



Dx50-2

THE BEGINNING TO ENDLESS MEASUREMENT POSSIBILITIES

Mid range distance sensors

SICK
Sensor Intelligence.



Dx50-2: ENDLESS POSSIBILITIES – AND WE’RE NOT JUST TALKING DISTANCE

A sensing range like no other and high speed in a compact design. The second generation of the Dx50 product family will give you an edge at any distance. All thanks to its extreme reliability and precision. Our patented HDDM™ technology offers a measurement accuracy of just a few millimeters – even over large distances. Even on black surfaces over distances of up to ten meters. Its effortless operation and exceptional ruggedness make it versatile enough to be used in endless applications. Nothing can stand in the way of the Dx50-2 product family – not even mechanical stresses, ambient light, or extreme temperatures. The first sensor in the product family, the DT50-2 Pro, offers maximum performance in demanding applications. This opens up a whole new range of possibilities.



Dx50-2: New features imply new possibilities

- The same compact design as its predecessor yet with a significantly greater measuring range: up to 10 m on black surfaces and 30 m on white objects
- Measurement and output rate of up to 3,000 distance values per second
- Repeatability from 0.5 mm to 5 mm
- Extremely broad ambient temperature range from -40°C to $+65^{\circ}\text{C}$
- Equally precise measurement on light and dark materials and safe measurement on both glossy and reflective surfaces
- Reliable object detection even at extreme angles
- Measurements on red-hot materials are not a problem
- Very high ambient light immunity

Dx50-2: FUNCTIONALITY THAT STANDS OUT FROM THE CROWD – TAKE ADVANTAGE OF THE POSSIBILITIES

- **Increased sensing range:** The DT50-2 Pro guarantees quick, precise, and reliable measurements, regardless of color, over distances of several meters – setting new standards for the quality and productivity of your processes
- **Increased reliability:** Trouble-free operation with an exceptionally high level of ambient light immunity to both the sun and artificial light, with particularly rugged housing and a broad temperature range – allowing you to boost your productivity even in the most demanding environment



Automotive industry:

The DT50-2 Pro ensures precise, reliable measurement or detection at even greater distances. Even in the case of small or barely detectable objects in car body or vehicle construction applications.



Metal and steel industry:

Whether it's used on steel coils, rollers, or hot plates, the DT50-2 Pro lets nothing burn and delivers reliable measurement data – even on glossy or red-hot objects.



- **Rapid speed:** Take advantage of a measurement and output rate of up to three kilohertz – by far the best solution for super-fast processes
- **Excellent precision:** Detect small parts reliably over even greater distances with outstanding repeatability – you can be confident of precision at a safe distance
- **Intuitive operation:** Fast teach-in capability with the “Easy teach option” that can be accessed directly at the touch of a pushbutton, intuitive operation via the display, and complete process control with IO-Link or external teach-in function – outstanding simplicity to make your life easier



Wood industry:

Also the wood industry offers an extensive range of applications. Regardless of color and quality, wood can be detected or measured precisely, reliably, and, most importantly of all, at high speed from a great distance.



Transport and logistics:

Trouble-free productivity when running cranes or various other logistics-related processes – for example, for container height and distance measurements or for collision prevention of cranes.

THE NEW ERA IN DISTANCE MEASUREMENT

Time Of Flight Performance Laser class 2 Window OBSB Analog (mA/V)

SICK
Dx50-2
IO-Link
CE

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Product description

SICK is once again setting the standard in the field of distance sensors with the new generation of Dx50-2 sensors, which provide the perfect combination of measurement performance and size. Based on the patented and improved HDDM™ time-of-flight technology, the new product family supports precise and reliable measuring, with ranges of up to 10 m on black targets and up to 30 m on white targets. The Dx50-2 sensors feature an intuitive display, saving time during installation and commissioning.

