



DATA SHEET

DT50-2B415252

Dx50-2
Time-of-flight sensors



TIME-OF-FLIGHT SENSORS

DT50-2B415252

ORDERING INFORMATION

Type	part no.
DT50-2B415252	1068975
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% reflection factor 200 mm ... 10,000 mm, 6% remission factor
Target	Natural objects
Resolution	0.1 mm
Repeatability	≥ 0.5 mm ^{2) 3) 4)}
Measurement accuracy	± 7 mm ⁴⁾
Response time	0.83 ms ... 75 ms, 0.83 ms / 3.33 ms / 8.33 ms / 25 ms / 75 ms ^{5) 6)}
Switching frequency	1,000 Hz/250 Hz/100 Hz/33 Hz/11 Hz ^{5) 6)}
Output time	0.33 ms/1.33 ms/3.33 ms/10 ms/30 ms ^{5) 7)}
Light source	Laser, red ⁸⁾
Type of light	Visible red light
Laser class	2 (IEC 60825-1:2014, EN 60825-1:2014)
Typ. light spot size (distance)	10 mm x 10 mm (at 10 m)
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)

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: 1/250.

	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 Wireless operation via Wireless LAN Activate Wireless LAN interface via gesture
Average laser service life (at 25 °C)	100,000 h

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INTERFACES

IO-Link	Function	✓ , IO-Link V1.1, COM3 (230,4 kBaud) Process data, parameterization, diagnosis, data storage
	Remark	✓
Wireless LAN	Function	App for configuring SOPASair, IEEE 802.11 b/g, encryption: WPA2 / WPA
	Data transmission rate	Parameterization, diagnosis, access point / client ≤ 54 Mbit/s
Digital output	Number	1 ... 2 ^{1) 2) 3)}
	Type	Push-pull: PNP/NPN
	Function	Complementary digital outputs (Q, $\bar{Q}$)
	Maximum output current I_A	Output Q ₂ adaptable: Current output / Voltage output / Digital output / Q ₁ not / deactivated ≤ 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, $\leq 450 \Omega$
	Voltage	0 V ... 10 V, $\geq 50,000 \Omega$
	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⁾

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.

Ripple	$\leq 5\text{ V}_{\text{pp}}$ ⁴⁾
Initialization time	$\leq 250\text{ ms}$
Warm-up time	$\leq 15\text{ min}$
Display	3 x LED
Enclosure rating	IP65 IP67
Protection class	III

¹⁾ Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

²⁾ When using IO-Link output $V_s > 18\text{ V}$. When using analog output $V_s > 13\text{ V}$.

³⁾ Without load, at $\geq 0\text{ }^\circ\text{C}$.

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

MECHANICS

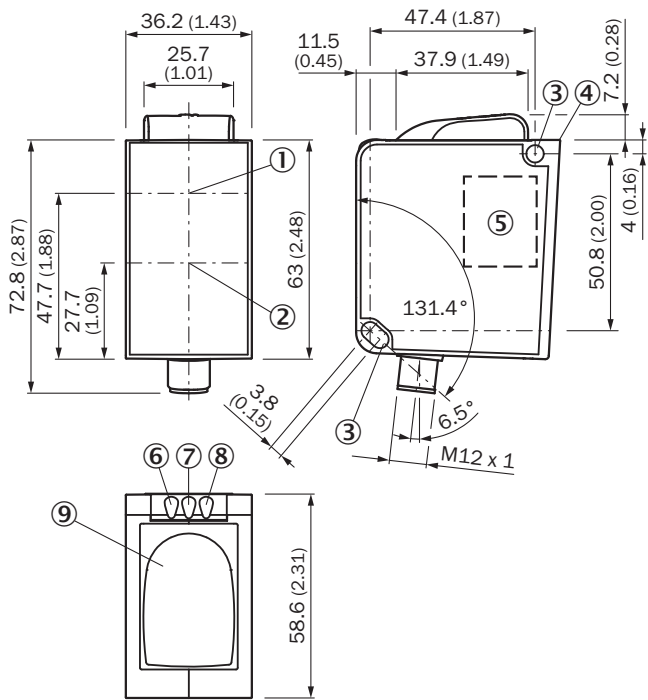
Dimensions (W x H x D)	36.2 mm x 63 mm x 58.6 mm
Housing material	Metal (zinc diecast)
Window material	Plastic (PMMA)
Weight	235 g
Connection type	Male connector, M12, 5-pin

