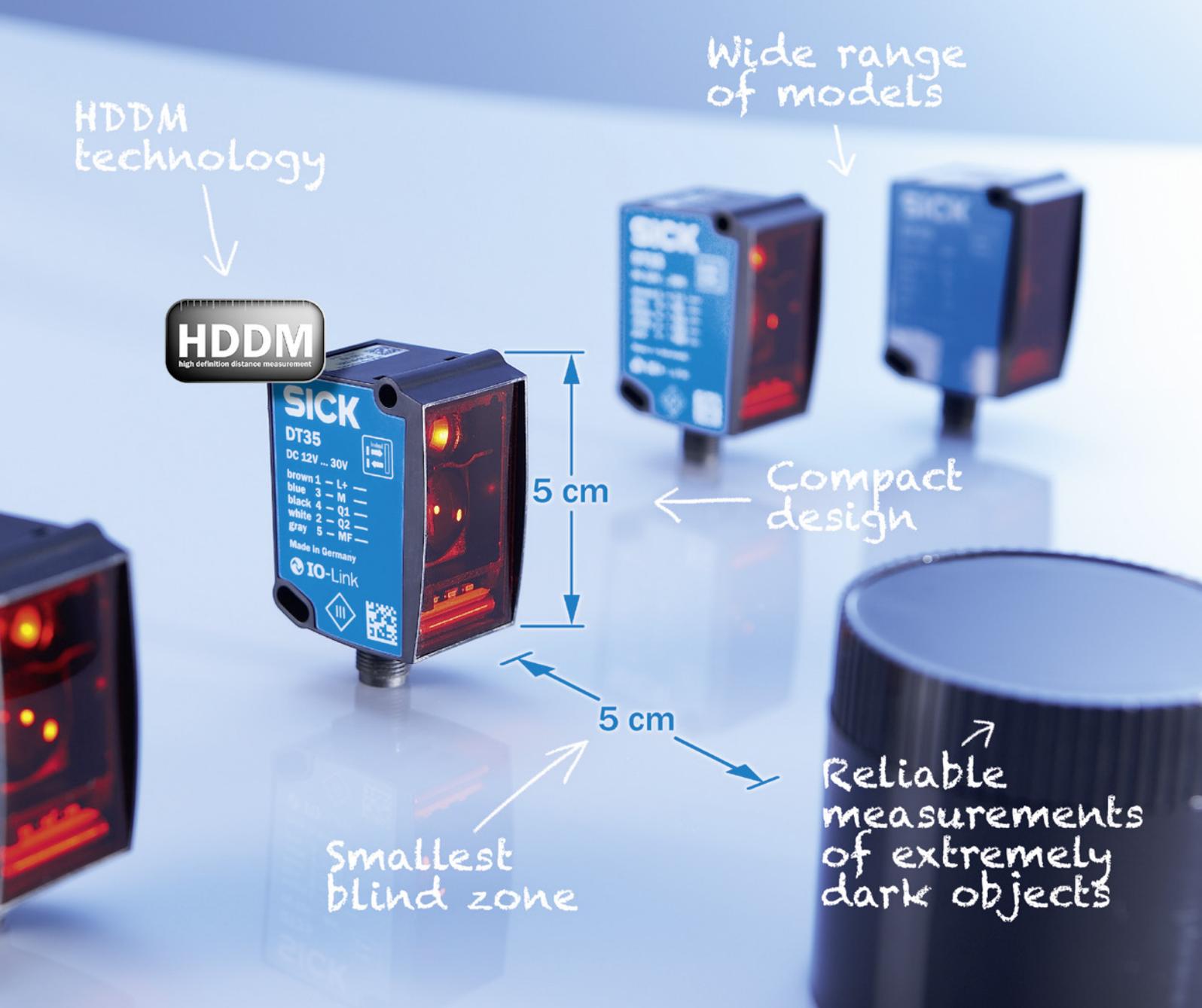




Dx35 Mid Range Distance Sensors

Larger than life performance – flexible measurement and detection up to 35 m



No cross talk

The Dx35's coded transmission pulses allow several sensors to be used simultaneously in confined spaces.