The high output rate of the sensors delivers up to 3,000 distance values per second for maximum throughput and process quality. The Dx50-2 sensors have a rugged housing and provide reliable operation despite extreme temperatures and harsh ambient conditions. Since the settings for speed, sensing range, and repeatability can be adjusted to meet current requirements, the Dx50-2 sensors can be customized to suit each and every possible application.

At a glance

- Measuring range up to 10 m on black targets and up to 30 m on white targets within a compact housing
- Output rate up to 3,000/s
- Repeatability: 0.5 mm to 5 mm
- Reliable, patented HDDM™ time-of-flight technology
- Withstands extreme temperatures from -40 °C to +65 °C thanks to rugged metal housing with LCD
- Shape comparison integrated in sensor
- IO-Link, analog and switching output (three switching modes available for selection)
- Enclosure rating IP 65 and IP 67

Your benefits

- A wide measuring range and a compact housing increase the number of application possibilities
- Very high throughput thanks to a high measuring frequency
- Precise and reliable measurement regardless of object color improves uptime and process quality
- Withstands harsh ambient conditions thanks to ruggedness, a wide operating temperature, and ambient light immunity
- Integrated shape comparison for straightforward checking and sorting of objects
- Fast, intuitive commissioning via display, Easy teach option, multifunctional input, or IO-Link saves time
- Full process control with IO-Link from commissioning to maintenance
- Three switching modes provide a simple solution for demanding applications

→ www.mysick.com/en/Dx50-2

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

Performance

Resolution	0.1 mm
Repeatability ^{1) 2) 3)}	0.5 mm ... 5 mm
Accuracy ³⁾	± 7 mm
Switching frequency ^{4) 5)}	1,000 Hz / 250 Hz / 100 Hz / 33 Hz / 11 Hz
Output time ^{4) 6)}	0.33 ms / 1.33 ms / 3.33 ms / 10 ms / 30 ms
Light source ⁷⁾	Laser, red
Laser class	2 (EN 60825-1)
Typ. light spot size (distance)	10 mm x 10 mm (at 10 m)
Additional function	Switch-off or lock display Output Q ₂ selectable: 4 mA ... 20 mA / 0 V ... 10 V / switching output / Q ₁ not/ deactivated Easy teach option Teach-in, scaling and inversion of analog output Teach-in, scaling and inversion of switching output Set speed: Super Fast ... Super Slow Shape comparison: based on the distance measured over a period of time IO-Link V1.1 (incl. data storage) Hold measurement value Multifunctional input: laser off / external teach / deactivated Switching mode: Distance to Object (DtO) / switching window / object between sensor and background (ObSB) Reset to factory default
Laser service life (MTTF at 25 °C)	100,000 h

¹⁾ Equivalent to 1 σ .

²⁾ See characteristic curves repeatability.

³⁾ 6 % ... 90 % remission.

⁴⁾ Dependent on the set speed: Super Fast ... Super Slow.

⁵⁾ Lateral entry of object into measuring range.

⁶⁾ Continuous change of distance in measuring range.

⁷⁾ Wavelength: 658 nm; max. output: 250 mW; pulse duration: 3 ns; pulse repetition rate: 1/250.

Interfaces

Resolution analog output	16 bit
Multifunctional input (MF) ¹⁾	1 x
Hysteresis	0 mm ... 29,950 mm
Data interface	IO-Link

¹⁾ Response time ≤ 60 ms.

Mechanics/electronics

Supply voltage V_s ^{1) 2)}	DC 10 V ... 30 V
Ripple ³⁾	≤ 5 V _{pp}
Power consumption ^{4) 5)}	≤ 1.7 W
Initialization time	≤ 250 ms
Warm-up time	≤ 15 min
Housing material	Die-cast zinc, acrylic glass (PMMA)
Connection type	Male connector, M12, 5-pin
Indication	3 x LED, LC display
Weight	200 g

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⁾ May not fall short of or exceed V_s tolerances.

⁴⁾ At ≥0°C.

