



# DS50-N1122

Dx50

TIME-OF-FLIGHT SENSORS

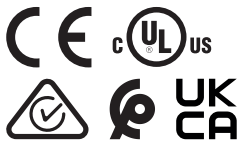
**SICK**  
Sensor Intelligence.



## Ordering information

Type	part no.
DS50-N1122	1047406

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



## Detailed technical data

### Features

<b>Measuring range</b>	200 mm ... 10,000 mm, 90% remission factor 200 mm ... 6,000 mm, 18% reflection factor 200 mm ... 4,000 mm, 6% remission factor
<b>Target</b>	Natural objects
<b>Resolution</b>	1 mm <sup>1)</sup>
<b>Repeatability</b>	≥ 2.5 mm <sup>2) 3) 4)</sup>
<b>Measurement accuracy</b>	± 10 mm <sup>1) 5)</sup>
<b>Response time</b>	20 ms ... 100 ms, 20 ms / 100 ms <sup>4)</sup>
<b>Switching frequency</b>	25 Hz / 5 Hz <sup>4)</sup>
<b>Light source</b>	Laser, red <sup>6)</sup>
<b>Type of light</b>	Visible red light
<b>Laser class</b>	1 (IEC 60825-1:2014, EN 60825-1:2014) <sup>7)</sup>
<b>Typ. light spot size (distance)</b>	15 mm x 15 mm (10 m)
<b>Additional function</b>	Set moving average: fast/slow Adjustable operating modes: Switching point (DtO) / Switching window/Background (ObSB) Teach-in, scaling and inversion of digital output Set hysteresis Multifunctional input: laser off / external teach / deactivated Unique measurement value Crosstalk safety Switch-off display Reset to factory default

<sup>1)</sup> Related to distance value on the display.

<sup>2)</sup> Equivalent to 1  $\sigma$ .

<sup>3)</sup> 6% ... 90% remission factor.

<sup>4)</sup> Dependent on the averaging setting: fast/slow.

<sup>5)</sup> 90% remission factor.

<sup>6)</sup> Wavelength: 658 nm; max. output: 120 mW; pulse duration: 5 ns; duty cycle: 1/400.

<sup>7)</sup> Wavelength: 658 nm; max. output: 120 mW; pulse duration: 2.5 ns; duty cycle: 1/400.

	Lock user interface
<b>Average laser service life (at 25 °C)</b>	100,000 h
<b>Safety-related parameters</b>	
	MTTF <sub>D</sub> 101 years
	DC <sub>avg</sub> 0%

- 1) Related to distance value on the display.
- 2) Equivalent to 1  $\sigma$ .
- 3) 6% ... 90% remission factor.
- 4) Dependent on the averaging setting: fast/slow.
- 5) 90% remission factor.
- 6) Wavelength: 658 nm; max. output: 120 mW; pulse duration: 5 ns; duty cycle: 1/400.
- 7) Wavelength: 658 nm; max. output: 120 mW; pulse duration: 2.5 ns; duty cycle: 1/400.

## Interfaces

<b>Digital output</b>	
	Number 2 <sup>1) 2)</sup>
	Type NPN
	Maximum output current I <sub>A</sub> ≤ 100 mA
<b>Multifunctional input (MF)</b>	1 x <sup>3) 4)</sup>
<b>Hysteresis</b>	1 mm ... 9,999 mm

- 1) Output Q short-circuit protected.
- 2) NPN: HIGH = < 2.5 V / LOW = V<sub>S</sub>.
- 3) Response time ≤ 60 ms.
- 4) NPN: HIGH = ≤ 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>	≤ 1.85 W <sup>2)</sup>
<b>Ripple</b>	≤ 5 V <sub>pp</sub> <sup>3)</sup>
<b>Initialization time</b>	≤ 350 ms
<b>Warm-up time</b>	≤ 15 min
<b>Display</b>	LC display, 2 x LED
<b>Enclosure rating</b>	IP65
<b>Protection class</b>	III

- 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
<b>Housing material</b>	Metal (zinc diecast)
<b>Window material</b>	Plastic (PMMA)
<b>Weight</b>	200 g
<b>Connection type</b>	Male connector, M12, 5-pin

## Ambient data

<b>Ambient temperature, operation</b>	-30 °C ... +65 °C
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	-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

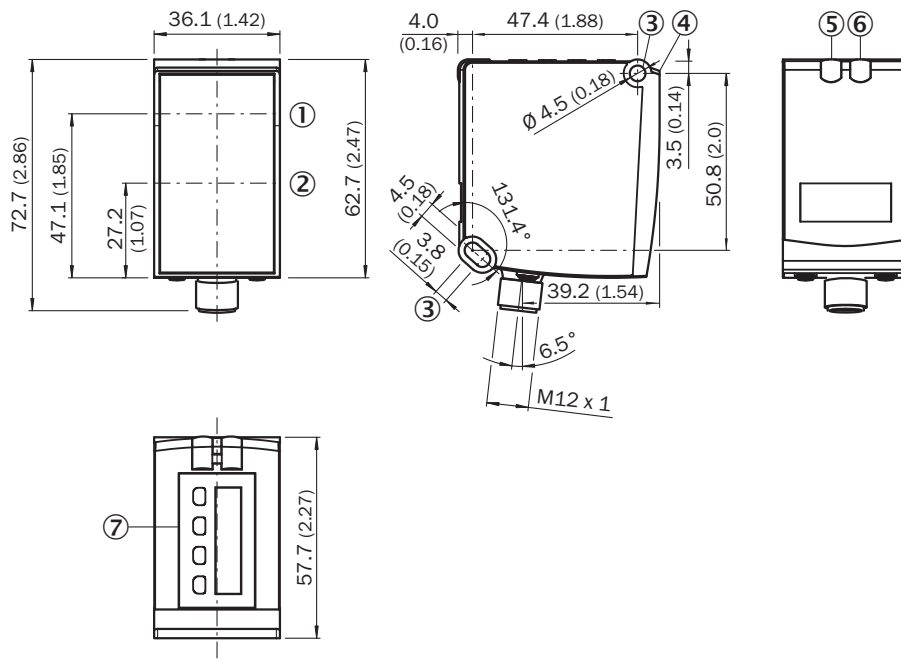
Certificates

<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China RoHS</b>	✓
<b>cULus certificate</b>	✓

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

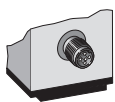
### Dimensional drawing



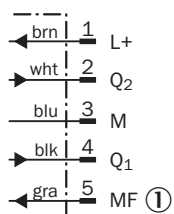
Dimensions in mm (inch)

- 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 Plug, M12, 5-pin



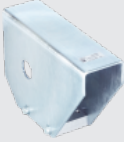



### Connection diagram



- ① Multifunctional input (MF)

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 Cover 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> Mounting bracket, steel, zinc coated</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> <li><b>Suitable for:</b> Dx50, Dx80, Dx50, Dx80</li> </ul>	BEF-WN-DX50	2048370

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 5-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A15-020VB5XLEAX	2096215
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 5-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A15-020UB5XLEAX	2095617
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 5-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A15-020VB5XLEAX	2096239
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 0.6 m, 5-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A15-C60VB5XLEAX	2145573
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 1 m, 5-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A15-010VB5XLEAX	2145574
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 3 m, 5-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A15-030VB5XLEAX	2145575
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 0.6 m, 5-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A15-C60VB5XLEAX	2145570
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 3 m, 5-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A15-030VB5XLEAX	2145572

## 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.”

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