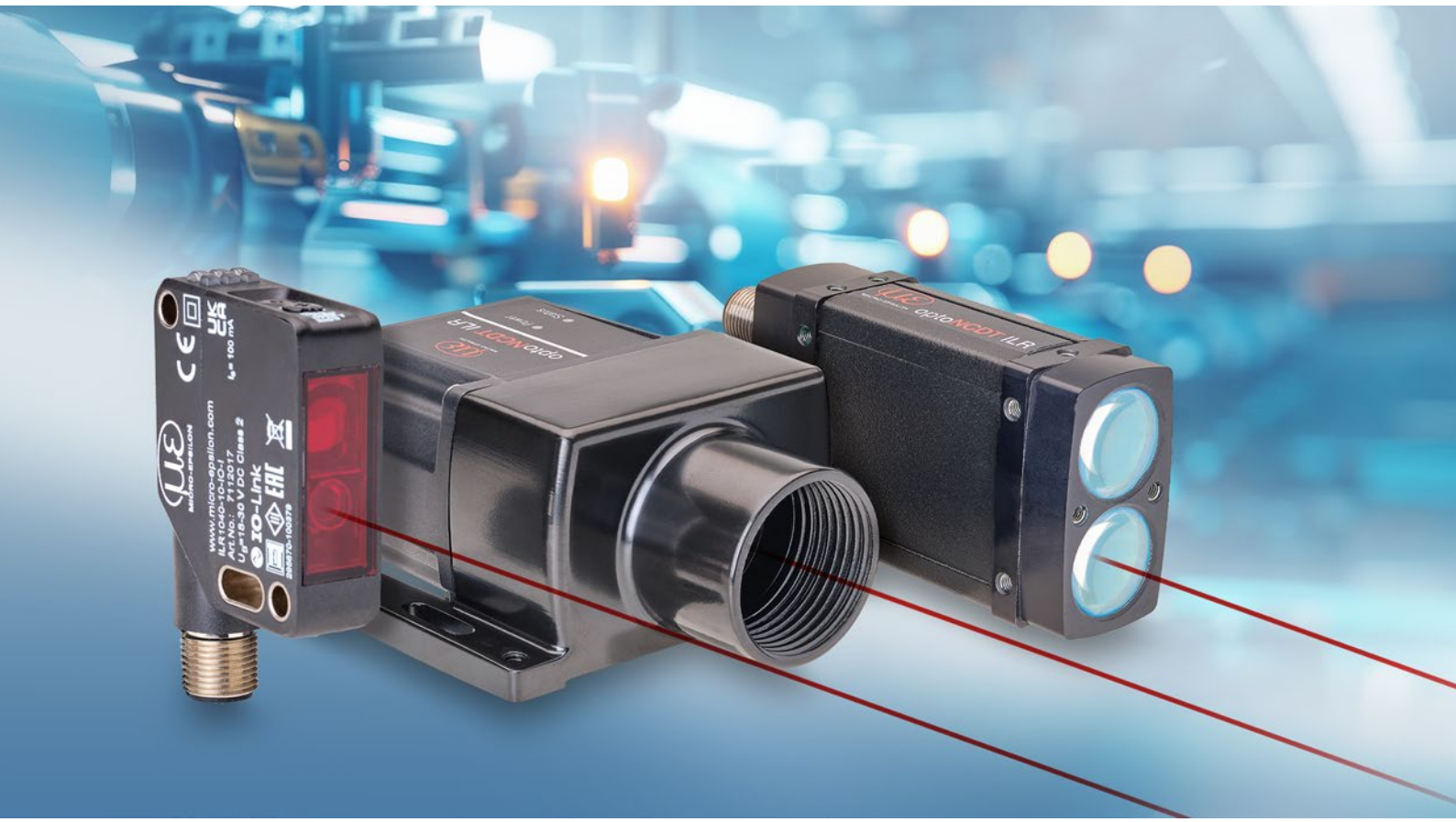
MICRO-EPSILON

More Precision

optoNCDT ILR // Laser-optical distance sensors



Compact and reliable laser distance sensor
optoNCDT ILR104x

- Measuring ranges without reflector: 10 m
  With reflector: 60 m and 150 m
- Ideal for series applications in the automation industry
- Laser class 1
- Robust design IP67 / IP69 / IP69K
- Fast response time
- Compact & lightweight design

NEW *Now with 150 m measuring range*

Compact and reliable sensor

The optoNCDT ILR104x laser distance sensors are designed for industrial distance measurements. These sensors achieve measuring ranges up to 10 meters without reflector film, 60 and 150 meters with reflector film. They feature a high protection class and resistance to ambient light. Due to their rotatable cable outlet and their compact design, these sensors can also be installed in difficult-to-access and narrow places.

The optoNCDT ILR104x sensors can be put into operation quickly and easily via the IO-Link interface. Operation of the sensor is supported by keys and LEDs.

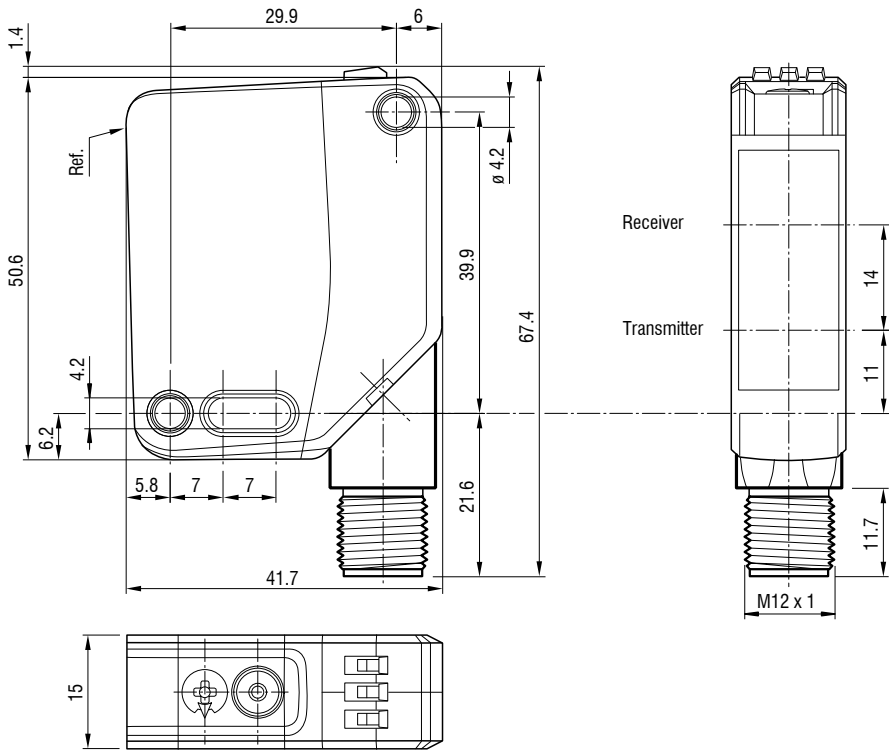
Time-of-flight principle

The ILR104x distance sensors use the time-of-flight measuring principle for accurate, reliable, clear and reproducible results. They achieve precise measurement results regardless of surface texture, dark object colors or ambient light. The ILR104x series sensors use a class 1 laser.

Versatile use

The compact sensors are designed for automation and are used for presence detection and collision monitoring, for example. Their robust plastic housing with IP69K protection class, the 50,000 lx ambient light resistance and a wide temperature range of -30 to +60 °C make these sensors the ideal choice for numerous applications.

Dimensions:

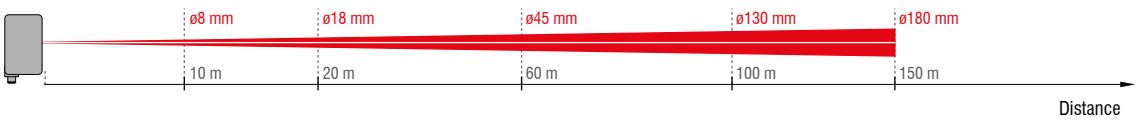


(dimensions in mm, not to scale)

