

# More Precision.



## optoNCDT 1700 - The industry standard. The benchmark in CCD laser measurement

The optoNCDT 1700 series is truly a world leading laser displacement sensor. The real time surface compensation RTSC, remote software programming, excellent linearity and resolution are not matched at this price level. The device also has a very compact footprint as all the conditioning electronics are integrated into the head.

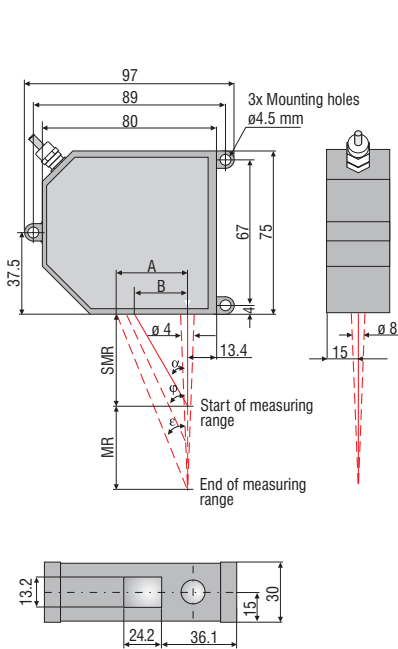
Model		ILD 1700- 2	ILD 1700- 10	ILD 1700- 20	ILD 1700- 40	ILD 1700- 50	ILD 1700- 100	ILD 1700- 200	ILD 1700- 250VT	ILD 1700- 500	ILD 1700- 750
Measuring range		2 mm	10 mm	20 mm	40 mm	50 mm	100 mm	200 mm	250 mm	500 mm	750 mm
Start of measuring range	SMR	24 mm	30 mm	40 mm	175 mm	45 mm	70 mm	70 mm	70 mm	200 mm	200 mm
Midrange	MMR	25 mm	35 mm	50 mm	195 mm	70 mm	120 mm	170 mm	195 mm	450 mm	575 mm
End of measuring range	EMR	26 mm	40 mm	60 mm	215 mm	95 mm	170 mm	270 mm	320 mm	700 mm	950 mm
Linearity		2 $\mu$ m	8 $\mu$ m	16 $\mu$ m	32 $\mu$ m	40 $\mu$ m	80 $\mu$ m	200 $\mu$ m	630 $\mu$ m	400 $\mu$ m	750 $\mu$ m
		$\pm$ 0.1% FSO	$\pm$ 0.08% FSO					$\pm$ 0.1% FSO	$\pm$ 0.25% FSO	$\pm$ 0.08% FSO	$\pm$ 0.1% FSO
Resolution (at 2.5 kHz without averaging)		0.1 $\mu$ m	0.5 $\mu$ m	1.5 $\mu$ m	4 $\mu$ m	3 $\mu$ m	6 $\mu$ m	12 $\mu$ m	50 $\mu$ m	30 $\mu$ m	50 $\mu$ m
Measuring rate		2.5 kHz / 1.25 kHz / 625 Hz / 312.5 Hz (adjustable)									
Light source		semiconductor laser <1 mW, 670 nm (red)									
Permissible ambient light	at 2.5 kHz	10,000 lx							15,000 lx	10,000 lx	
Laser safety class		class 2 acc. DIN EN 60825-1 : 2001-11									
Spot diameter	SMR	80 $\mu$ m	110 $\mu$ m	320 $\mu$ m	230 $\mu$ m	570 $\mu$ m	740 $\mu$ m	1300 $\mu$ m	1500 $\mu$ m	1500 $\mu$ m	1500 $\mu$ m
	MMR	35 $\mu$ m	50 $\mu$ m	45 $\mu$ m	210 $\mu$ m	55 $\mu$ m	60 $\mu$ m	1300 $\mu$ m	1500 $\mu$ m	1500 $\mu$ m	1500 $\mu$ m
	EMR	80 $\mu$ m	110 $\mu$ m	320 $\mu$ m	230 $\mu$ m	570 $\mu$ m	700 $\mu$ m	1300 $\mu$ m	1500 $\mu$ m	1500 $\mu$ m	1500 $\mu$ m
Temperature stability*		0.025% FSO/ $^{\circ}$ C	0.01 % FSO/ $^{\circ}$ C						0.025% FSO/ $^{\circ}$ C	0.01 % FSO/ $^{\circ}$ C	
Operation temperature		0 ... +50 $^{\circ}$ C									
Storage temperature		-20 ... +70 $^{\circ}$ C									
Output	measurements	selectable: 4 ... 20 mA / 0 ... 10 V / RS 422 / USB (optional with cable PC1700-3/USB)									
	switching outputs	1 x error or 2x limit (each programmable)									
Switch Input		laser ON-OFF / zero									
Operation		via touch screen on sensor or via PC with sensorCONFIG									
Power supply		24 VDC (11 ... 30 VDC), max. 150 mA									
Electromagnetic compatibility (EMC)		EN 61000-6-3 EN 61000-6-2									
Sensor cable length (with connector)		0.25 m (integrated cable with connector) option: 3 m or 10 m									
Synchronization		possible for simultaneous or alternating measurements									
Protection class		IP 65									
Vibration		2 g / 20 ... 500 Hz									
Shock		15 g / 6 ms									
Weight (with 0.25 cm cable)		~ 550 g			~ 600 g		~ 550 g			~ 600 g	