⁵⁾ Without load.

Ambient data

Enclosure rating	IP 65, IP 67
Protection class	III
Ambient temperature	Operation: -40 °C ... +65 °C ¹⁾ Storage: -40 °C ... +75 °C
Typ. ambient light safety	40 klx
Vibration resistance	EN 60068-2-6 / EN 60068-2-64
Shock resistance	EN 60068-2-27

¹⁾ $U_v \leq 24$ V.

Ordering information

Measuring range ^{1) 2)}	Analog output ³⁾	Switching output ^{3) 4) 5)}	Response time ^{6) 7)}	Model name	Part no.
200 mm ... 30,000 mm, 90 % remission 200 mm ... 17,000 mm, 18 % remission 200 mm ... 10,000 mm, 6 % remission	1 x 4 mA ... 20 mA ($\leq 450 \Omega$) / 1 x 0 V ... 10 V ($\geq 50 \text{ k}\Omega$) / -	1 x / 2 x complementary / 2 x push-pull: PNP/NPN (100 mA), IO-Link	0.83 ms / 3.33 ms / 8.33 ms / 25 ms / 75 ms	DT50-2B215252	1065661

¹⁾ For speed setting Slow.

²⁾ See characteristic curves repeatability.

³⁾ Output Q_2 selectable: 4 mA ... 20 mA / 0 V ... 10 V / switching output / Q_1 not/ deactivated.

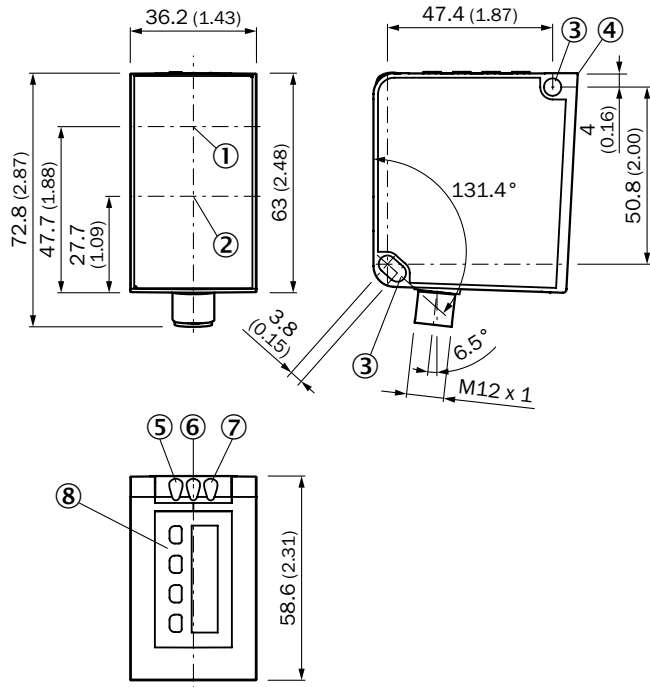
⁴⁾ Output Q short-circuit protected.

⁵⁾ Voltage drop < 3 V.

⁶⁾ Dependent on the set speed: Super Fast ... Super Slow.

⁷⁾ Lateral entry of object into measuring range.

Dimensional drawing (Dimensions in mm (inch))

