FastNGSS

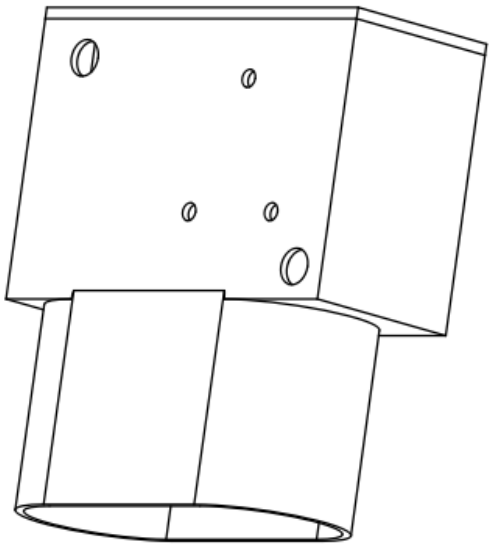
FastDevices

Non-contact Ground Speed Sensor

Preliminary Technical Datasheet

Description

FastNGSS is a high-performance non-contact velocity and sideslip sensor designed for automotive and motorsport applications. It provides real-time ground-relative longitudinal and lateral delta position measurements enabling **accurate speed and sideslip angle estimation** for control systems.
The innovative sensing method of FastNGSS achieves performance comparable to industry-standard optomechanical sensors but at a significantly lower cost.



Key Features

- Non-contact measurement of longitudinal and lateral velocity
- Real-time sideslip angle output
- Solid-state sensor with no moving parts
- Auto-zeroing and auto-calibration routine
- No periodic factory calibration required
- Supports CAN bus and Ethernet interface options
- Compact and very lightweight processing unit for easy integration
- Target price: **3500 EUR + Tax** (complete kit)
- Prototype available, development in advanced state

Applications

- Motorsport vehicle dynamics
- Automotive OEM development and testing
- Simulation and control system validation
- Off-highway and agricultural vehicles

Performance Highlights [1]

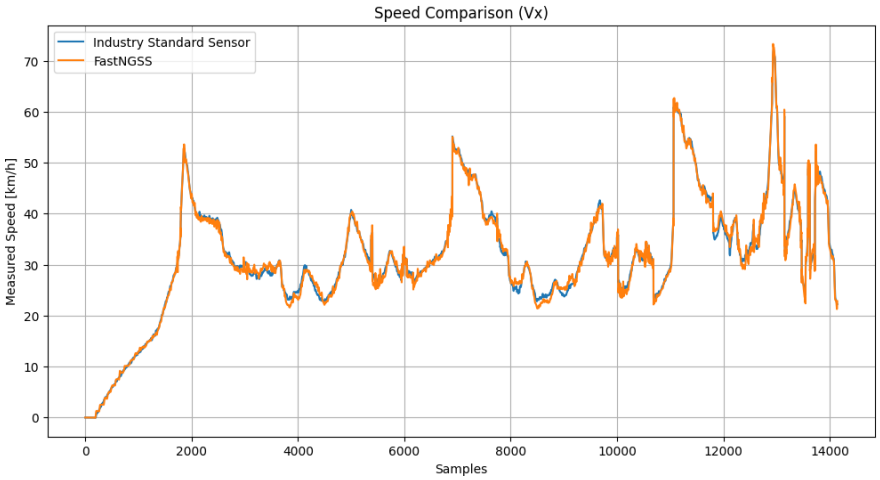
Parameter	Unit	Value
Speed range (see notes)[2]	km/h	up to 180
Velocity accuracy[3]	%	$< \pm 0.2$
Sideslip angle range	°	± 35
Sideslip resolution	°	< 0.01
Sideslip accuracy (typ.)	°	0.1
Measurement frequency	Hz	200
Install height options	mm	150-400

