Data sheet




# DL50-N2225

## Dx50

**TIME-OF-FLIGHT SENSORS**

SICK
Sensor Intelligence.



## Ordering information

| Type | part no. |
|---|---|
| DL50-N2225 | 1048419 |

Other models and accessories ➜ www.sick.com/Dx50

## Detailed technical data

### Features

| | |
|---|---|
| **Measuring range** | 200 mm ... 50,000 mm, on “diamond grade” reflective tape |
| **Target** | Reflector |
| **Resolution** | 0.1 mm |
| **Repeatability** | ≥ 0.25 mm [1) 2) 3)] |
| **Measurement accuracy** | ± 3 mm [4)] |
| **Response time** | 10 ms ... 160 ms, 10 ms / 40 ms / 160 ms [2) 5)] |
| **Output time** | 2.5 ms [6) 7)] |
| **Light source** | Laser, red |
| **Type of light** | Visible red light |
| **Laser class** | 1 (IEC 60825-1:2014, EN 60825-1:2014) [8)] |
| **Typ. light spot size (distance)** | 15 mm x 15 mm (10 m) |
| **Additional function** | Set moving average fast/medium/slow<br>Switching mode: distance to object (DtO)<br>Teach-in, scaling and inversion of digital output<br>Set hysteresis<br>Multifunctional input and output: Laser off, external teach, digital output 2, deactivated<br>Adjustable resolution of the SSI distance output: 0.0625 mm / 0.1 mm / 0.125 mm / 1 mm<br>Unique measurement value<br>Crosstalk safety<br>Switch-off display<br>Reset to factory default |

1) Equivalent to 1 σ.
2) Dependent on the averaging setting: fast/medium/slow.
3) Typical value.
4) 200 mm ... 4,000 mm: ≤ ± 5 mm.
5) Lateral entry of the object into the measuring range.
6) For baud rate 115,200 bps.
7) Continuous change of distance in measuring range.
8) Wavelength: 658 nm; max. output: 80 mW; pulse duration: 2.5 ns; duty cycle: 1/240.

| | |
|---|---|
| | Lock user interface |
| **Average laser service life (at 25 °C)** | 100,000 h |
| **Safety-related parameters** | |
| $MTTF_D$ | 101 years |
| $DC_{avg}$ | 0% |

[1] Equivalent to 1 σ.
[2] Dependent on the averaging setting: fast/medium/slow.
[3] Typical value.
[4] 200 mm ... 4,000 mm: ≤ ± 5 mm.
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## Interfaces

| | |
|---|---|
| **Serial** | ✓ , RS-422 |
| **Digital output** | |
| Number | 1 ... 2 [1] [2] |
| Type | NPN |
| Function | Dependent on the set function MF: digital output 2 / laser off, external teach |
| Maximum output current $I_A$ | ≤ 100 mA |
| **Multifunctional input (MF)** | – / 1 x [3] [4] [5] |
| **Hysteresis** | 1 mm ... 1,000 mm |

[1] Output Q short-circuit protected.
[2] NPN: HIGH = < 2.5 V / LOW = $V_S$.
[3] Dependent on the set function MF: digital output 2 / laser off, external teach.
[4] Response time ≤ 60 ms.
[5] NPN: HIGH = ≤ 2.5 V / LOW = $V_S$.

## Electronics

| | |
|---|---|
| **Supply voltage $U_B$** | DC 10 V ... 30 V [1] |
| **Power consumption** | ≤ 2.1 W [2] |
| **Ripple** | ≤ 5 $V_{pp}$ [3] |
| **Initialization time** | ≤ 250 ms |
| **Warm-up time** | ≤ 15 min |
| **Display** | LC display, 2 x LED |
| **Enclosure rating** | IP65 |
| **Protection class** | 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 $V_S$ tolerances.

## Mechanics

| | |
|---|---|
| **Dimensions (W x H x D)** | 36.1 mm x 62.7 mm x 57.7 mm |
| **Housing material** | Metal (zinc diecast) |
| **Window material** | Plastic (PMMA) |

| | |
|---|---|
| **Weight** | 200 g |
| **Connection type** | Male connector, M12, 8-pin |

