



# More Precision.

**optoNCDT ILR** // Laser-optical distance sensors



# High-performance laser distance sensor for industrial applications

## optoNCDT ILR2250-100

-  Large measuring range up to 100 m  
(150 m with reflector)
-  Ideal for OEM serial integration
-  Laser class 2
-  Highest signal stability on numerous surfaces
-  Compact & lightweight design
-  **INTER  
FACE** Analog / USB / RS422 /  
PROFINET / EtherNet/IP / IO-Link
-  Now also with integrated heating  
for outdoor applications



With the optoNCDT ILR2250-100, Micro-Epsilon presents a new powerful laser distance sensor. The sensor is designed for operation with or without reflector film, which is used depending on the distance and ambient conditions. The sensor measures large distances up to 100 m without contact and provides best results even on challenging (dark, structured or weakly reflecting) surfaces. The measuring range can be extended up to 150 m by attaching a reflector film to the measuring object.

Thanks to the integrated AUTO measurement mode, precise and reliable measurements can be made even on dark, partially reflecting and distant targets. A simple and fast alignment of the sensor is made possible by the integrated mounting plate with 4 set screws.

The ILR2250-100 laser distance sensors provide reliable results even under harsh conditions. They are protected against dust and splashes

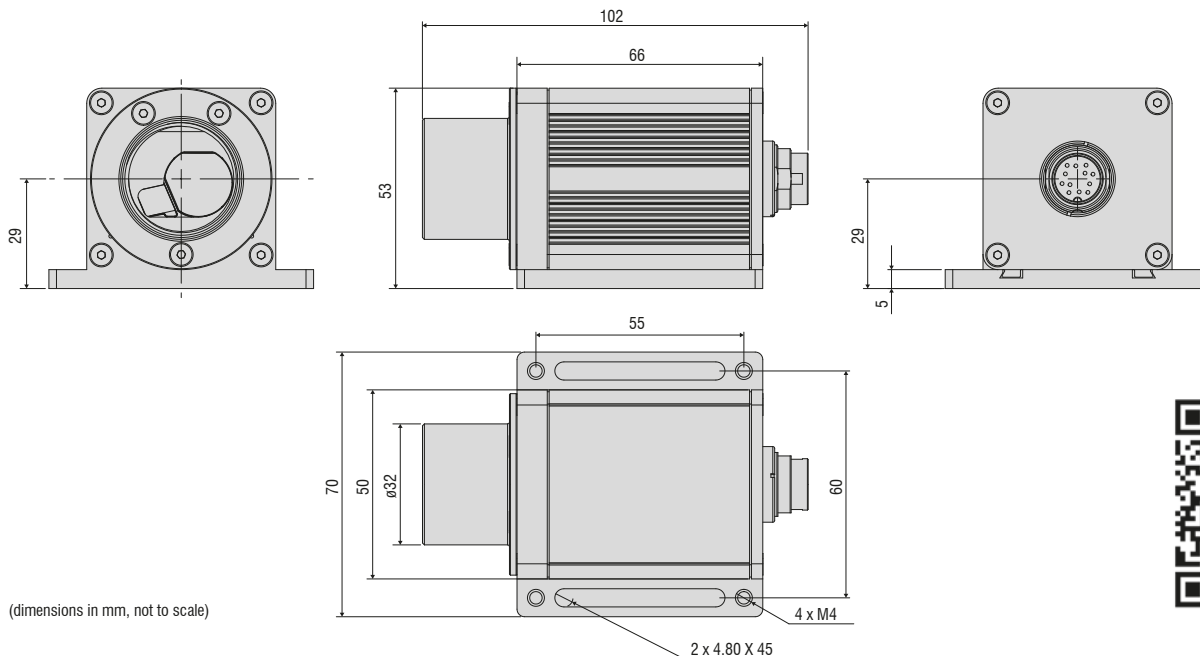
of water thanks to the robust design in an IP65 certified die-cast aluminum housing. Compact size combined with low weight opens up new fields of application particularly in factory and plant automation, as well as in drone applications for distance measurement from the air.