Model		ILR1040-10-IO-I	ILR1040-10-IO-U	ILR1041-60-IO-I	ILR1041-60-IO-U	ILR1041-150-IO-I	ILR1041-150-IO-U
Measuring range [1]	Start of measuring range	0.03 m	0.03 m	-	-	-	-
	End of measuring range	10 m	10 m	-	-	-	-
	Start of measuring range with reflector film ILR-RF250	-	-	0.2 m	0.2 m	0.2 m	0.2 m
	End of measuring range with reflector film ILR-RF250	-	-	60 m	60 m	150 m	150 m
Measuring rate		adjustable up to 333 Hz					
Max. travel speed		10 m/s					
Resolution		1 mm					
Linearity [2]		typ. ± 20 mm					
Repeatability [3]		< 3 mm				< 6 mm	
Light source		Semiconductor laser < 1 mW, 660 nm (red) 2mrad 4ns					
Laser class		Class 1 in accordance with DIN EN 60825-1:2014					
Typ. service life		85.000 h					
Permissible ambient light		50,000 lx @ 2.5 m standard white 90 %, 10,000 lx @ 2.5 m black 6 %					
Supply voltage		18 ... 30 VDC					
Power consumption		25 mA					
Digital interface		IO-Link 1.1 (via C/Q pin 4)					
Analog output		4 … 20 mA (12-bit DA)	0 ... 10 V (12-bit DA)	4 … 20 mA (12-bit DA)	0 ... 10 V (12-bit DA)	4 … 20 mA (16-bit DA)	0 ... 10 V (16-bit DA)
Switching output		Q1 (max 100 mA) push-pull output (configurable) reverse polarity protected, overvoltage-proof					
Connection		Supply & signal: M12 x1 , 4-pin					
Mounting		Through bores					
Temperature range	Storage	-40 … +70 °C					
	Operation	-30 … +60 °C					
Protection class (DIN EN 60529)		IP67 / IP69 / IP69K					
Material		PC (polycarbonate)					
Weight		37 g					
Control and indicator elements		3x LED for power, switching status and teach-in; 5-position rotary switch for selecting the operating modes; teach-in button					
Special features		Operating mode: single measurement, external triggering, distance tracking, continuous measurement					

[1] The specified data apply at a constant room temperature of 20 °C with continuous sensor operation.
Measurements were taken on a white, diffusely reflective surface (reference ceramic). Reflector film RF250
[2] Statistical spread 2σ
[3] Incl. thermal influence

Light spot diameter



The ILR104x sensors use a semiconductor laser of class 1.
Devices in this laser class require no special safety precautions.
They work with a semiconductor laser with a wavelength of 660 nm (visible/red)
Laser power is <1 mW.

Connection possibilities
optoNCDT ILR

ILR104x

Supply and output cables

29011586	PC1040-10	Supply and output cable, 10 m
29011587	PC1040-2	Supply and output cable, 2 m
29011588	PC1040/90-2	Supply and output cable, 2 m
29011589	PC1040-5	Supply and output cable, 5 m
29011590	PC1040/90-5	Supply and output cable, 5 m
29011590	PC1040-10	Supply and output cable, 10 m
29011591	PC1040/90-10	Supply and output cable, 10 m
29011592	PC1040-20	Supply and output cable, 20 m
29011593	PC1040/90-20	Supply and output cable, 20 m

ILR3800-IO

Supply and output cables

29011669	PC3800-5 IO-Link	Supply and output cable, 5 m
29011670	PC3800-10 IO-Link	Supply and output cable, 10 m
29011671	PC3800-15 IO-Link	Supply and output cable, 15 m
29011672	PC3800-20 IO-Link	Supply and output cable, 20 m

ILR3800
ILR3800-H

Supply and output cables

29011609	PCF3800-30/IF2004	Supply and output cable, 30 m
29011682	PCF3800-100/IF2004	Supply and output cable, 10 m

(to connect 4 ILRs to the IF2004, the IF2008-Y adapter cable is required.)

2901528	IF2008-Y-adapter cable

Connection cables

29011624	PCE3800-20/IF2008ETH	Connection cable, 20 m
29011623	PCE3800-10/IF2008ETH	Y-connection cable, 10 m
29011622	PCE3800-10/IF2008ETH	Connection cable, 10 m
29011621	PCE3800-5/IF2008ETH	Connection cable, 5 m
29011620	PCE3800-2/IF2008ETH	Connection cable, 2 m

Power supply unit PS2020
(Optional for DIN rail mounting)

Supply and output cables

29011737	PC3800-2/DPU	Supply and output cable, 2 m
29011738	PC3800-5/DPU	Supply and output cable, 5 m
29011739	PC3800-10/DPU	Supply and output cable, 10 m

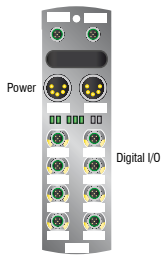
Supply and output cables

29011513	PC3800-2	Supply and output cable, 2 m
29011514	PC3800/90-2	Supply and output cable, 2 m
29011515	PC3800-5	Supply and output cable, 5 m
29011516	PC3800/90-5	Supply and output cable, 5 m
29011517	PC3800-10	Supply and output cable, 10 m
29011518	PC3800/90-10	Supply and output cable, 10 m
29011519	PC3800-20	Supply and output cable, 20 m
29011520	PC3800/90-20	Supply and output cable, 20 m
29011521	PC3800-30	Supply and output cable, 30 m
29011522	PC3800/90-30	Supply and output cable, 30 m