FSO = Full Scale Output All specifications apply for a diffusely reflecting white ceramic target

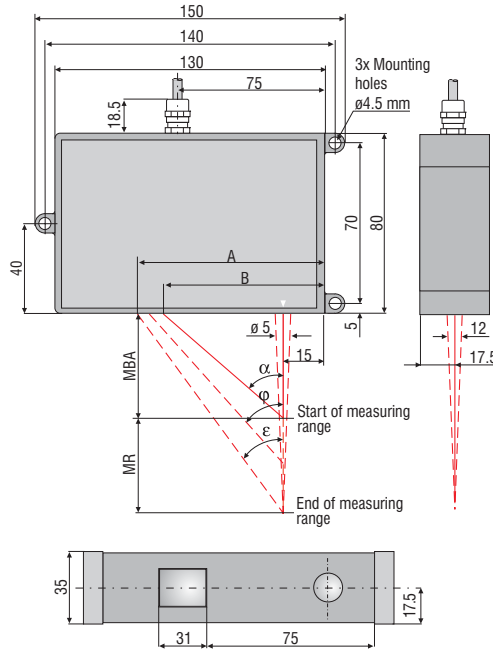
\*based on digital output SMR = Start of measuring range MMR = Midrange EMR = End of measuring range

# optoNCDT 1700 dimensions and accessories

optoNCDT 1700 (2/10/20/50/100/200/250VT)



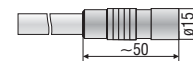
optoNCDT 1700 (40/500/750)



MR	SMR	$\alpha$	$\varphi$	$\varepsilon$	A	B
2	24	35°	40°	44.8°	25.8	16.8
10	30	34.3°	35.2°	35.6°	28.7	20.5
20	40	28.8°	27.5°	26.7°	30.1	22.0
50	45	26.5°	23.0°	18.3°	31.5	22.5
100	70	19.0°	15.4°	10.9°	32.6	24.1
200	70	19.0°	9.78°	6.97°	33.1	24.1
40	175	22.1°	21.9°	21.8°	101	86
500	200	19.3°	9.8°	7.0°	101	85
750	200	19.3°	7.7°	5.0°	101	85

(Dimensions in mm, not to scale.  
CAD files are available online)

Cable connector (sensorsided)



## Accessories optoNCDT 1700

### Supply and output cable

- PC 1700-3 (3 m)
- PC 1700-10 (10 m)
- PC 1700-10/3/IF2004 (10 m, for use with interface-card IF2004)
- PC 1700-10/D-Sub/9-pol.
- PC 1700-3/3/USB/BNC/US (power supply converter)
- PC 1700-3/USB (3 m, with USB-RS422-converter, supply 90 ... 230 VAC)
- PC1700-3/3/USB/OE/US (3 m, with USB-RS422-converter, supply 90 ... 230 VAC)

