



DT50-2B215252

Dx50-2

TIME-OF-FLIGHT SENSORS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	part no.
DT50-2B215252	1065661

Other models and accessories → [www.sick.com/Dx50-2](http://www.sick.com/Dx50-2)



## Detailed technical data

## Features

<b>Measuring range</b>	200 mm ... 30,000 mm, 90% remission factor <sup>1) 2)</sup> 200 mm ... 17,000 mm, 18% reflection factor 200 mm ... 10,000 mm, 6% remission factor
<b>Target</b>	Natural objects
<b>Resolution</b>	0.1 mm
<b>Repeatability</b>	≥ 0.5 mm <sup>2) 3) 4)</sup>
<b>Measurement accuracy</b>	± 7 mm <sup>4)</sup>
<b>Response time</b>	0.83 ms ... 75 ms, 0.83 ms / 3.33 ms / 8.33 ms / 25 ms / 75 ms <sup>5) 6)</sup>
<b>Switching frequency</b>	1,000 Hz/250 Hz/100 Hz/33 Hz/11 Hz <sup>5) 6)</sup>
<b>Output time</b>	0.33 ms/1.33 ms/3.33 ms/10 ms/30 ms <sup>5) 7)</sup>
<b>Light source</b>	Laser, red <sup>8)</sup>
<b>Type of light</b>	Visible red light
<b>Laser class</b>	2 (IEC 60825-1:2014, EN 60825-1:2014)
<b>Typ. light spot size (distance)</b>	10 mm x 10 mm (at 10 m)
<b>Additional function</b>	Set speed: Super Fast ... Super Slow

<sup>1)</sup> For speed setting Slow.

<sup>2)</sup> See repeatability characteristic lines.

<sup>3)</sup> Equivalent to 1  $\sigma$ .

<sup>4)</sup> 6% ... 90% remission factor.

<sup>5)</sup> Depending on the set speed: Super Fast ... Super Slow.

<sup>6)</sup> Lateral entry of the object into the measuring range.

<sup>7)</sup> Continuous change of distance in measuring range.

<sup>8)</sup> Wavelength: 658 nm; max. output: 250 mW; pulse duration: 3 ns; duty cycle: 1/250.

	Teach-in, scaling and inversion of analog output Output Q <sub>2</sub> adaptable: Current output / Voltage output / Digital output / Q <sub>1</sub> 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
<b>Average laser service life (at 25 °C)</b>	100,000 h
<b>Safety-related parameters</b>	
MTTF <sub>D</sub>	101 years
DC <sub>avg</sub>	0%

- 1) For speed setting Slow.  
2) See repeatability characteristic lines.  
3) Equivalent to 1  $\sigma$ .  
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.

## Interfaces

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

<b>Supply voltage <math>U_B</math></b>	DC 10 V ... 30 V <sup>1) 2)</sup>
<b>Power consumption</b>	$\leq 1.7 \text{ W}$ <sup>3)</sup>
<b>Ripple</b>	$\leq 5 \text{ V}_{pp}$ <sup>4)</sup>
<b>Initialization time</b>	$\leq 300 \text{ ms}$
<b>Warm-up time</b>	$\leq 15 \text{ min}$
<b>Display</b>	3 x LED, LC display
<b>Enclosure rating</b>	IP65 IP67
<b>Protection class</b>	III

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

<sup>2)</sup> When using IO-Link output  $V_S > 18 \text{ V}$ . When using analog output  $V_S > 13 \text{ V}$ .

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

<sup>4)</sup> May not fall short of or exceed  $V_S$  tolerances.

