Data sheet




# DT50-P2113

## Dx50

**TIME-OF-FLIGHT SENSORS**

SICK
Sensor Intelligence.



## Ordering information

| Type | part no. |
|---|---|
| DT50-P2113 | 1047314 |

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

## Detailed technical data

### Features

| | |
|---|---|
| **Measuring range** | 200 mm ... 20,000 mm, 90% remission factor<br>200 mm ... 8,500 mm, 18% reflection factor<br>200 mm ... 5,000 mm, 6% remission factor |
| **Target** | Natural objects |
| **Resolution** | 1 mm |
| **Repeatability** | ≥ 1 mm [1) 2) 3)] |
| **Measurement accuracy** | ± 7 mm [4)] |
| **Response time** | 15 ms ... 80 ms, 15 ms / 30 ms / 80 ms [3) 5)] |
| **Output time** | ≥ 2 ms [6)] |
| **Light source** | Laser, red |
| **Type of light** | Visible red light |
| **Laser class** | 2 (IEC 60825-1:2014, EN 60825-1:2014) [7)] |
| **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>Teach-in, scaling and inversion of analog output<br>Multifunctional input: laser off / external teach / deactivated<br>Switch-off display<br>Reset to factory default<br>Lock user interface |

1) Equivalent to 1 σ.
2) 6% ... 90% remission factor.
3) Dependent on the averaging setting: fast/medium/slow.
4) 90% remission factor.
5) Lateral entry of the object into the measuring range.
6) Continuous change of distance in measuring range.
7) Wavelength: 658 nm; max. output: 180 mW; pulse duration: 5 ns; duty cycle: 1/200.

| | |
|---|---|
| **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] 6% ... 90% remission factor.
[3] Dependent on the averaging setting: fast/medium/slow.
[4] 90% remission factor.
[5] Lateral entry of the object into the measuring range.
[6] Continuous change of distance in measuring range.
[7] Wavelength: 658 nm; max. output: 180 mW; pulse duration: 5 ns; duty cycle: 1/200.

## Interfaces

| | |
|---|---|
| **Digital output** | |
| Number | 1 [1) 2)] |
| Type | PNP |
| Maximum output current $I_A$ | ≤ 100 mA |
| **Analog output** | |
| Number | 1 |
| Type | Current output |
| Current | 4 mA ... 20 mA, ≤ 300 Ω |
| Resolution | 16 bit |
| **Multifunctional input (MF)** | 1 x [3) 4)] |
| **Hysteresis** | 10 mm ... 1,000 mm |

[1] Output Q short-circuit protected.
[2] PNP: HIGH = $V_S$ - (< 2.5 V) / LOW = 0 V.
[3] Response time ≤ 15ms.
[4] PNP: HIGH = $V_S$ / LOW = ≤ 2.5 V.

## 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, 5-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 |

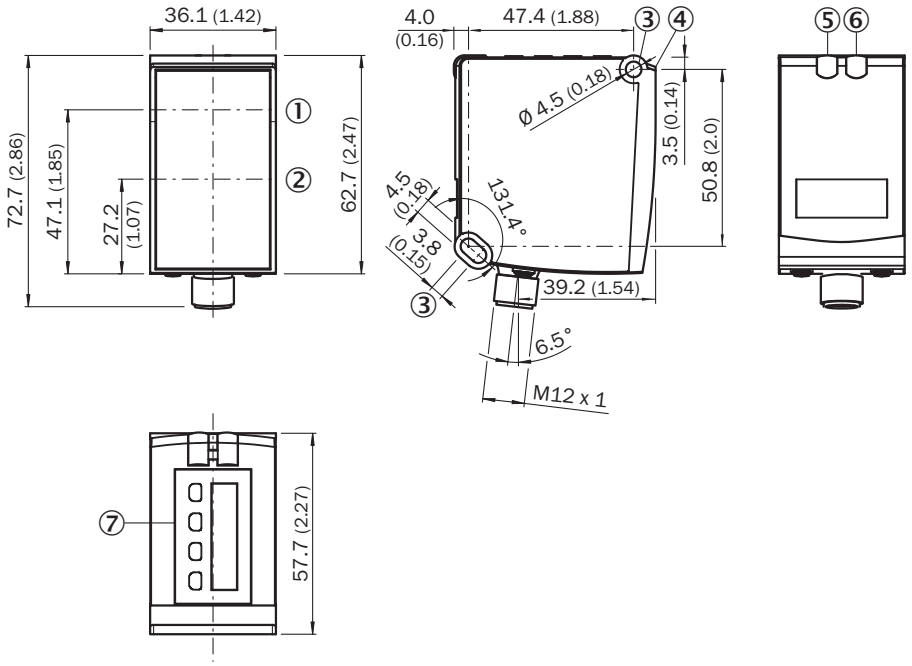
## Classifications

| | |
|---|---|
| **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

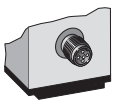
| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **Moroccan declaration of conformity** | ✓ |
| **China-RoHS** | ✓ |
| **cULus certificate** | ✓ |

## Dimensional drawing

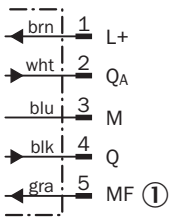



Dimensions in mm (inch)
① optical axis, sender
② optical axis, receiver
③ fixing hole
④ Reference surface = 0 mm
⑤ Status indicator digital output $Q_1$ (orange)
⑥ DT50/DT50 Hi/DL50: Status display for supply voltage active (green), DS50/DL50 Hi: Status display of digital output $Q_2$ (orange)
⑦ Control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

## Connection type Plug, M12, 5-pin



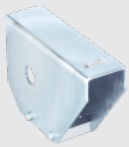
## Connection diagram




① Multifunctional input (MF)

## 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:** Mounting bracket, steel, zinc coated<br>• **Material:** Steel<br>• **Details:** Steel, zinc coated<br>• **Items supplied:** Mounting hardware for the sensor included | BEF-WN-DX50 | 2048370 |

| | Brief description | Type | part no. |
|---|---|---|---|
| connectors and cables | | | |
|  | • **Connection type head A:** Female connector, M12, 5-pin, angled, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 2 m, 5-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals, Uncontaminated zones | YG2A15-020VB5XLEAX | 2096215 |
|  | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 2 m, 5-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals, Uncontaminated zones | YF2A15-020VB5XLEAX | 2096239 |
|  | • **Connection type head A:** Female connector, M12, 5-pin, angled, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 0.6 m, 5-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals, Uncontaminated zones | YG2A15-C60VB5XLEAX | 2145573 |
|  | • **Connection type head A:** Female connector, M12, 5-pin, angled, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 1 m, 5-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals, Uncontaminated zones | YG2A15-010VB5XLEAX | 2145574 |
|  | • **Connection type head A:** Female connector, M12, 5-pin, angled, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 3 m, 5-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals, Uncontaminated zones | YG2A15-030VB5XLEAX | 2145575 |
|  | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 0.6 m, 5-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals, Uncontaminated zones | YF2A15-C60VB5XLEAX | 2145570 |
|  | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 3 m, 5-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals, Uncontaminated zones | 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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