






More Precision

optoNCDT // Laser displacement sensors (triangulation)





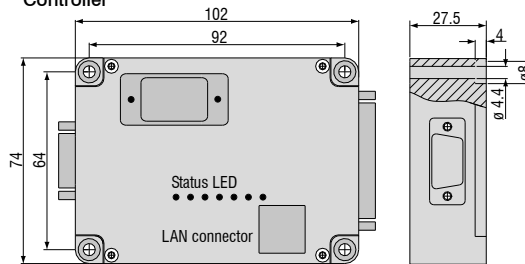
-  **Nine models with measuring ranges from 4mm to 100mm**
-  **Sensor head and separate controller**
-  **Up to 100kHz (-3dB) true analog frequency response**
- INTER FACE** **Analog outputs (U/I) Ethernet**

Analog laser triangulation sensors of the optoNCDT 1610 and 1630 series are designed for extremely fast measurement processes. Equipped with a PSD array, the sensors automatically adapt to the reflection factor of the measurement object enabling measurements even on changing surfaces.

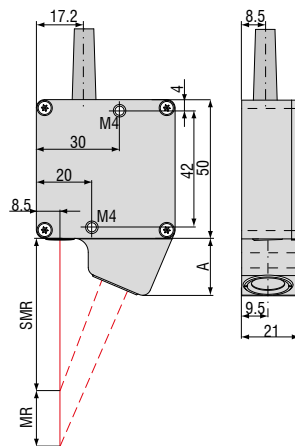
The LD 1610 series achieves a frequency response of 10kHz (-3dB) while the LD 1630 series is suitable for measurements up to 100 kHz (-3dB).

Equipped with analog interfaces (current, voltage) and an optional Ethernet interface, the controller can be easily integrated into diverse systems.

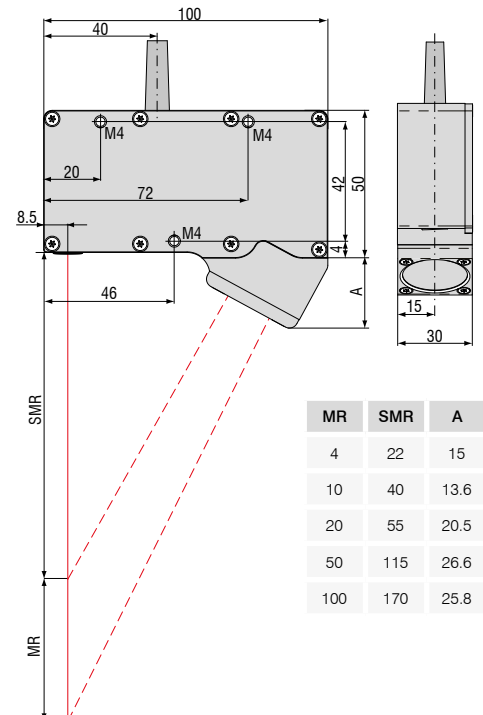
Controller



optoNCDT 1610/1630 (4/10/20mm)



optoNCDT 1610/1630 (50/100mm)



Sensors	LD1610-4	LD1610-10	LD1610-20	LD1610-50	LD1610-100
Measuring range	4mm	10mm	20mm	50mm	100mm
Start of measuring range	22mm	40mm	55mm	115mm	170mm
Linearity	8 μ m	20 μ m	40 μ m	100 μ m	200 μ m
	$\leq \pm 0.2\%$ FSO				
Resolution (noise, dynamic ¹⁾)	2.6 μ m	6.5 μ m	13.0 μ m	32.5 μ m	65 μ m
Resolution (noise, dynamic ²⁾)	0.2 μ m	0.5 μ m	1 μ m	2.5 μ m	6 μ m
Spot diameter	0.3mm	0.6mm	0.9mm	1.5mm	1.5mm
Frequency response	10kHz (-3dB)				
Light source	laser, wavelength 670nm, red (visible)				
Laser protection class	Class 2				
Max. Vibration	10g to 1kHz (sensor head, 20g optional)				
Operating temperature	0°C ... +50°C				
Storage temperature	-20°C ... +70°C				

Other measuring ranges on request ¹ Measurement on white target - Frequency response 10kHz ² Measurement on white target - Frequency response 20Hz

Sensors	LD1630-4	LD1630-10	LD1630-20	LD1630-50
Measuring range	4mm	10mm	20mm	50mm
Start of measuring range	22mm	40mm	55mm	115mm
Linearity	12 μ m	30 μ m	60 μ m	150 μ m
	$\leq \pm 0.3\%$ FSO			
Resolution (noise, dynamic ¹⁾)	7 μ m	17.5 μ m	35 μ m	50 μ m
Resolution (noise, dynamic ²⁾)	0.4 μ m	1 μ m	2 μ m	7.5 μ m
Spot diameter	0.3mm	0.6mm	0.9mm	1.5mm
Frequency response	100kHz (-3dB)			
Light source	laser, wavelength 670nm, red (visible)			
Laser protection class	Class 2			
Max. Vibration	5g to 1kHz (sensor head, 20g optional)			
Operating temperature	0°C ... +40°C			
Storage temperature	-30°C ... +75°C			

Other measuring ranges on request ¹ Measurement on white target - Frequency response 100kHz ² Measurement on white target - Frequency response 230Hz

