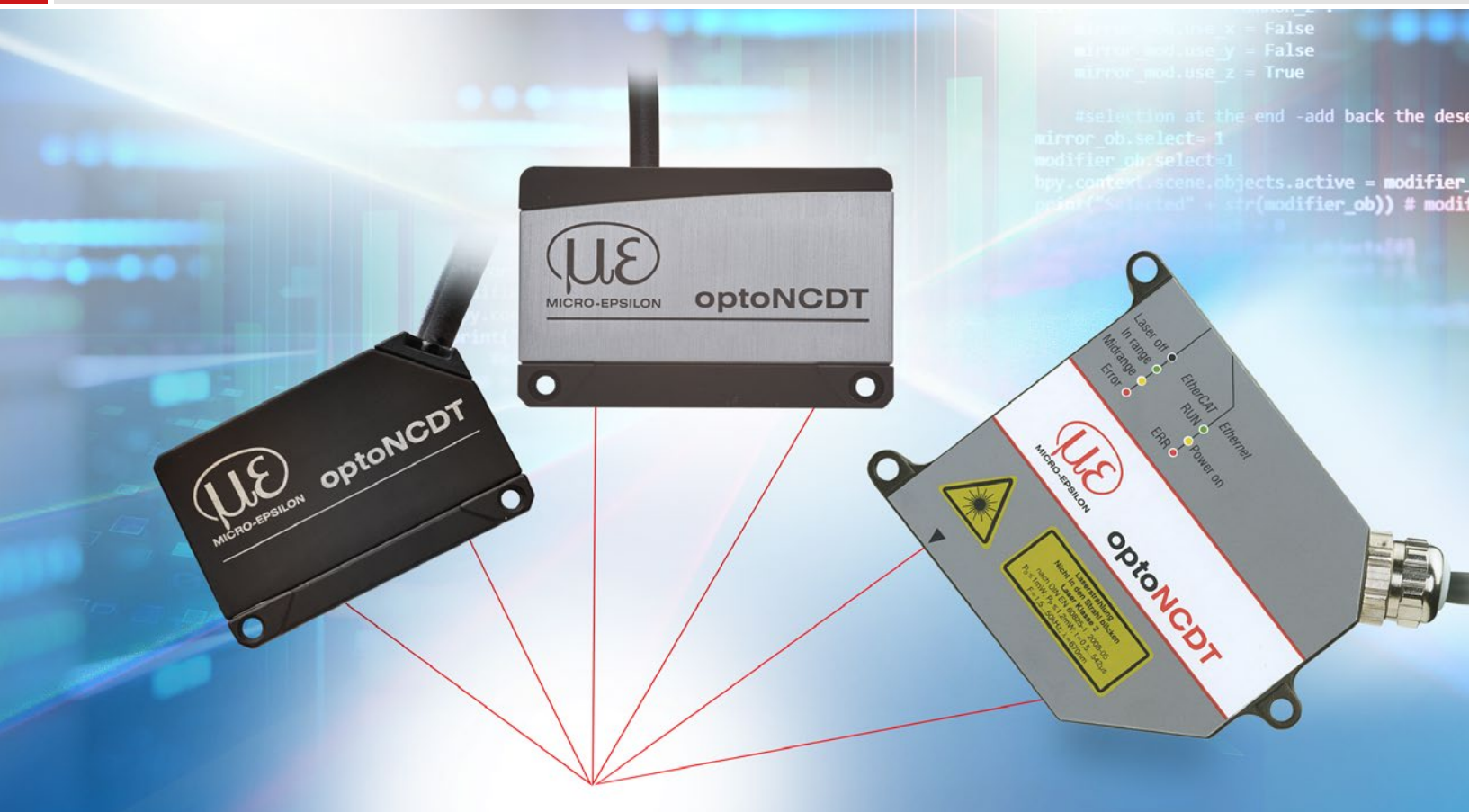




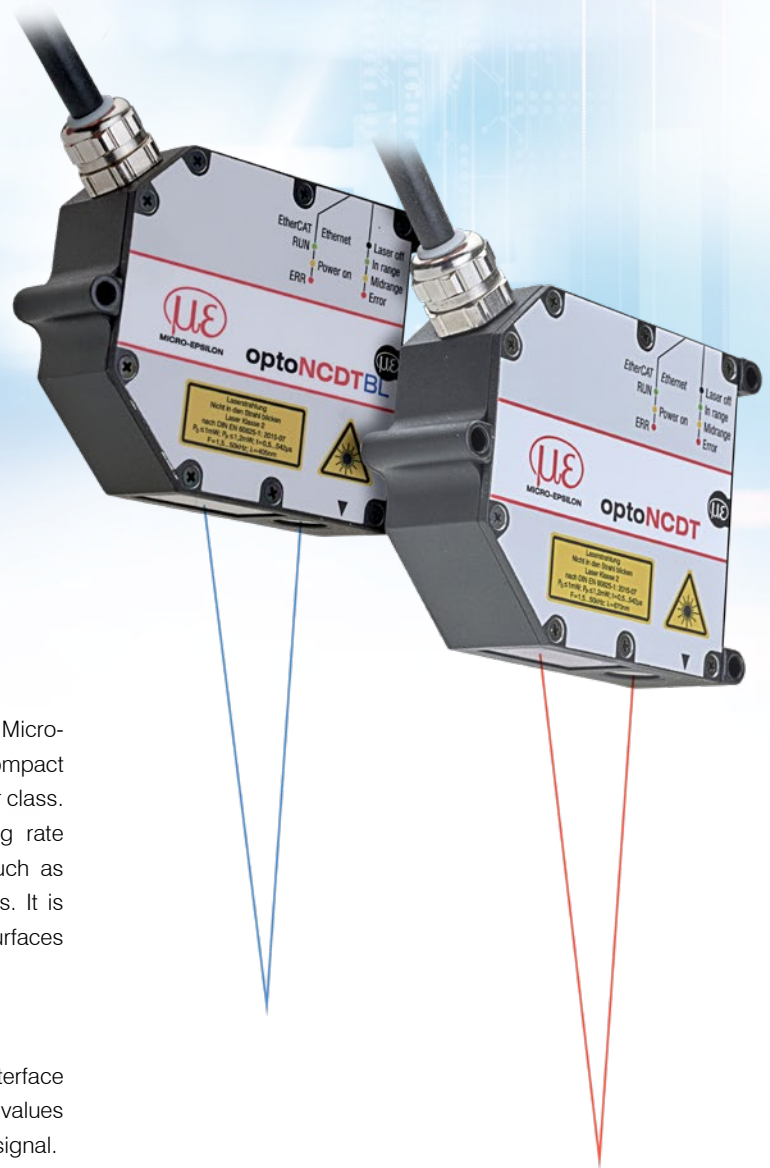
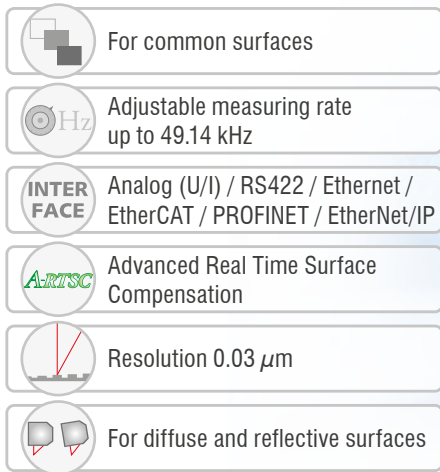
# More Precision

**optoNCDT** // Laser displacement sensors (triangulation)



# Highly dynamic laser sensors with high precision

## optoNCDT 2300



The optoNCDT 2300 sensors form the high-end segment of Micro-Epsilon laser sensors. The entire electronics is integrated in a compact sensor housing which is a worldwide unique feature of this sensor class. The high-precision laser sensor has an adjustable measuring rate of 49.14 kHz and is used for particularly fast applications, such as monitoring vibrations or measurements on challenging surfaces. It is used on diffuse reflective surfaces and for directly reflecting surfaces when equipped with the special alignment feature.

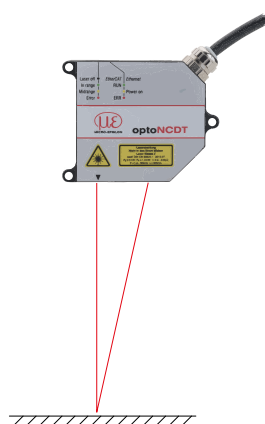
### User-friendly web interface for easy operation

The optoNCDT 2300 laser sensors can be operated via a web interface which offers multiple possibilities in order to process measured values and signals, e.g., peak selection, filter and masking of the video signal.

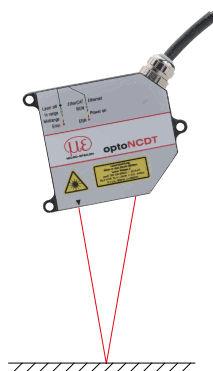
