# 100 Hz Speed Sensor
## (VBSS100_V4G)

Based on a high accuracy GPS/GLONASS engines, our 100 Hz VBOX Speed Sensors offers the ultimate non-contact measurement solution.

Data output is via CAN Bus, offering easy integration with data loggers and testing applications.

Each speed sensor also features analogue and digital outputs. The analogue output can be assigned to vehicle speed, lateral acceleration, longitudinal acceleration, or lap beacon marker with user selectable scaling.

The digital output can be configured as either a digital speed pulse output or a lap beacon marker.

The VBOX 100 Hz Speed Sensor offers brake-trigger input support and can calculate MFDD (Mean Fully Developed Deceleration), which makes it ideal for homologation brake testing.

The IP66 rating means that each unit is water and dustproof, allowing them to be used in a variety of conditions.

## Features

- High performance GPS/GLONASS receiver (100 Hz)
- CAN Bus Output of position, velocity, distance, time, heading, height, vertical velocity, longitudinal and lateral acceleration, trigger to zero distance, trigger time, trigger speed, radius of turn
- RS232 serial output of NMEA, position velocity and time
- User configurable analogue + digital outputs
- Virtual Lap Beacon output
- Brake trigger input
- Rugged Deutsch ASDD Autosport connector
- High quality aluminium enclosure
- IP66 rated: water + dustproof
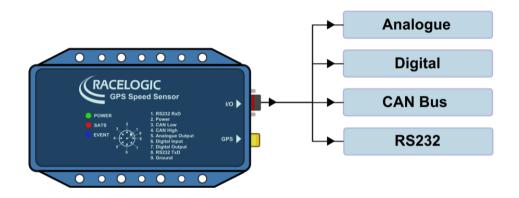- Wide 7V – 30 V operating range and low current consumption

## Interfaces

| Inputs | |
|---|---|
| Input Voltage range | 7 V – 30 V DC |
| Power | 2 W Max |
| GPS Antenna | 5 V Active Antenna (included) |
| Digital Input | Set Lap beacon Position / Brake Trigger Event |
| LED | Power, Satellite Count, Event Out |



| Outputs | |
|---|---|
| **CAN Bus** | |
| Output Data Rate | 125 Kbit, 250 Kbit, 500 Kbit & 1 Mbit selectable baud rate. Software controlled CAN termination. |
| Data available | Position, velocity, vertical velocity, heading, lateral acceleration, longitudinal acceleration, satellite count, time, radius of turn, altitude, brake stop time, brake stop distance, brake trigger velocity, DGPS status. |
| **RS232** | |
| Output Data Rate | Dependant on unit type and mode |
| Data Available | NMEA and RL Serial, dependant on unit type |
| **Analogue** | |
| Output Data Rate | 0 to 5 V DC |
| Data Available | Either Speed, Lateral Acceleration, Longitudinal Acceleration, or Lap Beacon |
| **Digital Output** | |
| Output Data Rate | Low = 0 V, High = 5 V, Max. frequency 4.4 KHz |
| Data Available | Speed or Lap Beacon |

**VBOX** AUTOMOTIVE

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12/04/2022

## Specifications

| Velocity | | Distance | |
|---|---|---|---|
| Accuracy | 0.1 km/h (averaged over 4 samples) | Accuracy | 0.05% (<50 cm per km) |
| Units | Km/h or Mph | Units | m/ ft |
| Update rate | 100 Hz | Update rate | 100 Hz |
| Maximum velocity | 1000 mph | Resolution | 1 cm |
| Minimum velocity | 0.1 km/h | | |
| Resolution | 0.01 km/h | | |
| Latency | 8.5 ms ±1 or 15.5 ms* | | |
| | | | |
| **Absolute Positioning** | | **Time** | |
| Accuracy** (Standalone) | V: 1.8 m; H: 1.2 m | Resolution | 0.01 s |
| Accuracy** with SBAS | V: 1.2 m; H: 0.8 m | Accuracy | 0.01 s |
| Accuracy** with DGPS | V: 0.5 m; H: 0.3 m | | |
| | | | |
| Update rate | 100 Hz | | |
| Resolution | 1.8 cm | | |
| | | | |
| **Heading** | | **Acceleration** | |
| Resolution | 0.01° | Accuracy | 0.50 % |
| Accuracy | 0.1° | Maximum | 20 G |
| | | Resolution | 0.01 G |
| **Brake stop Accuracy (Trigger Activated)** | | | |
| Accuracy | ±1.8 cm*** | | |

* With fixed CAN latency

** Specifications will vary depending on the number of satellites used, obstructions, satellite geometry (PDOP), multipath effects, and atmospheric conditions. For maximum system accuracy, always follow best practices for GNSS data collection.

*** Based on <50 m brake stop distance.

## Environmental and physical

| Environmental and physical | | | |
|---|---|---|---|
| Weight | Approx. 250g | Operating temperature | -30˚C to +70˚C |
| Size | 140mm x 92mm x 31.85mm | Storage temperature | -40°C to +85°C |
| IP rating | IP66 | Connectors | Deutsch ASDD Autosport Rated IP66 |

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| Support | |
|---------|---|
| Hardware | One Year Support Contract |
| Software | Lifetime Support Contract: Valid for a minimum of 5 years from the date of purchase and limited to original purchaser. Contract includes telephone / email technical support provided by local VBOX distributor and firmware / software upgrades where applicable. |

## Package Contents

| Description | Product code |
|-------------|--------------|
| Speed Sensor unit | RLVBSS100-V4G |
| GPS/GLONASSS Low Profile Antenna | RLACS156 |
| Certificate of Calibration | RLCALUKAS |

| Supplied separately | |
|---------------------|---|
| VBOX Speed Sensor Interface Cable (Analogue / Digital / CAN / Serial / Power) | RLCAB093 |
| VBOX Speed Sensor Interface Cable + 5-way Lemo socket for CAN Communication | RLCAB093-C |
| VBOX Speed Sensor Interface Cable + 5-way Lemo socket for Serial Communication | RLCAB093-L |

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