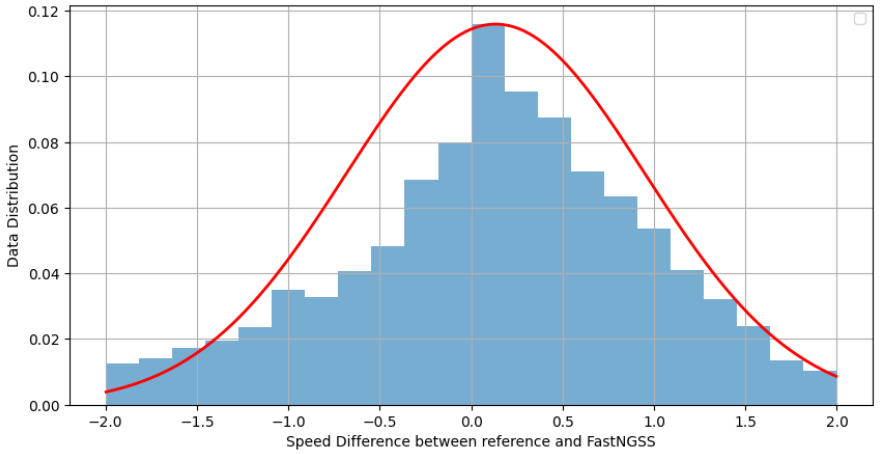
[1] Data from actual prototype testing data in race environment
[2] Maximum tested value, actual range may be higher. An option to extends the range up to $\approx$ 350 km/h is to be tested
[3] RMS error. % of the reading

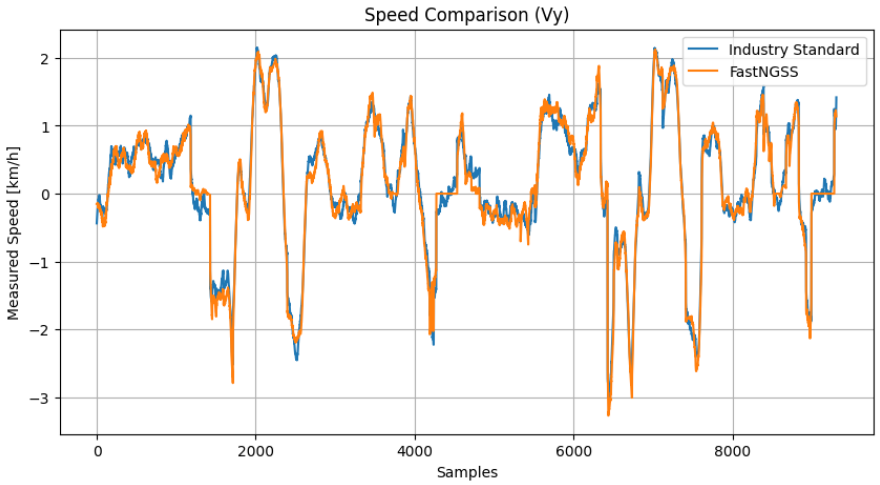
Comparison with industry standard mechanical optics sensors

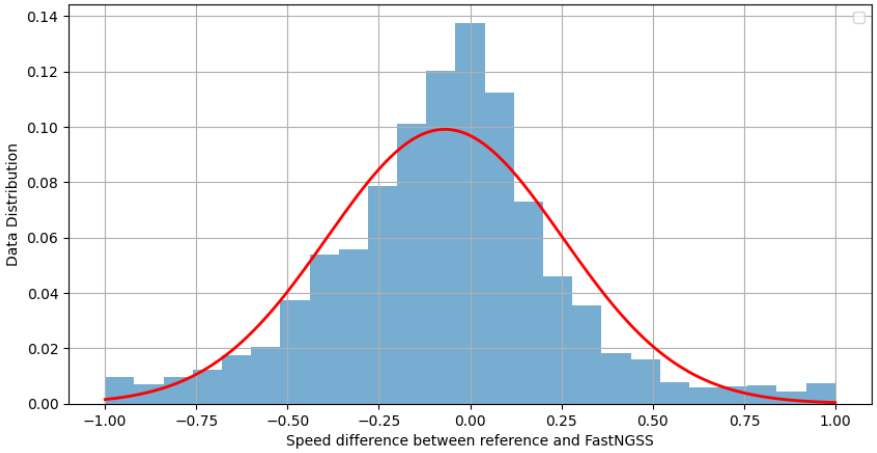
	Fast NGSS	Mechanical Optics Sensors
No need of bulky electronic unit	✓	✗
Weight	450g	>1 kg (excluding race versions)
Affordable cost	✓	✗
Factory calibrations avoidance	✓	✗

Benchmark testing against an industry-standard optical sensor showed highly consistent and closely matching results.





