

**SENSORS & SYSTEMS**

**Authority in Displacement Measurement**



**CCD-Precision**  
**ILD 1800**

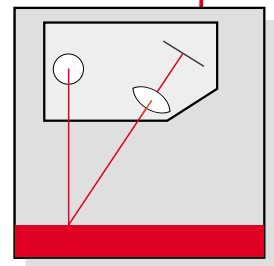
# BRANGLER PRINCIPLE OPTO NCDT

high accuracy and resolution

compact sensor design

5 kHz frequency

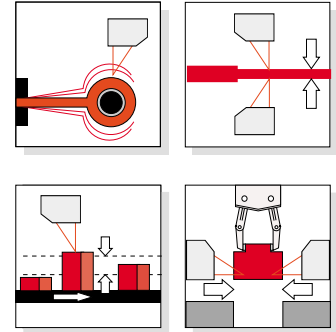
Intelligent  
Laser-Optical  
Displacement  
Measurement



CCD System  
**optoNCDT 1800**

## optoNCDT 1800

### CCD - Laser Triangulation



**optoNCDT 1800** is an optoelectronic displacement measurement system with integrated digital signal processor. In a non-contact process the system measures distances against a wide variety of material surfaces.

**optoNCDT 1800** operates according to the triangulation principle. A laser diode projects a visible light spot onto the surface of the target. Through an optical receiver unit the spot is imaged on a CCD-array.

In the controller the measured values are processed digitally and made available as analog or digital output signal.

The controller features an auto-zero and an averaging set key.

### Laser-optical displacement sensors

#### high speed CCD-System

optoNCDT 1800 is designed for industrial use in the factory automation and for measuring and testing during in-process quality assurance. Examples below show only a small selection of the numerous possibilities using optoNCDT sensors.

1 - vibration, amplitude, clearance, run-out

2 - thickness, position, elongation

3 - deflection, deformation, waviness, tilt

4 - dimension, profile tolerance, sorting, part recognition

5 - stroke, axial shaft oscillation, contour

6 - in-process quality control, dimensional testing



### features

- High resolution 0.01 % FSO
- High sampling rate of 5 kHz
- Fast adaption to varying surface properties
- Auto zero and signal averaging at the controller
- Sensor cable length up to 10 m (33')
- Synchronisation for dual channel applications

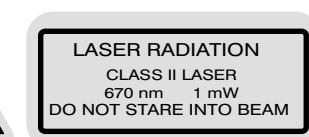
## Technical Data

Model	ILD 1800-2	ILD 1800-10	ILD 1800-20	ILD 1800-50	ILD 1800-100	ILD 1800-200
Measuring range	2 mm (.08")	10 mm (.4")	20 mm (.8")	50 mm (2")	100 mm (4")	200 mm (8")
Start of measuring range	24 mm (.9")	30 mm (1.2")	40 mm (1.6")	45 mm (1.8")	70 mm (2.8")	70 mm (2.8")
Reference distance (midrange)	25 mm (1")	35 mm (1.4")	50 mm (2")	70 mm (2.7")	120 mm (4.7")	170 mm (6.69")
End of measuring range	26 mm (1")	40 mm (1.6")	60 mm (2.4")	95 mm (3.7")	170 mm (6.7")	270 mm (10.63")
Spot diameter (minimum)	35 $\mu$ m (at MMR)	50 $\mu$ m (at MMR)	45 $\mu$ m (at MMR)	55 $\mu$ m (at MMR)	60 $\mu$ m (at MMR)	1300 $\mu$ m (at SMR)
Linearity	2 $\mu$ m	8 $\mu$ m	16 $\mu$ m	40 $\mu$ m	80 $\mu$ m	200 $\mu$ m
	$\pm 0.1$ % FSO	$\pm 0.08$ % FSO				$\pm 0.1$ % FSO
Resolution	DC to 5 kHz	0.2 $\mu$ m	1 $\mu$ m	2 $\mu$ m	5 $\mu$ m	10 $\mu$ m
		0.01 % FSO				
Measuring rate	5 kHz					
Permissible ambient light	10,000 lx					
Light source	1 mW laser, wavelength: 670 nm (red)					
Laser safety class	Class 2 - DIN EN 60825-1 03.97 / IEC 825-1 11.93 / FDA					
Protection class	Sensor: IP 65 / Controller: IP 50					
Long term stability	0.05 % FSO/month					
Temperature stability	$\pm 0.01$ % FSO/ $^{\circ}$ C ( $\pm .005$ % FSO/ $^{\circ}$ F)					
Operating temperature	0 to 50 $^{\circ}$ C (32 to 122 $^{\circ}$ F)					
Storage temperature	-20 to 70 $^{\circ}$ C (-4 $^{\circ}$ to 158 $^{\circ}$ F)					
Output	Standard: $\pm 5$ V / Options: RS 232 or RS 485					
Supply voltage	24 VDC ( $\pm 15$ %), max. 500 mA					
Sensor cable	standard	2 m (6.5') - integrated				
extension		5 (16.5') or 10 m (33') - without additional calibration				
Controller	functions	auto zero / signal averaging				
dimensions		143 x 145 x 52 mm (5.6" x 5.6" x 2") - without mounting clips				
Weight	Sensor with cable: 0.6 kg / Controller: 1.1 kg					
Electromagnetic compatibility (EMC)	EN 50081-1 and EN 50082-2					
Vibration	2 g / 20 ... 500 Hz					
Shock	15 g / 6 ms					

