LUXACT Neo 1D

Slip-free, contactless speed-over-ground sensor for vehicle longitudinal dynamics

Features

- speed accuracy ≤0,2% RMS
- any industry's typical surface
- big height dynamic range
- low & constant latency of 60 msec
- optical disturbances eliminated by integrated inertial system
- up to 1000 Hz data output rate
- clear start-up and standstill
- direction detection
- hard real-time due to high-power DSP & FPGAs

LUXACT optical sensors provide engineers with a powerful and universal reference for contactless, slip-free longitudinal speed over ground. Measurements are not affected by the environment disturbances like abrupt changing surfaces properties (reflectivity, material, medium) and heights to the ground variations, splashes of water, EM noise and objects crossing the field of vision. or testing neighborhood properties.

LUXACT meets the needs of modern time-efficient testing procedures due to easy mounting & setup and reliable results. The system is highly integrated in one compact and rugged IP67 protected sensor body. All signals are acquired directly by customer's data acquisition system without additional signal processing, which allows a quick and flexible integration in a modern testing or ECU infrastructure.

Applications

Automotive: brake test, ABS & ESP tests, coast down test, consumption, acoustic pass-by, IMU support, road profilometry

Rail: brake tests/commissioning, slip control (OEM + R&D), high-speed applications

Agricultural: distance/speed measurement on the field, slip control

Technology

Unlike traditional **mechanical, optical, radar & GPS-based sensors** LUXACT is essentially based on two measuring principles, optical and inertial, using benefits of both. The high grade innovative optical system with a wide aperture enables clear signal even in rough environments. Precise inertia system improves optical signal if it is corrupted. The brain of the sensor is a high power DSP & FPGA combined with 24-bit ADCs. This intelligent system performs complex online calculations that integrate LUXACT optical and inertial technologies, getting benefits of both. This sensor synergy ensures true reaction to fast changes of speed as well as low-noise measurements of velocity, true start-up and standstill and measurements in zero speed vicinity.

Typical surfaces

Automotive: asphalt, concrete, standing & moving water, splashes, fog, water dispersion, snow, ice, mud, dust, dirt

Rail: ballast bed, wood, concrete, snow, water, water & snow dispersion, steel, gaps

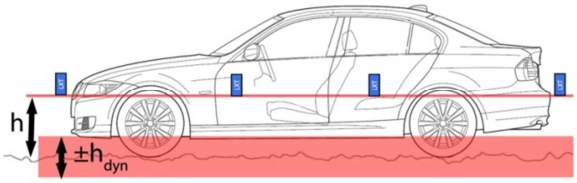
Agricultural: ploughed soil, fields

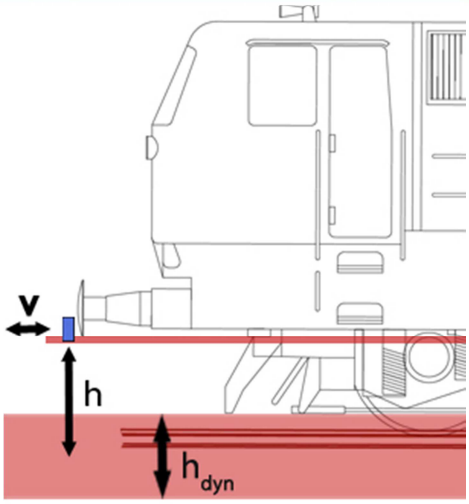
Performance Specifications

Speed ranges available	km/h	0,03-50	0,1-100	0,2-250	1-500
Nominal mounting heights available h	mm	300	600		900
Dynamic height working range h_{dyn}	%	±30 *of* h			
Speed accuracy	% FSO	≤0,1 *with calibration,* ≤0,2 typ.			
Distance accuracy	%	≤0,1 at s >200m			
Acceleration accuracy	%	≤1,0			
Speed linearity within 300…1000mm height	%	0,15			
Update rate	Hz	50	250		1000
Filtering		none needed			
Latency	msec	60 @ 50Hz output rate 80 @ 1000Hz output rate			
Light source		halogen or LED (option)			
MTTF of light source	h	4.000 halogen version 100.000 LED version			

Interfaces

CAN-Bus	Intel/Motorola format, 2.0A/2.0B Baud rate: 125, 250, 500, 1000 kbit/sec Measured values: longitudinal speed v_L total distance s distance since trigger s_T longitudinal acceleration a_L drive direction d (if DRC option selected) sensor status messages
TTL	Pulses/m, 1...1000/TTL (option)
USB	2.0 high speed (option)
Trigger	any potential-free NC/NO trigger Incl. power supply for LUXACT-approved sensors





Environmental & physical

Size	LxWxH: 280x80x 60 mm (incl. splash guard)
Weight	700g
Protection	IP67 when plugs connected
Operating conditions	-40…+85 ºC, 10 – 90% relative humidity, without condensing
Shock	50 g Half-Sine, 6ms
Vibration	15g, 10 … 150Hz
Power supply	9…36 VDC inverse-polarity protection, EMI protection
Power consumption	5W @ 12V LED version 25W @ 12V Halogen version

Options List

Ordering Codes	
LED	LED as light source
TTL/CAN	TTL or CAN Output
USB	USB output
TRG	Build-in trigger
DRC	Direction detection
ALY	Auto-correction of mounting angle errors
L...	Cable length in meters (std. 5m)

Ordering information

Example:

LXTN-1D-600-250-250 /TRG/DRC/L10/...

Height range
Speed range
Output rate
Options (see table)

Sales Contact (International)

SMG Engineering
Olgastr. 2, 80636 Munich
Germany
Phone: +49 89 64298808
Fax: +49 89 2555131055
ev@smg-engineering.de
→ More information on www.luxact.net