

SPEEDBOX & SPEEDBOX MINI - Non-contact Speed Sensors

Race Technology
www.race-technology.com



The **SPEEDBOX** and **SPEEDBOX MINI** are very high accuracy non-contact speed sensors which have been designed for professional automotive testing as well as other industrial and high-end motorsport applications. They output a low latency, non-interpolated speed measurement comprised of GPS and inertial data combined using an adaptive filter for exceptional performance even in environments where accuracy of GPS-only sensors is severely degraded.

- Highly accurate: 0.02m/s speed accuracy.
- 20Hz **PurePhase** GPS developed by Race Technology specifically for automotive testing.
- 3 axis accelerometer (optional high accuracy IMU upgrade: 10g, 300 degrees/s).
- Accelerometers combined with GPS create maximum accuracy even during short GPS signal drop-outs.
- Self-optimising Kalman filter used to maintain GPS and accelerometer data.
- 4 configurable analogue ports, offering inputs and outputs for combined speed, GPS or acceleration data. Easily accessible on LEMO connectors on **SPEEDBOX**.
- Digital pulse output for speed & distance measurement.
- Trigger input for data synchronisation with external events.
- Serial and USB ports for data output, in uBlox, Race Technology format, ASCII messages in NMEA format.
- Fully configurable CAN output.
- Live Monitor software for live script based testing.

The high accuracy 20Hz **PurePhase** GPS solution is optimised for speed measurement, outperforming even top of the range 'survey-grade' GPS receivers in this respect. This unique GPS technology outperforms "GPS-only sensors", offering lower noise, lower latency and superior bandwidth, and is far more resistant to drop-outs. It offers an ideal replacement/upgrade for 5th wheel, optical and GPS-only sensors.

GPS positional accuracy can be improved to within the range of 2-3cm by combining the **SPEEDBOX** with the **RT CONNECT** product.

The cases are designed to stack securely with other system components, allowing full systems to be integrated and installed as complete connected systems. This makes the transition from setting up on the bench to testing in the vehicle quick and easy.



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SPEEDBOX & SPEEDBOX MINI

As standard specification the SPEEDBOX and SPEEDBOX MINI are suitable for general straight-line speed measurement testing and pedal triggered brake tests, measuring deviation from a line under braking, acceleration timings, general high accuracy accel/speed measurement for tyre testing etc and also for some special applications like gradient measurement.

	SPEEDBOX	SPEEDBOX MINI	Options		
			+INS Dual Antenna	+INS Single Antenna	+RT CONNECT
Accelerations	200Hz, 0.1m/s	200Hz, 0.1m/s	200Hz, 0.01m/s	200Hz, 0.01m/s	
Speed	200Hz, 0.02m/s	200Hz, 0.02m/s	200Hz, 0.015m/s	200Hz, 0.015m/s	
Distance	200Hz, 3cm in 40m	200Hz, 3cm in 40m	200Hz, 3cm in 40m	200Hz, 3cm in 40m	
Position	20Hz 1-2m	20Hz 1-2m	20Hz 1-2m	20Hz 1-2m	10Hz (5Hz BeiDou) 2-3cm
Roll / Pitch / Yaw rate			200Hz, 0.01deg/s	200Hz, 0.01deg/s	
Yaw			200Hz, 0.08deg	200Hz, 0.08deg	
Roll / Pitch			200Hz, 0.04deg	200Hz, 0.04deg	
Price Comparison	\$\$\$	\$\$	\$\$\$\$\$\$\$	\$\$\$\$\$\$	+\$\$\$

The following optional enhancements are available:

+INS Single Antenna

Unbeatable accuracy for brake testing. Full vehicle attitude measurement for all types of brake testing and dynamic chassis development. Also much greater robustness to poor GPS data conditions and test accuracy estimates output with test results.

+INS Dual Antenna

This adds the ability to initialise when stationary to the SPEEDBOX-INS, ideal for from cold testing or applications where the vehicle can not easily be moved through dynamic manoeuvres to get the system initialised, such as on mining trucks or other large vehicles.

+RT CONNECT

Add 2-3cm positional accuracy to all SPEEDBOX systems, enabling use as driving robot input, target tracking, lane deviation, driverless vehicle and ADAS development / verification. This option also allows cloud based data logging and live telemetry.

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