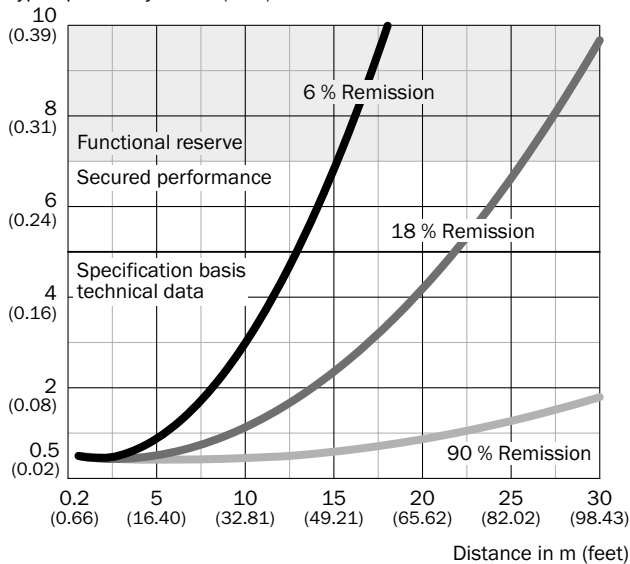


- ① Optical axis, sender
- ② Optical axis, receiver
- ③ Mounting hole, \varnothing 4.5 mm
- ④ Zero level
- ⑤ Status LED output Q_A / Q_2
- ⑥ Status LEDs output Q_1
- ⑦ Status indicator power on
- ⑧ Operating keys and display

Repeatability

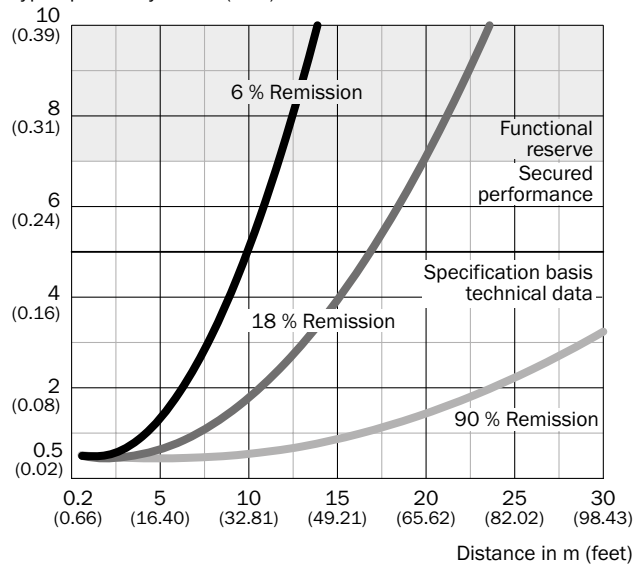
Super Slow

Typ. repeatability in mm (inch)



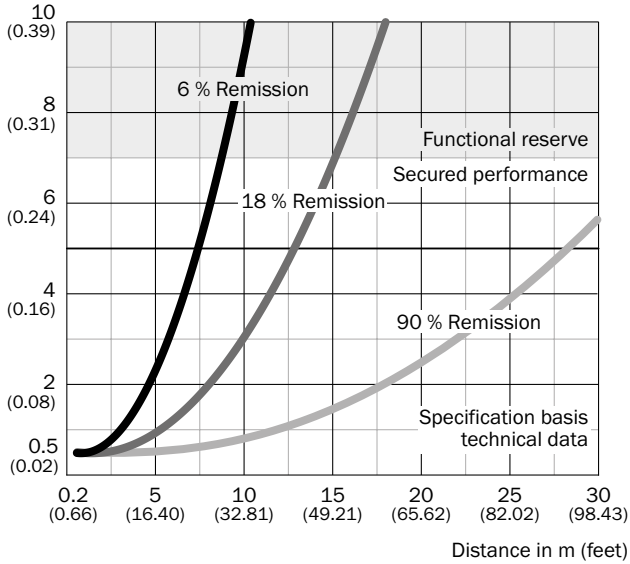
Slow

Typ. repeatability in mm (inch)



