

# VBOX II SX

5 / 10 / 20 Hz GPS Data Logger



## The VBOX II SX Range

**VBOX II SX** (RLVB2SX) is a powerful instrument used for measuring the speed and position of a moving vehicle. It is based on a new generation of high performance satellite receivers, and will measure acceleration, braking distances, lap times, cornering forces and more.

Due to its small size and simple installation, **VBOX II SX** is ideally suited for use in cars, bikes, off road vehicles and boats.

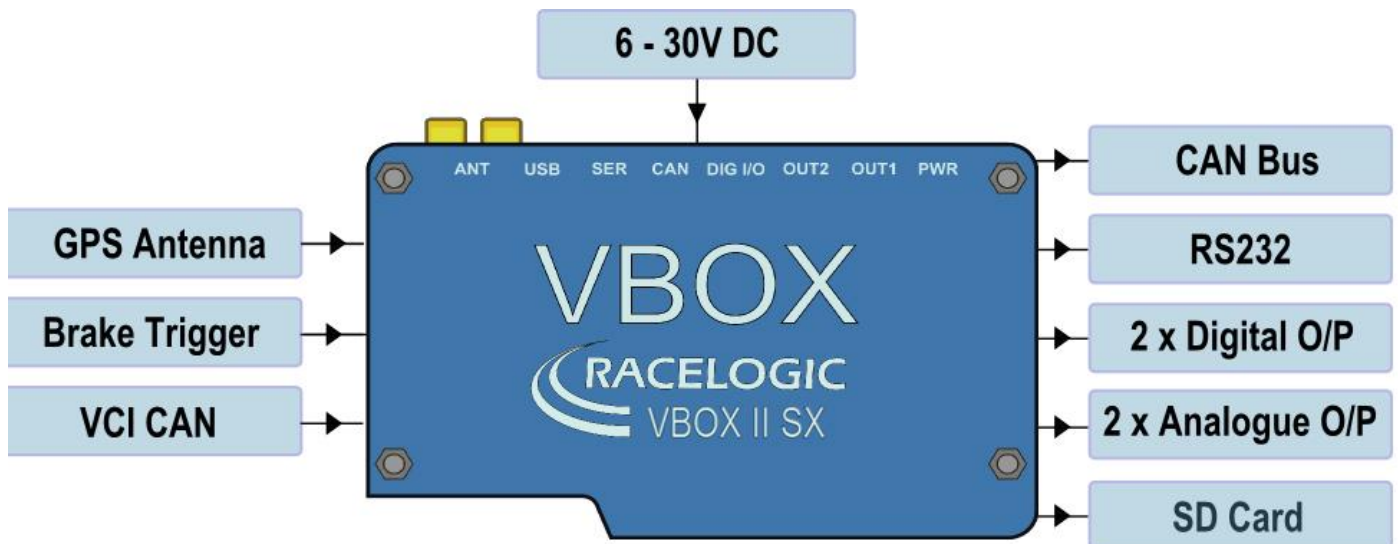
With 5Hz, 10Hz, and 20Hz GPS update rate options available, the range suits a variety of requirements and budgets. All units are compatible with the **DGPS Basestation** for positional accuracy to <20cm.

**VBOX II SX** features a high contrast OLED screen display and buttons for basic configuration without a PC, as well as a USB serial connection in addition to RS232. A built in CAN interface enables logging of up to 16 channels of vehicle CAN data without requiring external modules.



## Features

- Non-contact measurement using GPS
- 5 / 10 / 20 Hz Update rate options
- CAN interface for logging of vehicle data
- CAN Bus interface: connect to all VBOX input modules
- Logging of up to 24 data channels, in addition to up to 13 standard GPS channels
- USB and RS232 serial interface
- SD Card logging
- 2 x Analogue outputs + 2 x Digital outputs
- Accurate brake / event trigger input
- OLED Screen display
- Front panel configuration buttons
- Wide range of power input: 6 – 30V



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## Specifications

### Input: VCI CAN

Allows the user to log incoming CAN data from other systems. Note: Unit does not connect to other Racelogic CAN modules when in VCI CAN input is active.