### New: ILR2250-100-IO with IO-Link

The ILR2250-100-IO model is equipped with an IO-Link interface. The IO-Link communication standard simplifies data communication while reducing the commissioning time of the sensor.

### New: ILR2250-100-H with integrated heating

The ILR2250-100-H option has an integrated heating and cooling element that enables operation in the temperature range of -40 °C to +65 °C. This allows the sensors to be used permanently outdoors.



| Model                           | ILR2250-100                                                                               |                                    | ILR2250-100-H                                                     | ILR2250-100-IO                                                                              |
|---------------------------------|-------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Article number                  | 7112015                                                                                   |                                    | 7112015.200                                                       | 7112016                                                                                     |
| Measuring range <sup>1)</sup>   |                                                                                           | SMR                                | EMR                                                               |                                                                                             |
|                                 | black 6 %                                                                                 | 0.05 m                             | 30 m                                                              |                                                                                             |
|                                 | gray 40 %                                                                                 | 0.05 m                             | 70 m                                                              |                                                                                             |
|                                 | white 80 %                                                                                | 0.05 m                             | 100 m                                                             |                                                                                             |
|                                 | Reflector film <sup>2)</sup>                                                              | 35 m                               | 150 m                                                             |                                                                                             |
| Measuring rate                  | 20 Hz                                                                                     |                                    |                                                                   |                                                                                             |
| Resolution                      | 0.1 mm                                                                                    |                                    |                                                                   |                                                                                             |
| Linearity                       | < ±1 mm <sup>3)</sup>                                                                     |                                    |                                                                   |                                                                                             |
| Repeatability <sup>4)</sup>     | < 300 µm                                                                                  |                                    |                                                                   |                                                                                             |
| Temperature compensation        | -10 ... +50 °C                                                                            | -40 ... +65 °C                     |                                                                   | -10 ... +50 °C                                                                              |
| Light source                    | Semiconductor laser < 1 mW, 655 nm (red)                                                  |                                    |                                                                   |                                                                                             |
| Typ. service life               | 50,000 h                                                                                  |                                    |                                                                   |                                                                                             |
| Laser class                     | Class 2 in accordance with DIN EN 60825-1: 2015-07                                        |                                    |                                                                   |                                                                                             |
| Permissible ambient light       | 50,000 lx                                                                                 |                                    |                                                                   |                                                                                             |
| Supply voltage                  | 10 ... 30 VDC                                                                             | 24 ... 30 VDC                      |                                                                   | 10 ... 30 VDC                                                                               |
| Power consumption               | < 1.5 W (24 V)                                                                            | < 10 W (24 V)                      |                                                                   | < 1.5 W (24 V)                                                                              |
| Signal input                    | Trigger                                                                                   |                                    |                                                                   | -                                                                                           |
| Digital interface               | RS422 / USB <sup>5)</sup> / PROFINET <sup>5)</sup> / EtherNet/IP <sup>5)</sup>            |                                    |                                                                   | IO-Link 1.1; process data, parameter set up and diagnostics                                 |
| Analog output                   | 4 ... 20 mA (16 bit, freely scalable within the measuring range)                          |                                    |                                                                   | -                                                                                           |
| Switching output                | Q1 / Q2 / Q3 (configurable)                                                               |                                    |                                                                   | Q1 / Q2 / Q3 (configurable)<br>included in IO-Link process data                             |
| Connector                       | Supply/signal: 12-pin M16 screw/plug connection<br>(see accessories for connection cable) |                                    |                                                                   | Supply/signal:<br>5-pin M12 screw/plug connection<br>(see accessories for connection cable) |
| Assembly                        | Screwing and adjustment on sensor base plate                                              |                                    |                                                                   |                                                                                             |
| Temperature range               | Storage                                                                                   | -25 ... +70 °C (non-condensing)    |                                                                   |                                                                                             |
|                                 | Operation                                                                                 | -10 ... +50 °C<br>(non-condensing) | -40 ... +65 °C<br>(non-condensing)                                | -10 ... +50 °C<br>(non-condensing)                                                          |
| Shock (DIN EN 60068-2-29)       | 15 g / 6 ms in 3 axes, in 3 directions, 1000 shocks each                                  |                                    |                                                                   |                                                                                             |
| Vibration (DIN EN 60068-2-6)    | 15 g / 10 ... 500 Hz in 3 axes, 10 cycles each                                            |                                    |                                                                   |                                                                                             |
| Protection class (DIN EN 60529) | IP65                                                                                      |                                    |                                                                   |                                                                                             |
| Material                        | Aluminum housing                                                                          |                                    |                                                                   |                                                                                             |
| Weight                          | approx. 265 g                                                                             | approx. 270 g                      |                                                                   | approx. 265 g                                                                               |
| Control and indicator elements  | 5x LEDs for power, signal strength and switching outputs                                  |                                    | 5x LEDs for power, signal strength, heating and switching outputs | 5x LEDs for power, signal strength and switching outputs                                    |
| Special features                | 4 measurement-specific operating modes via sensorTOOL                                     |                                    |                                                                   | 4 measurement-specific operating modes via IO-Link                                          |

