

# More Precision



## optoNCDT ILD5500-10DR

The optoNCDT ILD5500 sensors represent the high-performance class of laser triangulation sensors from Micro-Epsilon. They impress with their high measuring rate of up to 150 kHz, or 20 kHz for the EtherCAT version, over the full measuring range, while featuring a compact design with no external controller.

The DR version with a measuring range of 10 mm is specially designed for reflective surfaces such as mirror-like wafers, glossy plastics, mirror glass or polished metals. The sensor must be mounted at an angle of 22.5° so that the angle of incidence of the laser equals the angle of reflection. This ensures high measurement accuracy and signal stability.



| General technical data                        |           | ILD5500-10DR(202)                                                                                                                                                                                                                                                                                                                             | ILD5500-10DR-EtherCAT(203)                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measuring rate <sup>[1]</sup>                 |           | 0,25 kHz ... 150 kHz                                                                                                                                                                                                                                                                                                                          | 0,25 kHz ... 20 kHz                                                                                                                                                                                                                                                                                            |
| Light source                                  |           | Laser 670 nm                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                |
| Laser class                                   |           | Class 2 in accordance with IEC 60825-1: 2022-07                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                |
| Supply voltage                                |           | 12 ... 30 VDC                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                |
| Power consumption                             |           | max. 5 W                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                |
| Signal input                                  |           | Laser on/off, sync in, trigger/MFI in, 1 encoder (A+, A-, B+, B-, Index)   2 encoders (A+, A-, B+, B-)                                                                                                                                                                                                                                        | Laser on/off                                                                                                                                                                                                                                                                                                   |
| Digital interface <sup>[2]</sup>              |           | Ethernet (32 bit), RS422 (32 or 18)                                                                                                                                                                                                                                                                                                           | EtherCAT                                                                                                                                                                                                                                                                                                       |
| Analog output                                 |           | 4 ... 20 mA / 0 ... 5 V / 0 ... 10 V                                                                                                                                                                                                                                                                                                          | No analog output available                                                                                                                                                                                                                                                                                     |
| Switching output                              |           | 1 or 2 switching outputs (error & limit value): npn, pnp, push pull                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                |
| Connection                                    |           | Sensor with 3 m integrated cable with open ends and RJ45 connector; or integrated pigtail 0.3 m with 24-pin M16 plug                                                                                                                                                                                                                          | integrated pigtail 0.3 m with 12-pin M12 plug; optional extension to 3 m / 6 m / 9 m / 15 m (see accessories for suitable connection cables)                                                                                                                                                                   |
| Mounting                                      |           | Support points with locating holes for centering sleeves for reproducible clamping of the sensor 2 x M4 direct or M3 bolt connection                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                |
| Temperature range                             | Storage   | -20 ... 70 °C (non-condensing)                                                                                                                                                                                                                                                                                                                | -20 ... 70 °C (non-condensing)                                                                                                                                                                                                                                                                                 |
|                                               | Operation | 0 ... 50 °C (non-condensing)                                                                                                                                                                                                                                                                                                                  | 0 ... 45 °C (non-condensing)                                                                                                                                                                                                                                                                                   |
| Shock (DIN EN 60068-2-27)                     |           | 15 g / 6 ms in 3 axes                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                |
| Vibration (DIN EN 60068-2-6)                  |           | 50 g / 20 ... 500 Hz / max. displacement 3.6 mm                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                |
| Protection class (DIN EN 60529)               |           | IP67                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                |
| Material                                      |           | Aluminum housing                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                |
| Weight                                        |           | approx. 310 g (incl. pigtail); < 600 g (sensor with 3 m OE)                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                |
| Control and indicator elements <sup>[3]</sup> |           | Select & Function buttons: interface selection, mastering (zero), teaching, presets, quality slider, frequency selection, factory setting; web interface for setup: application-specific presets, peak selection, video signal, freely selectable averaging, data reduction, setup management, expert mode; 2 x color LEDs for power / status | Select key: factory settings, switching the operation mode; web interface for setup: application-specific presets, peak selection, video signal, freely selectable averaging possibilities, data reduction, setup management; 1 x color LED for power / status; 3 x color LEDs for "STATE", "RUN/SF", "ERR/BF" |
| Permissible extraneous light <sup>[4]</sup>   |           | ≥ 200,000 lx                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                |