ILR1171

Supply and output cables

29011401	PC1171-2	Supply and output cable, 2 m
29011402	PC1171-5	Supply and output cable, 5 m
29011403	PC1171-10	Supply and output cable, 10 m



IO-Link master

PROFINET / EIP / EtherCAT

PLC

4-channel USB converter
IF2004/USB

USB

PC

Interface module for
Ethernet connection
IF2008/ETH

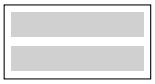
Ethernet

PC

Dual Processing Unit

Ethernet

PC



Display

Interface module for Industrial
Ethernet connection
IF2035-PROFINET
IF2035-EIP
IF2035-EtherCAT

PROFINET / EIP / EtherCAT

PLC

Interface module from
RS422 to USB
IF2001/USB

USB

PC

Optional accessories
optoNCDT ILR

Reflector film and target plate

The sensor measures the distance to moving and stationary objects.
The reflector film is used to extend the measuring range.

The following aspects should be considered:
- The minimum distance between sensor and reflector film must be observed.
- The laser spot must be centered on the reflector over the entire measuring path.
- The sensor and reflector may be tilted at a maximum angle of 5° to each other.

Reflective films work with targeted retroreflection, whereas a white target plate works with diffuse reflection. With a white target plate, the measuring range can be used up to 100 m – without restrictions in the close range.

Depending on the application, a reflective film or a white target plate can be used:
- optoNCDT ILR1041-x: Reflector film is absolutely necessary to use the measuring range. Measurement is not possible without reflector film.
- optoNCDT ILR1040-x: The use of a white target plate is recommended.

Sensor	Article	Dimensions
optoNCDT ILR104x	Art. no.: 7966001 ILR-RF250 Reflector film	250 x 250 mm
optoNCDT ILR3800	Art. no.: 7966058 ILR-RF210 Reflector film	210 x 297 mm
optoNCDT ILR1171	Art. no.: 7966001 ILR-RF250 Reflector film	250 x 250 mm
optoNCDT ILR	Art.-no.: 7966091 ILR-TB250 White target plate	250 x 250 mm

Protective glass

The sensor can be protected from external influences by using a protective glass.

Sensor	Article	Description
optoNCDT ILR3800	Art. no.: 7966080 ILR-PG3800 Protective glass	Optical glass, with anti-reflection coating and high transmission

Filter glass

Filter glasses enable measurement on highly reflective surfaces. However, this reduces the maximum laser power. Ask your regional sales contact before you use the filter glass.

Sensor	Article	Description
optoNCDT ILR3800	Art.-no.: 7966081 ILR-NDF3800 Filter glass 0.75 Art. no.: 7966082 ILR-NDF3800 Filter glass 0.5 Art. no.: 7966083 ILR-NDF3800 Filter glass 0.9	Optical gray filter

Compressed-air purge system

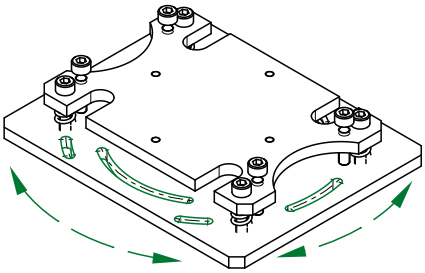
Particularly suitable for dusty and dirty environments to prevent deposits on the lens. Connection via a 6 mm hose. Recommended pressure: 3 bar.

Sensor	Article	Description
optoNCDT ILR3800	Art.-no.: 7966089 ILR-DLS3800 Compressed-air purge system	For cleaning or permanently keeping the optical path clear.

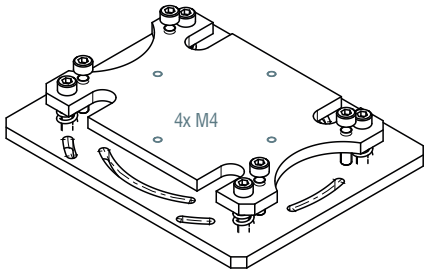
Mounting plate

The sensor can optionally be mounted using an aluminum plate. This ensures a secure hold and easy alignment of the sensor. Its robust design is suitable even for harsh industrial environments.

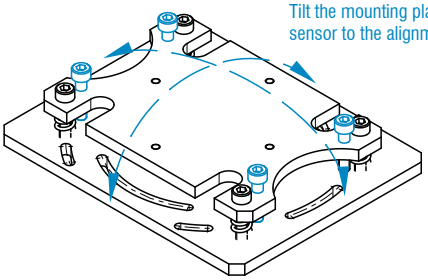
Sensor	Article	Description
optoNCDT ILR3800	Art. no.: 7966076 ILR-MP3800 Mounting plate	Optional; for easy sensor mounting



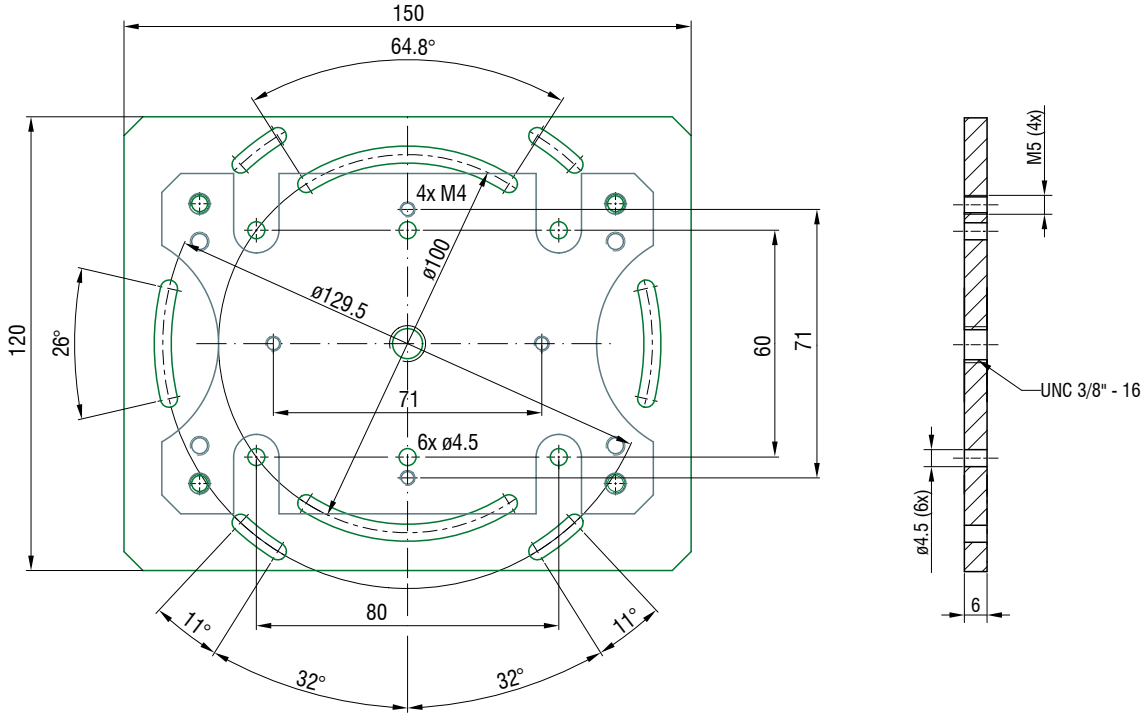
The sensor can optionally be mounted using a mounting plate.



4 mounting threads M4 for sensor mounting, optional: sensor rotated by 90°.



Tilt the mounting plate with sensor to the alignment plate

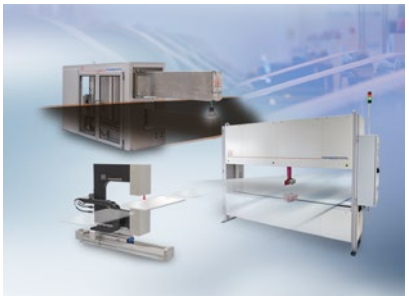


(dimensions in mm, not to scale)

Sensors and Systems from Micro-Epsilon

Sensors and systems for displacement, distance and position

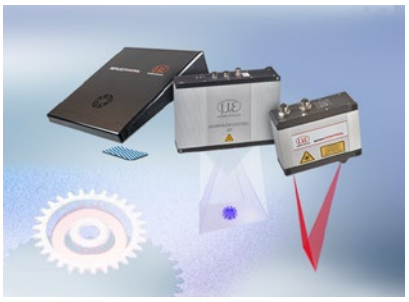
Sensors and measurement devices for non-contact temperature measurement



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

MICRO-EPSILON

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