SMR = Start of measuring range, EMR = End of measuring range

The specified data apply for a consistent room temperature of 20 °C, sensor is continuously in operation. Measured on white, diffuse reflecting surface (reference ceramic)

<sup>1)</sup> Depends on the reflectivity of the target, ambient light interference and atmospheric conditions

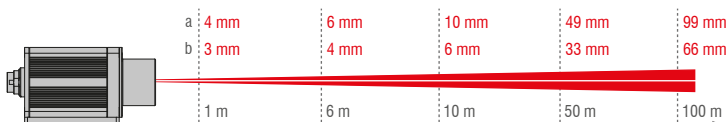
<sup>2)</sup> ILR-RF210 reflector film 210 x 297 mm; article no: 7966058

<sup>3)</sup> Measured in the range of 0.05 ... 20 m; statistical spread 2 σ

<sup>4)</sup> Measurement frequency of 20 Hz, moving average 10

<sup>5)</sup> Connection via interface module (see accessories)

#### Oval spot diameter ILR2250-100



The ILR2250 sensor works with a semiconductor laser at a wavelength of 655 nm (visible/red). Laser power is <1 mW. The sensors fall within laser class 2. Devices of this laser class require no special safety precautions.

EtherNet/IP®

PROFINET®

Analog

RS422

IO-Link  
inside

# Accessories

## optoNCDT ILR

### Accessories optoNCDT ILR103x/LC1

| Connection                                                                                                                                       | Interface modules                                                                                                    | Connection cables                                                                                                                                            | Sensor                                                                              | Accessories                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Supply/PLC<br>Power supply unit PS2031<br>Art. no.: 2420096<br> |                                                                                                                      | Supply and output cable<br>Art. no.:<br>2901232 (2 m)<br>2901233 (2 m, 90°)<br>2901234 (5 m)<br>2901235 (5 m, 90°)<br>2901268 (10 m, 90°)<br>29011248 (10 m) |  | Reflector 250 x 250 mm<br>Art. no.: 7966001<br> |
| Digital output/Ethernet<br>                                     | IF1032/ETH<br>Art. no.: 2420066<br> |                                                                             |                                                                                     |                                                                                                                                    |