### Power supply

- PS 2010 (for top-hat rail mounting; L/W/H 120x120x40 mm Input 115 / 230 VAC selectable; output 24 VDC / 2.5 A)

### Protection housing

- SGx 1800 (for models ILD 1700-2/10/20/50/100/200/250VT)
- SGx 2200-200 (for models ILD 1700-40/500/750)
- SGxF 1800 (option with compressed air clean setup)
- SGxF 2200-200 (option with compressed air clean setup)

### Interface-card

- IF2004 (RS422 PCI-interface-card for PC for 1-4 sensors optoNCDT or 3 sensors and 1 encoder)

### External Trigger

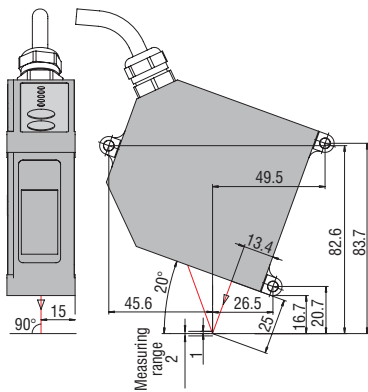
- Triggerbox 1700 (Electronics for triggering optoNCDT 1700 sensors. Acceptable trigger levels are from +2.4 VDC to +24 VDC, L/W/H 98x64x34 mm)

### Display

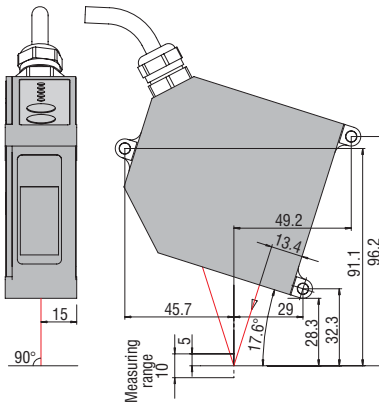
- CSP301 (digital processing and readout unit, programmable for two analog outputs)

# optoNCDT 1700DR dimensions and accessories

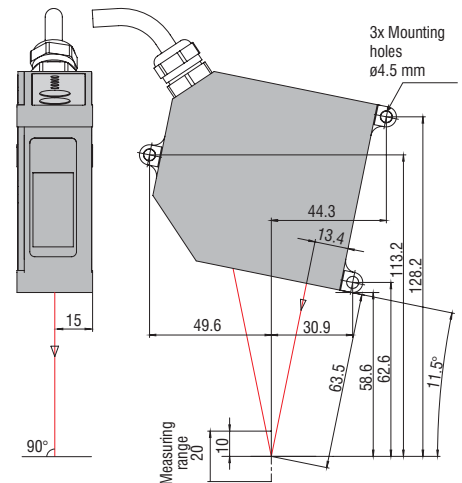
optoNCDT 1700-2DR



optoNCDT 1700-10DR

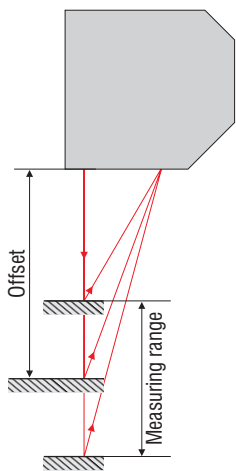


optoNCDT 1700-20DR



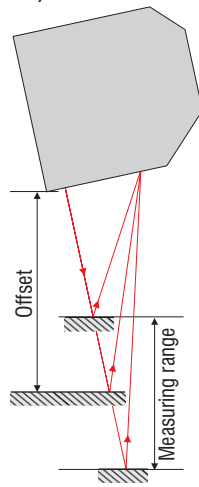
(Dimensions in mm, not to scale. CAD files are available online)

## Mounting diffuse reflection (tilt > 80°)



Diffusely reflecting surface

## Mounting direct reflection (tilt < 0.1°)



Mirror-like surface

Mounting device included in delivery.

