SICK.COM



DATA SHEET

DT50-2B215552

Dx50-2
Time-of-flight sensors

SICK
Sensor Intelligence



TIME-OF-FLIGHT SENSORS

DT50-2B215552

ORDERING INFORMATION

Type	part no.
DT50-2B215552	1075271

Further device versions and accessories at www.sick.com/Dx50-2

DETAILED TECHNICAL DATA

FEATURES

Measuring range	200 mm ... 30,000 mm, 90% remission factor [1) 2)] 200 mm ... 17,000 mm, 18% remission factor 200 mm ... 10,000 mm, 6% remission factor
Target	Natural objects
Resolution	100 µm
Repeatability	≥ 0.5 mm [2) 3) 4)]
Measurement accuracy	± 7 mm [4)]
Response time	1.67 ms ... 150 ms, 1.67 ms / 6.67 ms / 16.67ms / 50 ms / 150 ms [5) 6)]
Switching frequency	500 Hz / 125 Hz / 50 Hz / 16.6 Hz / 5.5 Hz [5) 6)]
Output time	0.67 ms / 2.67 ms / 6.67 ms / 20 ms / 60 ms [5) 7)]
Emitted beam	
Light source	Laser, red [8)]
Type of light	Visible red light
Typ. light spot size (distance)	10 mm x 10 mm (at 10 m)
Key laser figures	
Normative reference	IEC 60825-1:2014, EN 60825-1:2014
Laser class	1 [9)]

[1)] For speed setting Slow.

[2)] See repeatability characteristic lines.

[3)] Equivalent to 1 σ.

[4)] 6% ... 90% remission factor.

[5)] Depending on the set speed: Super Fast ... Super Slow.

[6)] Lateral entry of the object into the measuring range.

[7)] Continuous change of distance in measuring range.

[8)] Wavelength: 658 nm; max. output: 250 mW; pulse duration: 3 ns; duty cycle: 1/666.

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

Average laser service life (at 25 °C)	100,000 h
Additional function	Set speed: Super Fast ... Super Slow Teach-in, scaling and inversion of analog output Output Q_2 adaptable: Current output / Voltage output / Digital output / Q_1 not / deactivated Switching mode: Distance to Object (DtO) / switching window / object between sensor and background (ObSB) Teach-in, scaling and inversion of digital output Multifunctional input: laser off / external teach / deactivated Reset to factory default Shape comparison: based on the distance measured over a period of time Hold measurement value Switch-off or lock display Easy teach option
Safety-related parameters	
$MTTF_D$	101 years
DC_{avg}	0%

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INTERFACES

IO-Link	✓ , IO-Link V1.1, COM3 (230,4 kBaud)
Function	Process data, parameterization, diagnosis, data storage
Digital output	
Number	1 ... 2 [1] [2] [3]
Type	Push-pull: PNP/NPN
Function	Complementary digital outputs (Q, $\bar{Q}$) Output Q_2 adaptable: Current output / Voltage output / Digital output / Q_1 not / deactivated
Maximum output current I_A	≤ 100 mA
Analog output	
Number	1
Type	Current output / voltage output
Function	Output Q_2 adaptable: Current output / Voltage output / Digital output / Q_1 not / deactivated
Current	4 mA ... 20 mA, ≤ 450 Ω
Voltage	0 V ... 10 V, ≥ 50,000 Ω
Resolution	16 bit
Multifunctional input (MF)	1 x [4]
Hysteresis	0 mm ... 29,950 mm

[1] Output Q short-circuit protected.

[2] Voltage drop < 3 V.

[3] Max. total output current < 200 mA.

[4] Response time ≤ 60 ms.

ELECTRONICS

Supply voltage U_B	DC 10 V ... 30 V [1) 2)]
Power consumption	≤ 1.7 W [3)]
Ripple	≤ 5 V_{pp} [4)]
Initialization time	≤ 300 ms
Warm-up time	≤ 15 min
Display	3 x LED, LC display
Enclosure rating	IP65 IP67
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) When using IO-Link output V_s > 18 V. When using analog output V_s > 13 V.

3) Without load, at ≥ 0 °C.

4) May not fall short of or exceed V_s tolerances.

MECHANICS

Dimensions (W x H x D)	36.2 mm x 63 mm x 58.6 mm
Housing material	Metal (zinc diecast)
Window material	Plastic (PMMA)
Weight	235 g

AMBIENT DATA

Ambient temperature, operation	–40 °C ... +65 °C, U_v ≤ 24 V –30 °C ... +140 °C, operation with 2 cooling plates (2055755) / optionally with heat protection filter (2085598) [1)]
Ambient temperature, storage	–40 °C ... +75 °C
Max. rel. humidity (not condensing)	≤ 95 %
Typ. Ambient light immunity	40,000 lx
Vibration resistance	(IEC 60068-2-64:2008) Noise test: 20 Hz ... 500 Hz, 10 g RMS, 2 h / axis
Shock resistance	(IEC 60068-2-27:2008) 30 g, 11 ms, 3 axes, ± 3 single shocks / axis (IEC 60068-2-27:2008) 10 g, 6 ms, 3 axes, ± 500 shocks / axis (IEC 60068-2-27:2008) 70 g, 6 ms, Y-axis, ± 100,000 shocks
Electromagnetic compatibility (EMC)	EN 61000-6-2, EN 61000-6-4 [2)]

1) With water cooling.

