



Laser distance sensor 1D

OPTIMESS® 1D
measure the difference.

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The laser distance sensors OPTIMESS 1D allow for the highly precise and dynamic measurement of distance, thickness and displacement. Even the most difficult conditions are no problem for them. Whether in icy cold or under great shocks, OPTIMESS sensors feel right at home in rough environments. Whether reflective rails or jet-black tires, OPTIMESS 1D master challenging surfaces with ease. For each application, our sensor range offers the ideal measurement range - which extends to over 2 meters distance.

Features

- measurement ranges from 4mm up to 2000mm
- resolution up to 0.5µm
- linearity up to 0.02%
- measurement frequency up to 100kHz
- waterproof (IP67)
- wide temperature ranges from -20°C to 60°C
- high vibration and shock resistance
- insensitive to sunlight
- measurement also on hot objects

Applications

OPTIMESS 1D is used wherever high reliability with high measurement quality is required.

Typical applications are:

- railway
 - rail ripple measurement
 - roughness measurement
 - crash test
 - wheel profile
 - wheel roundness
- road measurement
 - 3D transverse profile
 - longitudinal ripple
 - surface roughness, texture
- industry
 - thickness measurement
 - contour detection
 - vibration measurement
 - robotics
 - gear measurement
 - machinery and vehicle construction

Connection

The sensor is connected by a robust Fischer® connector (OPTIMESS MC M8 connector), which complies with protection class IP67 even when unplugged. The power supply as well as the inputs and outputs, optionally analog or digital, are thus connected to the sensor. Analog voltage and power outputs or CAN bus are available by default. Other interfaces are also available upon request.

Options

Various optional components are available. Protective housings with e.g.:

- pneumatic slider for protection when not in use
- heating for very low temperatures
- air and water cooling in hot environments
- blow-out function to keep the screens clean

But also, connection boxes with power supply and DIN rail mounting for easy wiring in the switch cabinet.

In addition, special solutions are already possible for small quantities. Customized measurement ranges or housing shapes can be easily realized after consultation.

To compensate for sensor movements, an IMU can also be integrated.

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Sensor types

OPTIMESS MC



Thanks to the low weight and small dimensions, the OPTIMESS MC is especially suitable for use on vehicles, typical application is the driving dynamics measurement.

Measurement range 20 – 400mm
Measurement rate 1 - 4 kHz

OPTIMESS M



The extremely robust OPTIMESS M sensor is designed for use in difficult environmental conditions with large temperature fluctuations and high mechanical strain.

Typical applications are in the vehicle and railroad sector.

Measurement range 20 – 600mm
Measurement rate 1 - 100 kHz

OPTIMESS MSR



The OPTIMESS MSR sensor is suitable for high-precision measurements with a small measuring range, even under difficult ambient conditions. Typical applications are thickness measurement and roughness measurement on rails.

Measurement range 2 – 8mm
Measurement rate 1 - 100 kHz

OPTIMESS MLC



The OPTIMESS MLC sensor is especially suitable for use on vehicles, for example for road transverse and longitudinal profile measurement, and for driving dynamics measurement where larger measurement ranges are required.

Measurement range 100 – 2000mm
Measurement rate 1 - 50 kHz

General specifications

OPTIMESS 1D		
Environmental conditions	Humidity	5% - 95%, non-condensing
	Protection type	IP67 (also when unplugged)
	Ambient light	over 100,000 lux (sunlight)
	Vibration	10-100Hz, 2mm
	Shock	15G / 6ms, EN 60068
	Temperature range	-20°C to 60°C (optionally extendable up to -40°C)
	Environment, safety	EN 50155
	Certifications	CE
Laser	Protection class	1, 2, 3R, 3B, EN 60825-1
	Wave lengths	405nm – 680nm, depending on application
Connections	Supply voltage	10 - 32 V DC
	Power	2-4 W
	APIs	Analog voltage / power, CAN Bus



The ELAG Elektronik AG has been developing and supplying measurement systems since 1983 worldwide, setting the highest quality standards.

From laser sensors to complete ready-to-use measurement systems, including sensors, mechanics and user software, everything at ELAG Elektronik AG is developed and manufactured in-house by a powerful, innovative team of engineers. This means that you as our customer can benefit from fully developed sensors and seamlessly assembled measuring systems, for which we can guarantee high-precision results and simple operation.

We consciously seek proximity to you. We are convinced that short communication paths are crucial for us to implement your requirements consistently in high quality.

This also means that we provide you with competent support, from sales consulting and commissioning to the maintenance of your systems.

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