SENSORS & SYSTEMS

Authority in Displacement Measurement

MICRO-EPSILON

CCD-Precision

ILD 1800

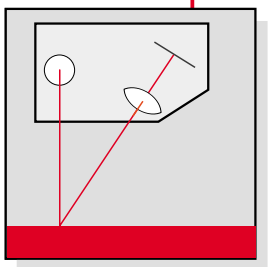
TRIANGULATION PRINCIPLE

OPTO NCDT

high accuracy and resolution

compact sensor design

5 kHz frequency



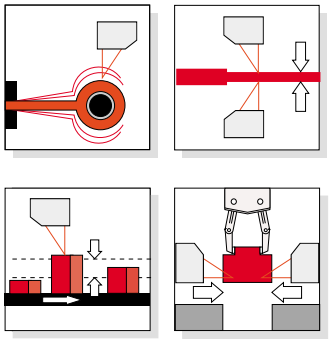
Intelligent
Laser-Optical
Displacement
Measurement

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**

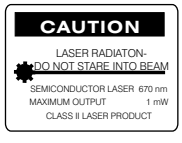
Technical Data

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 µm (at MMR)	50 µm (at MMR)	45 µm (at MMR)	55 µm (at MMR)	60 µm (at MMR)	1300 µm (at SMR)
Linearity	2 µm	8 µm	16 µm	40 µm	80 µm	200 µm
	±0.1 % FSO	**±0.08 % FSO**				**±0.1 % FSO**
Resolution DC to 5 kHz	0.2 µm	1 µm	2 µm	5 µm	10 µm	20 µm
	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	±0.01 % FSO/°C (± .005 % FSO/°F)					
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 extension	2 m (6.5') - integrated 5 (16.5') or 10 m (33') - without additional calibration					
Controller functions dimensions	auto zero / signal averaging 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 wavelengh 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.

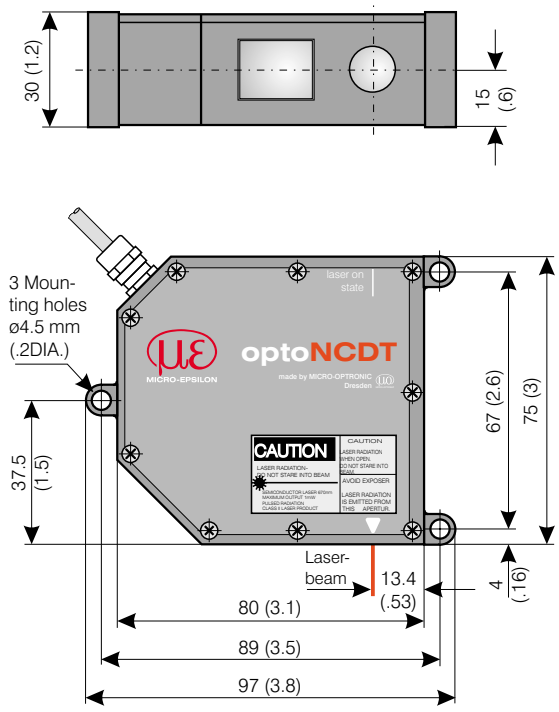
IEC - Standard



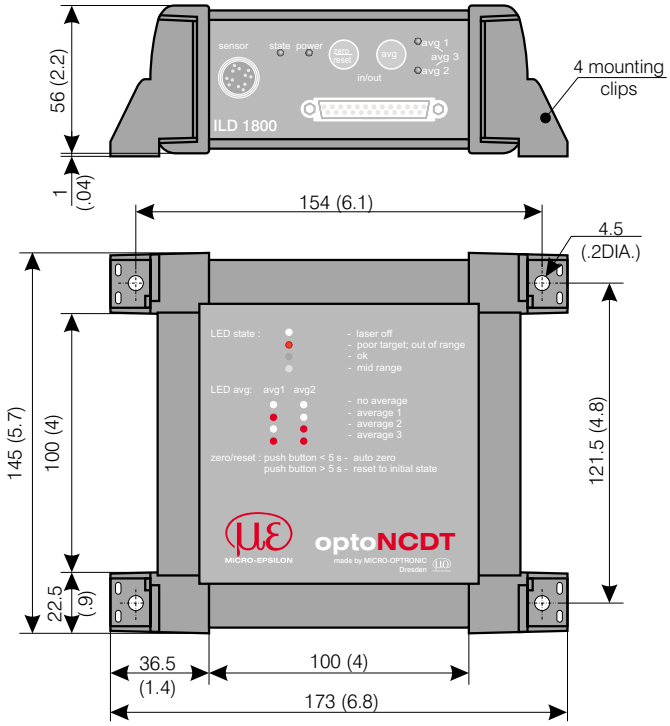
FDA - Standard

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

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 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

MICRO-EPSILON

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.