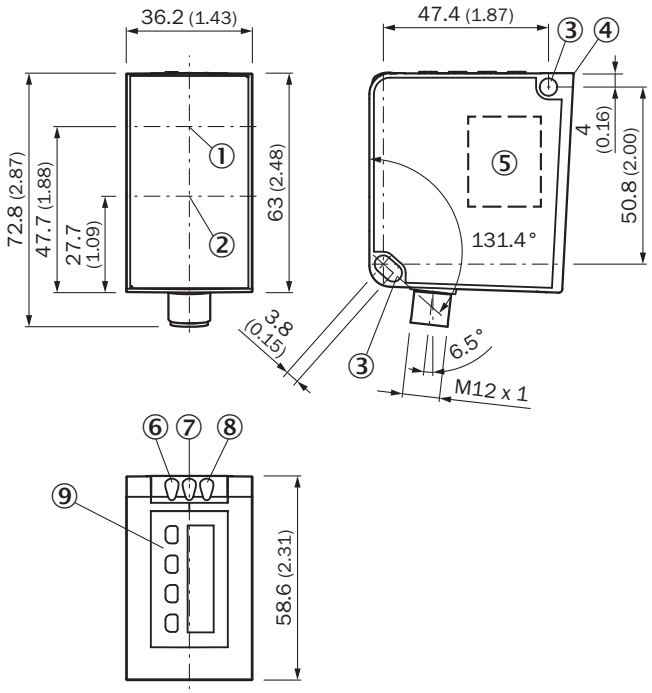
2) This is a Class A device. This device can cause radio interference in living quarters.

CERTIFICATES

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cULus certificate	✓
IO-Link certificate	✓

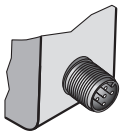
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING

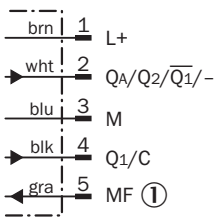


Dimensions in mm (inch)
① Optical axis, sender
② Optical axis, receiver
③ Mounting hole, Ø 4.5 mm
④ Reference surface = 0 mm
⑤ laser warning label
⑥ status indicator output Qa/Q2
⑦ Status LEDs output Q_1
⑧ supply voltage status display
⑨ Control elements and display

CONNECTION TYPE



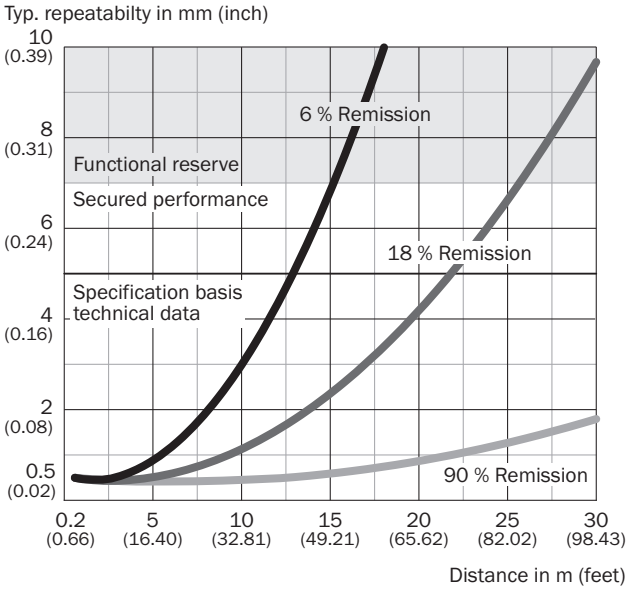
CONNECTION DIAGRAM



① Multifunctional input (MF)