FSO = Full Scale Output SMR = Start of Measuring Range MMR = Mid of Measuring Range

All specifications apply for a diffusely reflecting matt white ceramic target

optoNCDT 1800 uses a semiconductor laser with a wavelength of 670 nm (visible/red). The maximum optical output power is 1 mW. The sensor is classified as laser class II. A warning sign is attached to the sensor housing.

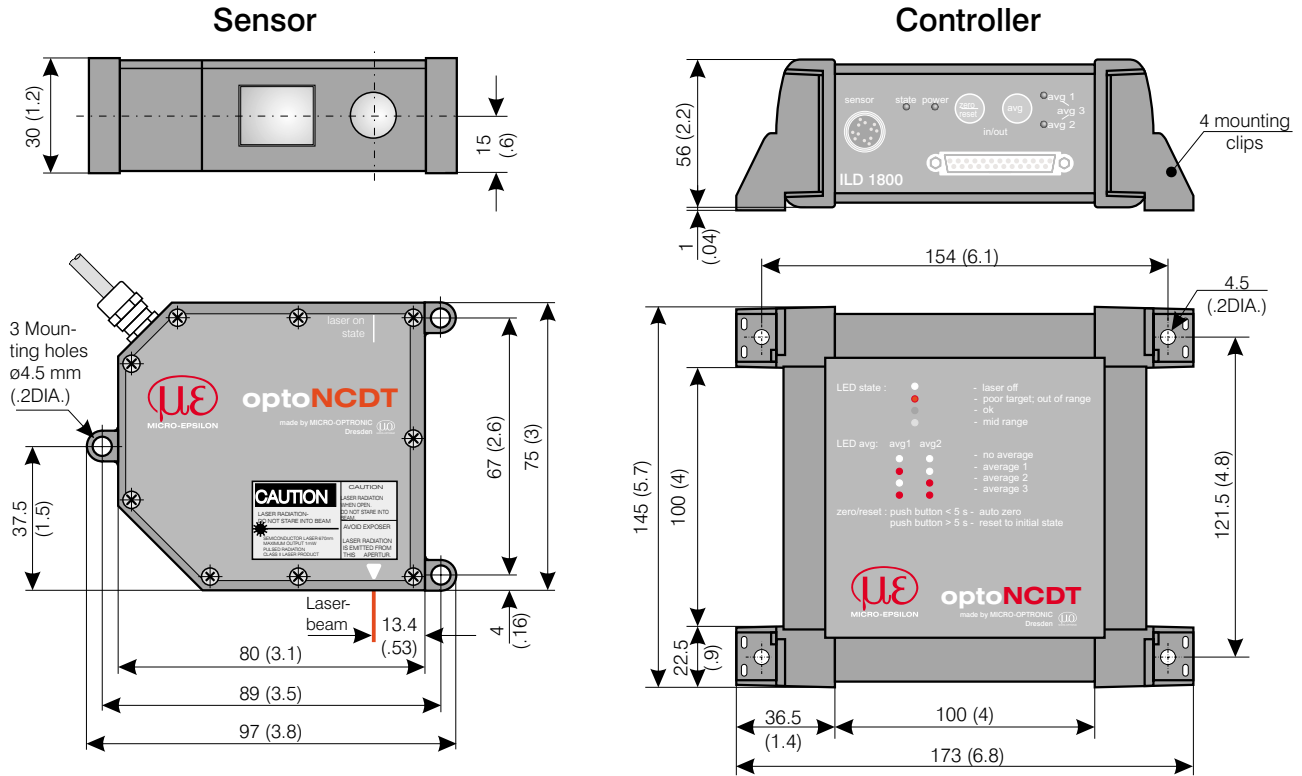


IEC - Standard



FDA - Standard

**optoNCDT 1800** Dimensions in mm (inch), not to scale



**Accessories**

**Sensor cable extension**

- CE 1800-3: 3 m (10 ') long
- CE 1800-8: 8 m (27 ') long

**Signal and output cable**

- PC 1800-3: 3 m (10 ') long

**Serial interfaces**

- RS 232 modul
- RS 485 modul
- IF 2004 (RS 485) PCI-Interface card

**PS 2010**

- Power supply for mounting on DIN-rail
- Input 230 VAC (115 VAC)
- Output 24 VDC / 2.5 A

**Dimensions:**

120 x 120 x 40 mm (4.7 " x 4.7 " x 1.6 ")

**DD 800**

Digital readout,programmable

Representative:

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Certified acc. to DIN EN ISO 9001: 1994

Modifications reserved / Y9761095-C010062MLO

# [new] long range sensor optoNCDT 1800-500



**optoNCDT 1800-500** is an optoelectronic displacement measurement system with integrated digital signal processor for long range measurement up to 700 mm distance. In a non-contact process the system measures distances against a wide variety of material surfaces. **optoNCDT 1800-500** operates according to the triangulation principle. A laser diode projects a visible light spot onto the surface of the target. Through an optical receiver unit the spot is imaged on a CCD-array. In the controller the measured values are processed digitally and made available as analog or digital output signal. The controller features an auto-zero and an averaging set key.



**CCD  
inside**

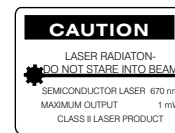
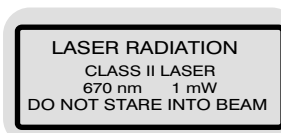
## Technical Data

