MICRO-EPSILON

More Precision

optoNCDT ILR // Laser-optical distance sensors

Compact and reliable laser distance sensor
optoNCDT ILR104x

- Measuring ranges 10 and 60 m (with reflector)
- Ideal for series applications in the automation industry
- Laser class 1
- Robust design IP67 / IP69 / IP69K
- Fast response time
- Compact & lightweight design

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 and 60 meters with reflector film. They are characterized by 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 LR104x sensors can be put into operation quickly and easily via the IO-Link interface. Operation of the sensor is supported by keys and LEDs.

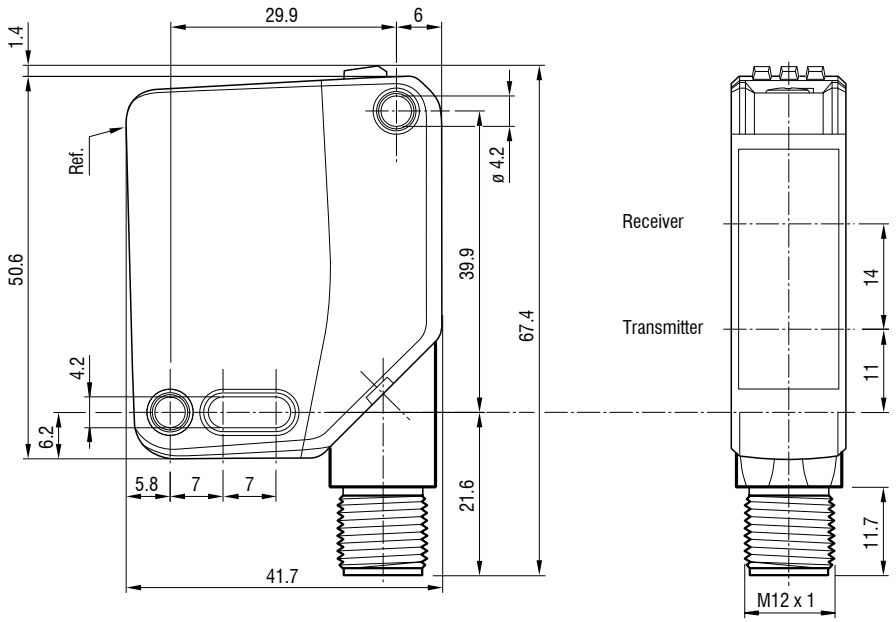
Time-of-flight principle

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:

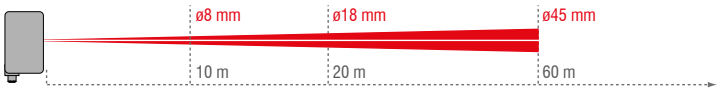


(dimensions in mm, not to scale)

Model		ILR1040-10-IO-I	ILR1040-10-IO-U	ILR1041-60-IO-I	ILR1041-60-IO-U
Measuring range	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
	End of measuring range with reflector film ILR-RF250	-	-	60 m	60 m
Measuring rate [1] [2]		adjustable up to 333 Hz			
Max. travel speed		10 m/s			
Resolution		1 mm			
Linearity [3]		typ. ± 20 mm			
Repeatability [4]		<3 mm			
Temperature stability		≤ 0.25 mm / °K			
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)
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 … +75 °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 for a consistent room temperature of 20 °C, sensor is continuously in operation. Measured on white, diffuse reflecting surface (reference ceramic)
[2] Depends on the reflectivity of the target, ambient light interference and atmospheric conditions
[3] Statistical spread 2σ
[4] Measurement frequency of 20 Hz, moving average 10

Light spot diameter



The ILR104x sensors use a semiconductor laser of class 1.
Devices of this laser class require no special safety precautions.
They work with a semi-conductor 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-/output cable, 10 m
29011587	PC1040-2	Supply-/output cable, 2 m
29011588	PC1040/90-2	Supply-/output cable, 2 m
29011589	PC1040-5	Supply-/output cable, 5 m
29011590	PC1040/90-5	Supply-/output cable, 5 m
29011590	PC1040-10	Supply-/output cable, 10 m
29011591	PC1040/90-10	Supply-/output cable, 10 m
29011592	PC1040-20	Supply-/output cable, 20 m
29011593	PC1040/90-20	Supply-/output cable, 20 m

ILR2250-100-IO

Supply and output cables

29011362	PC2250-5 IO-Link	Supply-/output cable, 5 m
29011363	PC2250-10 IO-Link	Supply-/output cable, 10 m
29011364	PC2250-15 IO-Link	Supply-/output cable, 15 m

ILR3800-100
ILR3800-100-H

Supply and output cables

29011609	PCF3800-30/IF2004	Supply-/output cable, 30 m

(The IF2008-Y adapter cable is required to connect 4x ILR sensors to the IF2004).

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)

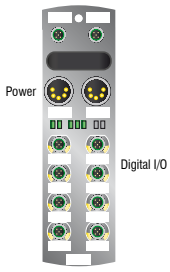
Supply and output cables

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

ILR1171

Supply and output cables

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



IO-Link master

4-channel USB converter
IF2004/USB

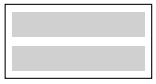
USB

PC

Interface module for
Ethernet connection
IF2008/ETH

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

The sensor measures the distance to moving and stationary objects. The measurable distance can be increased by using a reflective film suitable for the sensor. However, the minimum distance from the sensor to the reflector film must be maintained. The center of the laser spot must be in the center of the reflector over the entire measuring range. Target (reflector) and sensor can only be tilted by at most 5° relative to one another.

Sensor	Item	Dimensions
optoNCDT ILR140x	Art. no.: 7966001 ILR-RF250 Reflector film	250 x 250 mm
optoNCDT ILR2250	Art. no.: 7966058 ILR-RF210 Reflector film	210 x 297 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

Protective glass

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

Sensor	Item	Description
optoNCDT ILR2250	Art. no.: 7966061 ILR-PG2250 Protective glass	Optical glass, with anti-reflection coating and high transmission
optoNCDT ILR3800	Art. no.: 7966080 ILR-PG3800 Protective glass	

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	Item	Description
optoNCDT ILR2250	Art. no.: 7966063 ILR-NDF2250 Filter glass 0.75 Art. no.: 7966066 ILR-NDF2250 Filter glass 0.5 Art. no.: 7966068 ILR-NDF2250 Filter glass 0.9	Optical gray filter
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	

Air purge collar

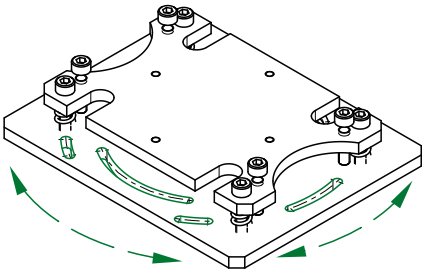
A compressed-air purge collar reliably prevents the deposition of dust and particles on the lens surface, ensuring that the optical performance remains consistently high. In addition, this reduces the cleaning effort and extends the service life of the system.

Sensor	Item	Description
optoNCDT ILR2250	Art. no.: 7966062 ILR-FBV2250 Air purge collar	Screwable compressed-air purge collar for cleaning the optical path
optoNCDT ILR3800	Art. no.: 7966087 ILR-FBV3800 Air purge collar	

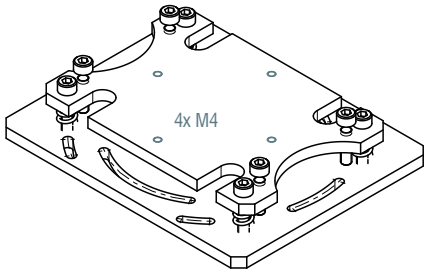
Mounting plate

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

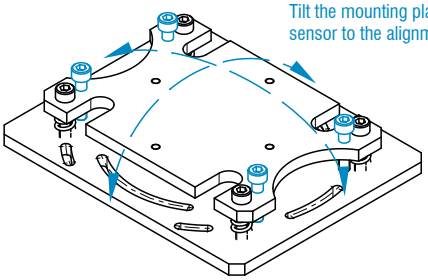
Sensor	Item	Description
optoNCDT ILR3800	Art. no.: 7966076 ILR-MP3800 Mounting plate	Optional; for easy sensor mounting



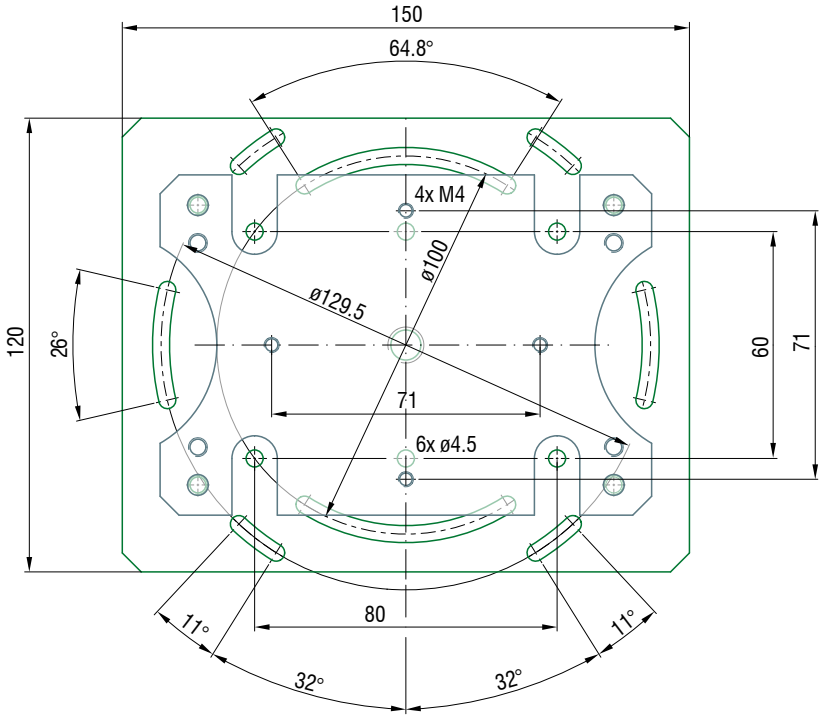
The sensor can optionally be mounted using a mounting plate.



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



Tilt the mounting plate with sensor to the alignment plate

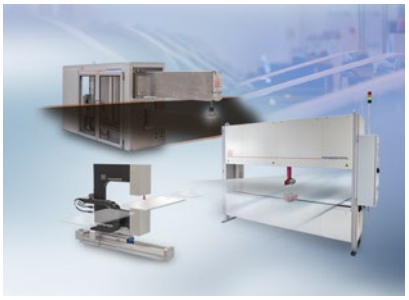


(dimensions in mm, not to scale)

Sensors and Systems from Micro-Epsilon

Sensors and systems for displacement, distance and position

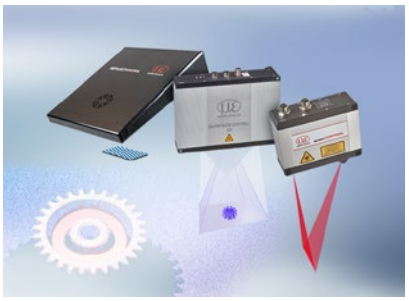
Sensors and measurement devices for non-contact temperature measurement



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

MICRO-EPSILON USA
8120 Brownleigh Dr. · Raleigh, NC 27617 / USA
Phone +1/919/787-9707 · Fax +1/919/787-9706
me-usa@micro-epsilon.com · **www.micro-epsilon.com**