



# More Precision








**optoNCDT 1420** // Smart Laser Triangulation Displacement Sensor



reddot award 2016  
winner industrial design





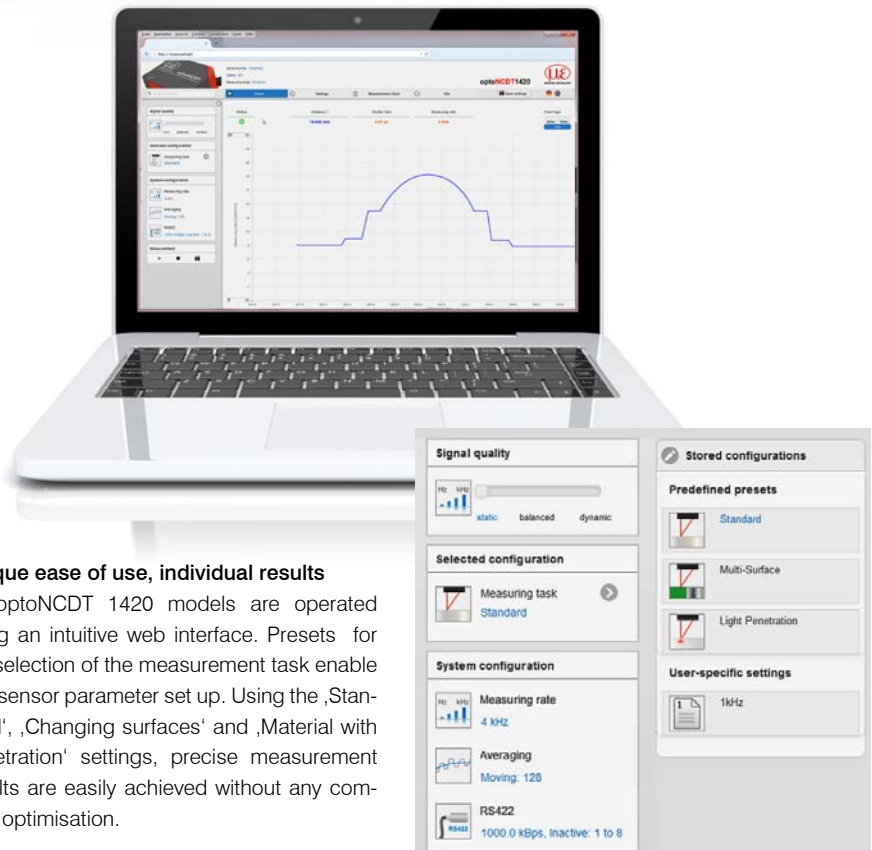
-  **Ideal for serial and OEM applications**
-  **Compact design with integrated controller**
-  **Measuring rate up to 4kHz**
-  **Analogue (U/I) and digital output**
-  **Trigger input / teach-in zero-setting / mastering**
-  **Configuration via web interface or Plug & Play**
-  **Application-specific presets and individual setups**
- ATC** **Auto Target Compensation**

The optoNCDT1420 offers a unique combination of speed, size, performance and application versatility in the range of compact triangulation sensors. The lightweight sensor with integrated controller is designed for dynamic measurements and can also be integrated into restricted installation space. The selectable connector type, i.e. cable or pigtail, together with compact size reduce the sensor installation effort to a minimum. Just like all triangulation sensors from Micro-Epsilon, the optoNCDT 1420 provides an intelligent surface regulation. This is how the Auto Target Compensation (ATC) ensures stable results regardless of changing colours or brightness of the target. The high-performance optical system projects the small light spot sharply onto the measurement object which enables to even detect smallest components reliably.

**Highest precision in a minimum of space**  
Compact size combined with low weight opens up new fields of application. Different output signals enable to integrate the sensor into plant or machine control systems. As well as analogue voltage and current outputs, a digital RS422 interface provides distance information from the sensor. Due to the selectable setting and evaluation possibilities, the optoNCDT 1420 meets the requirements for use in high volume and OEM applications. The compact triangulation sensor achieves a high measurement accuracy even with measuring rates of up to 4kHz.

**Unique ease of use, individual results**  
All optoNCDT 1420 models are operated using an intuitive web interface. Presets for the selection of the measurement task enable fast sensor parameter set up. Using the 'Standard', 'Changing surfaces' and 'Material with penetration' settings, precise measurement results are easily achieved without any complex optimisation.

Furthermore, up to eight user-specific sensors settings can be stored and exported in the setup management. This is how stored sensor settings can be easily transferred to other sensors. The optoNCDT offers an extended web interface which provides many additional functions. The video signal display, the signal peak selection and a freely adjustable signal



averaging enable to optimise the measurement task.

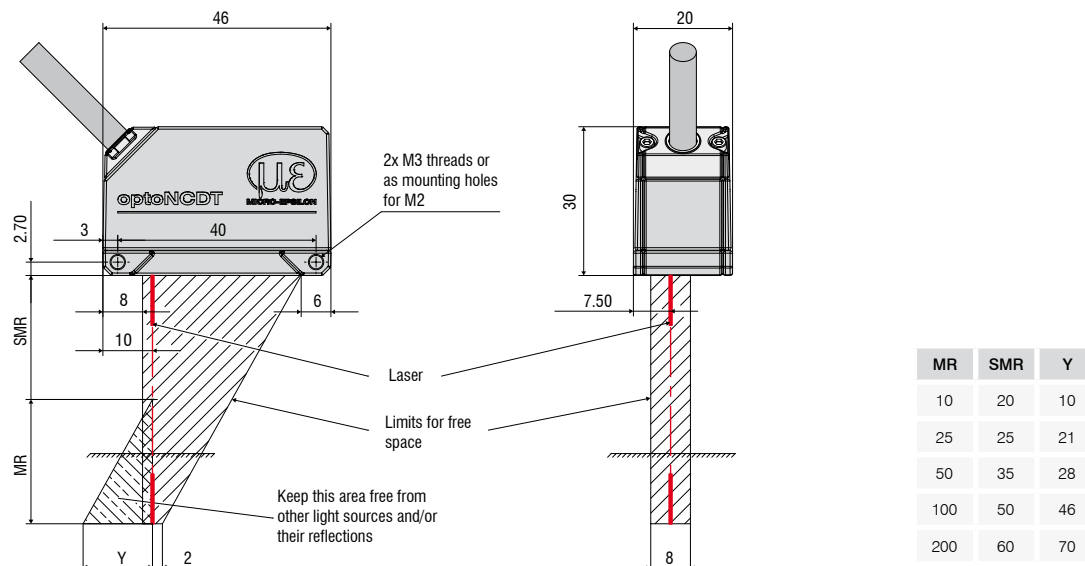
The ROI function (region of interest) allows e.g. for interfering signals in the background to be filtered out. The remaining signal peak is therefore optimally corrected.

Model	ILD1420				
Measuring range	10mm	25mm	50mm	100mm	200mm
Start of measuring range SMR	20mm	25mm	35mm	50mm	60mm
Midrange MMR	25mm	37.5mm	60mm	100mm	160mm
End of measuring range EMR	30mm	50mm	85mm	150mm	260mm
Linearity <sup>1)</sup>	8 - 10 $\mu$ m	20 - 25 $\mu$ m	40 - 50 $\mu$ m	80 - 100 $\mu$ m	160 - 200 $\mu$ m
	≤ 0.08 - 0.1% FSO				
Repeatability <sup>2)</sup>	0.5 $\mu$ m	1 $\mu$ m	2 $\mu$ m	4 $\mu$ m	8 $\mu$ m
Measuring rate <sup>3)</sup>	0.25kHz / 0.5kHz / 1kHz / 2kHz / 4kHz				
Light source	semiconductor laser < 1mW, 670nm (red)				
Permissible ambient light	10,000 lx				
Spot diameter ± 10%	SMR	90 x 120 $\mu$ m	100 x 140 $\mu$ m	90 x 120 $\mu$ m	750 x 1100 $\mu$ m
	MMR	45 x 40 $\mu$ m	120 x 130 $\mu$ m	230 x 240 $\mu$ m	
	EMR	140 x 160 $\mu$ m	390 x 500 $\mu$ m	630 x 820 $\mu$ m	750 x 1100 $\mu$ m
smallest diameter	45 x 40 $\mu$ m with 24mm	55 x 50 $\mu$ m with 31mm	70 x 65 $\mu$ m with 42mm	-	-
Protection class	IP 65				
Laser safety class	class 2 IEC 60825-1 : 2008-05				
Temperature stability	± 0.03% FSO/°C				
Operation temperature	0 ... +50°C (non-condensing)				
Storage temperature	-20 ... +70°C (non-condensing)				
Control I/O	1x HTL laser on/off; 1 x HTL multi-function input: trigger in / zero-setting / mastering / teach in (1x error output npn, pnp, push pull)				
Output	analogue	4 ... 20mA (1 ... 5V with cable PC 1420-3/U); 12bit; free scalable within the nominal range <sup>4)</sup>			
	digital	RS422 / 16bit			
Vibration	2g / 20 ... 500Hz (according to IEC 60068-2-6)				
Shock	15g / 6ms / 3 axes (according to IEC 60068-2-29)				
Weight	with cable 3m	approx. 145g			
	with Pigtail	approx. 60g			
LED	2 x 3 colour LEDs for power and status				
Operation	button	select button for zero / teach in / reset / factory setting			
	web interface	application-specific presets; peak selection, video signal; freely selectable averaging possibilities; data reduction; setup management <sup>5)</sup>			
Power supply	11-30V DC, 24V P < 2W				
Sensor cable		3m, integrated, open ends			
		0.3m Pigtail with 12pin M12 connector			
Controller	integrated signal processor				
Electromagnetic compatibility (EMC)	EN 61 000-6-3 / DIN EN 61326-1 (class B)				
	EN 61 000-6-2 / DIN EN 61326-1				

FSO = Full scale output All specifications apply for a diffusely reflecting matt white ceramic target; SMR = Start of measuring range; MMR = Midrange; EMR = End of measuring range

<sup>1)</sup> Values apply from 0 - 50% FSO or 50 - 100% FSO; <sup>2)</sup> Measuring rate 2kHz, median 9; <sup>3)</sup> Factory setting 2kHz; modifying the factory settings requires the IF2001/USB converter (optionally available)

<sup>4)</sup> The d/a conversion is executed at 12bit; <sup>5)</sup> PC connection via IF2001/USB (optionally available)



## High performance sensors made by Micro-Epsilon



Sensors and systems for displacement and position



Sensors and measurement devices for non-contact temperature measurement



2D/3D profile sensors (laser scanner)



Optical micrometers, fibre optic sensors and fibre optics



Colour recognition sensors, LED analyzers and colour online spectrometer



Measurement and inspection systems