Precise no matter the color

HDDM technology guarantees precise time-of-flight measurement across the entire color spectrum.



Solves most difficult applications

The Dx35 detects and measures both extremely dark and shiny objects, as well as objects tilted at extreme angles – an impossible task with other sensors in the market.



Multiple set-up options ...

Direct teach-in function on the sensor

Cut down on your commissioning costs with the quick and easy teach-in function on the control panel.



External teach wire

External teach-in allows simple and fast remote set-up if no access is available during the running process.



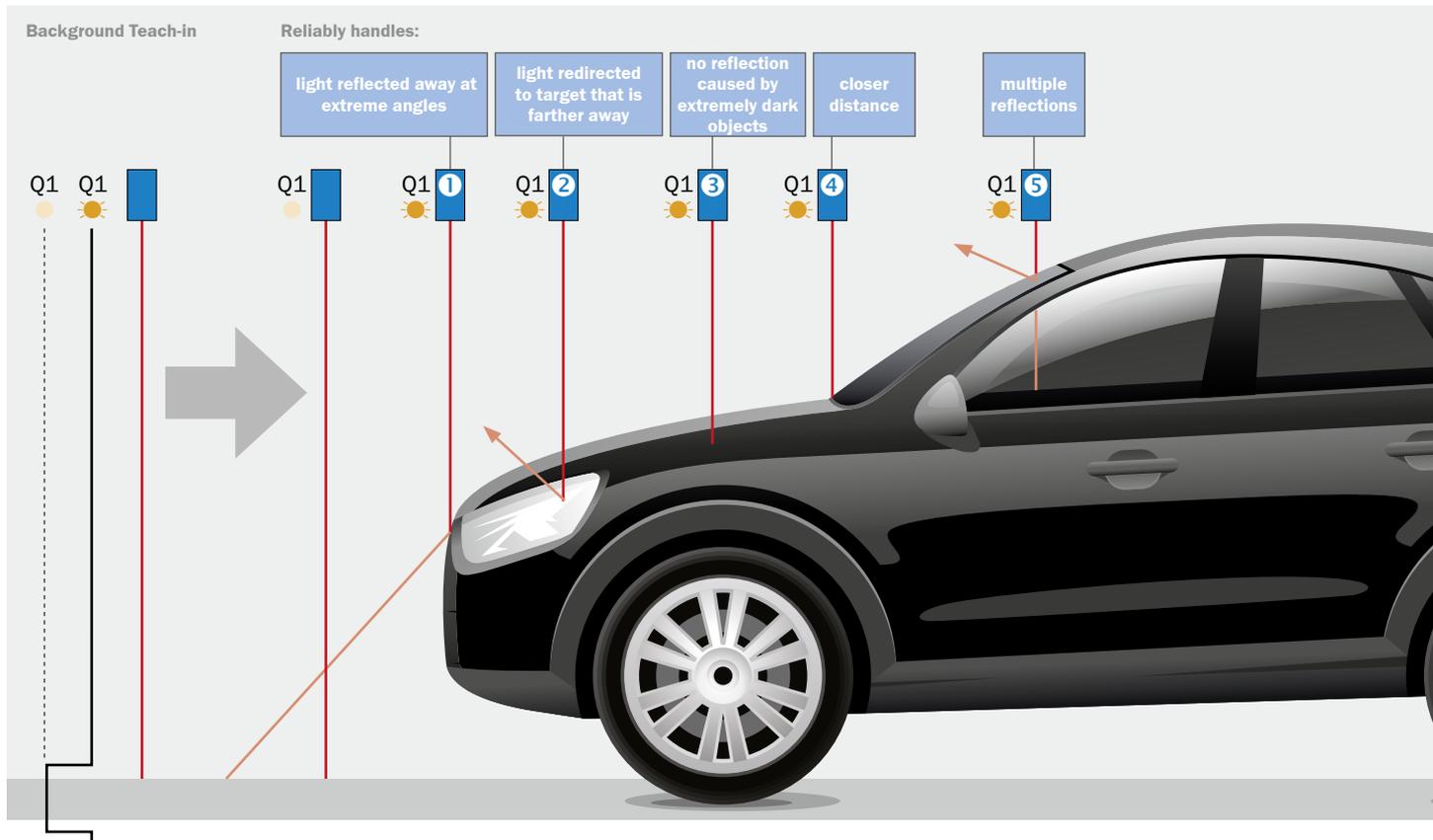
Communication via IO-Link

With IO-Link a switching output turns into a communication interface. This enables quick batch change-over and simple commissioning, maintenance and diagnostics.



Simple solution for complex applications

The Dx35 provides three different switching modes to meet the requirements of any application including complex ones. These are: "Distance to Object" "Window" and "Object Between Sensor and Background" (OBSB, see illustration).



... and flexible in any application



Reliable monitoring of storage space occupancy or fill level in distribution and warehousing systems

Inspection

Ensures high quality vehicle manufacturing and error-proofing by reliably detecting small parts from a safe distance.



Positioning

Precise and automatic positioning of shuttles, forklifts and the load which can be of any color and structure.



Stacking

Optimized and faster production processes due to reliable monitoring of filling and stacking levels.



Larger than life performance – flexible measurement and detection up to 35 m



Additional information

- Detailed technical data.....7
- Ordering information.....9
- Dimensional drawing.....10
- Connection type and diagram.....10
- Repeatability.....11
- Accessories.....13

Product description

The Dx35 family of distance sensors, based on HDDM™ technology, combine maximum reliability, measuring capabilities, flexibility and the perfect price-performance ratio in a very compact housing.

