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.

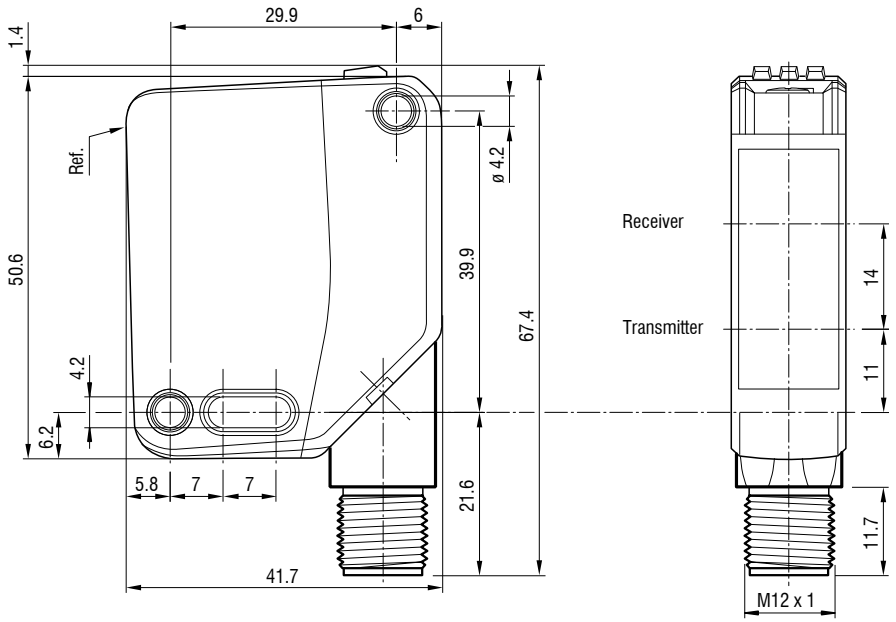
Time-of-flight principle

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:

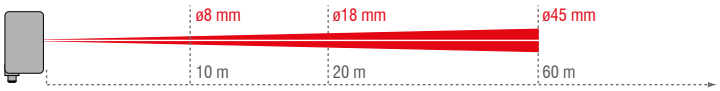


(dimensions in mm, not to scale)

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.

High speed sensor for outdoor applications
optoNCDT ILR1171-125

- Measuring range up to 125 m, (with reflector 270 m)
- Distance and speed measurements
- Laser class 1
- IP67 Robust design IP67
- Very high measuring rate for fast applications
- Optionally with integrated heating for outdoor applications

The optoNCDT ILR1171 is a laser-based distance sensor for non-contact and precise distance and displacement measurements from 0.2 m up to 125 m. The measuring range can be extended to 270 m with a reflector film. The sensor is designed for very large measuring ranges, with and without reflector. Due to the very high measuring rate of the sensor, moving objects can be measured easily. Even in poor visibility conditions, the ILR1171-125 impresses with its high signal intensity for stable measurements.