AMBIENT DATA

Ambient temperature, operation	-40 °C ... +65 °C, $U_v \leq 24\text{ V}$ -30 °C ... +80 °C, operation with 2 cooling plates -30 °C ... +140 °C, operation with 2 cooling plates and protection filter
Ambient temperature, storage	-40 °C ... +75 °C
Typ. Ambient light immunity	40,000 lx
Vibration resistance	(IEC 60068-2-6:2007) Sinusoidal resonance measurement: 10 Hz ... 1,000 Hz (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, 6 axes, ± 3 single shocks / axis (IEC 60068-2-27:2008) 10 g, 6 ms, 6 axes, ± 500 shocks / axis (IEC 60068-2-27:2008) 70 g, 6 ms, 1 axis, $\pm 100,000$ shocks / axis
Electromagnetic compatibility (EMC)	EN 61000-6-2, EN 61000-6-4 ¹⁾

¹⁾ This is a Class A device. This device can cause radio interference in living quarters.

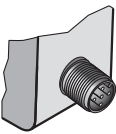
DIMENSIONAL DRAWING



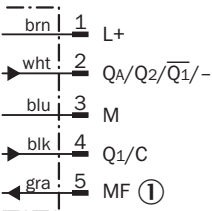
Dimensions in mm (inch)

- 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 Q₁
- ⑧ supply voltage status display
- ⑨ Wireless LAN antenna

CONNECTION TYPE



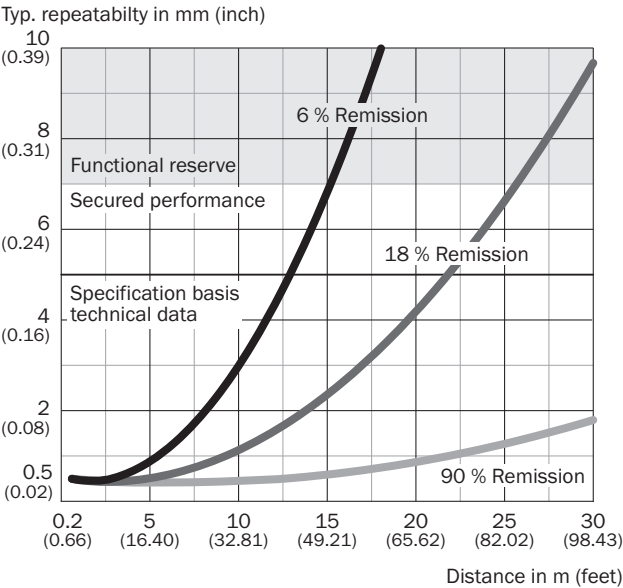
CONNECTION DIAGRAM



① Multifunctional input (MF)

