



## Laser Scanners CS / CSD

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The OPTIMESS laser scanners CS and CSD measure the distance based on the phase shift method with highest precision. They offer measurement rates of one million points per second at scan rates up to 100 profiles per second.

The OPTIMESS laser scanners CS and CSD convince through their compactness and lightweight. Nevertheless, they are suited for rough environments and guarantee maximum reliability and durability.

The intelligently controlled screen heater prevents fogging of the protective screens in high humidity, such as when entering a tunnel.

The integrated «Air-knife» (blow-out device) permanently protects the screens from soiling. In contrast to the CS, the OPTIMESS CSD has an additional measurement window towards the bottom, offering application specific scanning of either one or two 60° fields of view.

## Features

- **one million measurement points per second**
- **up to 100 profile scans per second**
- **measurement range up to 20 meters**
- **insensitive to sunlight**
- **compact and lightweight**
- **robust, protection class IP 67**
- **operating temperature -20 to +50 °C**
- **blow-out function for clean screens**

## API

The sensor is connected by a robust UltiMate™ connector from Fischer®, which complies with protection class IP68 even when unplugged. Power supply and data transfer are compactly routed via the same cable. The measurement data are transferred by GigE and can be easily processed with the included SDK.

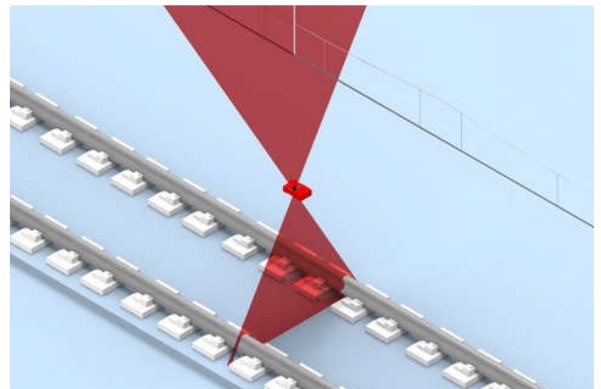
## Options

A customized protective housing is offered for additional safety. In addition to the mechanical protection, the internal ventilation allows for an even wider temperature range.

## Applications

The OPTIMESS laser scanners CS / CSD can be used wherever a surface is to be measured in two or three dimensions.

They are often used for measuring the contact wire. The OPTIMESS CS can be operated as a stand-alone scanner on the train roof. The combination with OPTIMESS 2D sensors (light section) additionally allows the compensation of vehicle movements.



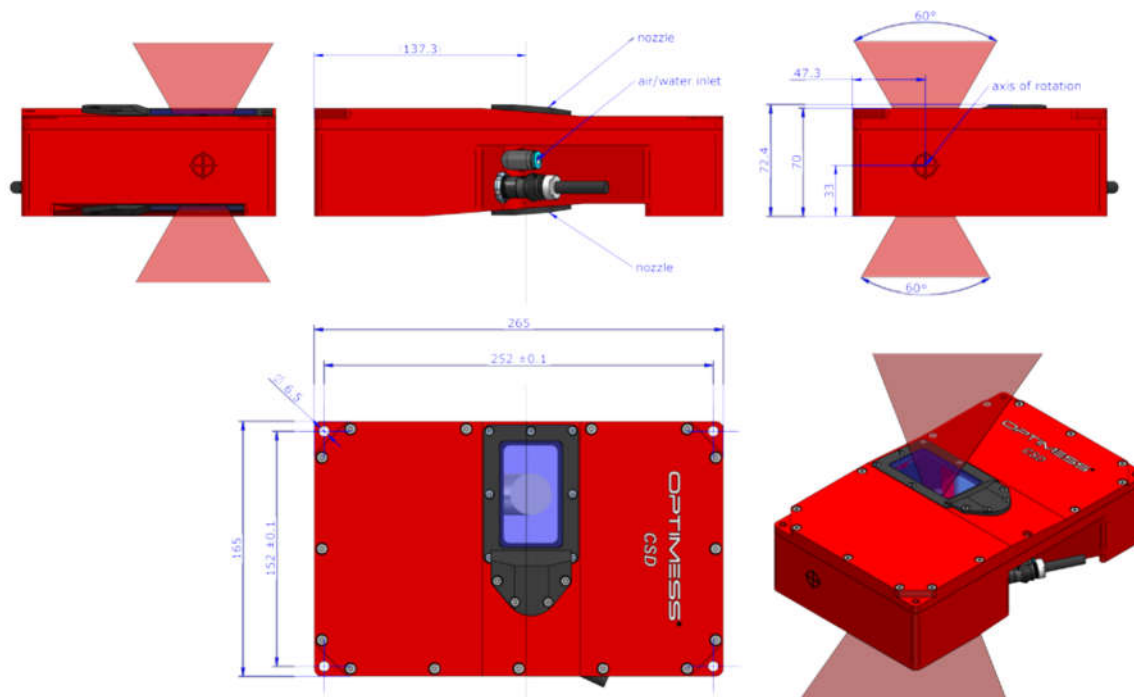
The OPTIMESS CSD, on the other hand, is ideally suited for the simultaneous detection of the contact wire and the rails. This eliminates the need for compensation. A calibration is also not necessary. This makes it ideal for simple, accurate and reliable measurement of contact wire height and lateral position.

## Specifications

OPTIMESS		CS	CSD
<b>Measurement</b>	Field of view	60°	2 x 60°
	Max. acquisition rate	1 MHz	
	Scan rate	10 ... 100 Hz	
	Measurement range	0.5 ... 20 m	
	Measurement uncertainty*	0.4 mm	
	Linearity**	±4 mm	
	Angular resolution	0.005°	
	Angular accuracy	±0.03°	
<b>Environmental conditions</b>	Humidity	5 ... 95%, non-condensing	
	Protection type	IP67 (also when unplugged)	
	Ambient light	Dark to sunlight	
	Temperature range	-20 ... 50 °C	
<b>Laser</b>	Class	1	
	Wave length	660 nm	
<b>Connections</b>	Supply voltage	20...30 VDC	
	Power	< 40 W	
	API	Passive PoE, Ethernet 100/BASE-T	
<b>Housing</b>	Dimensions	165 x 265 x 66 mm	
	Weight	5 kg	

\* 1 sigma value at 5 m measuring distance, white target (80%), acquisition rate 200 kHz

\*\* In measurement range 0.5 ... 5 m, above ±10 mm





ELAG Elektronik AG has been developing and supplying measuring systems world-wide since 1983, setting the highest quality standards.

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

We consciously want to be close to you. We are convinced that short communication channels are decisive in ensuring that your requirements are implemented by us in consistent high quality.

This also includes that we accompany you competently, from the sales consultation, commissioning up to the maintenance of your devices.

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