Model	ILD 1800-500	
<b>Measuring range</b>	<b>500 mm (19.69 ")</b>	
Start measuring range	200 mm (7.87")	
Reference distance (midrange)	450 mm (17.72")	
End measuring range	700 mm (27.56")	
Spot diameter	1500 µm (option with smaller spot diameter available)	
<b>Linearity</b>	<b>±0.08 % FSO (± 400 µm)</b>	
<b>Resolution</b>	<b>0.01 % FSO (50 µm) at sample rate of 2.5 kHz</b>	
<b>Measuring rate</b>	<b>2.5 kHz</b>	
Permissible ambient light	10,000 lx	
Light source	1 mW laser, wavelength: 670 nm (visible/red)	
Laser safety class	Class 2 - DIN EN 60825-1 03.97 / IEC 825-1 11.93 / FDA	
Protection class	Sensor: IP 65 / Controller: IP 50	
Operating temperature	0 to 50 °C (32 to 122 °F)	
Storage temperature	-20 to 70 °C (-4° to 158 °F)	
Output	Standard: ± 5 V / Options: RS 232 or RS 485	
Supply voltage	24 VDC (±15%), max. 500 mA	
Sensor cable	standard	2 m (6.5') - integrated
	extension	5 (16.5') or 10 m (33') - without additional calibration
Controller	functions	auto zero / signal averaging
