

Aliao Solution Brief

Performing emulation of Wheel speed sensors

The increasing complexity of road traffic makes great demands on drivers. Driver assistance systems relieve drivers and optimize safety on the road. Therefore, modern driver assistance systems are part of the standard equipment in almost all new cars in Europe, America and Asia and pose new challenges for garages.

The intelligent data communication of the electronic vehicle systems is supported by sensors. In relation to driving safety, wheel speed sensors are of particular importance and are used in numerous applications in various vehicle systems. In driver assistance systems such as ABS, TCS, ESP or ACC, motor control units use these sensors to determine the wheel speed

Due to this variety of applications, wheel speed sensors make a direct contribution to driving dynamics, driving safety, driving comfort and reduced fuel consumption and emission.

The emulator generates three current limits for each WSS emulator channel, one current level is fixed, and the additional two current levels are controlled by digital signals.

Advantages:

- The solution replaces the need for real sensors
- No need to physically simulate sensors environment
- Allow you to reuse between test applications and give you accuracy, speed, and repeatability.

Active vs Passive sensor

If a sensor becomes "active" only when a power supply is connected to it and if it then generates an output signal, it is called "active".

If a sensor works without an additional power supply, then it is called "passive".



ALIARO Solution

By using pre-defined soft panels in the application NI VeriStand, the user can configure and monitor each channel.

The solution consists of a compact and portable enclosure together with NI FPGA and digital I/O module.

ALIARO offers the advantage of integration expertise and custom engineering from when implementing the solution.

Technical Specification

Parameter	Range	Value
Amount of channels		4 ch
Supply Voltage		6-20 V
Current level		3-28 mA <i>7+7+14mA @12V supply</i>
Rm (V variant)		50 Ω
Digital Pulse Width		20-40 ms
Rline		2 x 0,75 Ω
Supported protocol	AK protocol	
Current limits	The unit generates three current limits for each WSS emulator channel, one current level is fixed, and the additional two current levels are controlled by digital signals	
External hardware	NI FPGA; NI digital I/O module,	
Software support	VeriStand, LabVIEW, (Python)	

Additional information:

The Wheel Speed Sensor Emulator can also be integrated in the NI SLSC chassis and mounted on the AL-1010 Multi-function module to be used in the pre-configured Hardware-in-the-loop platform delivered by NI, Aliaro and other partners.

About Aliaro

Aliaro is an established test solution & HIL provider and NI Silver Alliance Partner in Sweden with offices in Sweden, UK, China and USA. Together with NI, they design modular, flexible and cost-efficient solutions for testing and HIL that enable customers to work with open and changeable devices where rapid changes are allowed.

Contact Aliaro to learn more about how NI & Aliaro can help you increase product quality and accelerate testing timelines.

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