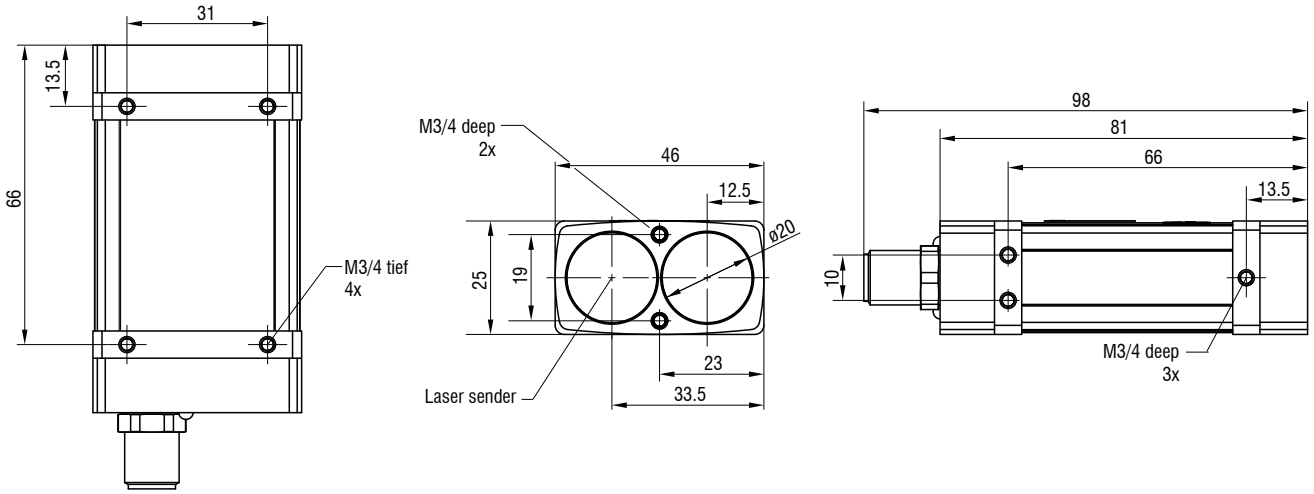
Time-of-flight principle

The sensor operates according to the laser pulse runtime principle and is therefore particularly well suited to applications with large distances. Commissioning of the sensor is straightforward due to a variety of interfaces and easy installation options. The actual measuring range depends on the reflectivity and the surface quality of the object to be measured.

Versatile fields of application

The optoNCDT ILR1171-125 is fitted with an integrated heater for outdoor use. A pilot laser is also integrated for mounting and adjustment. This makes it easier to align the sensor over long distances, for example when monitoring buildings. The RS422 and RS485 interfaces ensure reliable and fast data transmission.

Dimensions:

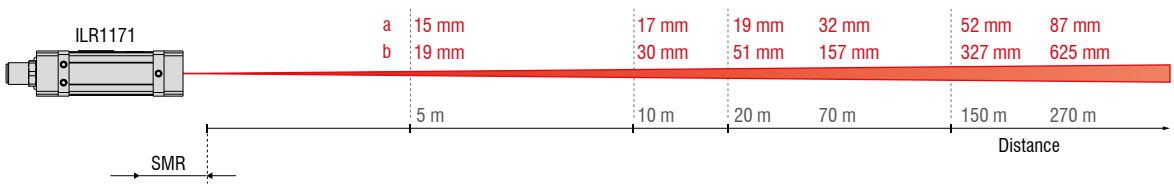


(dimensions in mm, not to scale)

Model		ILR1171-125
Article number		7112027
Measuring range [1]	Black 10 %	70 m
	Gray 40 %	100 m
	White 80 %	125 m
	Reflector film [2]	270 m
Start of measuring range		0.2 m [3]
Measuring rate		40 kHz
Resolution		1 mm
Linearity		< ±60 mm [4]
Repeatability [5]		<25 mm
Temperature stability		< 20 ppm / K
Light source		Semiconductor laser < 1 mW, 905 nm (red)
Laser class		Class 1 in accordance with IEC 60825-1: 2022-07
Permissible ambient light		50,000 lx
Supply voltage		10 ... 30 VDC
Power consumption		< 3 W (24 V)
Signal input		Trigger
Digital interface		RS232 / RS422
Analog output		4 ... 20 mA (16 bit, freely scalable within the measuring range)
Switching output		Q1 / Q2 (configurable); trigger
Connection		Supply/signal: 12 pin M12 screw/plug connection
Mounting		Mounting holes
Temperature range	Storage	-40 … +70 °C (non-condensing)
	Operation	-20 … +60 °C (non-condensing)
Shock (DIN EN 60068-2-29)		30 g / 6 ms in 6 directions, 3 shocks each
Vibration (DIN EN 60068-2-6)		1 g / 10 … 2000 Hz in 3 axes, 2 cycles each
Protection class (DIN EN 60529)		IP67
Material		Aluminum housing
Weight		approx. 140 g
Control and indicator elements		2x LEDs for power and signal
Special features		Measurement-specific operating modes

[1] Depends on the reflectivity of the target, ambient light interference and atmospheric conditions
[2] ILR-RF250 reflector film 250 x 250 mm; art. 7966001
[3] 0.5 m for measurement with reflector film
[4] Linearity in the ranges of ≤ 1 m and ≥ 70 m is ±100 mm
[5] Repeatability in the ranges ≤ 1 m and ≥ 70 m is ±50 mm

Light spot diameter



The optoNCDT ILR 1171 sensors use a semiconductor class 1 laser (operating mode) and a semiconductor class 2 laser (setup mode).
Devices of this laser classes require no special safety precautions.

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