### Fast exposure control for demanding surfaces

The new A-RTSC (Advanced Real Time Surface Compensation) feature is a development based on the proven RTSC technology and, with its improved dynamic range, enables more precise real time surface compensation during the measurement process. This means the sensor is not influenced by rapidly changing surface reflections and provides stable measurement results.

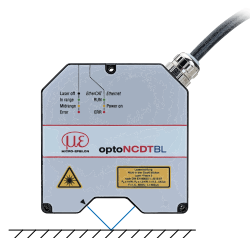
| Model             | Technology                                                                        | Measuring range | Repeatability      | Linearity   |
|-------------------|-----------------------------------------------------------------------------------|-----------------|--------------------|-------------|
| optoNCDT 2300     |  | 2 - 300 mm      | 0.03 $\mu\text{m}$ | from 0.02 % |
| optoNCDT 2300BL   |  | 2 - 50 mm       | 0.03 $\mu\text{m}$ | from 0.02 % |
| optoNCDT 2300LL   |  | 2 - 50 mm       | 0.1 $\mu\text{m}$  | from 0.02 % |
| optoNCDT 2300-2DR |  | 2 mm            | 0.03 $\mu\text{m}$ | from 0.03 % |
| optoNCDT 2310     |  | 10 - 50 mm      | 0.5 $\mu\text{m}$  | from 0.03 % |



