MICRO-EPSILON

More Precision

optoNCDT // Laser displacement sensors (triangulation)

Laser displacement sensors with oval light spot for metallic surfaces

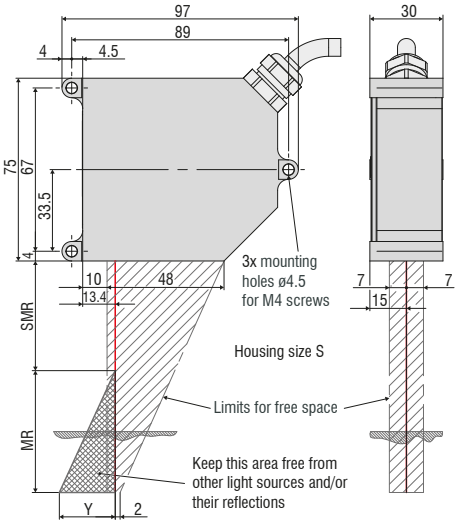
optoNCDT 1750LL

- Measurement of shiny metallic or structured surfaces
- Adjustable measuring rate up to 7.5 kHz
- INTER FACE: Analog (U/I) RS422 / PROFINET / EtherNet/IP
- Filter inside: Adjustable filter functions
- Configuration via web interface or select button
- RTSC: Real Time Surface Compensation

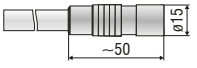
The optoNCDT 1750LL sensors operate with an oval light spot which reminds of a short "laser line". The oval light spot and special software algorithms filter out disturbances while significantly simplifying measurements on metallic surfaces. Due to its extremely compact size, the sensor can easily be integrated into restricted installation space.

The optoNCDT 1750 laser stands out due to its real-time surface compensation feature. The real-time surface compensation feature (RTSC) determines the amount of reflection from the target surface during continuous exposure and in real-time.

All optoNCDT 1750 models are operated using an intuitive web interface. Due to the selectable setting and evaluation possibilities, the optoNCDT 1750 meets the requirements for use in industrial applications with high dynamics.



Connector (sensor side)



MR	SMR	Y
2	24	2
10	30	7
20	40	12
50	45	25

Model		ILD1750-2LL	ILD1750-10LL	ILD1750-20LL	ILD1750-50LL
Measuring range		2 mm	10 mm	20 mm	50 mm
Start of measuring range		24 mm	30 mm	40 mm	45 mm
Mid of measuring range		25 mm	35 mm	50 mm	70 mm
End of measuring range		26 mm	40 mm	60 mm	95 mm
Measuring rate		continuously adjustable between 0.3 ... 7.5 kHz			
		6 adjustable stages: 7.5 kHz / 5 kHz / 2.5 kHz / 1.25 kHz / 625 Hz / 300 Hz			
Linearity		< ±1.6 µm	< ±6 µm	< ±12 µm	< ±30 µm
		< ±0.08 % FSO	< ±0.06 % FSO		
Repeatability		0.1 µm	0.4 µm	0.8 µm	2 µm
Light spot diameter (±10 %)	SMR	85 x 240 µm	120 x 405 µm	185 x 485 µm	350 x 320 µm
	MMR	24 x 280 µm	35 x 585 µm	55 x 700 µm	70 x 960 µm
	EMR	64 x 400 µm	125 x 835 µm	195 x 1200 µm	300 x 1940 µm
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		10,000 lx			
Supply voltage		11 … 30 VDC			
Power consumption		< 3 W (24 V)			
Signal input		1x 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 (16 bit) / PROFINET [1] / EtherNet/IP [1]			
Analog output		4 ... 20 mA / 0 … 5 V / 0 … 10 V (16 bit, freely scalable within the measuring range)			
Switching output		2 x switching output (error & limit value): npn, pnp, push pull			
Synchronization		possible for simultaneous or alternating measurements			
Connection		integrated pigtail 0.25 m with 14-pin cable connector, min. bending radius 30 mm (fixed installation); optional extension to 3 m / 10 m possible (see accessories for suitable connection cable)			
Installation		Screw connection via three mounting holes			
Temperature range	Storage	-20 ... +70 °C (non-condensing)			
	Operation	0 ... +50 °C (non-condensing)			
Shock (DIN EN 60068-2-29)		15 g / 6 ms in 3 axes			
Vibration (DIN EN 60068-2-6)		2 g / 20 … 500 Hz			
Protection class (DIN EN 60529)		IP65			
Material		Die-cast zinc housing			
Weight		approx. 550 g (incl. pigtail)			
Control and display elements		Select & function keys: interface selection, mastering (zero), teach, presets, quality slider, frequency selection, factory settings; web interface for setup [6]: selectable 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 white, diffuse reflecting surfaces (Micro-Epsilon reference ceramic for ILD sensors)
[1] Optional connection via interface module (see accessories)
[2] Connection to PC via IF2001/USB (see accessories)