## Mechanics

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

## Ambient data

<b>Ambient temperature, operation</b>	$-40 \text{ }^\circ\text{C} \dots +65 \text{ }^\circ\text{C}$ , $U_v \leq 24 \text{ V}$ $-30 \text{ }^\circ\text{C} \dots +140 \text{ }^\circ\text{C}$ , operation with 2 cooling plates (2055755) / optionally with heat protection filter (2085598) <sup>1)</sup>
<b>Ambient temperature, storage</b>	$-40 \text{ }^\circ\text{C} \dots +75 \text{ }^\circ\text{C}$
<b>Max. rel. humidity (not condensing)</b>	$\leq 95 \%$
<b>Typ. Ambient light immunity</b>	40,000 lx
<b>Vibration resistance</b>	(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
<b>Shock resistance</b>	(IEC 60068-2-27:2008) 30 g, 11 ms, 6 axes, $\pm 3$ single shocks / axis (IEC 60068-2-27:2008) 10 g, 6 ms, 6 axes, $\pm 500$ shocks / axis (IEC 60068-2-27:2008) 70 g, 6 ms, 1 axis, $\pm 100,000$ shocks / axis
<b>Electromagnetic compatibility (EMC)</b>	EN 61000-6-2, EN 61000-6-4 <sup>2)</sup>

<sup>1)</sup> With water cooling.

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

## Classifications

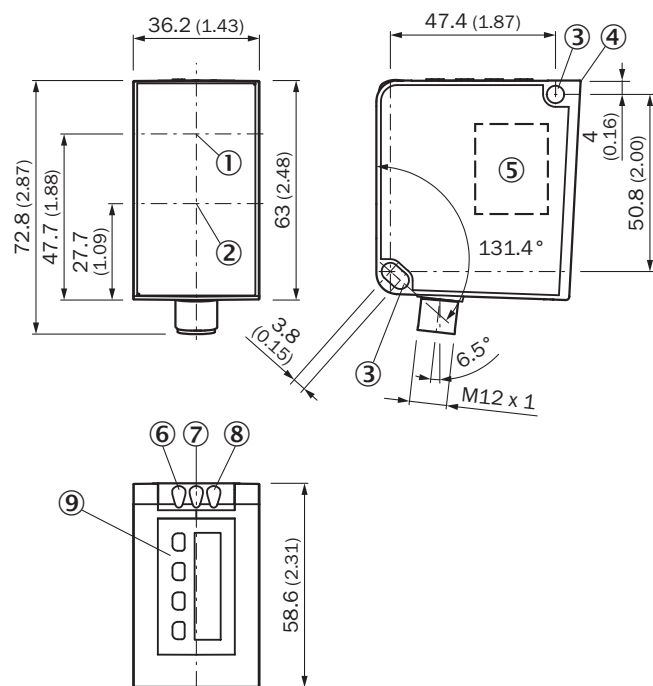
<b>ECLASS 5.0</b>	27270801
<b>ECLASS 5.1.4</b>	27270801
<b>ECLASS 6.0</b>	27270801
<b>ECLASS 6.2</b>	27270801
<b>ECLASS 7.0</b>	27270801
<b>ECLASS 8.0</b>	27270801
<b>ECLASS 8.1</b>	27270801

<b>ECLASS 9.0</b>	27270801
<b>ECLASS 10.0</b>	27270801
<b>ECLASS 11.0</b>	27270801
<b>ECLASS 12.0</b>	27270916
<b>ETIM 5.0</b>	EC001825
<b>ETIM 6.0</b>	EC001825
<b>ETIM 7.0</b>	EC001825
<b>ETIM 8.0</b>	EC001825
<b>UNSPSC 16.0901</b>	41111613

## Certificates

<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China-RoHS</b>	✓
<b>cULus certificate</b>	✓
<b>IO-Link</b>	✓

## Dimensional drawing

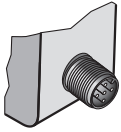


Dimensions in mm (inch)

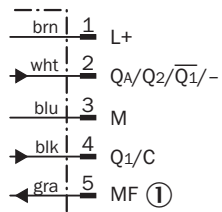
- ① Optical axis, sender
- ② Optical axis, receiver
- ③ Mounting hole, Ø 4.5 mm
- ④ Reference surface = 0 mm
- ⑤ Laser warning label

- ⑥ status indicator output  $Q_A/Q_2$
- ⑦ Status LEDs output  $Q_1$
- ⑧ supply voltage status display
- ⑨ Control elements and display