Distance measurement on diffuse reflecting surfaces



Distance measurement on directly reflecting surfaces

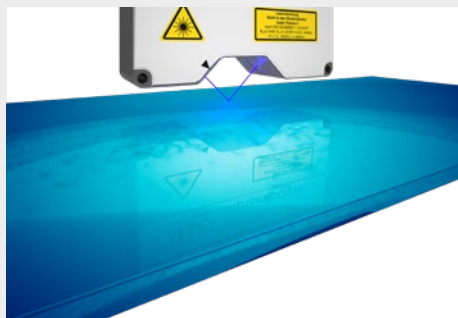


High precision distance measurement on directly reflecting surfaces

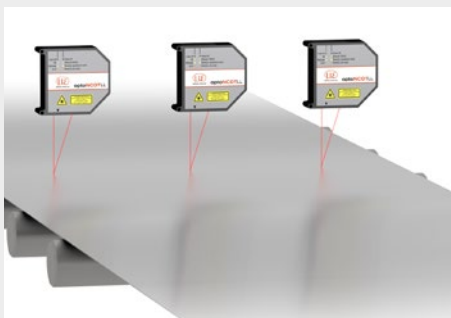
### Versatile use

The optoNCDT 2300 sensors can be operated in several measurement modes: in standard mode for distance measurement on diffusely reflecting materials. In addition, the sensors can be used for distance measurement on reflective and shiny surfaces (direct reflection).

### Application examples



Distance measurement of coated glass



Planarity testing of metal strips



Testing the radial run out of rollers

# Technical data

## optoNCDT 2300



### Laser-Line - optoNCDT 2300LL

| Model                                   |     | ILD2300-2LL           | ILD2300-10LL  | ILD2300-20LL  | ILD2300-50LL  |
|-----------------------------------------|-----|-----------------------|---------------|---------------|---------------|
| Measuring range <sup>[1]</sup>          |     | 2 (2) mm              | 10 (5) mm     | 20 (10) mm    | 50 (25) mm    |
| Start of measuring range <sup>[1]</sup> |     | 24 (24) mm            | 30 (35) mm    | 40 (50) mm    | 45 (70) mm    |
| Mid of measuring range <sup>[1]</sup>   |     | 25 (25) mm            | 35 (37.5) mm  | 50 (55) mm    | 70 (82.5) mm  |
| End of measuring range <sup>[1]</sup>   |     | 26 (26) mm            | 40 (40) mm    | 60 (60) mm    | 95 (95) mm    |
| Linearity <sup>[2]</sup>                |     | < ±0.6 µm             | < ±2 µm       | < ±4 µm       | < ±10 µm      |
|                                         |     | < ±0.03 % FSO         | < ±0.02 % FSO | < ±0.02 % FSO | < ±0.02 % FSO |
| Resolution <sup>[3]</sup>               |     | 0.03 µm               | 0.15 µm       | 0.3 µm        | 0.8 µm        |
| Light spot diameter <sup>[4]</sup>      | SMR | 85 x 240 µm           | 120 x 405 µm  | 185 x 485 µm  | 350 x 320 µm  |
|                                         | MMR | 24 x 280 µm           | 35 x 585 µm   | 55 x 700 µm   | 70 x 960 µm   |
|                                         | EMR | 64 x 400 µm           | 125 x 835 µm  | 195 x 1200 µm | 300 x 1940 µm |
| Material                                |     | Die-cast zinc housing |               |               |               |

<sup>[1]</sup> Value in brackets applies for a measuring rate of 49.14 kHz

<sup>[2]</sup> FSO = Full Scale Output

The specified data apply to white, diffuse reflecting surfaces (Micro-Epsilon reference ceramic for ILD sensors)

<sup>[3]</sup> Measuring rate 20 kHz

<sup>[4]</sup> ±10 %; SMR = Start of measuring range; MMR = Mid of measuring range; EMR = End of measuring range



### Direct reflection - optoNCDT 2300-2DR

| Model                                   |     | ILD2300-2DR/BL                                                                                                                                                                                        |
|-----------------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measuring range <sup>[1]</sup>          |     | 2 (1) mm                                                                                                                                                                                              |
| Start of measuring range <sup>[1]</sup> |     | 9 (9) mm                                                                                                                                                                                              |
| Mid of measuring range <sup>[1]</sup>   |     | 10 (9.5) mm                                                                                                                                                                                           |
| End of measuring range <sup>[1]</sup>   |     | 11 (10) mm                                                                                                                                                                                            |
| Linearity <sup>[2]</sup>                |     | < ±0.6 µm                                                                                                                                                                                             |
|                                         |     | < ±0.03 % FSO                                                                                                                                                                                         |
| Resolution <sup>[3]</sup>               |     | 0.03 µm                                                                                                                                                                                               |
| Temperature stability <sup>[4]</sup>    |     | ±0.01 % FSO / K                                                                                                                                                                                       |
| Light spot diameter <sup>[5]</sup>      | SMR | 21.6 x 25 µm                                                                                                                                                                                          |
|                                         | MMR | 8.5 x 11 µm                                                                                                                                                                                           |
|                                         | EMR | 22.4 x 23.7 µm                                                                                                                                                                                        |
| Light source                            |     | Semiconductor laser <1 mW, 405 nm (blue violet)                                                                                                                                                       |
| Power consumption                       |     | < 2 W (24 V)                                                                                                                                                                                          |
| Connection                              |     | integrated pigtail 0.25 m with 14-pin cable connector, min. bending radius 30 mm when firmly installed;<br>optional extension to 3 m / 10 m possible (see accessories for suitable connection cables) |
| Material                                |     | Aluminum housing                                                                                                                                                                                      |
| Weight                                  |     | approx. 400 g (incl. pigtail)                                                                                                                                                                         |

<sup>[1]</sup> Value in brackets applies for a measuring rate of 49.14 kHz

<sup>[2]</sup> The specified data apply to directly reflecting surfaces; FSO = Full Scale Output

<sup>[3]</sup> Measuring rate 20 kHz

<sup>[4]</sup> Relates to digital output in mid of measuring range

<sup>[5]</sup> ±10 %; 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<sup>2</sup> width)

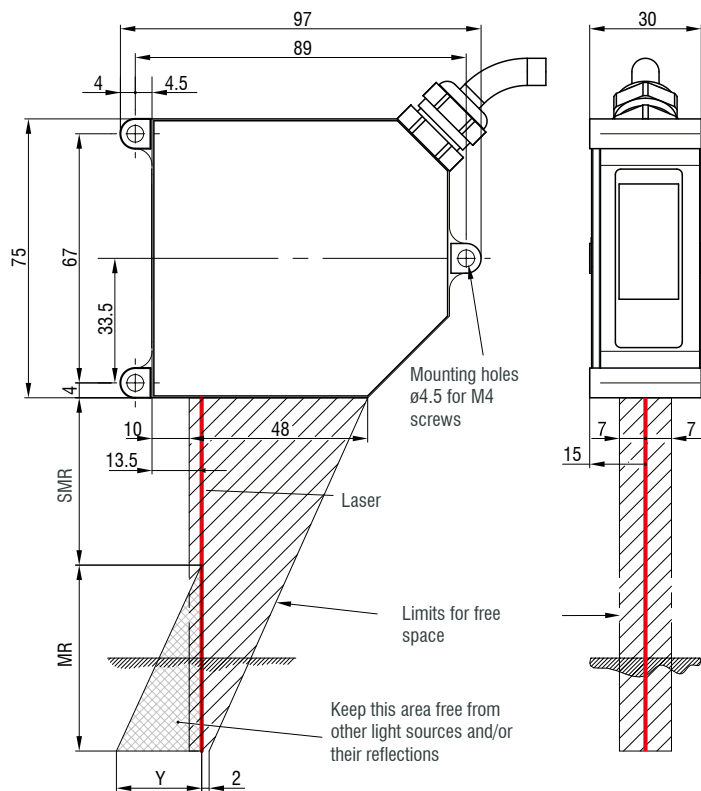
# Dimensions

## optoNCDT 2300

optoNCDT 2300 / Measuring range 2 - 100

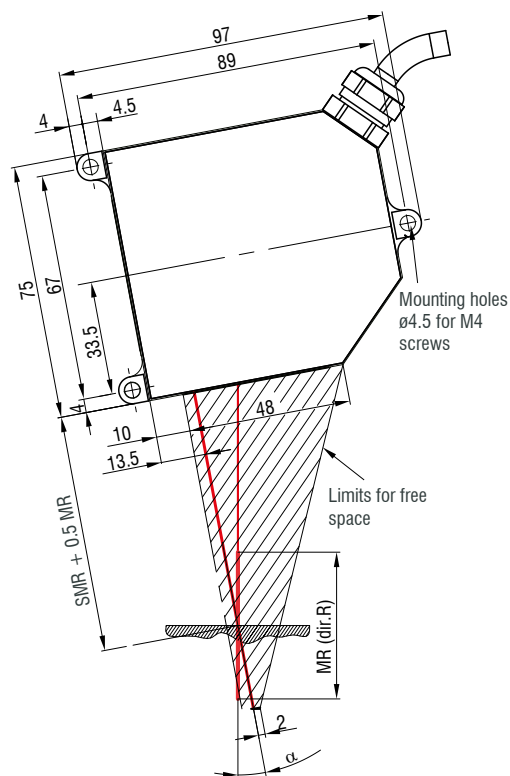
### optoNCDT 2300-2 ... 2300-100

Diffuse reflection



### optoNCDT 2300-2 ... 2300-20

Direct reflection



optoNCDT 2300 (Diffuse reflection)

optoNCDT 2300LL

optoNCDT 2300BL (Diffuse reflection)

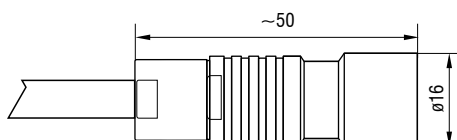
| MR  | SMR | Y    |
|-----|-----|------|
| 2   | 24  | 1.5  |
| 5   | 24  | 3.5  |
| 10  | 30  | 6.5  |
| 20  | 40  | 10.0 |
| 50  | 45  | 23.0 |
| 100 | 70  | 33.5 |

optoNCDT 2300 (Direct reflection)

optoNCDT 2300BL (Direct reflection)

| MR | SMR + 0.5 MR | α      |
|----|--------------|--------|
| 2  | 25           | 20.5 ° |
| 5  | 26.5         | 20 °   |
| 10 | 35           | 17.5 ° |
| 20 | 50           | 13.8 ° |

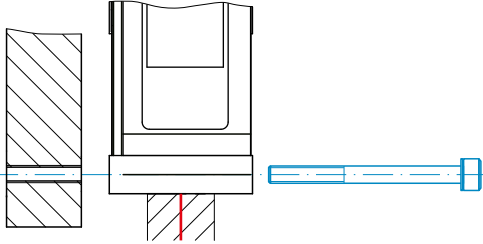
Connector (sensor side)



Installation options

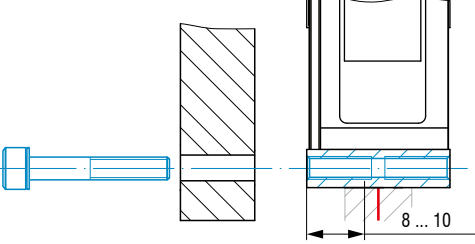
Housings M and L

**Bolt connection**



|                                                    |    |
|----------------------------------------------------|----|
| ILD2300-2 ... ILD2300-100<br>ILD2300BL / ILD2300LL | M4 |
| ILD2300-200 / -300<br>ILD2310-10 / -20 /-40        | M4 |
| ILD2310-50<br>ILD2310-50BL                         | M5 |
| ILD2300-2DR                                        | M3 |

**Direct fastening**



|                                                    |    |
|----------------------------------------------------|----|
| ILD2300-2 ... ILD2300-100<br>ILD2300BL / ILD2300LL | -  |
| ILD2300-200 / -300<br>ILD2310-10 / -20 /-40        | M5 |
| ILD2310-50<br>ILD2310-50BL                         | M6 |
| ILD2300-2DR                                        | M4 |

Accessories for optoNCDT 2300/2310

Power supply unit

PS2020 (power supply 24 V / 2.5 A, input 100 - 240 VAC, output 24 VDC / 2.5 A, mounting onto symmetrical standard rail 35 mm x 7.5 mm, DIN 50022)

Mounting plate

for easy alignment of the DR models

Protective housings

see page 60

Scope of supply

- 1 sensor ILD23x0 with 0.25 m connection cable and cable socket
- 2 laser warning signs according to IEC standard
- RJ45 short-circuit plug

Article designation

|                                                                                                                                                          |   |    |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----|
| ILD2300-                                                                                                                                                 | 6 | LL | 3R |
| <b>Laser class</b><br>No indication: class 2 (standard)<br>3R: class 3R (on request)                                                                     |   |    |    |
| <b>Laser type</b><br>No indication: Red laser point (standard)<br>LL: Laser Line<br>BL: Blue Laser<br>DR: Direct Reflection                              |   |    |    |
| <b>Measuring range</b> in mm                                                                                                                             |   |    |    |
| <b>Series</b><br>ILD2300: Highly dynamic laser sensor in the 50 kHz class<br>ILD2310: Laser sensors with small measuring range and large offset distance |   |    |    |

# Connection possibilities

## optoNCDT 2300

### Drag-chain suitable extension and adapter cables

Cable diameter: max. 7.5 mm  
 Drag chain: ja  
 Robot: no  
 Temperature range: -40 ... 70 °C (moving / not moving)  
 Bending radius: > 90 mm (fixed installation / dynamic / drag chain)

| Sensor                                                    | Cables                                                                                                                                                                                                                                                                                                                    | Type                                                                                  | Connection possibilities and accessories |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------|----------|---------------------|----------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------|
| ILD2300-xx<br>ILD2300-xxLL<br>ILD2300-xxBL<br>ILD2300-2DR | <b>Extension cable pigtail</b><br>Length 3 m / 6 m / 9 m / 15 m<br><br><table><tr><td>Art. no.</td><td>Designation</td></tr><tr><td>2901717</td><td>PC2300-3/OE</td></tr><tr><td>2901760</td><td>PC2300-6/OE</td></tr><tr><td>2901761</td><td>PC2300-9/OE</td></tr><tr><td>2901762</td><td>PC2300-15/OE</td></tr></table> | Art. no.                                                                              | Designation                              | 2901717  | PC2300-3/OE         | 2901760  | PC2300-6/OE                                                                      | 2901761                                                                               | PC2300-9/OE                                                                                         | 2901762                                                                               | PC2300-15/OE                                                                                          | Open ends                                                                             | <b>Supply voltage connection</b><br>Power supply unit PS2020 |  |
|                                                           | Art. no.                                                                                                                                                                                                                                                                                                                  | Designation                                                                           |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | 2901717                                                                                                                                                                                                                                                                                                                   | PC2300-3/OE                                                                           |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | 2901760                                                                                                                                                                                                                                                                                                                   | PC2300-6/OE                                                                           |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | 2901761                                                                                                                                                                                                                                                                                                                   | PC2300-9/OE                                                                           |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| 2901762                                                   | PC2300-15/OE                                                                                                                                                                                                                                                                                                              |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | <b>Interface module of RS422 to USB</b><br>IF2001/USB                                                                                                                                                                                                                                                                     |    |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | <b>Interface module for Industrial Ethernet connection</b><br>IF2035-PROFINET<br>IF2035-EIP<br>IF2035-EtherCAT                                                                                                                                                                                                            |    |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | <b>Interface card for synchronous data acquisition</b><br>IF2008PCle / IF2008E                                                                                                                                                                                                                                            |   |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | <b>4-fold interface module from RS422 to USB</b><br>IF2004/USB                                                                                                                                                                                                                                                            |  |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| ILD2310-xx                                                | <b>Adapter cable for sensor calculation</b><br>Length 3 m / 6 m / 9 m<br><br><table><tr><td>Art. no.</td><td>Designation</td></tr><tr><td>29011031</td><td>PC2300-3/C-Box/RJ45</td></tr><tr><td>29011044</td><td>PC2300-6/C-Box/RJ45</td></tr><tr><td>29011045</td><td>PC2300-9/C-Box/RJ45</td></tr></table>              | Art. no.                                                                              | Designation                              | 29011031 | PC2300-3/C-Box/RJ45 | 29011044 | PC2300-6/C-Box/RJ45                                                              | 29011045                                                                              | PC2300-9/C-Box/RJ45                                                                                 | Sub-D                                                                                 | <b>Controller for D/A conversion and evaluation of up to 2 sensor signals</b><br>Dual Processing Unit |  |                                                              |                                                                                     |
| Art. no.                                                  | Designation                                                                                                                                                                                                                                                                                                               |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| 29011031                                                  | PC2300-3/C-Box/RJ45                                                                                                                                                                                                                                                                                                       |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| 29011044                                                  | PC2300-6/C-Box/RJ45                                                                                                                                                                                                                                                                                                       |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| 29011045                                                  | PC2300-9/C-Box/RJ45                                                                                                                                                                                                                                                                                                       |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | <b>Adapter cable for sensor calculation</b><br>Length 2 m<br><br><table><tr><td>Art. no.</td><td>Designation</td></tr><tr><td>29011279</td><td>PCE2300-3/M12</td></tr></table>                                                                                                                                            | Art. no.                                                                              | Designation                              | 29011279 | PCE2300-3/M12       | M12      | <b>Interface module for Ethernet connection of up to 8 sensors</b><br>IF2008/ETH |  |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| Art. no.                                                  | Designation                                                                                                                                                                                                                                                                                                               |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| 29011279                                                  | PCE2300-3/M12                                                                                                                                                                                                                                                                                                             |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
|                                                           | <b>Adapter cable Sub-D for EtherCAT</b><br>Length 3 m / 6 m<br><br><table><tr><td>Art. no.</td><td>Designation</td></tr><tr><td>2901661</td><td>PC2300-3/SUB-D</td></tr><tr><td>2901976</td><td>PC2300-6/SUB-D</td></tr></table>                                                                                          | Art. no.                                                                              | Designation                              | 2901661  | PC2300-3/SUB-D      | 2901976  | PC2300-6/SUB-D                                                                   | Sub-D                                                                                 | <b>Signal output Ethernet, EtherCAT, RS422 to PC or PLC</b><br>PC2300-0,5Y Connection cable ILD2300 |  |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| Art. no.                                                  | Designation                                                                                                                                                                                                                                                                                                               |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| 2901661                                                   | PC2300-3/SUB-D                                                                                                                                                                                                                                                                                                            |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |
| 2901976                                                   | PC2300-6/SUB-D                                                                                                                                                                                                                                                                                                            |                                                                                       |                                          |          |                     |          |                                                                                  |                                                                                       |                                                                                                     |                                                                                       |                                                                                                       |                                                                                       |                                                              |                                                                                     |