### Input: Brake / Event Trigger

Oversampled input for external trigger module

### Output: CAN Bus

Bit rate	125 kbit/s, 250kbit/s, 500kbit/s & 1Mbit/s selectable baud rate
Identifier type	Standard 11bit and Extended 29bit 2.0A
Data available	Satellites in view, UTC Time, Latitude, Longitude, Velocity, Heading, Altitude, Vertical velocity, Distance, Longitudinal & Lateral acceleration, Distance from Trigger, Trigger time, Trigger velocity

### Output: Analogue

Voltage range	-5 to +5V DC Long ACC & Lat ACC 0V to +5V DC (velocity)
Default setting *	0.0125Volts per km/h (0 to 400Km/h)
Accuracy	0.1 km/h @ 100km/h

### Output: Digital

Frequency range	DC to 50kHz
Default setting *	90 pulses per metre (equates to 25Hz per km/h from 0 to 400Km/h)
Accuracy	0.1km/h @ 100km/h

\* The range settings can be adjusted by the user in software

### Power

Input Voltage range	6-30V DC
Current	Typically 560mA

### Environmental and physical

Weight	Approx 500 grams
Size	154mm x 112mm (decreasing to 99mm) x 30mm
Operating temperature	-30°C to +60°C
Storage temperature	-40°C to +85°C

### Memory

External memory support	SD Card 1
Recording time	Dependant on SD capacity. Approx 4.4 megabytes per hour used while logging all GPS channels.

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## VB2SX: GPS Specifications for VBOX II SX 20Hz Unit

<b>Velocity</b>		<b>Distance</b>	
Accuracy	0.1 Km/h (averaged over 4 samples)	Accuracy	0.05% (<50cm per Km)
Units	Km/h or Mph	Units	Metres / Feet
Update rate	20 Hz	Update rate	20Hz
Maximum velocity	1000 Mph	Resolution	1cm
Minimum velocity	0.1 Km/h		
Resolution	0.01 Km/h		
Latency	41.5 ms		
<b>Absolute Positioning</b>		<b>Time</b>	
Accuracy	3m 95% CEP**	<u>Accel/Brake Test (MFD/VBOXTools):</u>	
Accuracy with SBAS DGPS		Resolution	0.01 s
• Europe (EGNOS)	<1m 95% CEP**	Accuracy	0.05 s
• USA (WAAS) + ASIA (MSAS)	<1.8m 95% CEP**	<u>Lap Timing (OLED/VBOXTools):</u>	
Accuracy w/ BaseStation	40cm 95% CEP**	Resolution	0.01 s
Accuracy with local upgrade	20cm 95% CEP**	Accuracy	0.01 s*
Update rate	20 Hz		
Resolution	1 cm		
Height accuracy	6 Metres 95% CEP**	<b>Brake stop Accuracy</b>	
Height accuracy with SBAS DGPS	2 Metres 95% CEP**	Accuracy	± 10cm
<b>Heading</b>		<b>Acceleration</b>	
Resolution	0.01°	Accuracy	0.50%
Accuracy	0.1°	Maximum	20 G
		Resolution	0.01 G
		Update rate	20 Hz

### Definitions

\* Not using DGPS and crossing the start/finish line at 100km/h

\*\* 95% CEP (Circle of Error Probable) means 95% of the time the position readings will fall within a circle of the stated radius.

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## VB2SX10: GPS Specifications for VBOX II SX 10Hz Unit