µεCCD inside

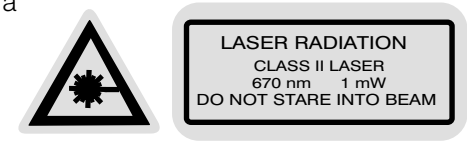
Technical Data

Model		ILD 1800-500
Measuring range		**500 mm (19.69 ")**
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)
Linearity		**±0.08 % FSO (±400 µm)**
Resolution		**0.01 % FSO (50 µm) at sample rate of 2.5 kHz**
Measuring rate		**2.5 kHz**
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 extension	2 m (6.5 ') - integrated 5 (16.5 ') or 10 m (33 ') - without additional calibration
Controller	functions dimensions	auto zero / signal averaging 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

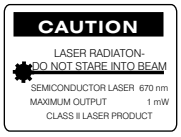
FSO = Full Scale Output

All specifications apply for a diffusely reflecting matt white ceramic target

optoNCDT 1800 uses a semiconductor laser with a wavelengh 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

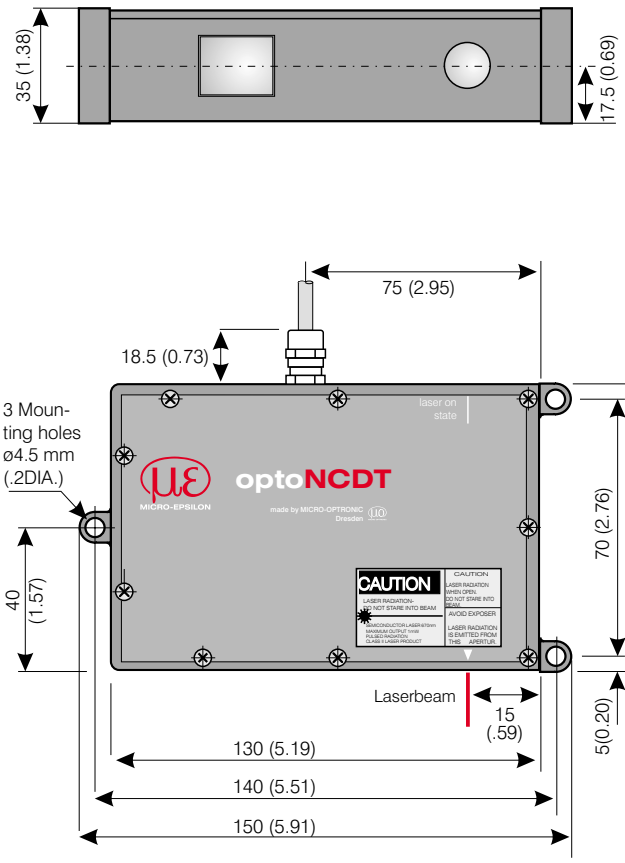


FDA - Standard

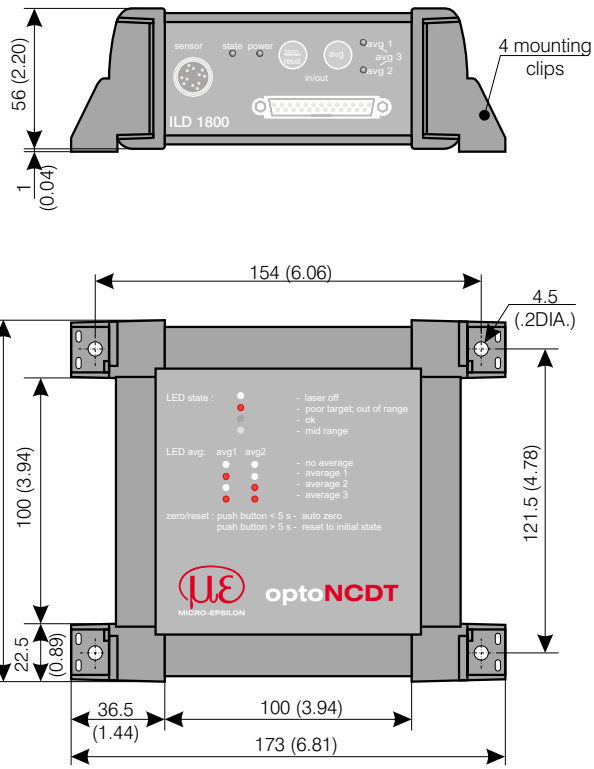
optoNCDT 1800-500

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
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