Accessories for all optoNCDT series

Power supply

- PS 2020 (power supply 24 V / 2.5 A, input 100 - 240 VAC, output 24 VDC / 2.5 A, mounting onto symmetrical standard rail 35 mm x 7.5 mm, DIN 50022)

Controller unit for evaluation and signal conversion

- C-Box/2A (controller for conversion and evaluation of up to 2 sensor signals)

Interface card

- IF2008PCI / IF2008PCIe (interface card for multiple signal processing; analog and digital interfaces)

USB converter

- IF2001/USB RS422/USB converter (converter for digital signals in USB)
- IF2004/USB 4-channel RS422/USB converter (converter for up to 4 digital signals in USB)

Interface module for Industrial Ethernet connection

- IF2030/PNET
- IF2030/ENETIP

Accessories optoNCDT 1420/1402CL1

Supply and output cable (drag-chain suitable)

- PCF1420-1/I (1 m, output 4 ... 20 mA)
- PCF1420-1/I(01) (1 m, output 4...20 mA)
- PCF1420-3/I (3 m, output 4 ... 20 mA)
- PCF1420-6/I (6 m, output 4 ... 20 mA)
- PCF1420-10/I (10 m, output 4 ... 20 mA)
- PCF1420-15/I (15 m, output 4 ... 20 mA)
- PCF1420-3/U (3 m, with integrated resistor, output 1 ... 5 VDC)*
- PCF1420-6/U (6 m, with integrated resistor, output 1 ... 5 VDC)*
- PCF1420-10/U (10 m, with integrated resistor, output 1 ... 5 VDC)*
- PCF1420-15/U (15 m, with integrated resistor, output 1 ... 5 VDC)*
- PCF1420-3/IF2008 (3 m, interface and supply cable)
- PCF1420-6/IF2008 (6 m, interface and supply cable)
- PCF1420-10/IF2008 (10 m, interface and supply cable)
- PCF1420-3/C-Box (3 m)

* on request with output 2 ...10 VDC

Supply and output cable, suitable for use with robots

(available in 90° version)

- PCR1402-3/I (3 m)
- PCR1402-6/I (6 m)
- PCR1402-8/I (8 m)

Accessories for optoNCDT 1750BL / 1750DR / 1710 / 1710BL

Supply and output cable (drag-chain suitable)

- PC1700-3 (3 m)
- PC1700-10 (10 m)
- PC1700-10/IF2008 (10 m, for use with interface card IF2008)
- PC1750-3/C-Box (3 m)
- PC1750-6/C-Box (6 m)
- PC1750-9/C-Box (9 m)

Supply and output cable (suitable for use with robots)

- PCR1700-5 (5 m)
- PCR1700-10 (10 m)

Supply and output cables for temperatures up to 200 °C

- PC1700-3/OE/HT (3 m)
- PC1700-6/OE/HT (6 m)
- PC1700-15/OE/HT (15 m)

Protection housing

- SGH model (sizes S and M)
- SGHF model (sizes S and M)
- SGHF-HT model

Accessories for optoNCDT 2300/2300LL/2300BL/ 2300-2DR

Supply and output cable

- PC2300-0,5Y (connection cable to PC or PLC; for operation a PC2300-3/SUB-D will be required)
- PC2300-3/SUB-D (3 m; for operation a PC2300-0,5Y will be required)
- PC2300-3/IF2008 (interface and supply cable)
- PC2300-3/OE (3 m)
- PC2300-6/OE (6 m)
- PC2300-9/OE (9 m)
- PC2300-15/OE (15 m)
- PC2300-3/C-Box/RJ45 (3 m)

