



# DL50-N2228

Dx50

TIME-OF-FLIGHT SENSORS

**SICK**  
Sensor Intelligence.



### Ordering information

Type	part no.
DL50-N2228	1058987

Other models and accessories → [www.sick.com/Dx50](http://www.sick.com/Dx50)

### Detailed technical data

#### Features

<b>Measuring range</b>	200 mm ... 50,000 mm, on “diamond grade” reflective tape
<b>Target</b>	Reflector
<b>Resolution</b>	100 µm
<b>Repeatability</b>	≥ 0.25 mm <sup>1) 2) 3)</sup>
<b>Measurement accuracy</b>	± 3 mm <sup>4)</sup>
<b>Response time</b>	10 ms ... 160 ms, 10 ms / 40 ms / 160 ms <sup>2) 5)</sup>
<b>Output time</b>	2.5 ms <sup>6)</sup>
<b>Emitted beam</b>	
Light source	Laser, red
Type of light	Visible red light
Typ. light spot size (distance)	15 mm x 15 mm (10 m)
<b>Key laser figures</b>	
Normative reference	IEC 60825-1:2014, EN 60825-1:2014
Laser class	1 <sup>7)</sup>
	8)
Average laser service life (at 25 °C)	100,000 h
<b>Additional function</b>	Set moving average fast/medium/slow Switching mode: distance to object (DtO) Teach-in, scaling and inversion of digital output Set hysteresis Multifunctional input and output: Laser off, external teach, digital output 2, deactivated Adjustable resolution of the SSI distance output: 0.0625 mm / 0.1 mm / 0.125 mm / 1 mm Unique measurement value Crosstalk safety

<sup>1)</sup> Equivalent to 1 σ.

<sup>2)</sup> Dependent on the averaging setting: fast/medium/slow.

<sup>3)</sup> Typical value.

<sup>4)</sup> 200 mm ... 4,000 mm: ≤ ± 5 mm.

<sup>5)</sup> Lateral entry of the object into the measuring range.

<sup>6)</sup> Continuous change of distance in measuring range.

<sup>7)</sup> Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

<sup>8)</sup> Wavelength: 658 nm; max. output: 80 mW; pulse duration: 2.5 ns; duty cycle: 1/240.

		Switch-off display Reset to factory default Lock user interface
<b>Safety-related parameters</b>		
	MTTF <sub>D</sub>	101 years
	DC <sub>avg</sub>	0%

- 1) Equivalent to 1  $\sigma$ .  
 2) Dependent on the averaging setting: fast/medium/slow.  
 3) Typical value.  
 4) 200 mm ... 4,000 mm:  $\leq \pm 5$  mm.  
 5) Lateral entry of the object into the measuring range.  
 6) Continuous change of distance in measuring range.  
 7) Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.  
 8) Wavelength: 658 nm; max. output: 80 mW; pulse duration: 2.5 ns; duty cycle: 1/240.

## Interfaces

<b>SSI</b>		✓
<b>Digital output</b>	Number	1 ... 2 <sup>1) 2)</sup>
	Type	NPN
	Function	Dependent on the set function MF: digital output 2 / laser off, external teach
	Maximum output current I <sub>A</sub>	$\leq 100$ mA
<b>Multifunctional input (MF)</b>		- / 1 x <sup>3) 4) 5)</sup>
<b>Hysteresis</b>		1 mm ... 1,000 mm

- 1) Output Q short-circuit protected.  
 2) NPN: HIGH =  $< 2.5$  V / LOW = V<sub>S</sub>.  
 3) Dependent on the set function MF: digital output 2 / laser off, external teach.  
 4) Response time  $\leq 60$  ms.  
 5) NPN: HIGH =  $\leq 2.5$  V / LOW = V<sub>S</sub>.

## Electronics

<b>Supply voltage U<sub>B</sub></b>	DC 10 V ... 30 V <sup>1)</sup>
<b>Power consumption</b>	$\leq 2.1$ W <sup>2)</sup>
<b>Ripple</b>	$\leq 5$ V <sub>pp</sub> <sup>3)</sup>
<b>Initialization time</b>	$\leq 250$ ms
<b>Warm-up time</b>	$\leq 15$ min
<b>Display</b>	LC display, 2 x LED
<b>Enclosure rating</b>	IP65
<b>Protection class</b>	III
<b>Connection type</b>	Male connector, M12, 8-pin

- 1) Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.  
 2) Without load.  
 3) May not fall short of or exceed V<sub>S</sub> tolerances.