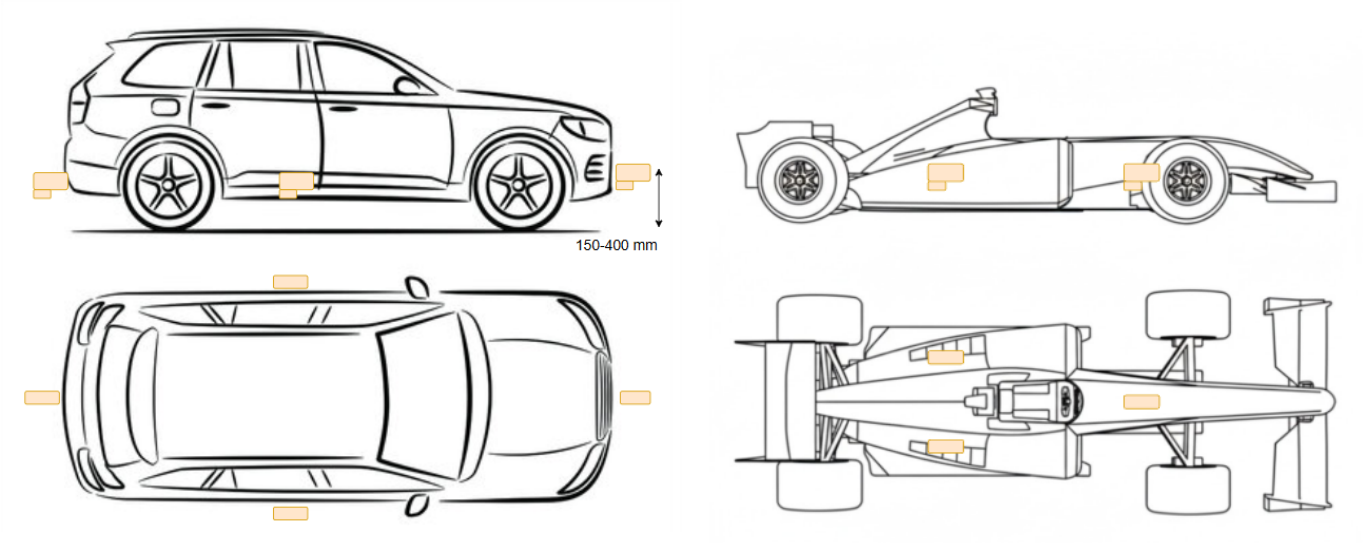




Technical specifications

Sensor		
Theoretical speed range	km/h	up to 380
Distance resolution	mm	≤ 1
Velocity accuracy	%	$< \pm 0.2$
Sideslip angle range	°	± 45
Sideslip resolution	°	< 0.01
Sideslip accuracy (typ.)	°	0.1
Measurement frequency (raw)	Hz	500
Install height options	mm	150-400
Illumination	IR	
System specifications		
Supply voltage	8–36	V
Absorbed current max.	2	A
Operating temperature	-20 – 100	°C
Weight and Enclosure		
Weight	450	g
Measuring unit dimensions	76x35x85	mm
I/O Interface		
CANbus Interfaces	1	
CANbus Speed	Selectable (250/500/1000/FD)	
Ethernet	Yes	

Mechanicals and fixing positions



FastNGSS can be mounted to the vehicle using its magnetic base, an optional wheel, or any custom mounting solution required to meet testing and racing requirements.

Development

FastNGSS is still in active development. For pre-production testing and notice of interest please contact:

✉ **info.fastdevices@gmail.com**

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