## Connection cable for high temperature

|                    |                                                        |
|--------------------|--------------------------------------------------------|
| Cable diameter:    | max. 7.5 mm                                            |
| Drag chain:        | no                                                     |
| Robot:             | no                                                     |
| Temperature range: | -55 ... 250 °C (moving)<br>-90 ... 250 °C (not moving) |
| Bending radius:    | > 40 mm (fixed installation)<br>> 75 mm (dynamic)      |

| Sensor                                                                      | Cables                                                                                                                                                              | Type      | Connection possibilities and accessories                                                                       |                                                                                     |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| ILD2300-xx<br>ILD2300-xxLL<br>ILD2300-xxBL<br>ILD2300-2DR<br><br>ILD2310-xx | <b>Connection cable high temperatures</b><br>Length 3 m / 6 m / 9 m / 15 m                                                                                          | Open ends | <b>Connection supply voltage</b><br>PS2020                                                                     |  |
|                                                                             | <i>Art. no.</i> <i>Designation</i><br>29011118      PC2300-3/OE/HT<br>29011119      PC2300-6/OE/HT<br>29011095      PC2300-9/OE/HT<br>29011120      PC2300-15/OE/HT |           | <b>Interface module of RS422 to USB</b><br>IF2001/USB                                                          |  |
|                                                                             |                                                                                                                                                                     |           | <b>Interface module for Industrial Ethernet connection</b><br>IF2035-PROFINET<br>IF2035-EIP<br>IF2035-EtherCAT |  |
|                                                                             |                                                                                                                                                                     |           |                                                                                                                |                                                                                     |
|                                                                             |                                                                                                                                                                     |           |                                                                                                                |                                                                                     |

## Connection cable for EtherCAT operation

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Cable diameter:    | max. 7.5 mm                                         |
| Drag chain:        | yes                                                 |
| Robot:             | no                                                  |
| Temperature range: | -40 ... 70 °C (moving / not moving)                 |
| Bending radius:    | > 90 mm (fixed installation / dynamic / drag chain) |

| Input                             | Cables                                                                                                                                                 | Type                | Connection possibilities and accessories                     |                                                                                       |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Sub-D<br><br>(PC2300-x/<br>Sub-D) | <b>Adapter cable for EtherCAT</b><br>Length 0.5 m<br><br><i>Art. no.</i> <i>Designation</i><br>2901693      PC2300-0,5Y<br>Connection cable<br>ILD2300 | Open ends<br>& RJ45 | <b>Signal output EtherCAT &amp; Ethernet</b>                 |  |
|                                   |                                                                     |                     | <b>Supply voltage connection</b><br>Power supply unit PS2020 |  |
|                                   |                                                                                                                                                        |                     | <b>Interface module of RS422 to USB</b><br>IF2001/USB        |  |

