



# More Precision.

**optoNCDT 1900LL** // Laser displacement sensor for metallic surfaces



Laser displacement sensor for shiny metallic and structured surfaces

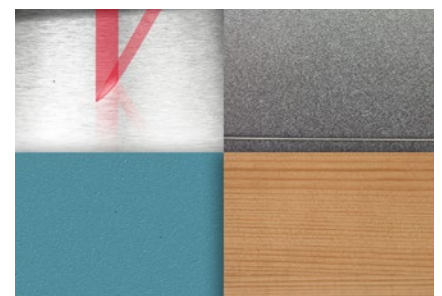
optoNCDT 1900LL



- Precise laser sensor with oval-shaped light spot (laser line)
- For shiny metallic, rough and structured surfaces
- Unique combination of compact size, high speed and accuracy
- Ideal for static and dynamic measurements with high resolution
- Highest ambient light resistance in its class
- Advanced Surface Compensation for high speed measurements on changing surfaces

#### Laser sensors with oval-shaped light spot (laser line)

The optoNCDT 1900LL is the latest Micro-Epsilon laser sensor. This innovative sensor projects an oval-shaped light spot which reminds of a short laser line (LL). The laser sensor impresses with precise distance measurements on shiny metallic and structured surfaces, as well as materials where the laser beam penetrates. The integrated high-performance controller enables fast and highly precise processing and output of measurement values. The innovative optoNCDT 1900LL laser triangulation sensor is used wherever high precision and reliability are required, e.g., in challenging automation tasks, automotive production, 3D printing and in measuring machines.



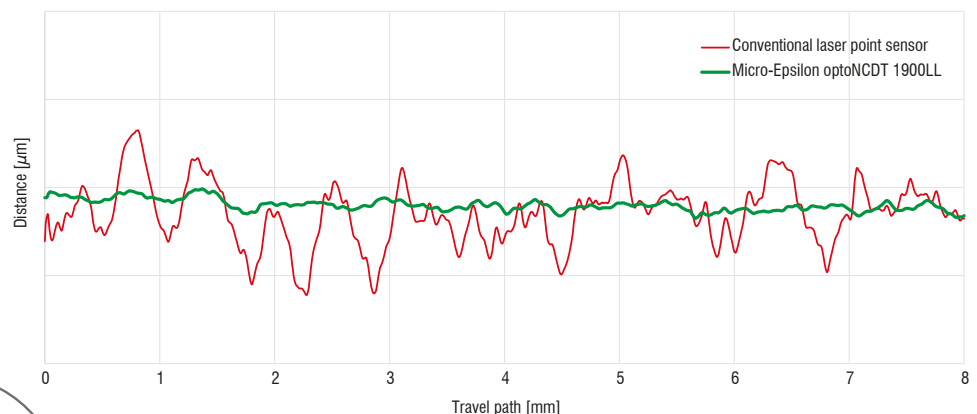
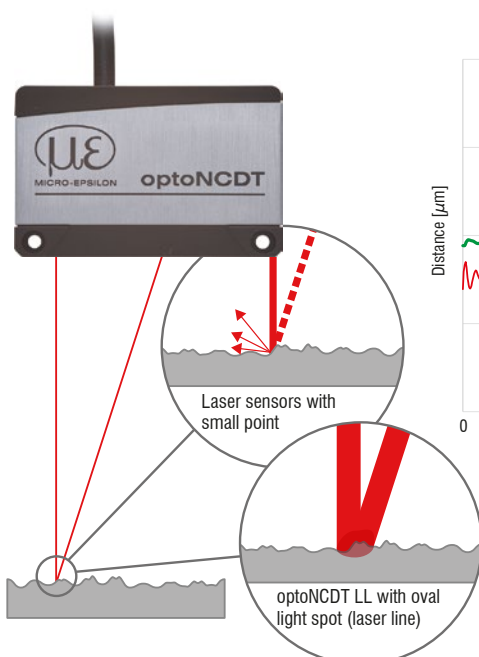
#### Advanced Surface Compensation

##### The intelligent exposure control for demanding surfaces

The optoNCDT 1900LL is equipped with an intelligent surface control feature. New algorithms generate stable measurement results even on demanding surfaces where changing reflections occur. In addition, the sensor has the highest resistance to ambient light in its class and can be used in strongly illuminated environments up to 50,000 lux.

#### Reliable and precise measurements for metallic and structured surfaces

Both the oval-shaped light spot and special software algorithms filter out disturbances caused by surface roughness, defects, indentations or small holes on the surface. This also compensates for the laser penetration into the surface.



When measuring rough and structured surfaces, laser sensors equipped with a small laser point usually perform at their limits. The optoNCDT LL sensors use an oval-shaped light spot compensating for surface interferences by optical averaging. Therefore, the sensors achieve extremely stable and precise measurement results with structured and rough surfaces, as well as with measuring objects where the laser penetrates.