<sup>[1]</sup> Factory setting: 4 kHz

<sup>[2]</sup> EtherNet/IP require connection via interface module IF2035 (see accessories)

<sup>[3]</sup> Access to web interface requires connection to PC

<sup>[4]</sup> ≥ 200,000 lx with background suppression | Default settings with 20 kHz measurement frequency: 50,000 lx

# optoNCDT ILD5500-10DR

| Model                                   |                        | ILD5500-10DR & ILD5500-10DR-EtherCAT (203) |
|-----------------------------------------|------------------------|--------------------------------------------|
| Measuring range                         |                        | 10 mm                                      |
| Start of measuring range                |                        | 23 mm                                      |
| Mid of measuring range                  |                        | 28 mm                                      |
| End of measuring range                  |                        | 33 mm                                      |
| Linearity <sup>[1]</sup> <sup>[2]</sup> |                        | 1,5 $\mu\text{m}$                          |
|                                         |                        | 0,015 % FSO                                |
| Repeatability <sup>[3]</sup>            |                        | < 0,008 $\mu\text{m}$                      |
| Light spot diameter <sup>[4]</sup>      | SMR                    | 85 x 200 $\mu\text{m}$                     |
|                                         | MMR                    | 60 x 75 $\mu\text{m}$                      |
|                                         | EMR                    | 130 x 250 $\mu\text{m}$                    |
|                                         | smallest $\varnothing$ | 30 x 47 $\mu\text{m}$ with 34,5 mm         |
| Temperature stability <sup>[5]</sup>    |                        | $\pm 0.005$ % FSO / K                      |

<sup>[1]</sup> Value valid only for the standard measurement range; value for median 9 + moving average 4096; Ethernet, 150 kHz, at the center of the measurement range, on a white, diffusely reflecting surface (Micro-Epsilon reference ceramic for optoNCDT sensors)

<sup>[2]</sup> Value valid with customer-side two-point linearization to the measurement object; without two-point linearization, the linearity for the DR variant is 0.06% of full scale

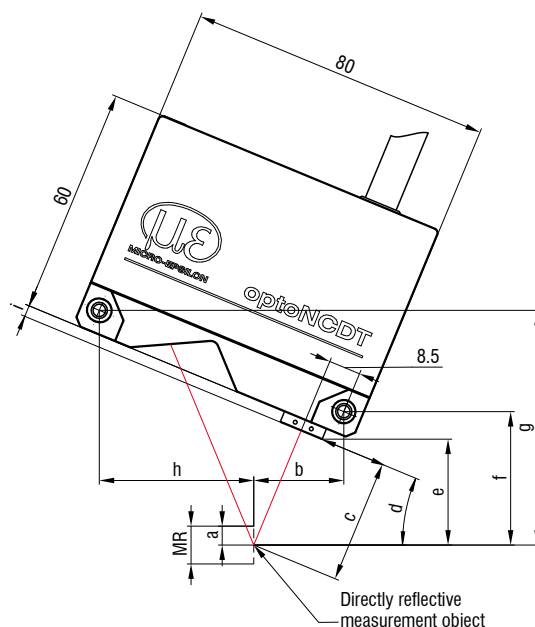
<sup>[3]</sup> Value applies only to the standard measuring range; value for median 9 + moving average 4096; Ethernet, 150 kHz, in the mid of the measuring range, on white, diffuse reflecting surfaces (Micro-Epsilon reference ceramic for optoNCDT sensors)

<sup>[4]</sup>  $\pm 20$  %; SMR = start of measuring range; MMR = mid of measuring range; EMR = end of measuring range; light spot diameter determined with point-shaped laser with Gaussian fit (full  $1/e^2$  width)

<sup>[5]</sup> Related to digital output in the mid of the measuring range; the specified value is only achieved by mounting on a metallic sensor holder. Good heat dissipation from the sensor to the holder must be ensured; this value is valid in the range from 20 to 50 °C

## Dimensions

(in mm, not to scale)



|              | MR | a  | b    | c    | d    | e  | f    | g    | h    | i  |
|--------------|----|----|------|------|------|----|------|------|------|----|
| Unit         | mm | mm | mm   | mm   | °    | mm | mm   | mm   | mm   | mm |
| ILD5500-10DR | 10 | 5  | 23.8 | 32.7 | 22.5 | 28 | 35.3 | 62.1 | 40.9 | 3  |