# 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 [1] | | 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 [2] | | 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<br>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 [3] | | 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;<br>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;<br>3 x color LEDs for “STATE”, “RUN/SF”, “ERR/BF” |
| Permissible extraneous light [4] | | ≥ 200,000 lx | |

[1] Factory setting: 4 kHz
[2] EtherNet/IP require connection via interface module IF2035 (see accessories)
[3] Access to web interface requires connection to PC
[4] ≥ 200,000 lx with background suppression | Default settings with 20 kHz measurement frequency: 50,000 lx

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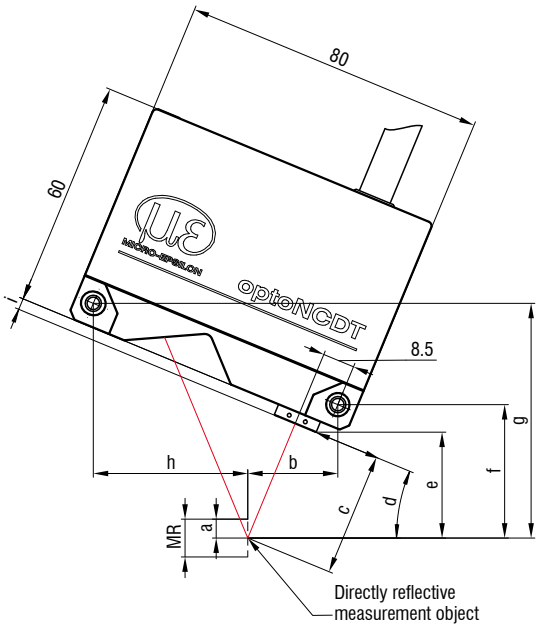
| Model | | ILD5500-10DR (202) | ILD5500-10DR-EtherCAT (203) |
|---|---|---|---|
| Measuring range | | 10 mm | |
| Start of measuring range | | 23 mm | |
| Mid of measuring range | | 28 mm | |
| End of measuring range | | 33 mm | |
| Linearity [1] [2] | | 1,5 µm | |
| | | 0,015 % FSO | |
| Repeatability [3] | | < 0,008 µm | |
| Light spot diameter [4] | SMR | 120 x 250 µm | |
| | MMR | 70 x 45 µm | |
| | EMR | 100 x 170 µm | |
| | smallest Ø | 47 x 30 µm with 35,6 mm ±0,6 mm | |
| Temperature stability [5] | | ± 0.005 % FSO / K | |

[1] Value valid only for the standard measurement range; Ethernet, 4 kHz, on a directly reflective surface (Micro-Epsilon reference mirror for optoNCDT sensors) at room temperature
[2] 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
[3] 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 directly reflective surface (Micro-Epsilon reference mirror for optoNCDT sensors) at room temperature
[4] ±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/e² width)
[5] 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 |