## Ambient data

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

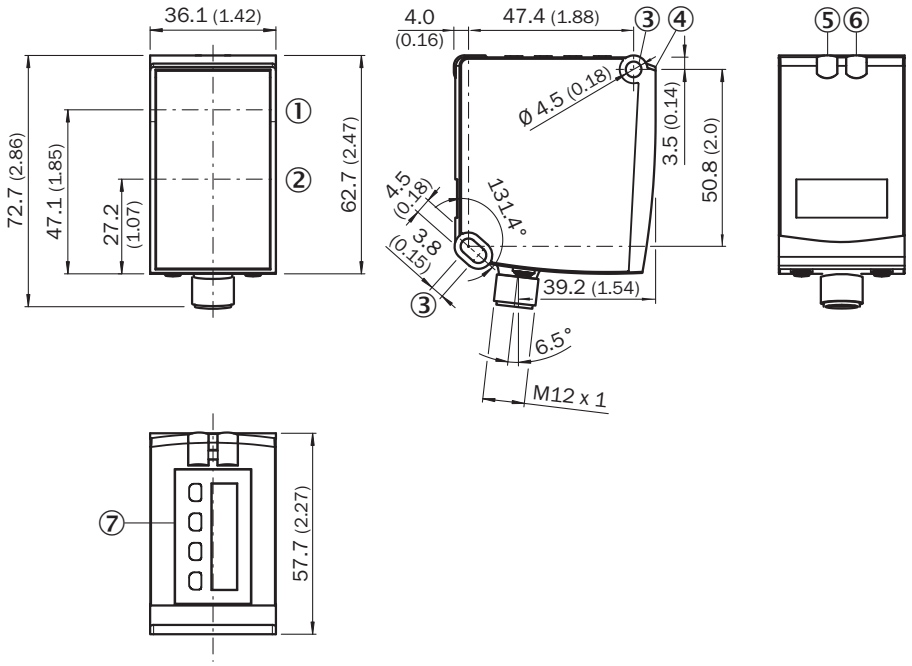
## Classifications

| | |
|---|---|
| **ECLASS 5.0** | 27270801 |
| **ECLASS 5.1.4** | 27270801 |
| **ECLASS 6.0** | 27270801 |
| **ECLASS 6.2** | 27270801 |
| **ECLASS 7.0** | 27270801 |
| **ECLASS 8.0** | 27270801 |
| **ECLASS 8.1** | 27270801 |
| **ECLASS 9.0** | 27270801 |
| **ECLASS 10.0** | 27270801 |
| **ECLASS 11.0** | 27270801 |
| **ECLASS 12.0** | 27270916 |
| **ETIM 5.0** | EC001825 |
| **ETIM 6.0** | EC001825 |
| **ETIM 7.0** | EC001825 |
| **ETIM 8.0** | EC001825 |
| **UNSPSC 16.0901** | 41111613 |

## Certificates

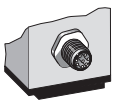
| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **Moroccan declaration of conformity** | ✓ |
| **China-RoHS** | ✓ |
| **cULus certificate** | ✓ |

## Dimensional drawing

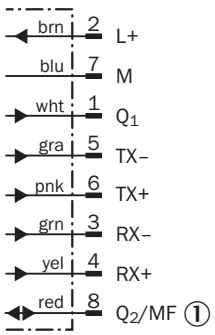



Dimensions in mm (inch)
① optical axis, sender
② optical axis, receiver
③ fixing hole
④ Reference surface = 0 mm
⑤ Status indicator digital output $Q_1$ (orange)
⑥ DT50/DT50 Hi/DL50: Status display for supply voltage active (green), DS50/DL50 Hi: Status display of digital output $Q_2$ (orange)
⑦ Control elements and display

## Connection type Male connector M12, 8-pin



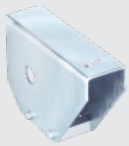
## Connection diagram




① Multifunctional in- and output

## Recommended accessories

Other models and accessories ➜ www.sick.com/Dx50

| | Brief description | Type | part no. |
|---|---|---|---|
| device protection and care | | | |
|  | • **Description:** Weather Cover for Dx35/Dx50/Dx50-2/Dx80 | OBW-KHS-M02 | 2050205 |
|  | • **Description:** Cooling plate for Dx50/Dx50-2/DT20 (for water cooling)<br>• **Usable for:** Dx50 | BEF-KP-Dx50/DT20 | 2055755 |
|  | • **Description:** Thermal shield for Dx50 with NIR filter, for use with 2x cold plate BEF-KP-Dx50/DT20 | Heat protection filter for Dx50 | 2057137 |
| Mounting systems | | | |
|  | • **Description:** Alignment unit<br>• **Material:** Steel<br>• **Details:** Steel, zinc coated<br>• **Items supplied:** Mounting hardware for the sensor included | BEF-AH-DX50 | 2048397 |
| reflectors and optics | | | |
|  | • **Description:** Reflector plate, “diamond grade” reflective tape, 330 mm x 330 mm, base plate material: aluminum, screw connection<br>• **Ambient operating temperature:** –34 °C ... +70 °C | PL240DG | 1017910 |
| connectors and cables | | | |
|  | • **Connection type head A:** Female connector, M12, 8-pin, straight<br>• **Connection type head B:** Flying leads<br>• **Cable:** 2 m, 8-wire, PUR, halogen-free<br>• **Description:** Shielded<br>• **Connection systems:** Flying leads | YF2A68-020XXXXLEAX | 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:

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