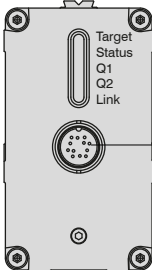
### Accessories optoNCDT ILR2250-100 / ILR2250-100-H / ILR2250-100-IO

| Connection                                                                                                                                         | Interface modules                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Connection cables                                                                                                                                                                                                                                                                                                              | Sensor                                                                                                                                                                                                                            | Accessories                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply/PLC<br>Power supply unit PS2031<br>Art. no.: 2420096<br> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Supply and output cable<br>Art. no.:<br>2901524 (3 m)<br>2901239 (3 m, 90°)<br>2901573 (5 m)<br>2901240 (5 m, 90°)<br>2901236 (10 m)<br>2901241 (10 m, 90°)<br>2901237 (20 m)<br>2901242 (20 m, 90°)<br>2901238 (30 m)<br>2901243 (30 m, 90°)                                                                                  | ILR2250-100<br>ILR2250-100-H<br>                                                                                                              | Reflector 210 x 297 mm<br>Art. no.: 7966058<br>                                                     |
| PLC Ethernet<br>                                                | IF2030 for PROFINET<br>Art. no.: 2420087<br><br><br>IF2030 for EtherNet/IP<br>Art. no.: 2420088                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                   | Air purge collar<br>Art. no.: 7966062<br>                                                           |
| Digital output/Ethernet<br>                                     | IF2001/USB<br>Art. no.: 2213025<br><br><br>IC2001/USB<br>Art. no.: 2213041<br><br><br>IF1032/ETH<br>Art. no.: 2420066<br><br><br>IF2004/USB<br>Art. no.: 2213024<br> | Art. no.:<br>29011342 (3 m)<br>29011347 (5 m)<br>29011348 (10 m)<br>29011372 (20 m)<br>2x 2901528 (0.3 m)                                                                                                                                                                                                                      |                                                                                                                                                                                                                                   | Protective glass<br>Art. no.: 7966061<br>                                                           |
| PLC Ethernet<br>                                                | IF2008/ETH for 8 sensors<br>Art. no.: 2213030<br><br><br>IO-Link master<br>                                                                                                                                                                                                                                                                | Art. no.:<br>29011107 (5 m)<br>29011398 (3 m)<br><br><br>IO-Link standard cable<br>Art. no.:<br>29011362 (5 m)<br>29011363 (10 m)<br>29011364 (15 m)<br> | ILR2250-100-IO<br>Sensor +<br>adapter cable (0.3 m) <br> | Filter glass<br>Art. no.:<br>7966063 ILR-NDF 0.75<br>7966066 ILR-NDF 0.5<br>7966068 ILR-NDF 0.9<br> |

# Accessories

## optoNCDT ILR

### Accessories optoNCDT ILR1191-300

| Connection                                                                                                                                       | Interface modules                                                                                                    | Connection cables                                                                                                                                                                                                                                                                                                                  | Assembly                                                                                                     | Accessories                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Supply/PLC<br>Power supply unit PS2031<br>Art. no.: 2420096<br> |                                                                                                                      | Supply and output cable<br>Art. no.:<br>2901524 (3 m)<br>2901239 (3 m, 90°)<br>2901573 (5 m)<br>2901240 (5 m, 90°)<br>2901236 (10 m)<br>2901241 (10 m, 90°)<br>2901237 (20 m)<br>2901242 (20 m, 90°)<br>2901238 (30 m)<br>2901243 (30 m, 90°)<br> | Electrical connections<br> | Reflector 250 x 250 mm<br>Art. no.: 7966001<br> |
| Digital output/Ethernet<br>                                     | IF2001/USB<br>Art. no.: 2213025<br> |                                                                                                                                                                                                                                                                                                                                    |                                                                                                              | Mounting plate<br>Art. no.: 7966014<br>         |
|                                                                                                                                                  | IF1032/ETH<br>Art. no.: 2420066<br> |                                                                                                                                                                                                                                                                                                                                    |                                                                                                              | Protection tube<br>Art. no.: 7966016<br>        |
|                                                                                                                                                  |                                                                                                                      |                                                                                                                                                                                                                                                                                                                                    |                                                                                                              | Alignment aid<br>Art. no.: 7966060<br>        |

## Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, position and dimension



Sensors and measurement devices for non-contact temperature measurement



Measuring and inspection systems for quality assurance



Optical micrometers, fiber optics, measuring and test amplifiers



Color recognition sensors, LED Analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection