

Proper Environment

- Protection class: IP65 (applies only when the sensor cable is plugged in)
- Lenses are excluded from protection class. Contamination of the lenses causes impairment or failure of the function.
- Temperature range:
 - Operation: 0 ... +50 °C (+32 ... +104 °F)
 - Storage: -20 ... +70 °C (-4 ... +158 °F)
- Humidity: 5 - 95 % (no condensation)
- Ambient pressure: Atmospheric pressure

Sensor Mounting

The optoNCDT 2300-2DR sensor is an optical system for measurements with micrometer accuracy.

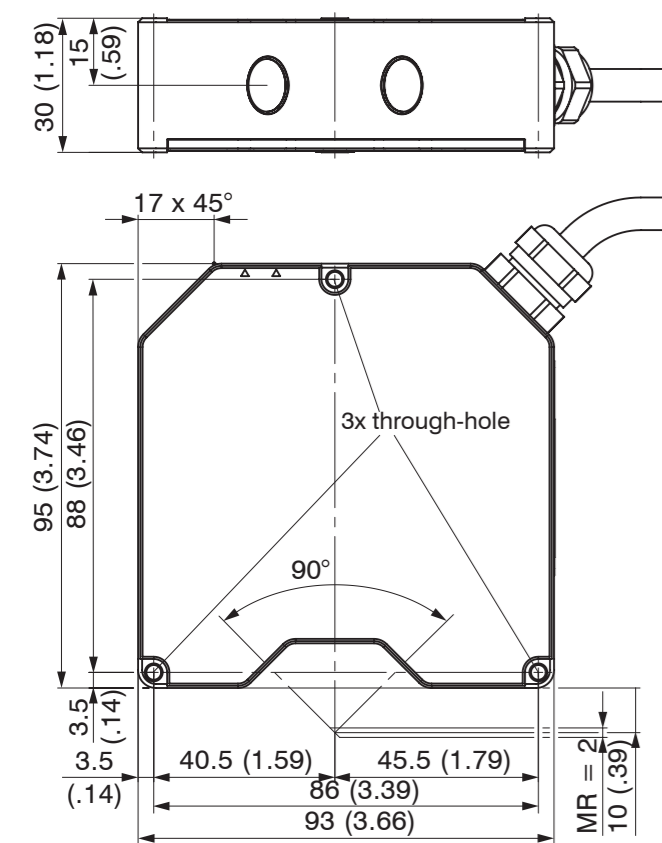
Ensure careful handling during installation and operation!

Mount the sensor only to the through-holes on a flat surface. Clamps of any kind are not permitted.

Mount the sensor by means of 3 screws type M3 or M4. The bearing surfaces surrounding the through-holes (mounting holes) are slightly raised.

Direct Reflection, Dimensions

Measuring range 2 mm



MR = Measuring range

Direct Reflection, Mounting

Measuring range 2 mm

LED State LED EtherCAT/Ethernet



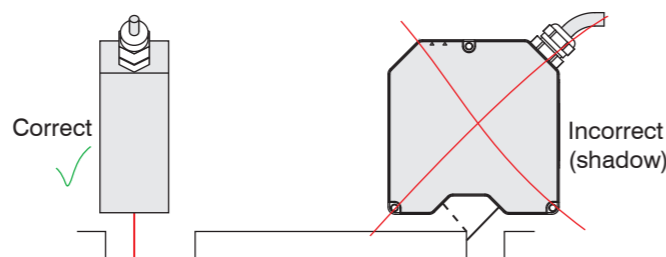
Direct reflection

Mounting steps

- Switch on the supply voltage on the sensor.
- Watch the State LED on the top side of the sensor.
- Position a shiny or mirroring measuring object within the measuring range.

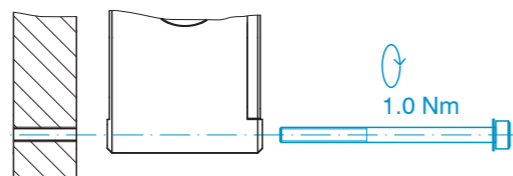
The State LED lights up yellow.

In case of bore holes, blind holes, and edges in the surface of moving targets the sensor must be arranged in such a way that the edges do not obscure the laser spot.



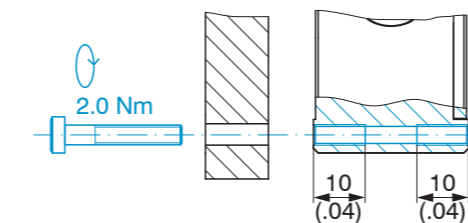
Mounting

Bolt connection



M3 x 40: ISO 4762-A2

Direct fastening



M4; ISO 4762-A2
Screw depth max. 10 mm

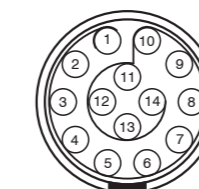
Input and Output

Signal Designation	Sensor Pin	Comment	Cable PC2300-x/SUB-D ¹
			15-pol. Sub-D
+ U _b	1	Supply voltage (11 ... 30 VDC)	1
Ground	2	System ground for supply and ground potential for RS422 level	9
+Laser on/off	3	Optocoupler input, potential-free Laser off: U _E ≤ 0.8 V (Low) Laser on: 2.8 V ≤ U _E ≤ 30 V (High)	2
- Laser on/off	4		10
Sync-in/out ²	5	Synchronous or trigger signals, symmetrically, RS422 level, terminating resistor 120 Ohm switchable, input or output selectable depending on the synchronization mode	3
/Sync-in/out ²	6		11
RxD-RS422	7	Serial input RS422, symmetrical, internally terminated with 120 Ohm	4
/RxD-RS422	8		12
TxD-RS422	9	Serial output RS422, symmetrical	5
/TxD-RS422	10		13
Tx - Ethernet	11	Ethernet output, potential-free	6
/Tx - Ethernet	12		14
Rx - Ethernet	13	Ethernet input, potential-free	7
/Rx - Ethernet	14		15
Screen	Housing	No galvanic connection to ground	Housing

1) Further cables are optionally available.

2) In trigger operation the input is used for triggering.

Plug connector: ODU MINI-SNAP, 14 pin, series B, dimension 2, code F, IP68. Sensor round plug, view: Solder-pin side male cable connector

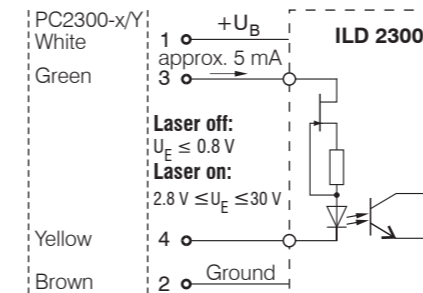


Supply Voltage, Nominal value: 24 V DC (11 ... 30 V, max. 150 mA).

11 ... 30 VDC	Sensor Pin	PC2300-x/Y Color	Supply
	1	White	+U _B
	2	Brown	Ground

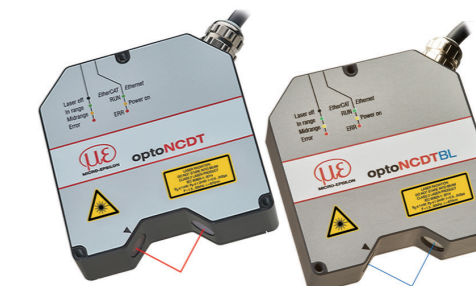
Use supply voltage for measurement instruments only. MICRO-EPSILON recommends using an optional available power supply unit PS2020 for the sensor.

Laser on



If pin Pin 3 with +U_B and Pin 4 are not connected with ground, the laser is off.

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Assembly Instructions optoNCDT 2300-2DR/R optoNCDT 2300-2DR/BL

Intended Use

The optoNCDT 2300-2DR is designed for use in industrial and laboratory applications.

It is used for measuring displacement, distance, position and ripples/waviness for quality monitoring and dimensional testing.

The sensor must only be operated within the limits specified in the technical data, see operating instructions, Chap. 3.4. The sensor must be used in such a way that no persons are endangered or machines and other material goods are damaged in the event of malfunction or total failure of the sensor. Take additional precautions for safety and damage prevention in case of safety-related applications.

Warnings

Avoid unnecessary laser radiation to be exposed to the human body. Switch off the sensor for cleaning and maintenance, for system maintenance and repair if the sensor is integrated into a system. Caution - use of controls or adjustments or performance of procedures other than those specified may cause harm.

Connect the power supply and the display/output device according to the safety regulations for electrical equipment. The supply voltage may not exceed the specified limits.
> Risk of injury. Damage to or destruction of the sensor.

Avoid constant exposure of sensor to splashes of water. Avoid exposure of sensor to aggressive media (detergents, cooling emulsions).
> Damage to or destruction of the sensor.

Avoid shocks and impacts to the sensor. Protect the sensor cable against damage.
> Damage to or destruction of the sensor, failure of the measuring device.

Laser Safety

The optoNCDT 2300-2DR/R operates with a semiconductor laser with a wavelength of 670 nm (visible/red), the optoNCDT 2300-2DR/BL operates with a semiconductor laser with a wavelength of 405 nm (visible/blue). The sensors fall within laser class 2.

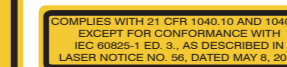


Laser radiation. Irritation or injury of the eyes possible. Close your eyes or immediately turn away if the laser beam hits the eye.

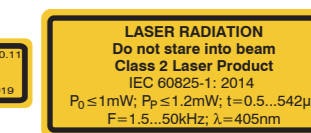
The following warning labels must be attached to the cover (front and/or rear side) of the sensor housing:



Laser warning sign and laser label, ILD2300-2DR/R



Only for USA

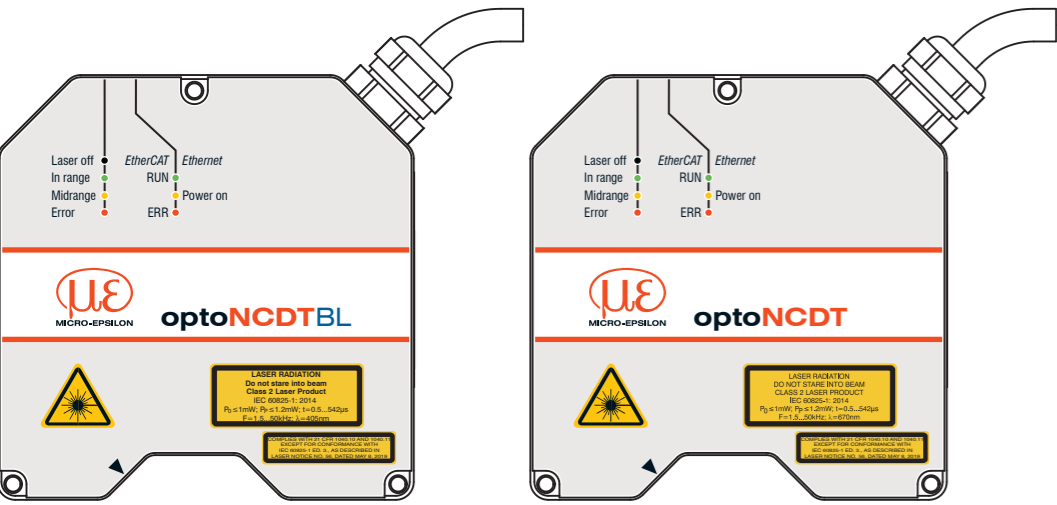


Laser label, ILD2300-2DR/BL



MICRO-EPSILON

If both warning labels are covered over when the unit is installed, the user must ensure that supplementary labels are applied. Observe the national laser protection regulations.



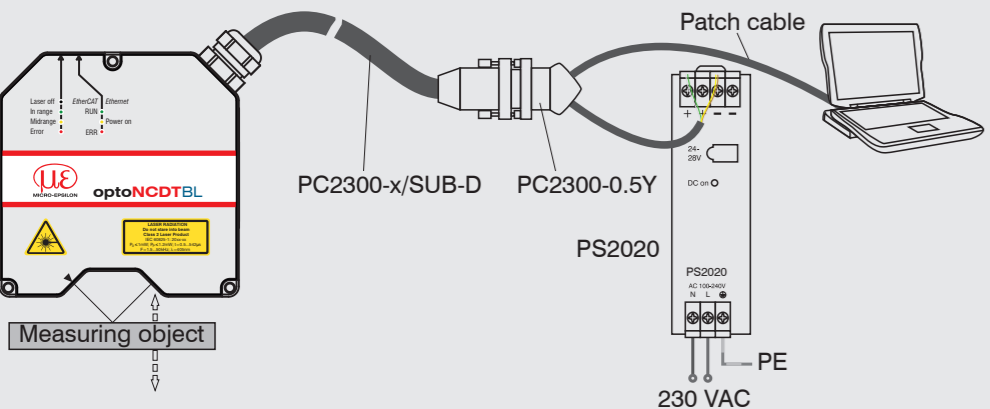
Sensor with laser labels laser class 2

Quick Start

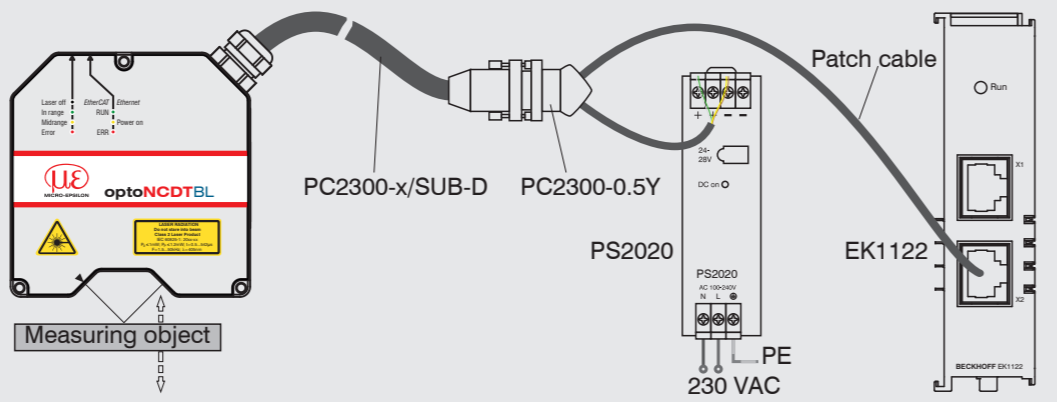
Structure of Components

- Sensor
 - Power supply
 - Laptop / PC + USB/Ethernet adapter + Ethernet cable
- ➔ Mount the sensor and connect the components.

Ethernet Connection



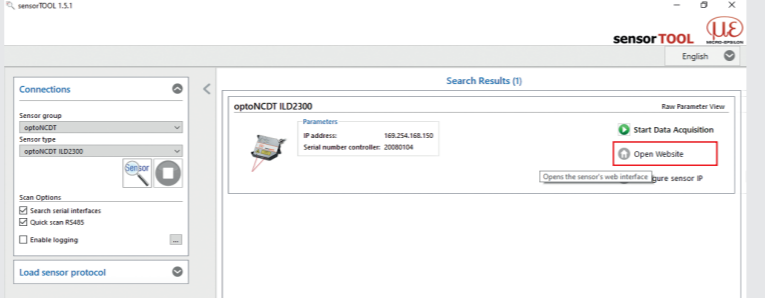
EtherCAT Connection



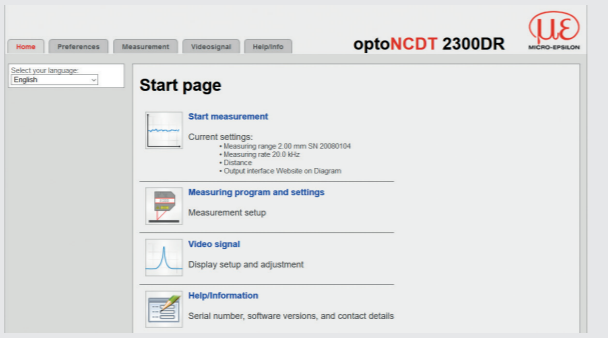
Initial Operation

- The sensor is delivered with the IP address 169.254.168.150. You can check the IP address of the sensors, that are connected to a PC / network, with the sensorTOOL program.
- ➔ Connect the sensor to the PC/notebook via a PC2300-x/SUB-D and a PC2300-0,5/Y. Connect the supply voltage.
 - ➔ Start the program sensorTOOL.
 - ➔ Click the Sensor button.

The program searches for connected ILD2300 DR sensors on available interfaces.



- ➔ Select the desired sensor. Click on the button Open Website.



The sensorTOOL program is available at <https://www.micro-epsilon.de/service/download/software>.

You need a web browser compatible with HTML5 on a PC/notebook.

Alternatively: If DHCP is enabled and the DHCP server is linked with the DNS server, an access is possible on „ILD2300_SN01234567“ („01234567“ Serial number of your sensor).

Start a web browser on your PC. Type „ILD2300_Serial number“ in the address bar of your web browser.

The start screen of the sensor software should now be displayed in the web browser.

- ➔ If you have changed any settings, go to the Preferences menu and click on the Save Setup button to store your settings.

You can select further interactive web-sites for sensor programming.

Select a Measurement Program

- ➔ Go to the menu Preferences > Measurement program.
- ➔ Select between Direct reflection - distance measurement or Direct reflection - thickness measurement from the measurement arrangement list. Confirm with Submit.

Select a Measuring Rate

- ➔ Go to the menu Preferences > Measuring rate.
- Start with a medium measuring rate. Select a measuring rate from the list. Confirm with Submit.

Select a Digital Interface

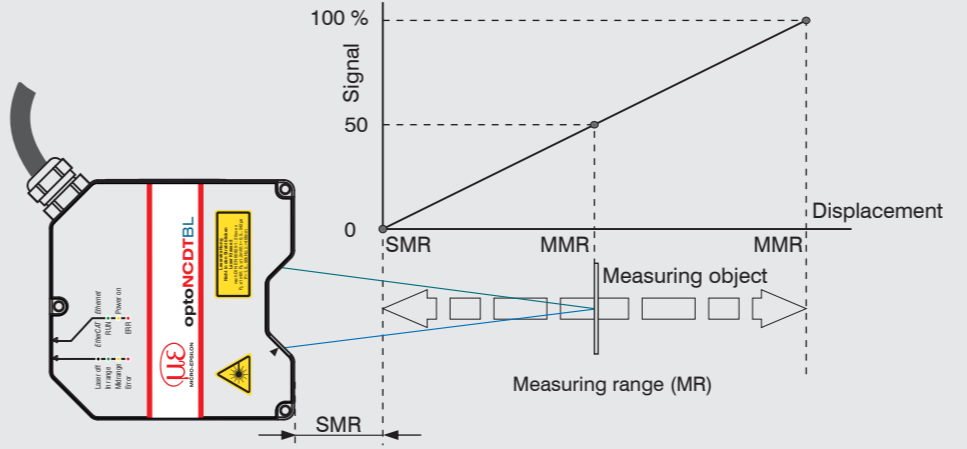
- ➔ Go to the menu Preferences > Digital interfaces > Digital interface selection.
- ➔ Select Web Diagram from the list. Confirm with Submit.

Store the Settings

- ➔ Go to the menu Preferences > Load/save settings.
- ➔ Select a Setup no. and click on the button Save setup.

Position a Measuring Object

- ➔ Position the measuring object (target) as centrally as possible within the measuring range.

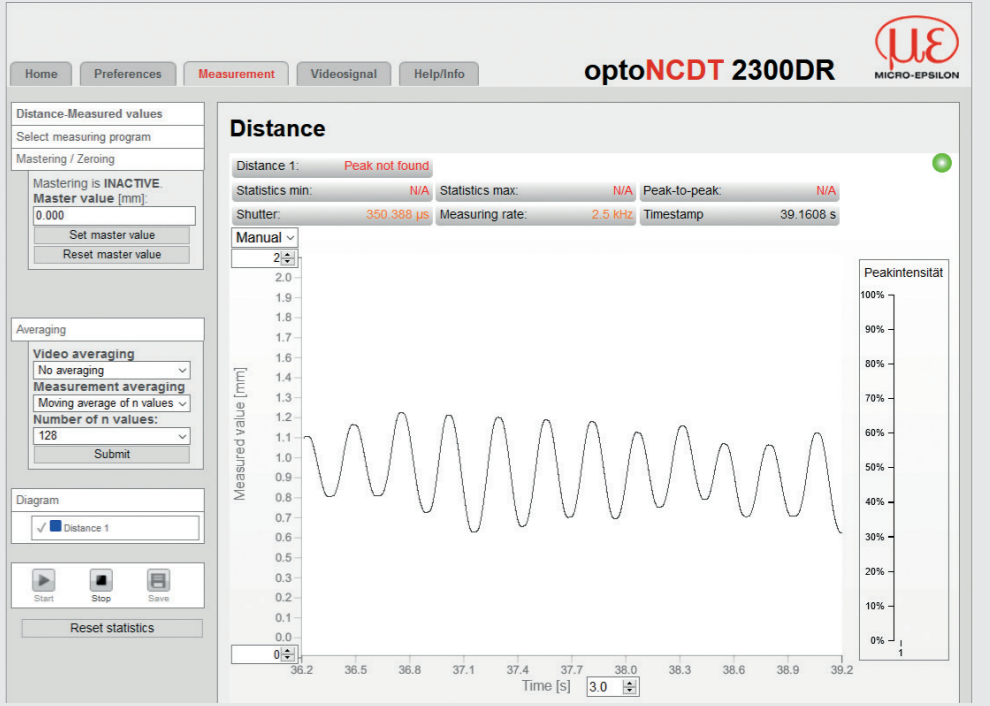


The Status LED Status on the sensor indicates the position of the measuring object to the sensor.

LED	Color	Labeling	Meaning
Status	Off	Laser off	Laser beam is switched off
	Green	In range	Sensor operates, measuring object within measuring range
	Yellow	Midrange	Measuring object is in mid of measuring range
	Red	Error	Measuring object outside measuring range, reflection is too low

Distance Measurement

- ➔ Go to the menu Preferences > Measurement program and select the measurement arrangement Direct reflection - Distance measurement.
- ➔ Go to the Measurement menu.
- ➔ Disable the Auto function and click on the Start button.



Thickness Measurement

- ➔ Go to the menu Preferences > Measurement program and select Direct reflection - thickness measurement from the measurement arrangement list.
- ➔ Select the target material from the material list. Confirm with Submit.

Store the Settings

- ➔ Go to the menu Preferences > Load/save settings.
- ➔ Select a Setup no. and click on the button Save setup.

Read the detailed operating instructions before using the sensor. The manual is available online on www.micro-epsilon.com/download/manuals/man--optoNCDT-2300--en.pdf.

