accuracy (1 σ) ²	0.15°
Track angle accuracy (1 σ) ³	0.15°
Slip angle accuracy (1 σ) ³	0.25°

>> Interfaces

Ethernet	10/100 Base-T
Serial ⁴	Configurable RS232
CAN	Up to 1 Mbit/s
Radio	Configurable RS232

Digital I/O	Odometer input Event input trigger 1PPS output Odometer simulation output IMU sync output
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>> Hardware

Dimensions	184 x 120 x 71 mm
Mass	1.5 kg
Input voltage	10–50 V dc
Power consumption	15 W
Operating temperature	-40° to 70° C
Vibration	0.1 g ² /Hz, 5–500 Hz
Shock survival	100 g, 11 ms
Internal storage	32 GB

>> Sensors

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

>> Wireless LAN

Radio	IEEE 802.11 ab/g/n/ac/d/h/j
Data Rates	5GHz: 802.11a/n/ac - Up to 433 Mbps 2.4GHz: 802.11b/g/n - Up to 150 Mbps
Operating Channels	Channel 1-14 (2412 - 2484 MHz) Channel 36-165 (4900 - 5845 MHz) Channel Bandwidth: 20, 40, 80 MHz ⁶

¹ Valid for open sky conditions.

² 2 m antenna separation. Wider separation will improve accuracy. Supports up to 5 m separation.

³ At 50 km/h.

⁴ Only available when using internal GNSS

⁵ With SuperCAL adjustment.

⁶ Operating channels/frequencies and bandwidths depend on regulatory rules.