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Certified acc. to DIN EN ISO 9001: 1994

Modifications reserved / Y9761128-A020022MLO

[new] long range sensor
optoNCDT 1800-750

MICRO-EPSILON

optoNCDT 1800-750 is an optoelectronic displacement measurement system with integrated digital signal processor for long range measurement up to 950 mm distance. In a non-contact process the system measures distances against a wide variety of material surfaces. **optoNCDT 1800-750** 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.

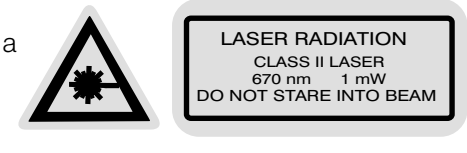
Technical Data

Model		ILD 1800-750
Measuring range		**750 mm**
Start measuring range		200 mm
Midrange		575 mm
End measuring range		950 mm
Spot diameter		1500 µm
Linearity		**±0.1 % FSO (±750 µm)**
Resolution		**0.01 % FSO (75 µm) with 2.5 kHz measuring rate**
Measuring rate		**2.5 kHz**
Permissible ambient light		10,000 lx
Light source		1 mW Laser, wavelength: 670 nm (red)
Laser protection 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 temperatur		-20 to 70 °C (-4 to 158 °F)
Output		standard: ±5 V / option: RS 232 or RS 485
Supply voltage		24 VDC (± 15 %), max. 500 mA
Sensor cable	standard extension	2 m - integrated 5 or 10 m - without additional calibration
Controller	functions dimensions	auto zero / signal averaging 143 x 145 x 52 mm - without mounting clips
Weight		sensor with cable: 0.6 kg / controller: 1.1 kg
Electromagnetic compability (EMC)		EN 50081-1 und EN 50082-2
Vibration		2 g / 20 ... 500 Hz
Shock		15 g / 6 ms

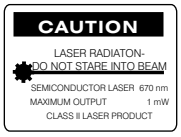
FSO = Full Scale Output

All specifications apply for a diffusely reflecting matt white ceramic target
All data are preliminary, modifications reserved..

optoNCDT 1800 uses a semiconductor laser with a wavelengh 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.



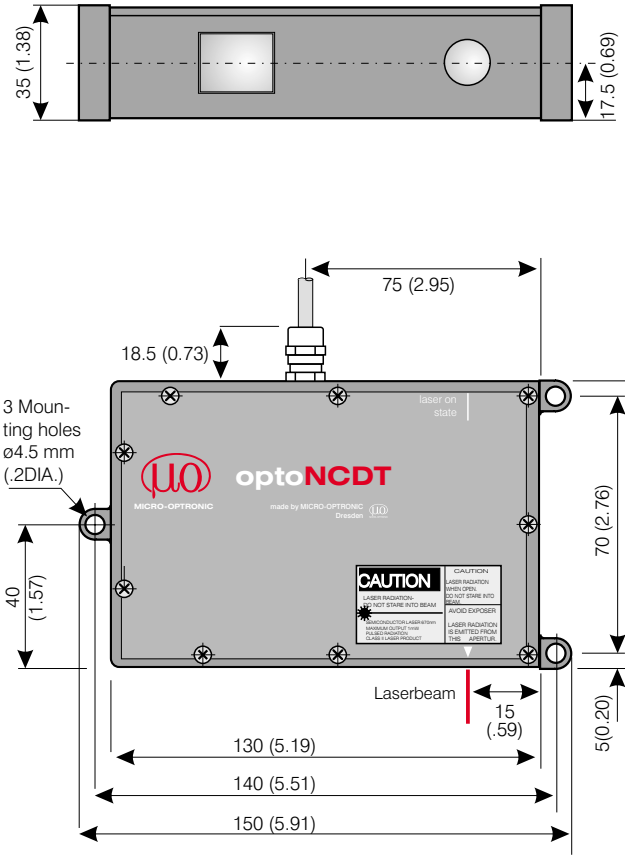
IEC - Standard



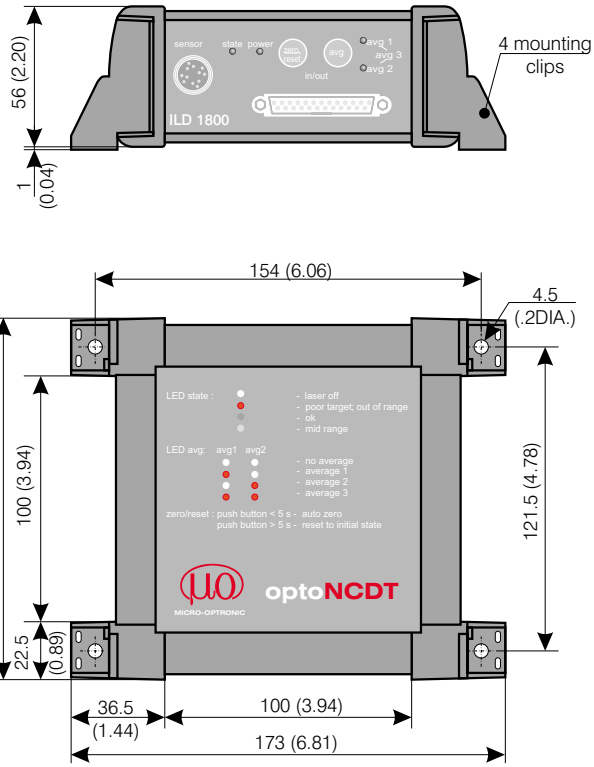
FDA - Standard

optoNCDT 1800-750 dimensions in mm, 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
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

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certified DIN EN ISO 9001: 1994

[new] long range sensor
optoNCDT 1810-50

MICRO-EPSILON

Large base distance with a small measurement range

The optoNCDT 1810-50 is an optoelectronic displacement measurement system for large measuring distances with high accuracy. It measures distances to a wide spectrum of material surfaces without making physical contact.

In contrast to conventional laser triangulation displacement sensors, the optoNCDT 1810 measures targets which are located at a long distance from the sensor. This is of particular advantage with measurements for which the sensor cannot be mounted in the immediate vicinity of the target. This may be for special constraints or also due to ambient conditions (e.g. hot surfaces).

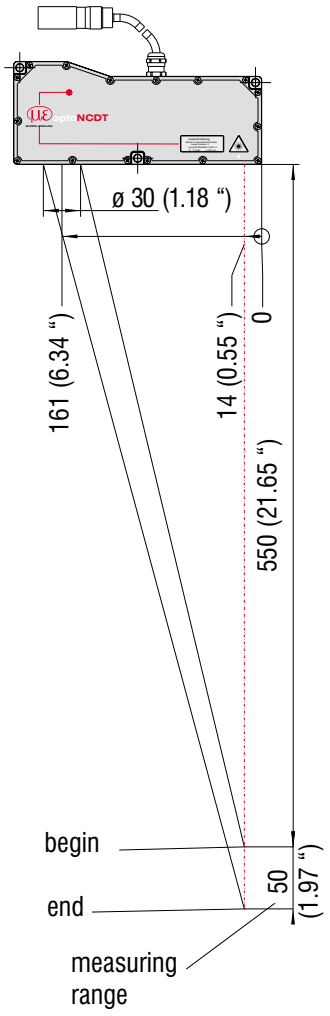
The sensor operates with a high resolution CMOS array and can compensate the effects of varying surfaces very quickly.

Technical Data

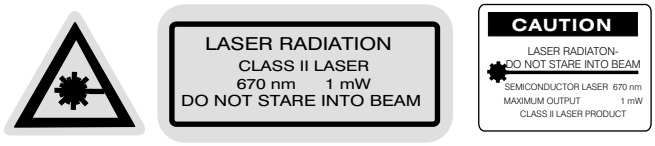
Model		ILD 1810-50
Measuring range		**50 mm (1.97 ")**
Start of measuring range		550 mm (21.65 ")
Mid range		575 mm (22.64 ")
End of measuring range		600 mm (23.62 ")
Spot diameter		appr. 400 x 500 µm
Linearity		**±0.1 % FSO (±50 µm)**
Resolution		**0.01 % FSO. (5 µm) at measuring rate 2.5 kHz**
Measuring rate		**2.5 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 : 2001-11
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 °C)
Output		standard: ± 5 V (-10 V ... + 10 V) / option: RS 232 or RS 485
Power supply		24 VDC (±15 %), max. 500 mA
Sensor cable	standard extension	2 m - integrated 5 or 10 m - without additional calibration
Controller	functions dimensions	auto zero / signal averaging 143 x 145 x 52 mm (5.6" x 5.6" x 2 " - without mounting clips
Weight		sensor with cable: 0.8 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

All specifications apply for a diffusely reflecting matt white ceramic target



optoNCDT 1800 uses a semiconductor laser with a wavelengh 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.