Controller		
Analog output	Distance	$\pm 10V$ (optional 0 ... 10V / 0 ... 5V) ; 4 ... 20mA
	Impedance	approx. 0 Ohm (10mA max.)
	Tilt angle	with 30° object inclination (axis A): approx. 0.5% (white target)
	Frequency response	DC ... 10kHz / 100kHz
	Thermal drift	0.02% °C FSO
	Light intensity	0V ... 10V
Digital output	Ethernet (optional)	TCP/IP factory set IP 192.168.122.245 (sampling frequency 1 - 30kHz)
Switching outputs with display	MIN	+24V when distance < MIN, LED yellow
	OK	+24V when distance > MIN and < MAX, LED green
	MAX	+24V when distance > MAX, LED orange
	Error	+24 V, LED red
Switching hysteresis		approx. 0.5% FSO
Permissible ambient light		20,000 lux
Operating time		50,000h (laser diode)
Insulation voltage		200V DC, 0 V against housing
Humidity		up to 90% RH, non-condensing
Protection class		sensor: IP64, controller: IP40
Power supply		+24V DC / 200mA (10 ... 30V)
Connector		25-in D-sub
Sensor cable length, standard		2m

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 35mm x 7.5mm, DIN 50022)

Controller unit for evaluation and signal conversion

- CSP 2008 (controller for multiple signal processing; analog and digital interfaces)

Controller unit for evaluation and signal conversion

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

Interface card

- IF2008 (interface card for multiple signal processing; analog and digital interfaces)

USB converter

- IF2001/USB RS422/USB Converter (converter for digital signals in USB)

USB converter

- IF2004/USB 4 channels RS422/USB Converter (converter, up to 4 digital signals in USB)

Accessories optoNCDT 1320/1420/1402CL1**Supply and output cable, drag-chain suitable**

- PCF1420-1/I (1m, output 4...20mA)
- PCF1420-1/I(O1) (1m, output 4...20mA)
- PCF1420-3/I (3m, output 4...20mA)
- PCF1420-6/I (6m, output 4...20mA)
- PCF1420-10/I (10m, output 4...20 mA)
- PCF1420-15/I (15m, output 4...20mA)
- PCF1420-3/U (3m, with integrated resistor, output 1...5 VDC)*
- PCF1420-6/U (6m, with integrated resistor, output 1...5 VDC)*
- PCF1420-10/U (10m, with integrated resistor, output 1...5 VDC)*
- PCF1420-15/U (15m, with integrated resistor, output 1...5 VDC)*
- PCF1420-3/IF2008 (3m, interface and supply cable)
- PC1420-6/IF2008 (6m, supply and output cable)
- PCF1420-10/IF2008 (10m, interface and supply cable)
- PC 1402-3/CSP (3m, connection cable for CSP 2008, only for optoNCDT 1420)

* on request with output 2...10 VDC

Supply and output cable, suitable for use with robots

(available in 90° version)

- PCR 1402-3/I (3m)
- PCR 1402-6/I (6m)
- PCR 1402-8/I (8m)

Accessories optoNCDT 1610/1630**Supply and output cable**

- PC 1605-3 (3m)
- PC 1605-6 (6m)
- PC 1607-5/BNC (5m, BNC connector)

Accessories optoNCDT1700/1700LL/1700BL**Supply and output cable (drag-chain suitable)**

- PC 1700-3 (3m)
- PC 1700-10 (10m)
- PC 1700-10/IF2008 (10m, for use with interface card IF2008)
- PC 1700-3/T (3m, for use with trigger box)
- PC 1700-10/T (10m, for use with trigger box)
- PC 1700-3/USB (3m, with USB-RS422-converter, power supply 90 ... 230 VAC)

Supply and output cable (suitable for use with robots)

- PCR 1700-5 (5m)
- PCR 1700-10 (10m)

Supply and output cables for temperatures up to 200°C

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

Protection housing

- SGHF (with air-purge collar), sizes S and M
- SGH (without air-purge collar), sizes S and M
- SGHF-HT (with water cooling)

Accessories optoNCDT 2300/2300LL/2300BL**Supply and output cable**

- PC2300-0,5Y (connection cable to PC or SPS; for operation a PC2300-3/SUB-D will be required)
- PC2300-3/SUB-D (3m; for operation a PC2300-0,5Y will be required)
- PC 2300-3/CSP (3m, connection cable ILD2300-UniController)
- PC 2300-3/IF2008 (interface and supply cable)
- PC 2300-3/OE (3m)
- PC 2300-6/OE (6m)
- PC 2300-9/OE (9m)
- PC 2300-3/CSP (3m, connection cable ILD2300-UniController)
- PC 2300-10/CSP (10m, connection cable ILD2300-UniController)
- PC 2300-15/CSP (15m, connection cable ILD2300-UniController)
- PC 2300-15/OE (15m)

* other cable lengths on request

Protection housing

- SGHF (with air-purge collar), sizes S and M
- SGH (without air-purge collar), sizes S and M
- SGHF-HT (with water cooling)

Supply and output cables for temperatures up to 200°C

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

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, fiber optic sensors and fiber optics



Color recognition sensors, LED analyzers and color online spectrometer



Measurement and inspection systems