### Connection type



### Connection diagram

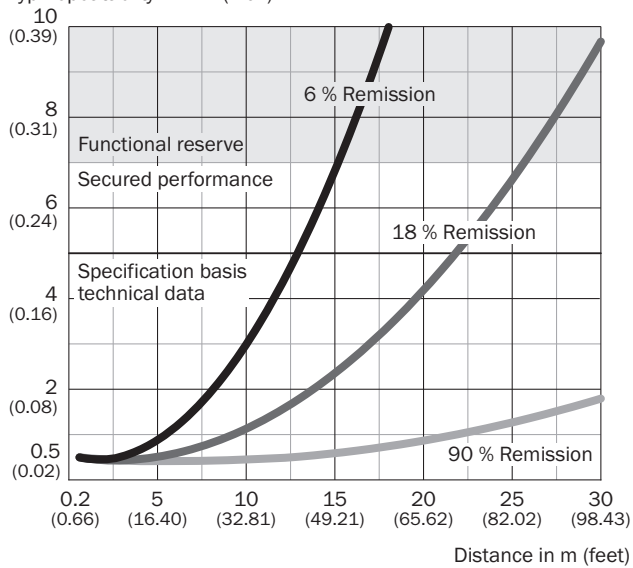


① Multifunctional input (MF)

### characteristic curve 1) Super Slow

#### Super Slow

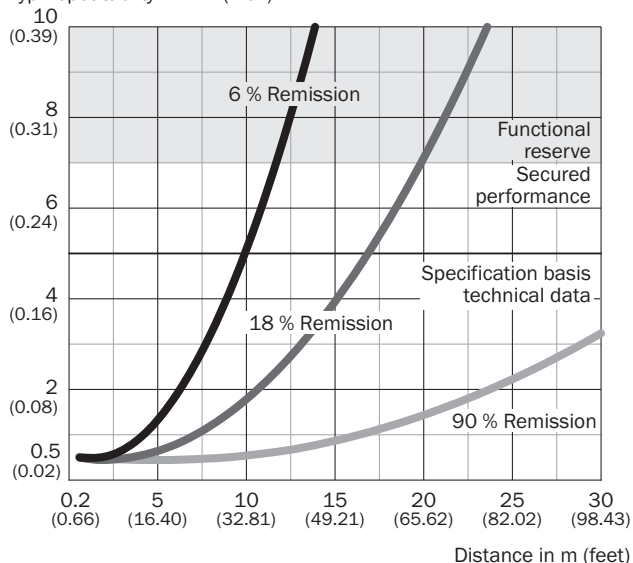
Typ. repeatability in mm (inch)



## characteristic curve 2) Slow

### Slow

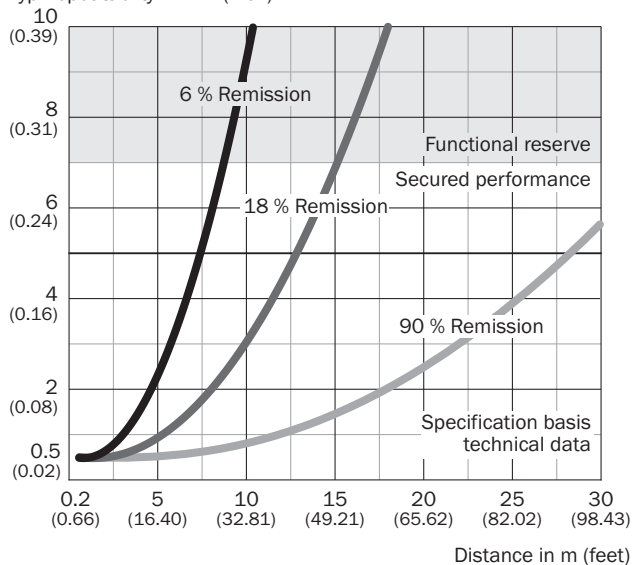
Typ. repeatability in mm (inch)