## Accessories optoNCDT 1700DR

### Supply and output cable

- PC 1700-3 (3 m)
- PC 1700-10 (10 m)
- PC 1700-10/3/IF2004 (10 m, for use with interface-card IF2004)
- PC 1700-10/D-Sub/9-pol.
- PC 1700-3/3/USB/BNC/US (power supply converter)
- PC 1700-3/USB (3 m, with USB-RS422-converter, supply 90 ... 230 VAC)
- PC1700-3/3/USB/OE/US (3 m, with USB-RS422-converter, supply 90 ... 230 VAC)

### Power supply

- PS 2010 (for top-hat rail mounting; L/W/H 120x120x40 mm)
- Input 115 / 230 VAC selectable; output 24 VDC / 2.5 A)

### Protection housing

- SGx 1800 (for models ILD 1700-2/10/20/50/100/200/250VT)
- SGxF 1800 (option with compressed air clean setup)
- SGxF 2200-200 (option with compressed air clean setup)

### Interface-card

- IF2004 (RS422 PCI-interface-card for PC for 1-4 sensors optoNCDT or 3 sensors and 1 encoder)

### External Trigger

- Triggerbox 1700 (Electronics for triggering optoNCDT 1700 sensors. Acceptable trigger levels are from +2.4 VDC to +24 VDC, L/W/H 98x64x34 mm)

### Display

- CSP301 (digital processing and readout unit, programmable for two analog outputs)

# More Precision.



## optoNCDT 1700DR For direct reflecting targets (glass & mirrored)

optoNCDT 1700DR is designed for use with direct reflective materials such as highly polished metal and mirrored surfaces traditionally not possible to measure with laser sensors.

The sensor compensates for the high intensity of the reflected light by using patented, high speed software algorithm which dramatically reduces signal noise. Due to the algorithm's high processing speed, the sensor also measures with the same accuracy on dynamically changing surfaces.

The unit size is identical to the standard optoNCDT 1700 series and is therefore suitable for use in restricted spaces.

Model		ILD 1700-2DR	ILD 1700-10DR	ILD 1700-20DR
Measuring range		2 mm	10 mm	20 mm
Start, mid, end of Measuring range		see engineering drawing		
Linearity		2 $\mu\text{m}$	10 $\mu\text{m}$	40 $\mu\text{m}$
		$\pm 0.1\%$ FSO		$\pm 0.2\%$ FSO
Resolution (at 2.5 kHz without averaging)		0.1 $\mu\text{m}$	0.5 $\mu\text{m}$	3 $\mu\text{m}$
		14 bit		
Measuring rate		2.5 kHz / 1.25 kHz / 625 Hz / 312.5 Hz (adjustable)		
Light source		semiconductor laser <1 mW, 670 nm (red)		
Permissible ambient light		10.000 lx (at 2.5 kHz)		
Laser safety class		class 2 acc. DIN EN 60825-1 : 2001-11		
Spot diameter	SMR	80 $\mu\text{m}$	110 $\mu\text{m}$	320 $\mu\text{m}$
	MMR	35 $\mu\text{m}$	50 $\mu\text{m}$	45 $\mu\text{m}$
	EMR	80 $\mu\text{m}$	110 $\mu\text{m}$	320 $\mu\text{m}$
Temperature stability		0.025 % FSO/°C	0.01 % FSO/°C (based on digital output)	
Operation temperature		0 ... +50 °C		
Storage temperature		-20 ... +70 °C		
Output	measurements	selectable: 4 ... 20 mA / 0 ... 10 V / RS 422 / USB (option with Cable PC1700-3/USB)		
	switching outputs	1 x error or 2x limit (each programmable)		
Switch Input		laser ON-OFF / zero		
Operation		via touch screen on sensor or via PC with sensorCONFIG		
Power supply		24 VDC (11 ... 30 VDC), max. 150 mA		
Electromagnetic compatibility (EMC)		EN 61000-6-3; EN 61000-6-2		
Sensor cable length (with connector)		0.25 m (integrated cable with connector) option: 3 m or 10 m		
Synchronization		possible for simultaneous or alternating measurements		
Protection class		IP 65		
Vibration		2 g / 20 ... 500 Hz		
Shock		15 g / 6 ms		
Weight (with 25 cm cable)		appr. 550 g		

FSO = Full Scale Output All specifications apply for a diffusely reflecting white ceramic target

SMR = Start of measuring range MMR = Midrange EMR = End of measuring range