## Mechanics

<b>Dimensions (W x H x D)</b>	36.1 mm x 62.7 mm x 57.7 mm
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<b>Housing material</b>	Metal (zinc diecast)
<b>Window material</b>	Plastic (PMMA)
<b>Weight</b>	200 g

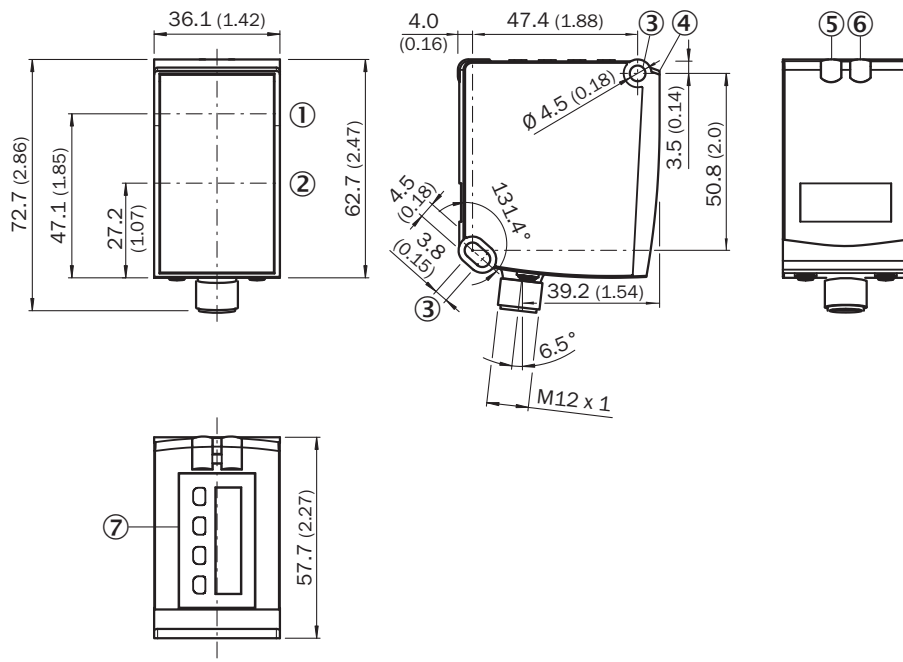
Ambient data

<b>Ambient temperature, operation</b>	-30 °C ... +65 °C -30 °C ... +80 °C, operation with 2 cooling plates -30 °C ... +140 °C, operation with 2 cooling plates and protection filter
<b>Ambient temperature, storage</b>	-40 °C ... +75 °C
<b>Max. rel. humidity (not condensing)</b>	≤ 95 %
<b>Typ. Ambient light immunity</b>	40,000 lx
<b>Vibration resistance</b>	EN 60068-2-6, EN 60068-2-64
<b>Shock resistance</b>	EN 60068-2-27

Classifications

<b>ECLASS 5.0</b>	27270801
<b>ECLASS 5.1.4</b>	27270801
<b>ECLASS 6.0</b>	27270801
<b>ECLASS 6.2</b>	27270801
<b>ECLASS 7.0</b>	27270801
<b>ECLASS 8.0</b>	27270801
<b>ECLASS 8.1</b>	27270801
<b>ECLASS 9.0</b>	27270801
<b>ECLASS 10.0</b>	27270801
<b>ECLASS 11.0</b>	27270801
<b>ECLASS 12.0</b>	27270916
<b>ETIM 5.0</b>	EC001825
<b>ETIM 6.0</b>	EC001825
<b>ETIM 7.0</b>	EC001825
<b>ETIM 8.0</b>	EC001825
<b>UNSPSC 16.0901</b>	41111613