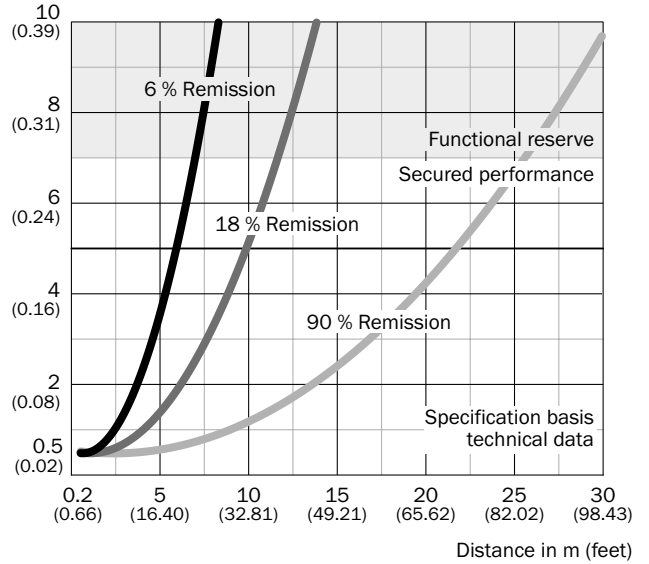
Medium

Typ. repeatability in mm (inch)



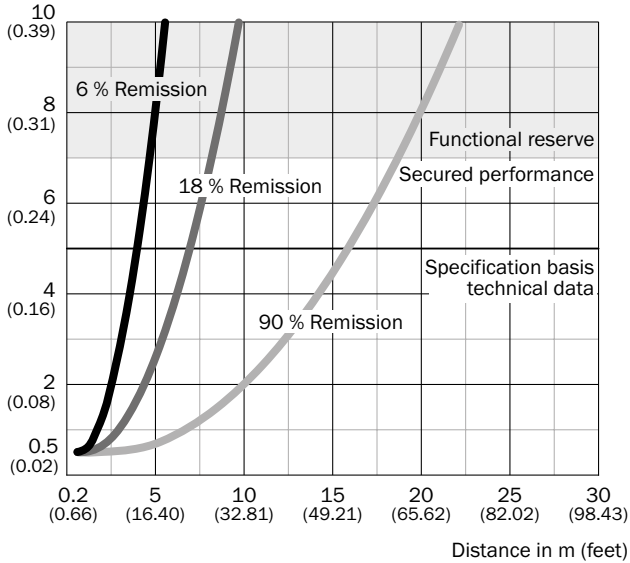
Fast

Typ. repeatability in mm (inch)



Super Fast

Typ. repeatability in mm (inch)



Accessories

Mounting systems

Device protection (mechanical)

	Brief description	Type	Part no.
	Cooling plate	BEF-KP-Dx50/DT20	2055755
	Weather protection hood	OBW-KHS-M02	2050205







Mounting brackets and mounting plates

	Brief description	Type	Part no.
	Mounting bracket, steel, zinc coated	BEF-WN-DX50	2048370
	Mounting bracket with hinged arm	BEF-WN-MULTI	2064469
	Mounting bracket for weather hood	BEF-WN-OBW	2023251

Terminal and alignment brackets

	Brief description	Type	Part no.
	Alignment unit	BEF-AH-DX50	2048397




Universal bar clamp systems

	Brief description	Type	Part no.
	Plate K for universal clamp bracket	BEF-KHS-K01	2022718
	Universal clamp bracket for rod mounting	BEF-KHS-KH1	2022726
	Universal bar clamp for mounting bars with 12 mm diameter	BEF-KHS-KH3	5322626
	Plate N04 for universal clamp bracket, steel	BEF-KHS-N04	2051610
	Plate N04N for universal clamp bracket, stainless steel	BEF-KHS-N04N	2051620
	Mounting bar, straight, 200 mm, steel	BEF-MS12G-A	4056054
	Mounting bar, straight, 300 mm, steel	BEF-MS12G-B	4056055
	Mounting bar, straight, 200 mm, stainless steel	BEF-MS12G-NA	4058914
	Mounting bar, straight, 300 mm, stainless steel	BEF-MS12G-NB	4058915
	Mounting bar, L-shaped, 150 mm x 150 mm, steel	BEF-MS12L-A	4056052
	Mounting bar, L-shaped, 250 x 250 mm, steel	BEF-MS12L-B	4056053
	Mounting bar, L-shaped, 150 mm x 150 mm, stainless steel	BEF-MS12L-NA	4058912
	Mounting bar, L-shaped, 250 mm x 250 mm, stainless steel	BEF-MS12L-NB	4058913