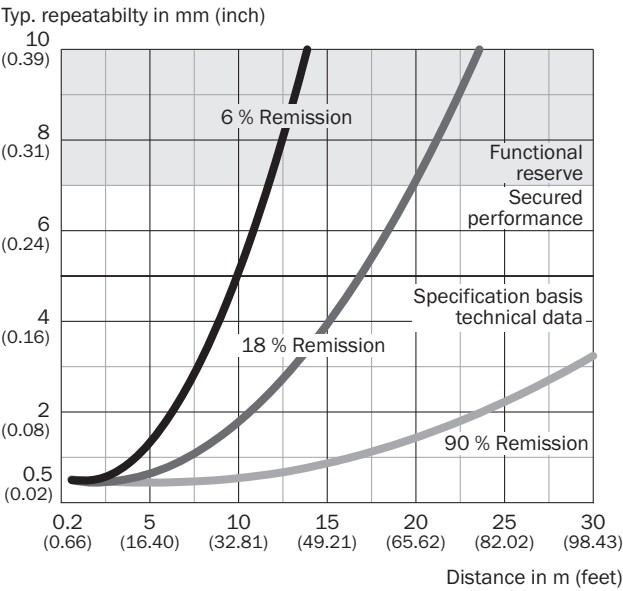
CHARACTERISTIC CURVE 1) SUPER SLOW

Super Slow



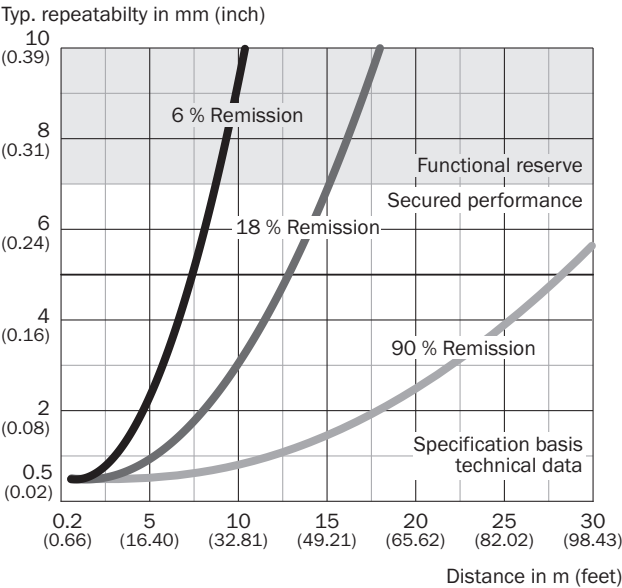
CHARACTERISTIC CURVE 2) SLOW

Slow



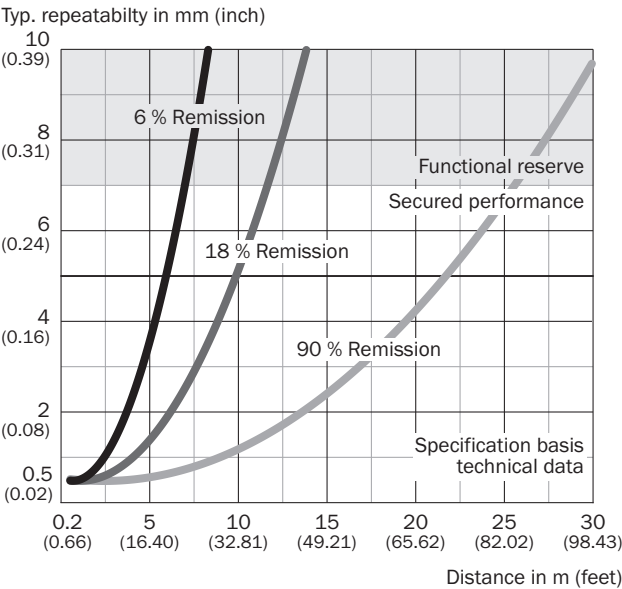
CHARACTERISTIC CURVE 3) MEDIUM

Medium



CHARACTERISTIC CURVE 4) FAST

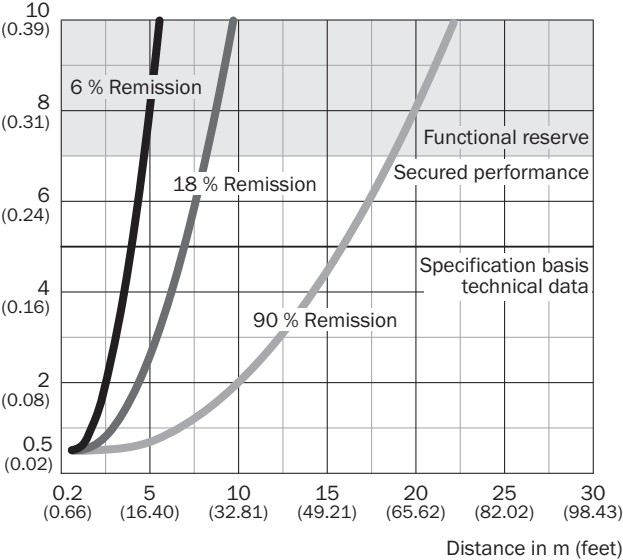
Fast



CHARACTERISTIC CURVE 5) SUPER FAST

Super Fast

Typ. repeatability in mm (inch)



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/1068975



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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

SICK
Sensor Intelligence