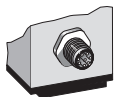
Dimensional drawing



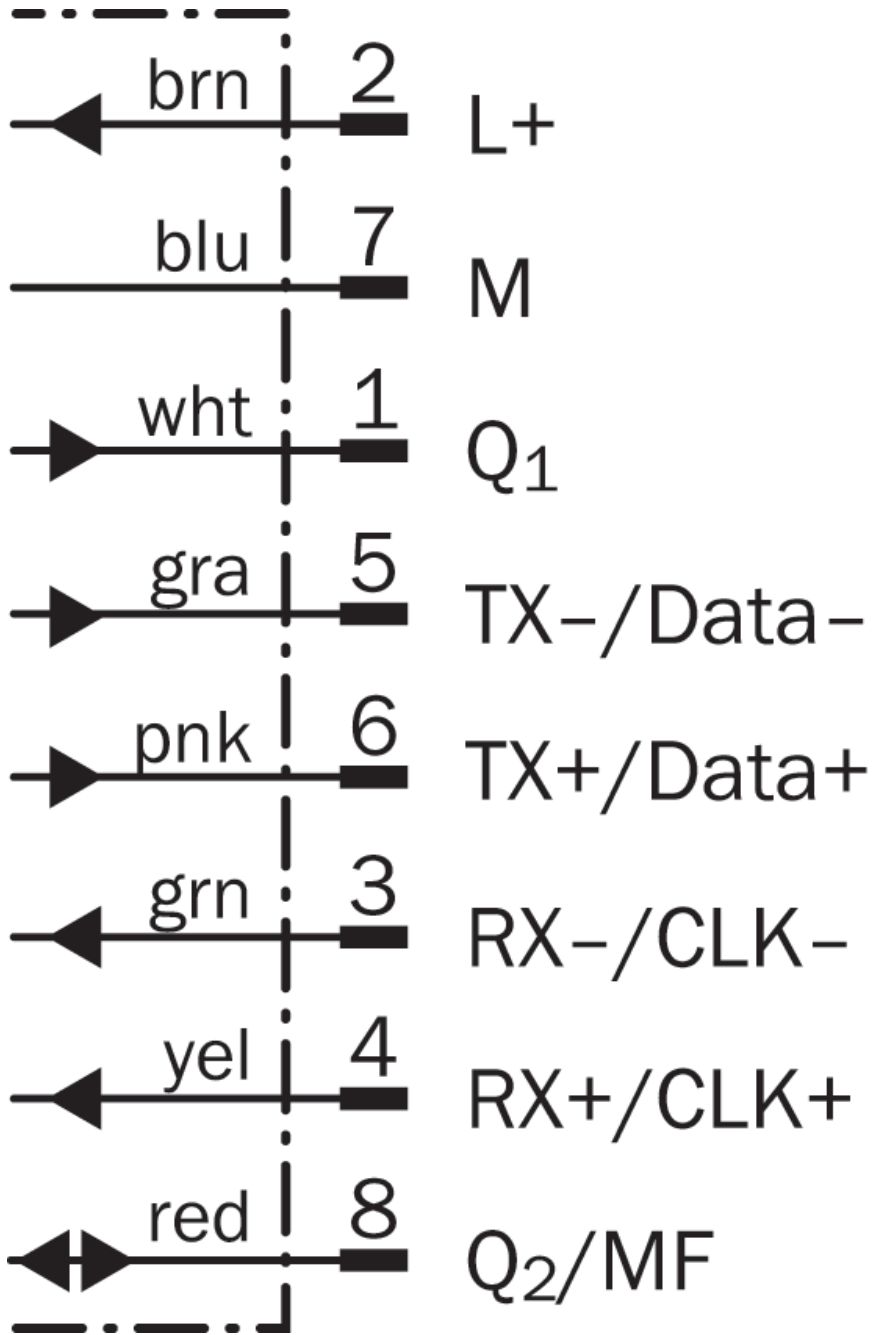
Dimensions in mm (inch)

- ① optical axis, sender
- ② optical axis, receiver
- ③ fixing hole
- ④ Reference surface = 0 mm
- ⑤ Status indicator digital output Q<sub>1</sub> (orange)
- ⑥ DT50 / DT50 Hi/DL50: Status display for supply voltage active (green), DS50 / DL50 Hi: Status display of digital output Q<sub>2</sub> (orange)
- ⑦ Control elements and display

Connection type Male connector M12, 8-pin

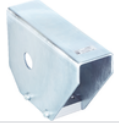





Connection diagram



## Recommended accessories

Other models and accessories → [www.sick.com/Dx50](http://www.sick.com/Dx50)

	Brief description	Type	part no.
device protection and care			
	<ul style="list-style-type: none"> <li><b>Description:</b> Weather protection hood for Dx35 / Dx50 / Dx50-2 / Dx80</li> </ul>	OBW-KHS-M02	2050205
	<ul style="list-style-type: none"> <li><b>Description:</b> Cooling plate for Dx50/Dx50-2/DT20 (for water cooling)</li> <li><b>Usable for:</b> DT20 Hi, Dx50, Dx50-2</li> </ul>	BEF-KP-Dx50/DT20	2055755
	<ul style="list-style-type: none"> <li><b>Description:</b> Thermal shield for Dx50 with NIR filter, for use with 2x cold plate BEF-KP-Dx50/DT20</li> </ul>	Heat protection filter for Dx50	2057137
Mounting systems			
	<ul style="list-style-type: none"> <li><b>Description:</b> Alignment unit</li> <li><b>Material:</b> Steel</li> <li><b>Details:</b> Steel, zinc coated</li> <li><b>Items supplied:</b> Mounting hardware for the sensor included</li> </ul>	BEF-AH-DX50	2048397
reflectors and optics			
	<ul style="list-style-type: none"> <li><b>Description:</b> Reflector plate, "diamond grade" reflective tape, 330 mm x 330 mm, base plate material: aluminum, screw connection</li> <li><b>Ambient operating temperature:</b> -34 °C ... +70 °C</li> </ul>	PL240DG	1017910
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Description:</b> Shielded</li> <li><b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Cable:</b> 2 m, 8-wire, PUR, halogen-free</li> <li><b>Connection systems:</b> Flying leads</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	YF2A68-020XXXLEAX	6032448

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)