	dimensions	143 x 145 x 52 mm (5.6" x 5.6" x 2") - without mounting clips
Weight	Sensor with cable: 0.6 kg / Controller: 1.1 kg	
Electromagnetic compatibility (EMC)	EN 50081-1 and EN 50082-2	
Vibration	2 g / 20 ... 500 Hz	
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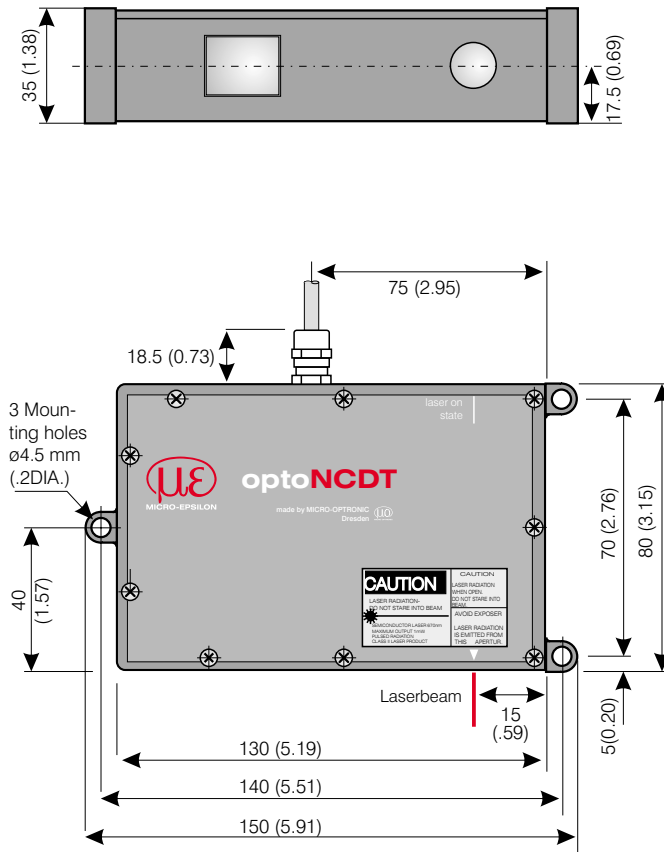


IEC - Standard

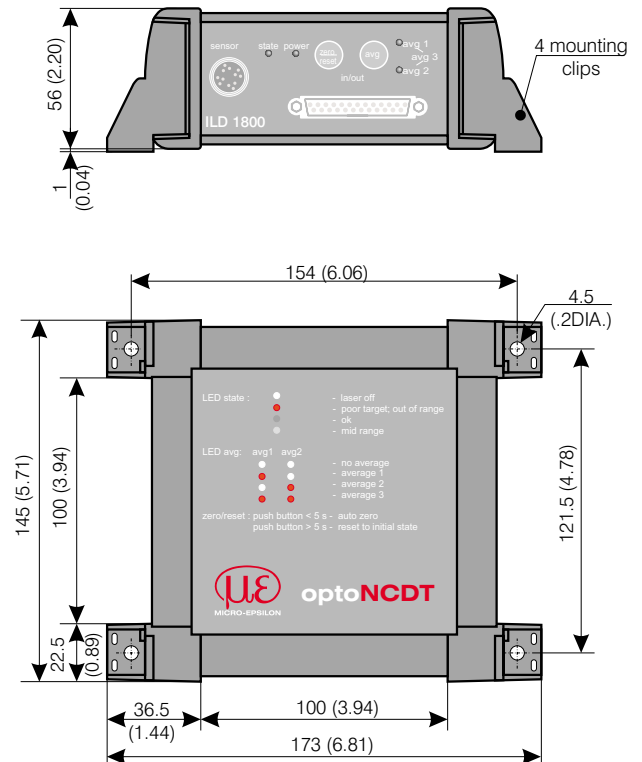
FDA - Standard

**optoNCDT 1800-500** Dimensions in mm (inch), not to scale

**Sensor**



**Controller**



**Accessories**

**Sensor cable extension**

CE 1800-3: 3 m (10 ') long

CE 1800-8: 8 m (27 ') long

**Signal and output cable**

PC 1800-3: 3 m (10 ') long

**Serial interfaces**

RS 232 module

RS 485 module

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Input 230 VAC (115 VAC)

Output 24 VDC / 2.5 A

Dimensions: 120 x 120 x 40 mm (4.7 " x 4.7 " x 1.6 ")

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Certified acc. to DIN EN ISO 9001: 1994

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