# Protective housings for demanding environments

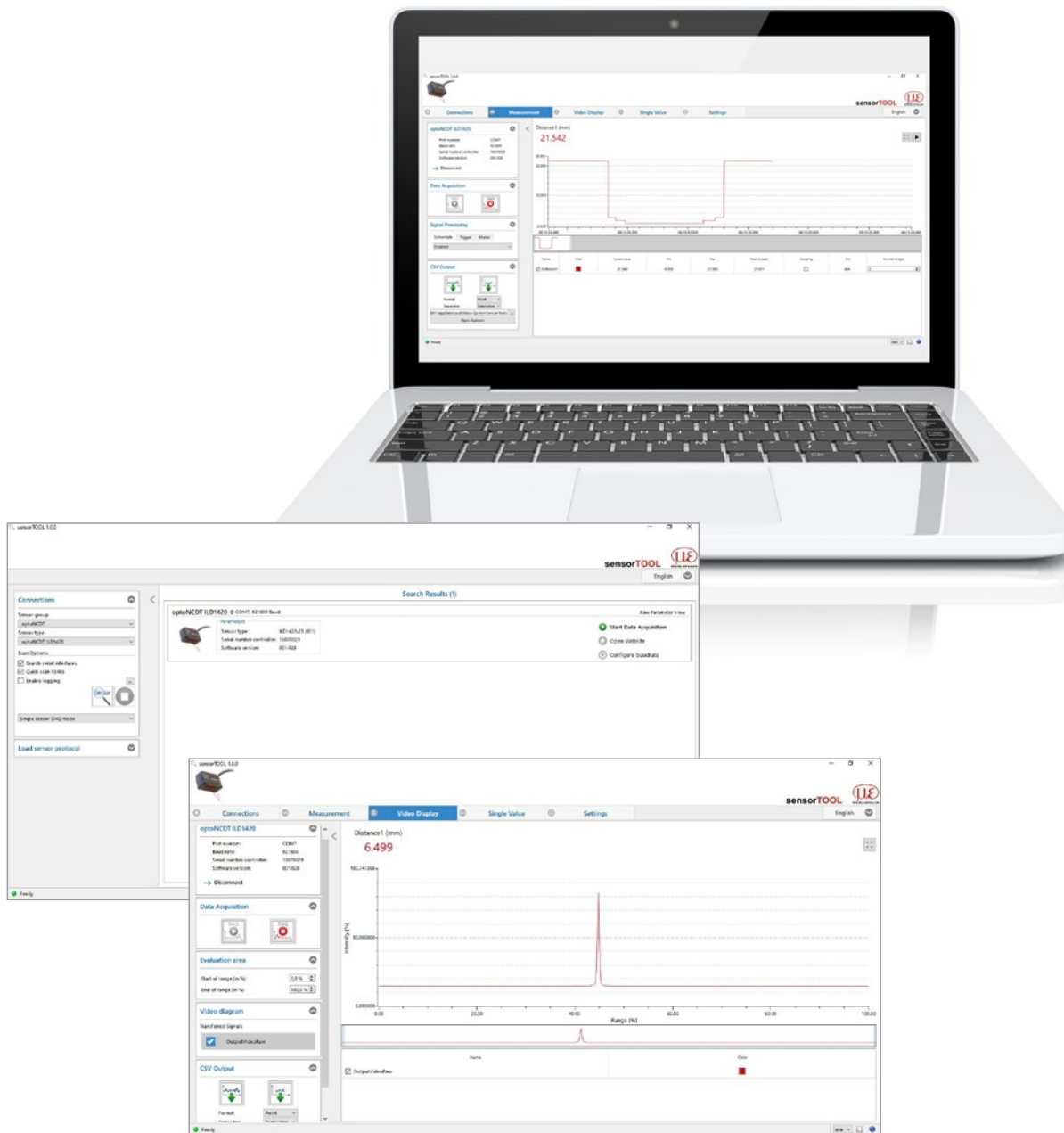
**optoNCDT**

| SGH & SGHF models                                                                                                                                                                            |                                                                                   |                                                                                                                               |                                                                                    | SGHF-HT model                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Protective housing Size S                                                                                                                                                                    |                                                                                   | Protective housing Size M                                                                                                     |                                                                                    |                                                                                                                                        |
| SGH                                                                                                                                                                                          | SGHF                                                                              | SGH                                                                                                                           | SGHF                                                                               |                                                                                                                                        |
|                                                                                                             |  |                                              |  |                                                     |
| (140 x 140 x 71 mm)                                                                                                                                                                          |                                                                                   | (180 x 140 x 71 mm)                                                                                                           |                                                                                    | (260 x 180 x 154 mm)                                                                                                                   |
| Water-resistant housing protects the sensor from solvents and detergents.                                                                                                                    |                                                                                   | Water-resistant housing protects the sensor from solvents and detergents.                                                     |                                                                                    | Water-cooled protective housing with window and compressed-air connection for measurement tasks in ambient temperatures up to 200 °C.  |
| Ideal with high ambient temperatures. The integrated air cooling of the housing offers optimum protection for the sensor.                                                                    |                                                                                   | Ideal with high ambient temperatures. The integrated air cooling of the housing offers optimum protection for the sensor.     |                                                                                    | Maximum temperature of cooling water T(max) = 10 °C<br>Minimum water flow rate Q(min) = 3 liters/min                                   |
| Size S suitable for<br>ILD1750-20BL<br>ILD1750-200BL<br>ILD2300-2 / -2LL / -2BL<br>ILD2300-5 / -5BL<br>ILD2300-10 / -10LL / -10BL<br>ILD2300-20 / -20LL<br>ILD2300-50 / -50LL<br>ILD2300-100 |                                                                                   | Size M suitable for<br>ILD1750-500BL<br>ILD1750-750BL<br>ILD2300-200<br>ILD2300-300<br>ILD2310-10<br>ILD2310-20<br>ILD2310-40 |                                                                                    | Suitable for<br>ILD1750-500BL<br>ILD1750-750BL<br>ILD2300-200<br>ILD2300-300<br>ILD2310-10<br>ILD2310-20<br>ILD2310-40<br>ILD2310-50BL |

| Protective housing SGHF ILD1900                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Compact protective housing which is simply attached to the sensor. The protective housing has an air purge for cleaning the protective windows. It also cools the sensor.</p> |
| <p>Suitable for</p> <p>ILD1900-6 / -6LL</p> <p>ILD1900-10 / -10LL</p> <p>ILD1900-25 / -25LL</p> <p>ILD1900-50 / -50LL</p> <p>ILD1900-100</p> <p>ILD1900-200</p> <p>ILD1900-500</p>                                                                                   |

## sensorTOOL

The Micro-Epsilon sensorTOOL is a powerful software that is used to operate one or more optoNCDT sensors. The sensorTOOL can be used to access the sensor connected to the PC, display its complete data stream and save it in a file (in Excel-compatible CSV format). The sensor is configured via its web interface.



### Free download

All software tools, drivers and documented driver DLL for easy integration of the sensors into existing or internally-generated software are available free of charge under [www.micro-epsilon.de/download](http://www.micro-epsilon.de/download)

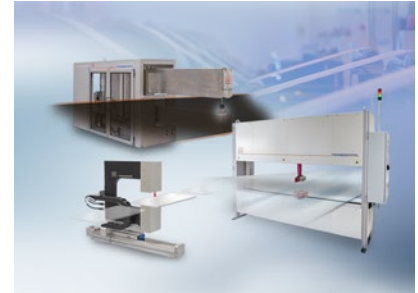
## Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



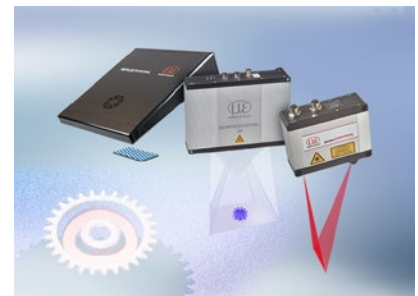
Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection