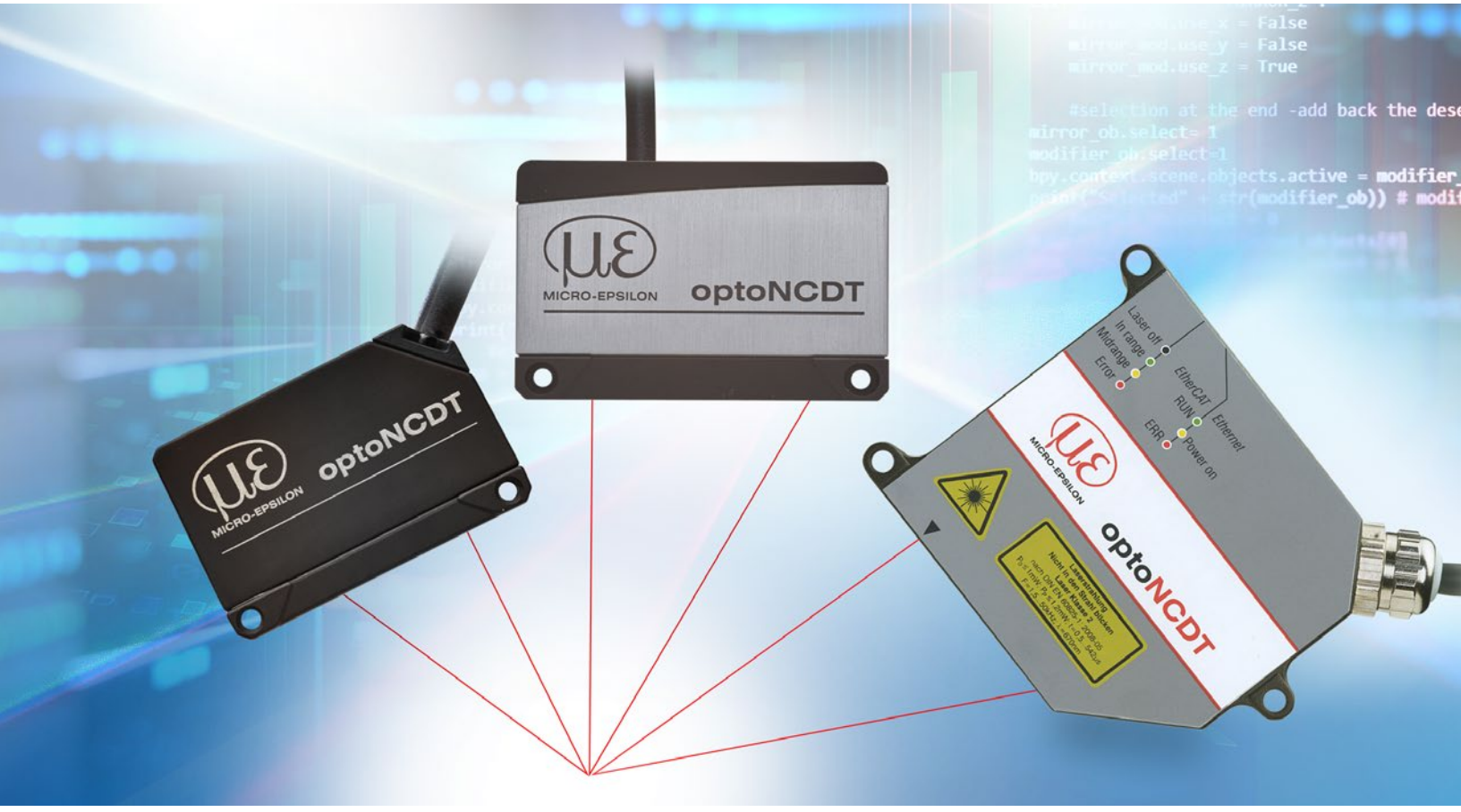
MICRO-EPSILON

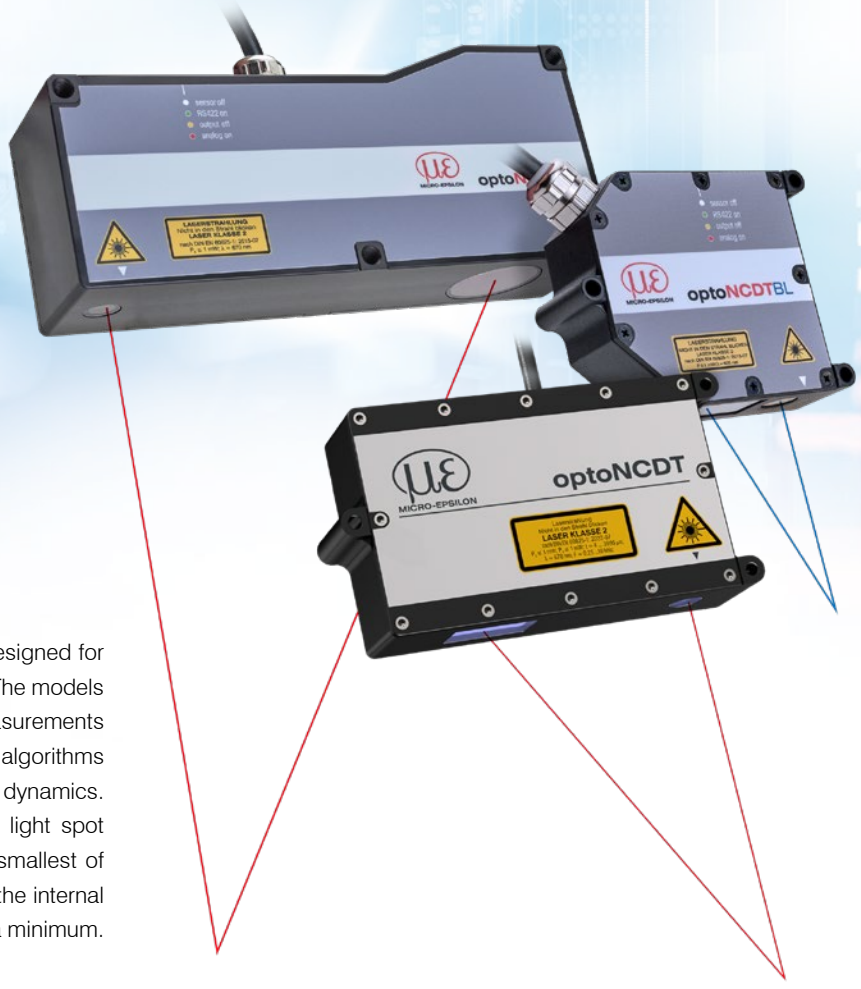
More Precision

optoNCDT // Laser displacement sensors (triangulation)



Powerful laser sensors for special applications
optoNCDT 17x0 / optoNCDT 1910

- Adjustable measuring rate up to 10 kHz
- Analog (U/I) / RS422 / PROFINET / EtherNet/IP
- Fast surface compensation
- High repeatability
- Ideal for large measurement distances



The optoNCDT 1910 and 1750 series laser sensors are designed for fast and precise measurements in industrial applications. The models are used for demanding surfaces and impress in measurements where large distances are required. Innovative evaluation algorithms and improved components enable high accuracy and dynamics. The high-performance optical system generates a small light spot onto the target which enables the detection of even the smallest of components reliably. The pigtail cable in conjunction with the internal controller reduces the installation effort for the sensors to a minimum.

The intelligent exposure control for demanding surfaces

The optoNCDT 1750 sensors feature real-time surface compensation. The real-time surface compensation feature (RTSC) determines the amount of reflection from the target surface during continuous exposure and in real-time. The exposure time or the amount of light produced by the laser is optimally matched to the reflection characteristics of the target surface. This enables extremely reliable measurements even on reflecting surfaces. The optoNCDT 1910 sensors use Advanced Surface Compensation and are also highly resistant to ambient light.

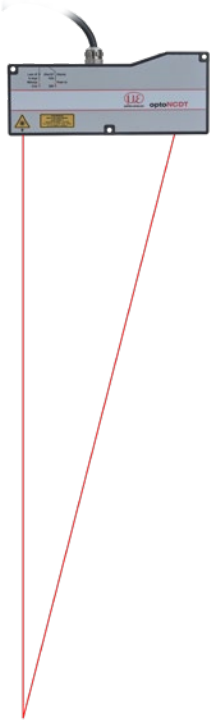
Ideal for industrial applications

Different output signals enable the integration of the sensor into plant and machine control systems. As well as analog voltage and current outputs, a digital interface provides distance information from the sensor. Due to the universal setting and evaluation possibilities, the sensors meet all the requirements for use in industrial applications.

Model	Technology	Measuring range	Repeatability	Linearity
optoNCDT 1750BL		2 - 750 mm	0.8 µm	from 0.06 %
optoNCDT 1750-DR		2 - 20 mm	0.1 µm	0.08 %
optoNCDT 1760		1000 mm	from 7.5 µm	0.10 %
optoNCDT 1910		500 / 750 mm	from 20 µm	0.07 %

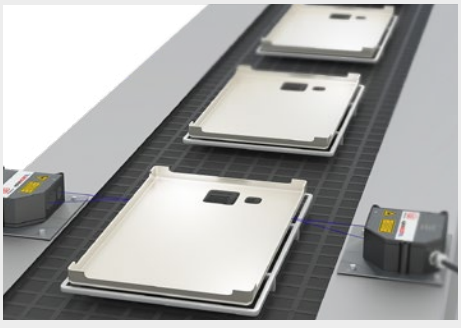
Large distance and large measuring range

The optoNCDT long-range models are used to cover a large measuring range or to measure from a large distance to the target. The long-range laser sensors combine high accuracy and large measuring distances.

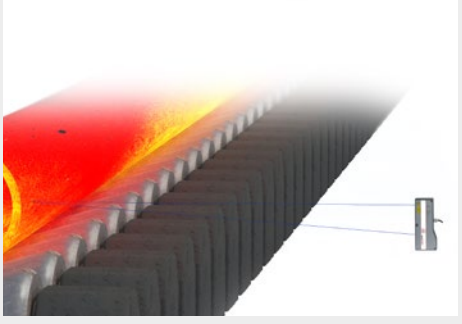


Application examples

Geometry testing of reflective glass parts



Position check of plastic components



Position measurement of red-hot glowing pipes

Blue laser - optoNCDT 1750BL

Model		ILD1750-20BL	ILD1750-200BL	ILD1750-500BL	ILD1750-750BL
Measuring range		20 mm	200 mm	500 mm	750 mm
Start of measuring range		40 mm	100 mm	200 mm	200 mm
Mid of measuring range		50 mm	200 mm	450 mm	575 mm
End of measuring range		60 mm	300 mm	700 mm	950 mm
Linearity [1]		< ±12 µm	< ±160 µm	< ±350 µm	< ±670 µm
		< ±0.06 % FSO	< ±0.08 % FSO	< ±0.07 % FSO	< ±0.09 % FSO
Repeatability [2]		0.8 µm	15 µm	20 µm	45 µm
Light spot diameter [3]	SMR	320 µm	1300 µm	1500 µm	1500 µm
	MMR	45 µm			
	EMR	320 µm			
Light source		Semiconductor laser <1 mW, 405 nm (blue violet)			
Material		Die-cast zinc housing		Aluminum housing	

[1] FSO = Full Scale Output; the specified data apply to white, diffuse reflecting surfaces (Micro-Epsilon reference ceramic for ILD sensors)
[2] Measuring rate 5 kHz, median 9
[3] ±10 %; SMR = Start of measuring range; MMR = Mid of measuring range; EMR = End of measuring range

Direct reflection - optoNCDT 1750DR

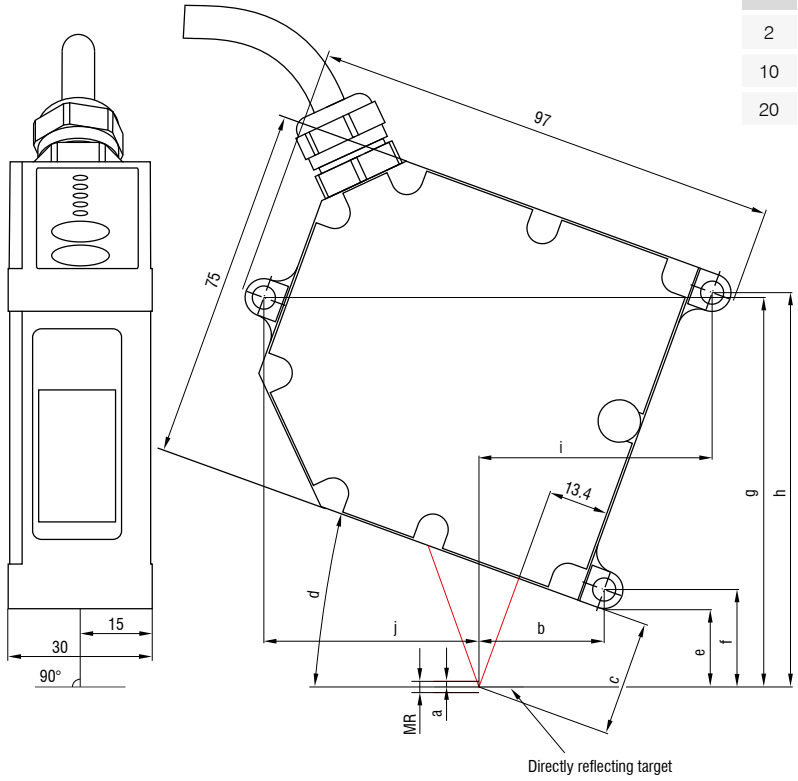
Model		ILD1750-2DR	ILD1750-10DR	ILD1750-20DR
Measuring range		2 mm	10 mm	20 mm
Start of measuring range		24 mm	30.5 mm	53.5 mm
Mid of measuring range		25 mm	35.5 mm	63.5 mm
End of measuring range		26 mm	40.5 mm	73.5 mm
Linearity [1]		< ±1.6 µm	< ±6 µm	< ±12 µm
		< ±0.08 % FSO		
Repeatability [2]		0.1 µm	0.4 µm	0.8 µm
Measuring angle		20°	17.6°	11.5°
Light spot diameter [3]	SMR	80 µm	110 µm	320 µm
	MMR	35 µm	50 µm	45 µm
	EMR	80 µm	110 µm	320 µm

[1] FSO = Full Scale Output; the specified data apply to white, diffuse reflecting surfaces (Micro-Epsilon reference ceramic for ILD sensors)
[2] Measuring rate 5 kHz, median 9
[3] ±10 %; SMR = Start of measuring range; MMR = Mid of measuring range; EMR = End of measuring range

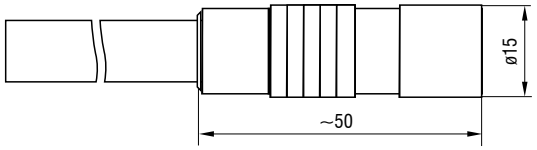
Dimensions
optoNCDT 17x0

optoNCDT 1750DR

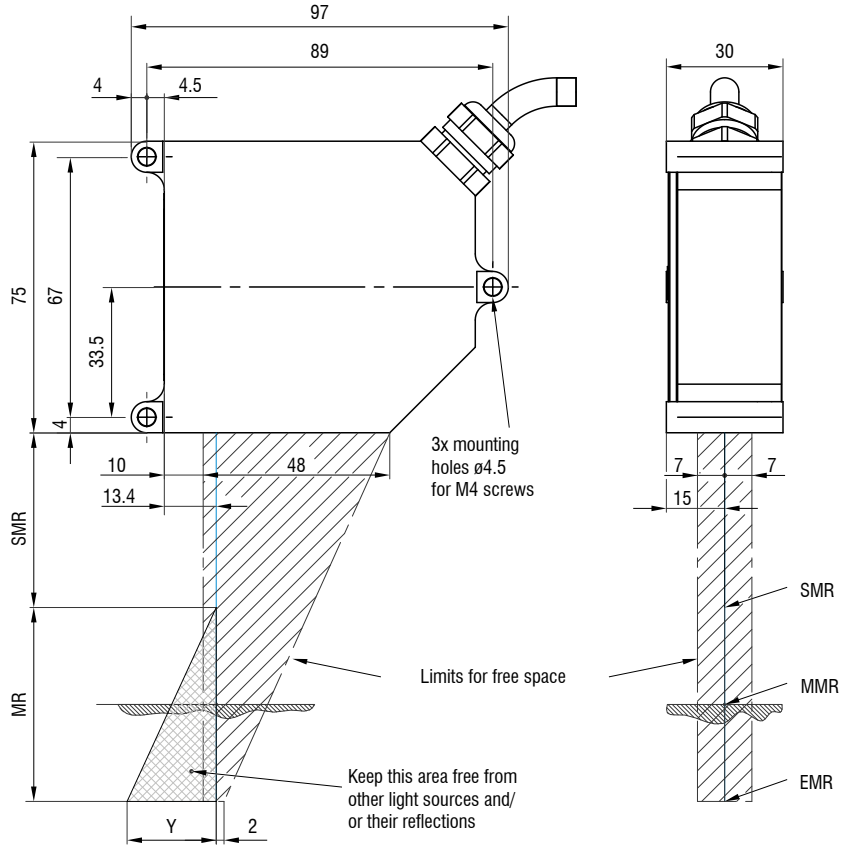
MR	a	b	c	d	e	f	g	h	i	j
2	1	26.5	25	20 °	16.7	20.7	82.6	83.7	49.5	45.6
10	5	29	35.5	17.6 °	28.3	32.3	91.1	96.2	49.2	45.7
20	10	30.9	63.5	11.5 °	58.6	62.6	113.2	128.2	44.3	49.6



Connector (sensor side)

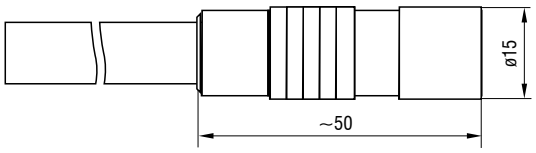


optoNCDT 1750BL / Measuring ranges 20 / 200



MR	SMR	Y
20	40	12
200	100	70

Connector (sensor side)



Connection possibilities
optoNCDT 17x0 / 1910

optoNCDT 1750 / 1760

Drag-chain suitable extension and adapter cables

Cable diameter: 6.8 ±0.2 mm
Drag chain: yes
Robot: no
Temperature range: -40 … 90 °C (moving /not moving)
Bending radius: > 55 mm (fixed installation / dynamic / drag chain)

Sensor	Cables	Type	Connection possibilities and accessories	
ILD1750-xxBL ILD1750-xxDR ILD1760-1000	**Extension cable pigtail** Length 3 m / 6 m / 9 m / 15 m *Art. no.* *Designation* 2901189 PC1700-3 2901357 PC1700-6 2901191 PC1700-10 2901266 PC1700-15	Open ends	**Supply voltage connection** Power supply unit PS2020	
			Interface module of RS422 to USB IF2001/USB IC2001/USB	
			Interface module for Industrial Ethernet connection IF2035-PROFINET IF2035-EIP IF2035-EtherCAT	
	Adapter cable for PC interface card Length 3 m / 6 m *Art. no.* *Designation* 2901555 PC1700-3/IF2008 2901556 PC1700-6/IF2008 2901557 PC1700-8/IF2008	Sub-D	**Interface card for synchronous data acquisition** IF2008PCIe / IF2008E	
			4-fold USB converter IF2004/USB	
	Adapter cable for sensor calculation Length 3 m / 6 m / 9 m *Art. no.* *Designation* 29011173 PC1750-3/C-Box 29011180 PC1750-6/C-Box 29011181 PC1750-9/C-Box	Sub-D	**Controller for D/A conversion and evaluation of up to 2 sensor signals** Dual Processing Unit	

Robot-suitable extension cables

Cable diameter: max. 9 mm
Drag chain: no
Robot: yes
Temperature range: -40 … 70 °C (moving / not moving)
Bending radius: 110 mm (dynamic)

Sensor	Cables	Type	Connection possibilities and accessories	
ILD1750-xxBL ILD1750-xxDR ILD1760-1000	**Extension cable pigtail:** Length 3 m / 6 m / 9 m / 15 m *Art. no.* *Designation* 2901494 PCR1700-5 2901299 PCR1700-10	Open ends	**Connection supply voltage** PS2020	
			Interface module from RS422 to USB IF2001/USB IC2001/USB	
			Interface module for Industrial Ethernet connection IF2035-PROFINET IF2035-EIP IF2035-EtherCAT	

Extension cables for high temperatures

Cable diameter:	max. 7.5 mm
Drag chain:	no
Robot:	no
Temperature range:	-55 … 250 °C (moving)
	-90 … 250 °C (not moving)
Bending radius:	> 40 mm (fixed installation)
	> 75 mm (dynamic)

Sensor	Cables	Type	Connection possibilities and accessories	
ILD1750-xxBL ILD1750-xxDR ILD1760-1000	**Extension cables high temperatures** Length 3 m / 6 m / 9 m / 15 m *Art. no.* *Designation* 29011091 PC1700-3/OE/HT 29011092 PC1700-6/OE/HT 29011094 PC1700-15/OE/HT	Open ends	**Supply voltage connection** Power supply unit PS2020	
			Interface module of RS422 to USB IF2001/USB	
			Interface module for Industrial Ethernet connection IF2035-PROFINET IF2035-EIP IF2035-EtherCAT	

Other cables

Cable diameter:	6.7 mm
Drag chain:	yes
Robot:	no
Temperature range:	-40 … 80 °C
Bending radius:	> 27 mm (fixed installation)
	> 51 mm (dynamic)

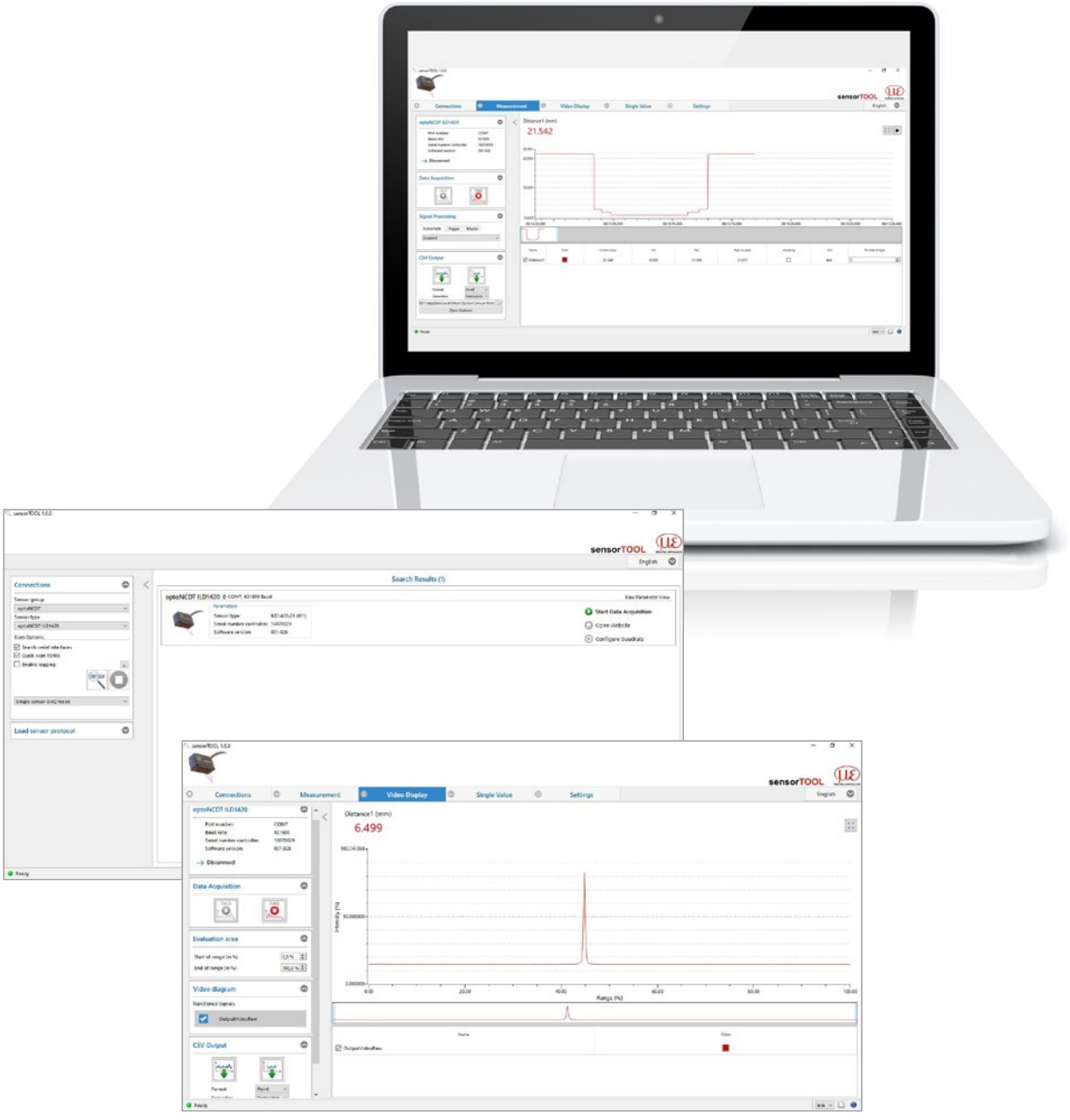
Input	Cables	Type	Connection possibilities and accessories	
2 x Sub-D (PC1700-x/ IF2008)	**Adapter cables for 4-fold sensor connection** Length 0.1 m *Art. no.* *Designation* 2901528 IF2008-Y-adapter cable 	Sub-D	**Interface card for synchronous data acquisition** IF2008PCIe / IF2008E	
			4-fold USB converter & parameter setting IF2004/USB	

optoNCDT 1910

see Connection possibilities optoNCDT 1900 on pg. 32.

sensorTOOL

The Micro-Epsilon sensorTOOL is a powerful software that is used to operate one or more optoNCDT sensors. The sensorTOOL can be used to access the sensor connected to the PC, display its complete data stream and save it in a file (in Excel-compatible CSV format). The sensor is configured via its web interface.



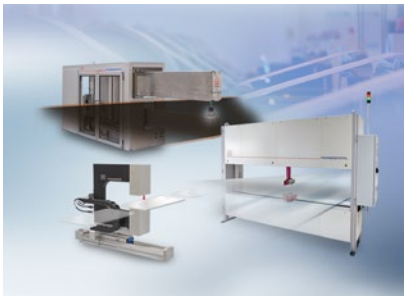
Free download

All software tools, drivers and documented driver DLL for easy integration of the sensors into existing or internally-generated software are available free of charge under www.micro-epsilon.de/download

Sensors and Systems from Micro-Epsilon

Sensors and systems for displacement, distance and position

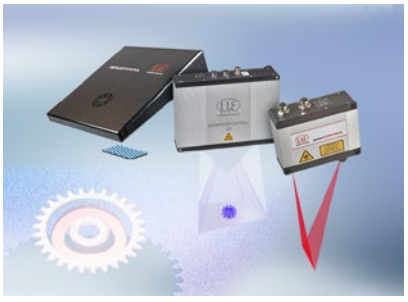
Sensors and measurement devices for non-contact temperature measurement



Measuring and inspection systems for metal strips, plastics and rubber

Optical micrometers and fiber optics, measuring and test amplifiers

Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection

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