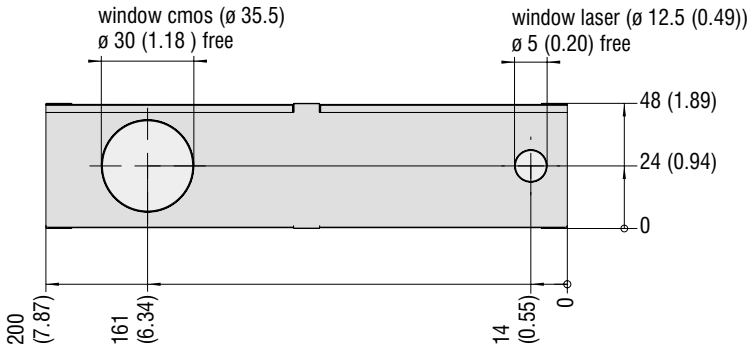


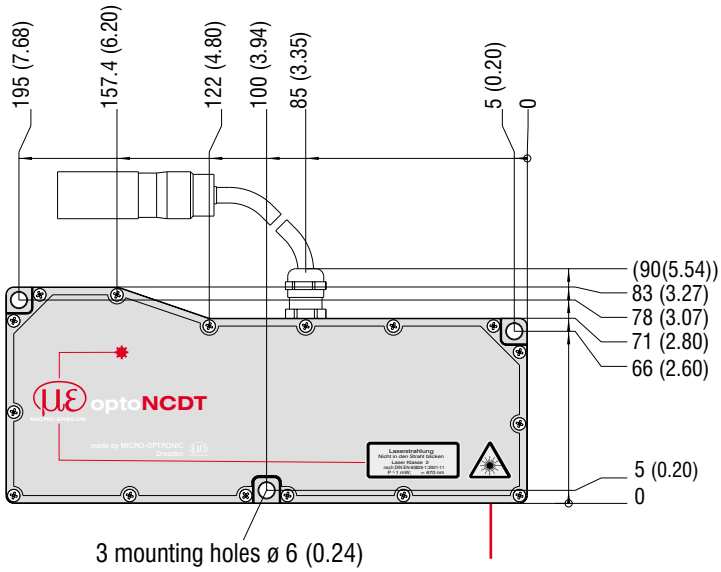
IEC - Standard

FDA - Standard

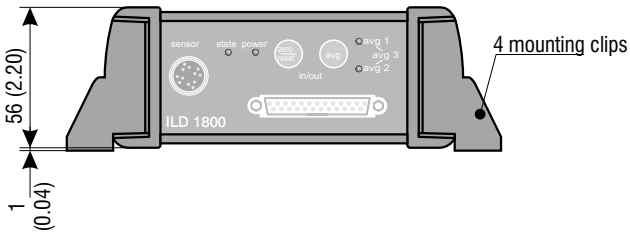
optoNCDT 1810-50 Dimensions in mm (inch), not to scale

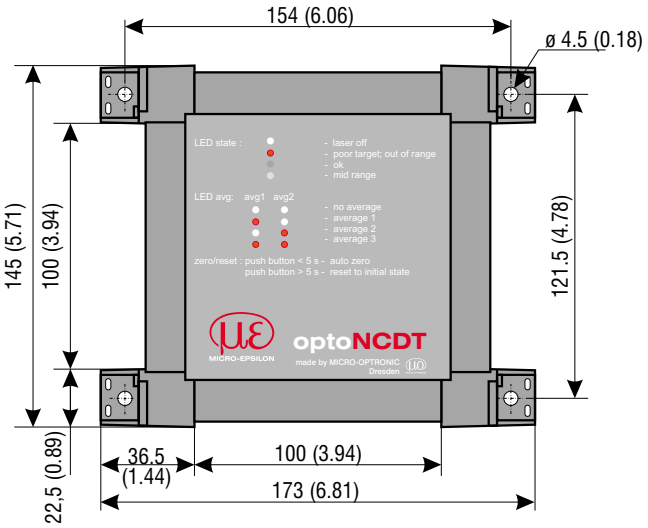
Sensor





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 422 module
IF 2004 (RS 422) PCI-Interface card
for 4 sensors or 3 sensors + 1 encoder

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

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