

LGS

Laser Ground Sensor

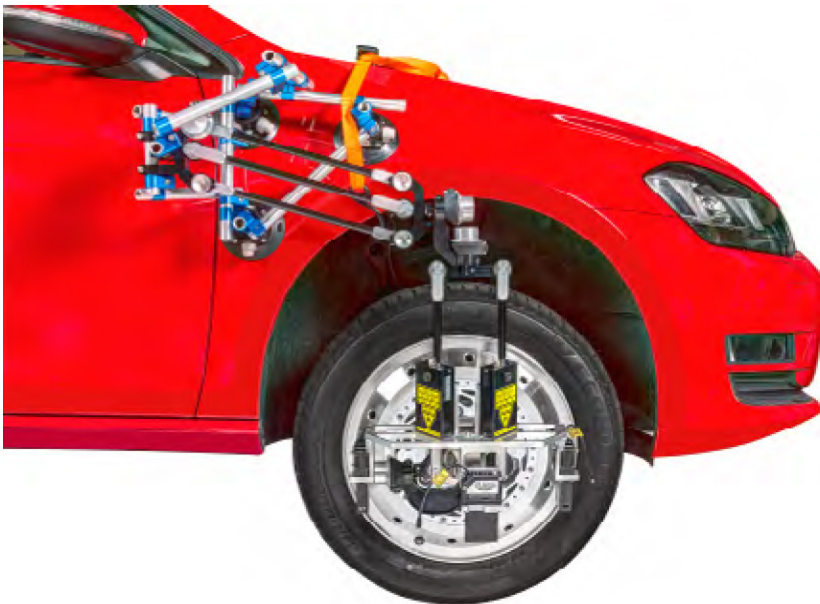
High-accuracy collection of speed and position data of a vehicle relative to the ground.

Understanding vehicle behavior under real driving conditions is essential to optimizing the chassis and powertrain design. In particular, the growing demand for improved fuel economy and driving comfort requires optimizing the balance and performance of the vehicle. The Laser Ground Sensor (LGS), part of A&D's Vehicle Measurement System (VMS), is a high-accuracy dynamic vehicle measurement sensor that collects speed and position data of a vehicle relative to the ground.

The LGS combines two speed sensors and three distance sensors. The speed sensors, Laser Doppler Velocimeters, (LDV), measure the ground speed along two directions and tire rotation. The LDV uses the Laser Doppler method, and is able to detect zero speed as well. The Laser Displacement Sensors (LDS) measure the distance from the sensor to the ground to identify wheel height change during the drive. Using a Digital Signal Processor (DSP), the slip, camber, pitch and roll angles can be determined using model-based calculations.

Benefits:

- Measures:
 - Wheel speed
 - Slip angle
 - Pitch angle
 - Camber angle
 - Effective tire radius
- Measure vehicle body pitch by incorporating parallel link WPS
- Bandpass optical filter to reduce solar noise
- Median filter supports testing on rainy or snowy roads by reducing noise from water droplets
- DSP controller available from A&D
- Connects to CAN logger



The LGS Laser Ground Sensor

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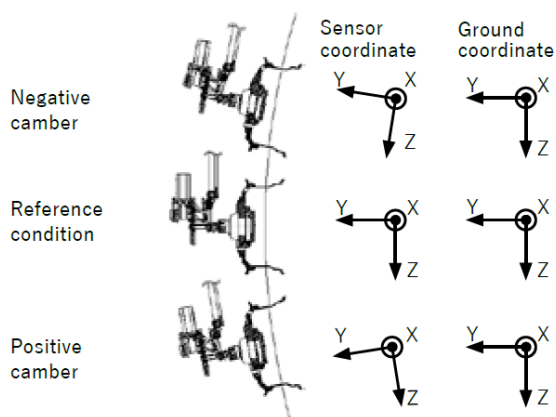
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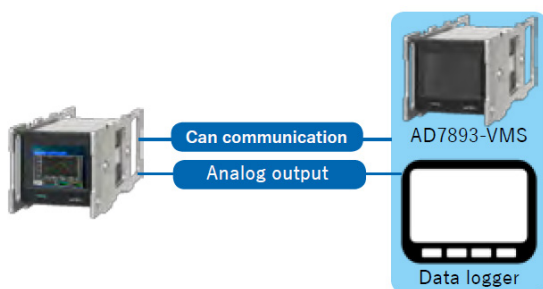
Wheel position data correction

When measuring with A&D's Wheel Force Sensor alone, the coordinate system moves according to vehicle motion (camber / pitch etc.). By using with the LGS, the measurement coordinates of the WFS can be corrected, providing the six-component force data based on the ground.



General Purpose Output

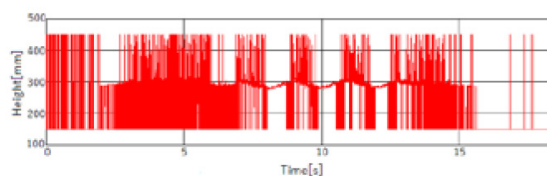
A CAN interface allows connection with an existing data logger as well as the AD7893-VMS controller.



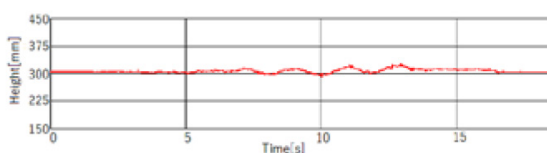
Solar light noise reduction

By using a band pass optical filter outdoors, solar light noise is reduced.

No filter

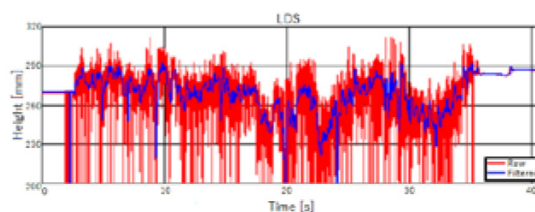


With filter



Median Filter Function

Water droplets can be a source of noise in rainy or snowy conditions. This noise can be eliminated by using the median filter function.



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