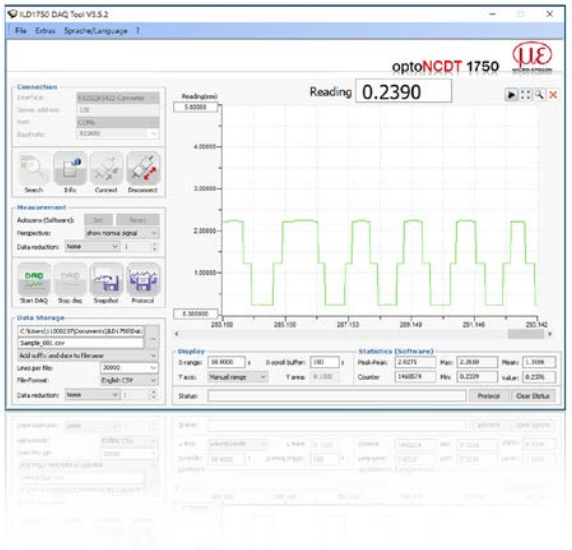
* other cable lengths on request

Protection housing

- SGH model (sizes S and M)
- SGHF model (sizes S and M)
- SGHF-HT model

Supply and output cables for temperatures up to 200 °C

- PC2300-3/OE/HT (3 m)
- PC2300-6/OE/HT (6 m)
- PC2300-9/OE/HT (9 m)
- PC2300-15/OE/HT (15 m)



optoNCDT Demo Tool

The scope of supply includes a software for easy sensor configuration. The settings can be implemented conveniently via a Windows user interface on the PC. The sensor parameters are transmitted to the sensor via the serial port and can also be saved if required. The software is available as single and multi-channel version. The sensor is connected to the PC via the sensor cable using a USB converter.
[for any ILD sensor]

Free download

Download free of charge from www.micro-epsilon.com/download: software, driver and well-documented driver DLL for easy sensor integration in existing or customer software.

Protection housing for demanding environments

To protect the optoNCDT laser sensors in harsh environments, protective housings are available in different designs.

SGH model

Completely enclosed housing with an integrated front window, where the sensor measures through the window. The water-resistant housing provides protection against solvents and detergents.

SGHF model

With window and compressed-air connection ideal for high ambient temperatures. The integrated air cooling of the housing offers optimum protection for the sensor.

SGHF-HT model

This water-cooled protection housing with window and compressed-air connection is designed for measurement tasks in ambient temperatures up to 200 °C.
Suitable for all long-range sensors
optoNCDT 1710
optoNCDT 1750-500 and optoNCDT 1750-750
optoNCDT 2310
optoNCDT 2300 - 200
Maximum ambient temperature 200 °C
Maximum temperature of cooling water T(max) = 10 °C
Minimum water flow rate Q(min) = 3 liters/min

SGHx ILD size S (140x140x71 mm)
for optoNCDT 1750 / 2300 dimensions 97x75 mm

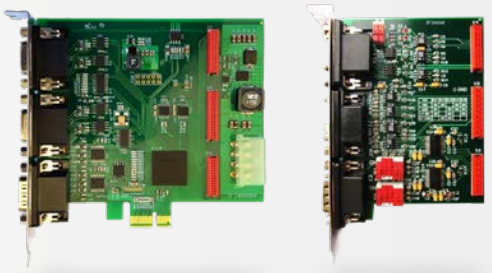
SGHx ILD size M (140x180x71 mm)
for optoNCDT 1750 / 2300 dimensions 150x80 mm

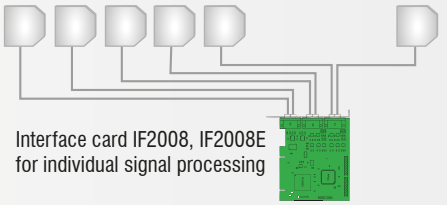
IF2008PCI / IF2008PCIe - PCI Interface card for synchronous data acquisition

The absolutely synchronous data acquisition is a decisive factor for the planarity or thickness measurement using several laser sensors. The IF2008PCI interface card is designed for installation in PCs and enables the synchronous capture of four digital sensor signals and two encoders. The data are stored in a FIFO memory in order to enable resource-saving processing in blocks in the PC. The IF2008E expansion board enables to detect in addition two digital sensor signals, two analog sensor signals and eight I/O signals.

