











## Laser Triangulation Displacement Sensors

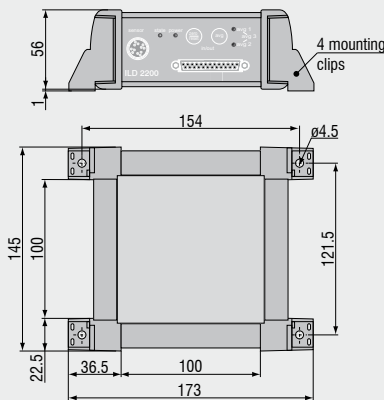




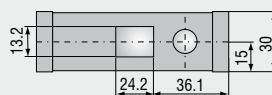
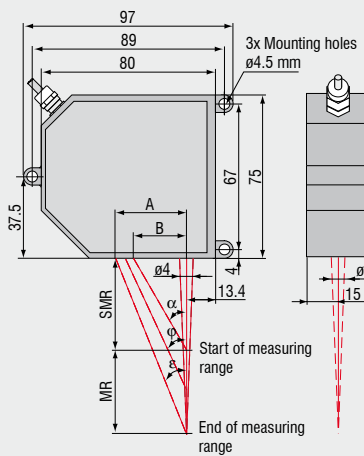
-  **Seven models with measuring ranges from 2mm to 200mm**
-  **Sensor head and separate controller**
-  **Measurement rate up to 10kHz**
-  **Real Time Surface Compensation**
-  **Analogue and digital output**
-  **Adjustable filter functions (firmware)**
-  **Calibration certificate included**
-  **Configuration via software [www.micro-epsilon.com/download](http://www.micro-epsilon.com/download)**

At the head of the Micro-Epsilon laser family stands the optoNCDT 2200 series. Extreme accuracy, high measuring rate and constant signal stability, can be achieved at maximum speed without any signal averaging. This is world's first in terms of capability, enabling the sensor to solve the most demanding measurement applications. The digital output signal can be combined with the IF2008 PCI card (also designed and supplied by Micro-Epsilon) to synchronise multiple sensors at full measurement rate for easy data acquisition direct to a PC.

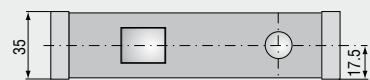
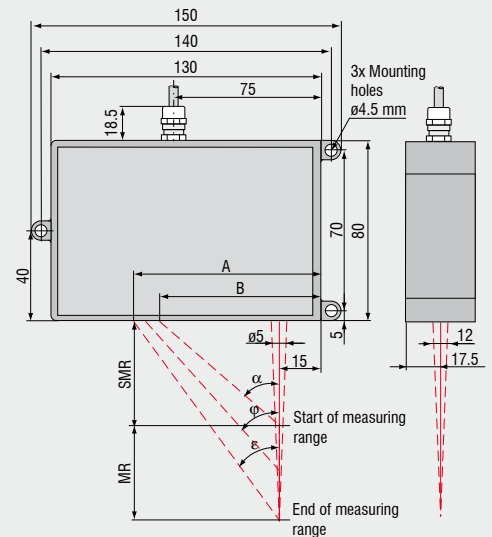
**Controller**



**optoNCDT 2200 (2/10/20/50/100mm)**



**optoNCDT 2200 (40/200mm)**



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

MR	SMR	$\alpha$	$\phi$	$\epsilon$	A	B
2	24	35.0°	40.0°	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
50	45	26.5°	23.0°	18.3°	31.5	22.5
100	70	19.0°	15.4°	10.9°	32.6	24.1
40	175	22.1°	21.9°	21.8°	101	86
200	130	25.1°	16.7°	13.1°	91.6	76

Model	ILD 2200-2	ILD 2200-10	ILD 2200-20	ILD 2200-40	ILD 2200-50	ILD 2200-100	ILD 2200-200	
Measuring range	2mm	10mm	20mm	40mm	50mm	100mm	200mm	
Start of measuring range	24mm	30mm	40mm	175mm	45mm	70mm	130mm	
Midrange	25mm	35mm	50mm	195mm	70mm	120mm	230mm	
End of measuring range	26mm	40mm	60mm	215mm	95mm	170mm	330mm	
Linearity	1 $\mu$ m $\leq 0.05\%$ FSO	3 $\mu$ m	6 $\mu$ m	12 $\mu$ m	15 $\mu$ m	30 $\mu$ m	60 $\mu$ m	
Resolution <sup>1)</sup> (at 10 kHz without averaging)	0.03 $\mu$ m	0.15 $\mu$ m	0.3 $\mu$ m	0.6 $\mu$ m	0.8 $\mu$ m	1.5 $\mu$ m	3 $\mu$ m	
Measuring rate	10kHz							
Permissible ambient light	30,000lx							
Spot diameter	SMR	80 $\mu$ m	110 $\mu$ m	160 $\mu$ m	230 $\mu$ m	215 $\mu$ m	350 $\mu$ m	1300 $\mu$ m
	MMR	35 $\mu$ m	50 $\mu$ m	60 $\mu$ m	210 $\mu$ m	80 $\mu$ m	130 $\mu$ m	1300 $\mu$ m
	EMR	80 $\mu$ m	110 $\mu$ m	160 $\mu$ m	230 $\mu$ m	215 $\mu$ m	350 $\mu$ m	1300 $\mu$ m
Light source	semiconductor laser <1mW, 670nm (red)							
Laser safety class	class 2 acc. DIN EN 60825-1/A1 12.99 / IEC 825-1/A1 12.99 / FDA							
Protection class	sensor: IP 65 / controller: IP 50							
Temperature stability	0.025% FSO/ $^{\circ}$ C	0.01% FSO/ $^{\circ}$ C						
Operation temperature	0 ... +50 $^{\circ}$ C							
Storage temperature	-20 ... +70 $^{\circ}$ C							
Output	analogue: $\pm 5V$ digital: RS 422 / 691.2kBaud							
Power supply	24VDC ( $\pm 15\%$ ), max. 500mA							
Sensor cable length	standard: 2m - integrated option: 5m/10m							
Controller	functions: auto zero / signal averaging dimensions: 143mm x 145mm x 52mm - without mounting clips							
Electromagnetic compatibility (EMC)	EN 55011/12.1998 and EN 50082-2/ 02.1996							
Vibration	2g / 20 ... 500Hz							
Shock	15g / 6ms / 3 axis							
Weight	sensor	~550g		~600g		~550g		~600g
	controller	~1000g						

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

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

<sup>1)</sup> resolution digital output 16bit

### Custom Sensor Modifications

For applications where the above standard sensors do not meet your requirements, it may be possible to supply a sensor with modified specification. Please contact us for further information.

### Options

- Non standard measuring range and stand off
- Custom housing or mounting geometry
- Measuring rate 2.5 / 5 / 10 / 20kHz
- Non standard signal interfaces
- Special cable length of electrical connector
- 90° beam deflection
- Vacuum suitability
- Reduced mass
- Increased shock and vibration resistance

## High performance sensors made by Micro-Epsilon



### Sensors and systems for displacement, position and dimension

Eddy current sensors  
Optical and laser sensors  
Capacitive sensors  
Inductive sensors  
Draw-wire sensors  
Optical micrometers  
2D/3D profile sensors  
Image processing



### Sensors and measurement devices for non-contact temperature sensors

Online instruments  
Handheld devices



### Measuring systems for quality control

for plastic and film  
for tire and rubber  
for web material  
for automotive components  
for glass