	Brief description	Type	Part no.
	Mounting rod, U-shape, bending radius 26 mm, 130 mm x 52 mm, steel	BEF-MS12U	4065437
	Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm, steel	BEF-MS12Z-A	4056056
	Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm, steel	BEF-MS12Z-B	4056057
	Mounting bar, Z-shaped, 100 mm x 150 mm x 200 mm, steel	BEF-MS12Z-C	4064563
	Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm, stainless steel	BEF-MS12Z-NA	4058916
	Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm, stainless steel	BEF-MS12Z-NB	4058917
	Bar clamp for bar diameter of 12 mm (fixing the mounting rod)	BEF-RMC-D12	5321878











Connection systems

Modules and gateways

	Brief description	Type	Part no.
	Number of IO-Link ports: 4; Communication mode: COM1/COM2/COM3; Switching input: PNP; Supply voltage Vs, IO-Link ports: DC 24 V; Current loading: 800 mA; Data transmission rate: Max. 12 Mbaud, Autobaud; Address space occupation: 1 bis 126; Connection type: Connector M12; Connection type, IO-Link ports: Connector M12, 5-pin; Supply voltage Vs, module: DC 18 ... 30 V; Power consumption: Typ. 75 mA / max. 100 mA (at UL with DC 24 V), Typ. 25 mA + sensor current / max. 800 mA (at Us with DC 24 V), for PROFIBUS	IOLSHPB-P3104R01	6039728
	IO-Link version V1.1, Port class 2, PIN 2, 4, 5 galvanically connected, Supply voltage 18 V DC ... 32 V DC (limit values, operation in short-circuit protected network max. 8 A)	SICK Memory Stick	1064290
	IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A	SiLink2 Master	1061790

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Type	Part no.
 Illustration may differ	Female connector, M12, 5-pin, straight	Cable	PVC, unshielded	2 m	DOL-1205-G02M	6008899
				5 m	DOL-1205-G05M	6009868
				10 m	DOL-1205-G10M	6010544
				15 m	DOL-1205-G15M	6029215
			TPU, halogen-free, unshielded	2 m	DOL-1205-G02MC	6025906
				5 m	DOL-1205-G05MC	6025907
				9 m	DOL-1205-G09MC	6037154
				10 m	DOL-1205-G10MC	6025908
	TPU, halogen-free, shielded	5 m	DOL-1205-G05MAC	6036384		
		10 m	DOL-1205-G10MAC	6036385		
		20 m	DOL-1205-G20MAC	6036386		

	Connection type head A	Connection type head B	Cable	Cable length	Type	Part no.
 Illustration may differ	Female connector, M12, 5-pin, angled	Cable	PVC, unshielded	2 m	DOL-1205-W02M	6008900
				5 m	DOL-1205-W05M	6009869
				10 m	DOL-1205-W10M	6010542
	Female connector, M12, 5-pin, angled, A-coded	Cable	TPU, halogen-free, unshielded	2 m	DOL-1205-W02MC	6025909
				5 m	DOL-1205-W05MC	6025910
				10 m	DOL-1205-W10MC	6025911
	Female connector, M12, 5-pin, angled, A-coded	Cable	TPU, halogen-free, drag chain use, HIPERFACE®, shielded	5 m	DOL-1205-W05MAC	6041751
				10 m	DOL-1205-W10MAC	6041752
	Male connector, M12, 5-pin, straight	Female connector, M12, 5-pin, straight	TPU, halogen-free, drag chain use, unshielded	1 m	DSL-1205-G01MC	6029280
				2 m	DSL-1205-G02MC	6025931
				5 m	DSL-1205-G05MC	6029282
				10 m	DSL-1205-G10MC	6038954
				15 m	DSL-1205-G15MC	6038956
				20 m	DSL-1205-G20MC	6038957
 	Female connector, M12, 5-pin, straight	-	Unshielded	-	DOS-1205-G	6009719
			CANopen, DeviceNet, shielded	-	DOS-1205-GA	6027534
	Female connector, M12, 5-pin, angled	-	Unshielded	-	DOS-1205-W	6009720
	Male connector, M12, 5-pin, straight	-	Unshielded	-	STE-1205-G	6022083
	Male connector, M12, 5-pin, straight, A-coded	-	CANopen, DeviceNet, shielded	-	STE-1205-GA	6027533
	Male connector, M12, 5-pin, angled	-	Unshielded	-	STE-1205-W	6022082