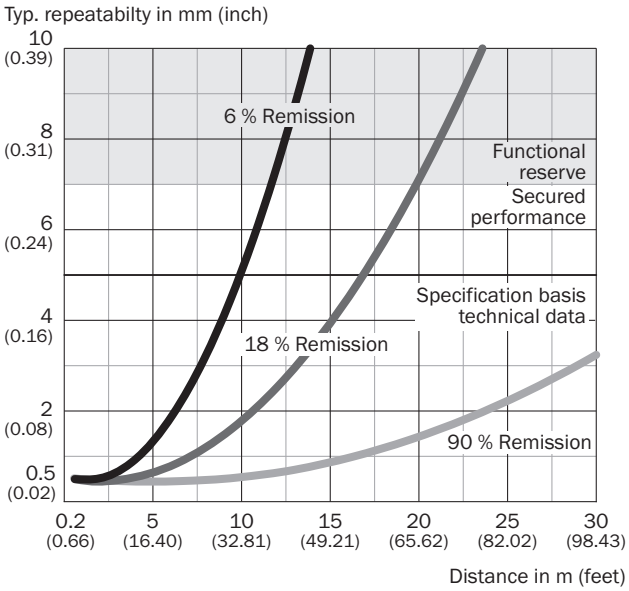
CHARACTERISTIC CURVE 1) SUPER SLOW

Super Slow



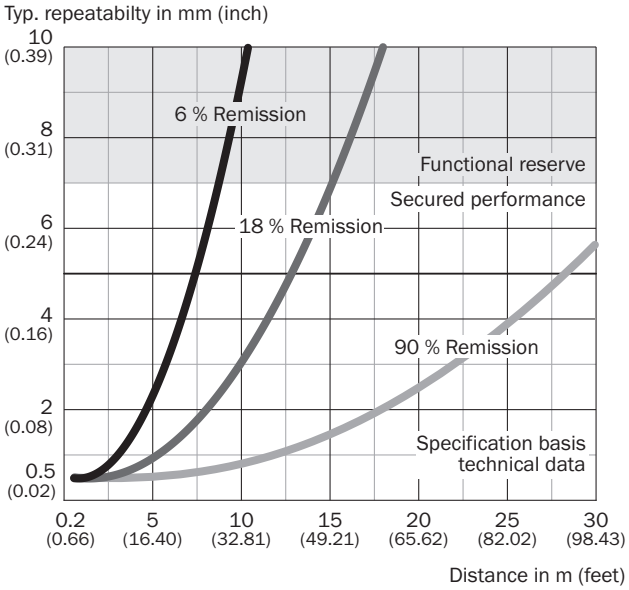
CHARACTERISTIC CURVE 2) SLOW

Slow



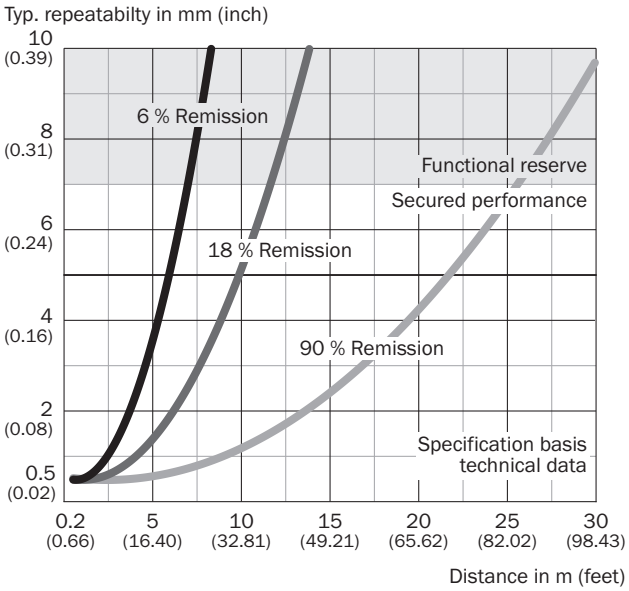
CHARACTERISTIC CURVE 3) MEDIUM

Medium



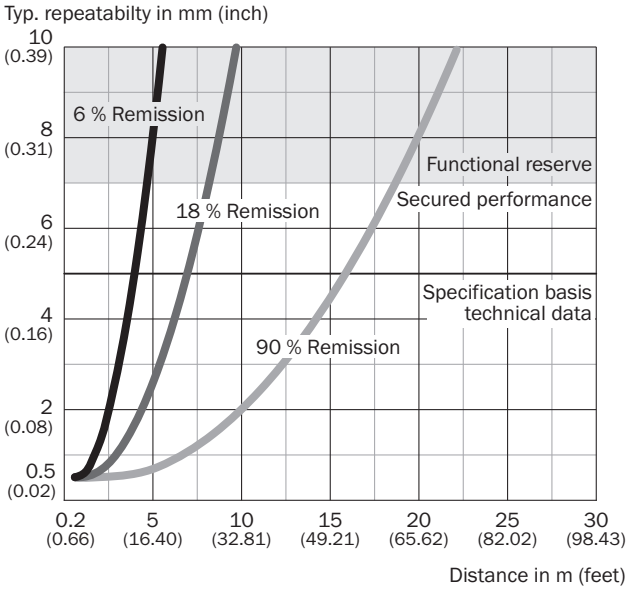
CHARACTERISTIC CURVE 4) FAST

Fast



CHARACTERISTIC CURVE 5) SUPER FAST

Super Fast



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/1075271

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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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