Special features

- IF2008 basic printed circuit board: 4 digital signals and 2 encoders
- IF2008E - Expansion board: 2x digital signals, 2x analog signals and 8x I/O signals





IF2001/USB converter RS422 to USB

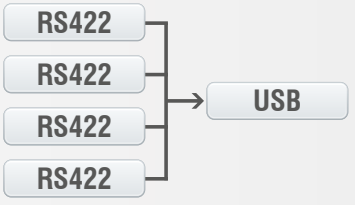
The RS422/USB converter transforms digital signals from a laser-optical sensor into a USB data packet. The sensor and the converter are connected via the RS422 interface of the converter. Data output is done via USB interface. The converter loops through further signals and functions such as laser on/off, switch signals and function output. The connected sensors and the converter can be programmed through software.

IF2004/USB: 4-channel converter from RS422 to USB

The RS422/USB converter is used for transforming digital signals from up to four optical sensors into USB data signals. The converter has four trigger inputs and a trigger output for connecting additional converters. Data is output via an USB interface. The connected sensors and the converter can be programmed through software.

Special features

- 4x digital signals via RS422
- 4x trigger inputs, 1x trigger output
- Synchronous data acquisition
- Data output via USB

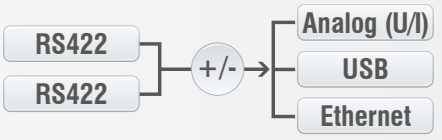


C-Box/2A Controller for D/A conversion and evaluation

C-Box/2A is used for fast D/A conversion of two digital input signals or for evaluating two digital sensor signals. The controller is compatible with the optoNCDT 1420, 1750 und 2300 models. Handling of the C-Box/2A and of the connected sensors are performed via web interface. Averaging functions, thickness, diameter, step and inclinations can be calculated. The D/A conversion is executed at 16 bit and max. 70 kHz.

Special features

- Trigger input
- Multi-function output
- Measurement value output via Ethernet, USB, analog output
  4 ... 20 mA / 0 ... 5 V / 0 ... 10 V / ±5 V / ±10 V
  (scalable via web interface)
- 2x switching outputs for sensors or C-Box/2A status
- Parallel data output via 3 output interfaces

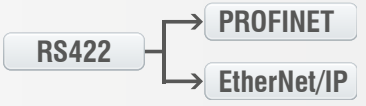


IF2030
Interface module for Industrial Ethernet connection

The IF2030 interface modules are designed for easy connection of Micro-Epsilon sensors to Ethernet-based fieldbuses, e.g., plant control systems. The PROFINET and Ethernet/IP modules are compatible with sensors that output data via an RS422 or RS485 interface. These modules operate on the sensor side with up to 4 MBd and have two network connections for different network topologies. Installation in switching cabinets is via a DIN rail.

EtherNet/IP

PROFINET



Sensors and Systems from Micro-Epsilon

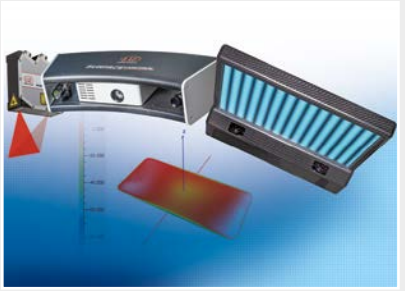
Sensors and systems for displacement, distance and position

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

Modifications reserved / Y9766188-I052110SGO

MICRO-EPSILON

MICRO-EPSILON USA
8120 Brownleigh Dr. · Raleigh, NC 27617 / USA
Phone +1/919/787-9707 · Fax +1/919/787-9706
me-usa@micro-epsilon.com · **www.micro-epsilon.com**