EASY INTEGRATION INTO YOUR AUTOMATION WORLD

Sensor integration with SICK is easy and fast for you: Our intelligent sensor solutions and safety controllers provide different integration technologies which allow easy access – from HMI, PLC, and engineering tools – to data from our sensors. In this way, we support you towards solving your application rapidly and easily and increase machine reliability with a continuous diagnostic concept.

PLC and engineering tool integration

Function Blocks	
IO-Link devices Level sensors Pressure sensors Presence detection sensors Distance sensors	Bar code scanners, Image-based code readers 1D und 2D
Vision sensors Inspectors	RFID RFH6xx RFU62x, RFU63x
Absolute encoders AFS60 AFM60	Laser volume flowmeter Bulkscan® LMS511

Function blocks

The SICK function blocks quickly allow you to establish acyclic communication to our sensors within your PLC program. Additionally, complex and variable process data can be parsed into their individual information contents without programmer effort.

DTM (Device Type Manager)

FDT/DTM is a cross-manufacturer concept, with which configuration and diagnosis of devices from different manufacturers can be done with just one engineering tool.

TCI (Tool Calling Interface)

The Tool Calling Interface (TCI) makes it possible to call up a tool used to carry out parameterization and diagnosis of a field device via the existing communication infrastructure.

HMI integration

OPC server

OPC technology is used to exchange data between field devices and Windows-based applications. The SOPAS OPC server from SICK follows the OPC DA specification and thus can be used on Windows operating systems.



Web server

The SOPAS web server from SICK can be used everywhere, where a web browser is available. The web server is distinguished by its ability to both carry out pure data exchange and also to provide visualizations for the devices, which is a big advantage, particularly for vision sensors.

Fieldbus Communication Interface



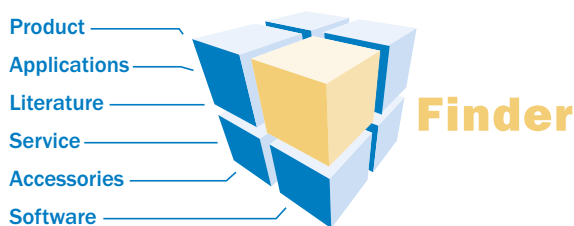
Modbus®TCP

Our fieldbus and network solutions allow SICK sensors and safety controllers to be connected to all conventional automation systems. This guarantees an easy and fast access to the available data.

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SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.



Consulting & Design
Safe and professional



Product & System Support
Reliable, fast and on-site



Verification & Optimization
Safe and regularly inspected



Upgrade & Retrofits
Easy, safe, economical



Training & Education
Practical, focused and professional

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 6,500 employees and over 50 subsidiaries and equity investments as well as numerous representative offices worldwide, we are always close to our customers. 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 various 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 round out 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:

Australia, Austria, Belgium/Luxembourg, Brazil, Czech Republic, Canada, China, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Mexico, Netherlands, Norway, Poland, Romania, Russia, Singapore, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Turkey, United Arab Emirates, USA

Detailed addresses and additional representatives → www.sick.com