Model		ILD1900-10LL	ILD1900-25LL
Measuring range		10 mm	25 mm
Start of measuring range		20 mm	25 mm
Mid of measuring range		25 mm	37.5 mm
End of measuring range		30 mm	50 mm
Measuring rate <sup>1)</sup>		continuously adjustable between 0.25 ... 10 kHz 7 adjustable stages: 10 kHz / 8 kHz / 4 kHz / 2 kHz / 1.0 kHz / 500 Hz / 250 Hz	
Linearity <sup>2)</sup>		< ±2 μm < ± 0.02 % FSO	< ±5 μm < ± 0.02 % FSO
Repeatability <sup>3)</sup>		< 0.4 μm	< 0.8 μm
Temperature stability <sup>4)</sup>		±0.005 % FSO / K	
Light spot diameter (±10 %) <sup>5)</sup>	SMR	125 x 730 μm	210 x 950 μm
	MMR	55 x 690 μm	80 x 970 μm
	EMR	125 x 660 μm	220 x 1000 μm
	smallest diameter	55 x 690 μm with 25 mm	80 x 970 μm with 37.5 mm
Light source		Semiconductor laser < 1 mW, 670 nm (red)	
Laser safety class		Class 2 in accordance with DIN EN 60825-1: 2015-07	
Permissible ambient light		50,000 lx	
Supply voltage		11 ... 30 VDC	
Power consumption		< 3 W (24 V)	
Signal input		1 x HTL/TTL laser on/off; 1 x HTL/TTL multi-function input: trigger in, slave in, zero setting, mastering, teach-in; 1 x RS422 synchronization input: trigger in, sync in, master/slave, master/slave alternating	
Digital interface		RS422 (18 bit) / PROFINET <sup>6)</sup> / EtherNet/IP <sup>6)</sup>	
Analog output		4 ... 20 mA / 0 ... 5 V / 0 ... 10 V (16 bit, freely scalable within the measuring range)	
Switching output		2x switching outputs (error & limit value): npn, pnp, push pull	
Synchronization		possible for simultaneous or alternating measurements	
Connection		integrated cable 3 m, open ends, min. bending radius 30 mm (fixed installation); or integrated pigtail 0.3 m with 17-pin M12 plug; optional extension to 3 m / 6 m / 9 m / 15 m possible (suitable connection cable see Accessories/optoNCDT catalog)	
Temperature range	Storage	-20 to +70°C (non-condensing)	
	Operation	0 to +50°C (non-condensing)	
Shock (DIN EN 60068-2-27)		15 g / 6 ms in 3 axes	
Vibration (DIN EN 60068-2-6)		20 g / 20 ... 500 Hz	
Protection class (DIN EN 60529)		IP67	
Material		Aluminum housing	
Weight		approx. 185 g (incl. pigtail), approx. 300 g (incl. cable)	
Control and display elements		Select & function keys: interface selections, mastering (zero), teach, presets, quality slider, frequency selection, factory settings; web interface for setup <sup>7)</sup> : application-specific presets, peak selection, video signal, freely selectable averaging possibilities, data reduction, setup management; 2 x color LEDs for power / status	

FSO = Full Scale Output

SMR = Start of measuring range, MMR = Mid of measuring range, EMR = End of measuring range

The specified data apply to a white, diffuse reflecting surface (Micro-Epsilon reference ceramic for ILD sensors)

<sup>1)</sup> Factory setting: measuring rate 4 kHz, median 9; modifying the factory setting requires the IF2001/USB converter (see optoNCDT catalog)

<sup>2)</sup> Relates to digital output

<sup>3)</sup> Typical value with measurements at 4 kHz and median 9

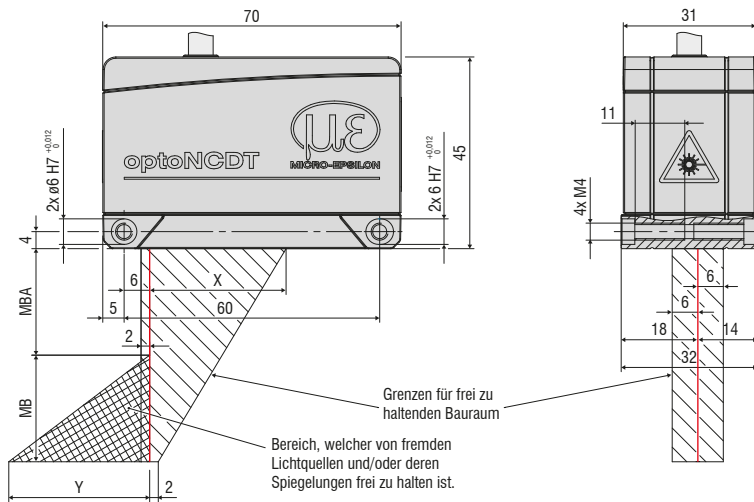
<sup>4)</sup> Relates to digital output in mid of measuring range

<sup>5)</sup> Light spot diameter with line-shaped laser determined based on the emulated 90/10 knife-edge method

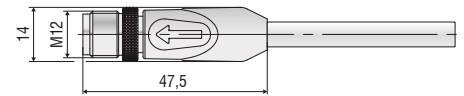
<sup>6)</sup> Connection via interface module (see Accessories/optoNCDT catalog)

<sup>7)</sup> Connection to PC via IF2001/USB (see Accessories/optoNCDT catalog)

optoNCDT 1900LL (10/25 mm)



Kabelkupplung (sensorseitig)



MR	SMR	X	Y
10	20	33	14
25	25	33	33