SICK.COM




DATA SHEET

# DT50-P2113

Dx50
Time-of-flight sensors

SICK Sensor Intelligence




## TIME-OF-FLIGHT SENSORS

# DT50-P2113

### ORDERING INFORMATION

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

Further device versions and accessories at 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 | 1,000 µm |
| 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)] |
| Emitted beam | |
| Light source | Laser, red |
| Type of light | Visible red light |
| Typ. light spot size (distance) | 15 mm x 15 mm (10 m) |
| Key laser figures | |
| Normative reference | IEC 60825-1:2014, EN 60825-1:2014 |
| Laser class | 2 [7)] [8)] |
| Average laser service life (at 25 °C) | 100,000 h |
| Additional function | Set moving average fast/medium/slow<br>Switching mode: distance to object (DtO) |

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) Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

8) Wavelength: 658 nm; max. output: 180 mW; pulse duration: 5 ns; duty cycle: 1/200.

| | |
|---|---|
| | 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 |
| 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] Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

[8] 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 |
| Connection type | Male connector, M12, 5-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 $V_S$ 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 |

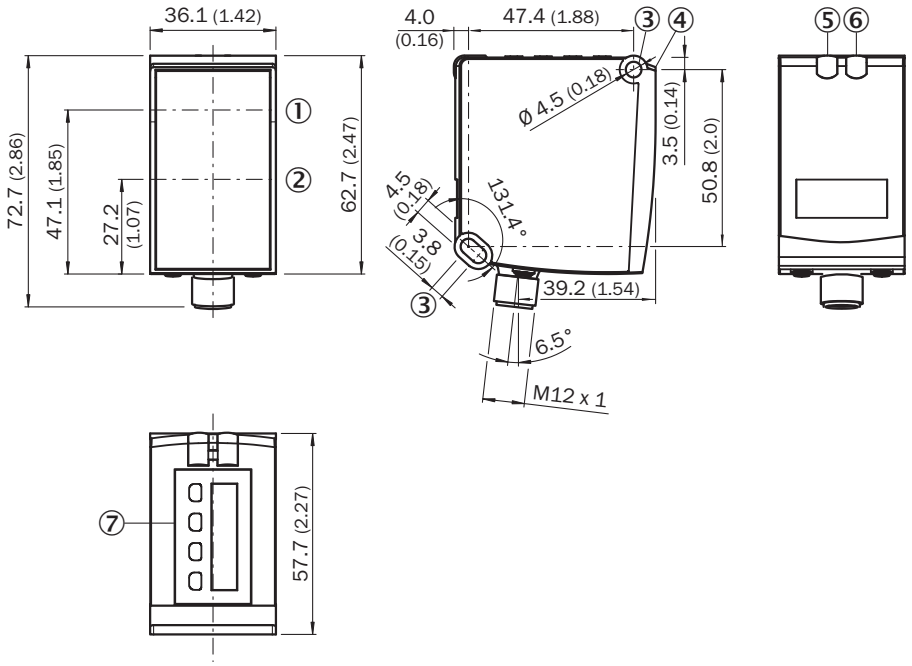
## AMBIENT DATA

| | |
|---|---|
| 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 |

## CERTIFICATES

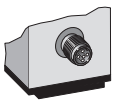
| | |
|---|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |
| ACMA declaration of conformity | ✓ |
| Moroccan declaration of conformity | ✓ |
| China RoHS | ✓ |
| China Compulsory Product Certification (CCC) exempt | ✓ |
| cULus certificate | ✓ |

**DIMENSIONAL DRAWING**

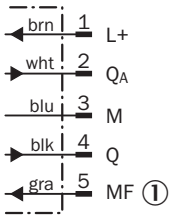



Dimensions in mm (inch)
① optical axis, sender
② optical axis, receiver
③ fixing hole
④ Reference surface = 0 mm
⑤ Status indicator digital output $Q_1$ (orange)
⑥ DT50 / DT50 Hi/DL50: Status display for supply voltage active (green), DS50 / DL50 Hi: Status display of digital output $Q_2$ (orange)
⑦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

**CONNECTION TYPE PLUG, M12, 5-PIN**



**CONNECTION DIAGRAM**




① Multifunctional input (MF)

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1047314

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# SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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