Velocity		Distance	
Accuracy	0.1 Km/h (averaged over 4 samples)	Accuracy	0.05% (<50cm per Km)
Units	Km/h or Mph	Units	Metres / Feet
Update rate	10 Hz	Update rate	10Hz
Maximum velocity	1000 Mph	Resolution	1cm
Minimum velocity	0.1 Km/h		
Resolution	0.01 Km/h		
Latency	41.5ms		
Absolute Positioning		Time	
Accuracy	3m 95% CEP**	<u>Accel/Brake Test (MFD/VBOXTools):</u>	
Accuracy with SBAS DGPS		Resolution	0.01 s
• Europe (EGNOS)	<1m 95% CEP**	Accuracy	0.1 s
• USA (WAAS) + ASIA (MSAS)	<1.8m 95% CEP**	<u>Lap Timing (OLED/VBOXTools):</u>	
Accuracy w/ BaseStation	40cm 95% CEP**	Resolution	0.01 s
Accuracy with local upgrade	20cm 95% CEP**	Accuracy	0.01 s*
Update rate	10 Hz		
Resolution	1 cm		
Height accuracy	6 Metres 95% CEP**	<b>Brake stop Accuracy</b>	
Height accuracy with SBAS DGPS	2 Metres 95% CEP**	Accuracy	± 15cm
Heading		Acceleration	
Resolution	0.01°	Accuracy	0.50%
Accuracy	0.1°	Maximum	20 G
		Resolution	0.01 G
		Update rate	10 Hz

### Definitions

\* Not using DGPS and crossing the start/finish line at 100km/h

\*\* 95% CEP (Circle of Error Probable) means 95% of the time the position readings will fall within a circle of the stated radius.

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## VB2SX5: GPS Specifications for VBOX II SX 5Hz Unit

<b>Velocity</b>		<b>Distance</b>	
Accuracy	0.1 Km/h v(averaged over 4 samples)	Accuracy	0.05% (<50cm per Km)
Units	Km/h or Mph	Units	Metres / Feet
Update rate	5 Hz	Update rate	5Hz
Maximum velocity	1000 Mph	Resolution	1cm
Minimum velocity	0.1 Km/h		
Resolution	0.01 Km/h		
Latency	41.5ms		
<b>Absolute Positioning</b>		<b>Time</b>	
Accuracy	3m 95% CEP**	<u>Accel/Brake Test (MFD/VBOXTools):</u>	
Accuracy with SBAS DGPS		Resolution	0.01 s
• Europe (EGNOS)	<1m 95% CEP**	Accuracy	0.2 s
• USA (WAAS) + ASIA (MSAS)	<1.8m 95% CEP**	<u>Lap Timing (OLED/VBOXTools):</u>	
Accuracy w/ BaseStation	40cm 95% CEP**	Resolution	0.01 s
Accuracy with local upgrade	20cm 95% CEP**	Accuracy	0.01 s*
Update rate	5 Hz		
Resolution	1 cm		
Height accuracy	6 Metres 95% CEP**	<b>Brake stop</b>	
Height accuracy with SBAS DGPS	2 Metres 95% CEP**	<b>Accuracy</b>	
		Accuracy	± 20cm
<b>Heading</b>		<b>Acceleration</b>	
Resolution	0.01°	Accuracy	0.50%
Accuracy	0.1°	Maximum	20 G
		Resolution	0.01 G
		Update rate	5 Hz

### Definitions

\* Not using DGPS and crossing the start/finish line at 100km/h

\*\* 95% CEP (Circle of Error Probable) means 95% of the time the position readings will fall within a circle of the stated radius.



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## Hardware & Software Support

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 the original purchaser. Contract includes: telephone/ email technical support provided by local VBOX Distributor and firmware/ software upgrades (where applicable).

## Package Contents

Description	Product Code
1x VBOX II SX 5Hz Unit or 1x VBOX II SX 10Hz Unit or 1x VBOX II SX 20Hz Unit	RLVB2SX5 RLVB2SX10 RLVB2SX
2x Magnetic GPS antennas	RLVBACS018
1x Lemo 2 way to 12V cigar lighter cable (2m)	RLVBCAB10L
1x 9 way D type to 5 way LEMO Serial cable (2m)	RLVBCAB001
1x USB A to USB B (2m)	RLCAB042
1x 2GB SD card	RLACS083
1x Mains charger with UK/US/EU/AUS power lead	RLVBACS020
1x Padded carry case	RLVBACS013
1x VBOX Tools Data Analysis software and User Guide	RLVBACS030
1x VBOXII SX Manual	VB2SXMAN



RLVB2SX5 / RLVB2SX10 / RLVB2SX20



2x RLVBACS018



RLVBACS020



RLVBCAB10L



RLVBCAB001



RLCAB042