## characteristic curve 3) Medium

### Medium

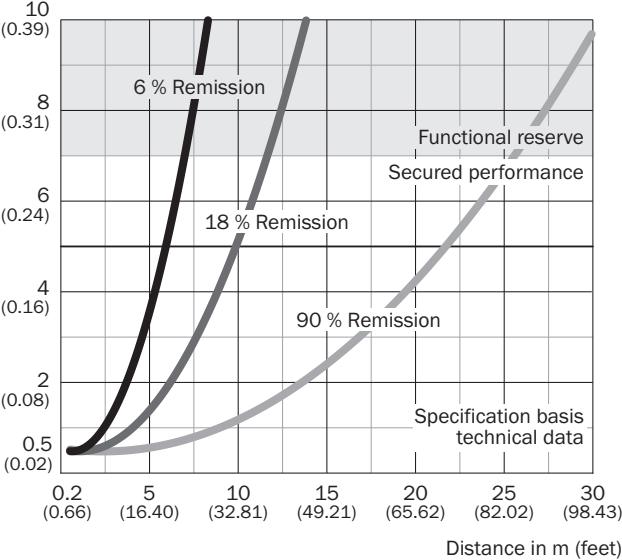
Typ. repeatability in mm (inch)



characteristic curve 4) Fast

Fast

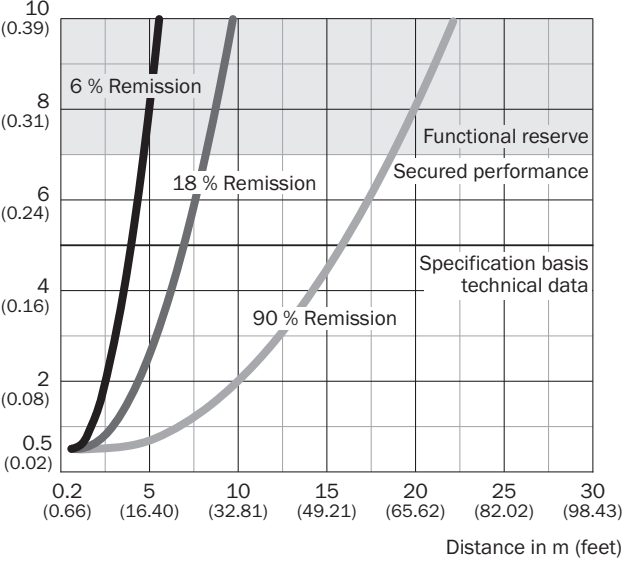
Typ. repeatability in mm (inch)



characteristic curve 5) Super Fast

Super Fast




Typ. repeatability in mm (inch)





## Recommended accessories

Other models and accessories → [www.sick.com/Dx50-2](http://www.sick.com/Dx50-2)

	Brief description	Type	part no.
device protection and care			
	<ul style="list-style-type: none"> <li><b>Description:</b> Weather Cover for Dx35/Dx50/Dx50-2/Dx80</li> </ul>	OBW-KHS-M02	2050205
	<ul style="list-style-type: none"> <li><b>Description:</b> Cooling plate for Dx50/Dx50-2/DT20 (for water cooling)</li> <li><b>Usable for:</b> Dx50</li> </ul>	BEF-KP-Dx50/DT20	2055755
	<ul style="list-style-type: none"> <li><b>Description:</b> Thermal shield for Dx50/Dx50-2 with NIR filter, for use with 2x cold plate BEF-KP-Dx50/DT20</li> </ul>	Heat protection filter for Dx50-2	2085598

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 2 m, 5-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A15-020VB5XLEAX	2096239
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 0.6 m, 5-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A15-C60VB5XLEAX	2145570
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 3 m, 5-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A15-030VB5XLEAX	2145572
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 2 m, 5-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A15-020UB5M2A15	2096009
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 2 m, 5-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A15-020VB5XLEAX	2096215
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 0.6 m, 5-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A15-C60VB5XLEAX	2145573
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 1 m, 5-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A15-010VB5XLEAX	2145574
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 3 m, 5-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A15-030VB5XLEAX	2145575
Mounting systems			
	<ul style="list-style-type: none"> <li><b>Description:</b> Alignment unit</li> <li><b>Material:</b> Steel</li> <li><b>Details:</b> Steel, zinc coated</li> <li><b>Items supplied:</b> Mounting hardware for the sensor included</li> </ul>	BEF-AH-DX50	2048397
	<ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket, steel, zinc coated</li> <li><b>Material:</b> Steel</li> <li><b>Details:</b> Steel, zinc coated</li> <li><b>Items supplied:</b> Mounting hardware for the sensor included</li> </ul>	BEF-WN-DX50	2048370

## 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:

Contacts and other locations –[www.sick.com](http://www.sick.com)