Depending on the application, sub-product families are available for distance measurement on natural objects (DT35 and DS35) or on reflective tape (DL35 and DR35).

The sub-product families also come with different interfaces. In addition to the IO-Link function, which all the devices have, the product family also offers sensors with analog and switching output (DT and DL) or the option of two switching outputs (DS and DR).

Its final distinguishing feature when selecting the right sensor for the application is the light sender: infrared or red light in laser class 1 or 2.

At a glance

- Maximum reliability, immunity to ambient light, and best price/performance ratio thanks to HDDM™ technology
- Measuring range of 0.05 m to 12 m for natural objects or 0.2 m to 35 m on reflective tape
- Devices with analog and switching output, or just switching
- Infrared or red laser in class 1 or class 2
- Repeatability: 0.5 mm to 5 mm
- Small housing size
- IO-Link

Your benefits

- Precise and reliable measurement regardless of object color extends run time and process quality
- A small size and blind zone make flexible mounting possible when space is limited
- Optimum solution thanks to flexible settings for speed, range and repeatability
- Flexible interface use: 4 mA to 20 mA, 0 V to 10 V, PNP output, NPN output, or IO-Link – making machine integration simple
- Offering easy alignment, optimal performance or inconspicuous measurement, versatile light senders make it an ideal solution for all scenarios
- Low investment costs and high performance levels guarantee a quick return on investment
- IO-Link offers full process control, from commissioning to service
- A wide variety of control options ensures rapid commissioning and fast batch changes

→ www.mysick.com/en/Dx35

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

	DT35	DS35	DL35	DR35
Resolution	0.1 mm			
Repeatability ^{1) 2)}	0,5 mm ... 5 mm ³⁾		0,5 mm ... 5 mm ⁴⁾	
Accuracy	Typ. ± 10 mm ³⁾		Typ. ± 15 mm ⁴⁾	
Switching frequency ^{5) 6)}				
Red laser, class 2	333 Hz / 100 Hz / 50 Hz / 25 Hz / 6 Hz		-	
Red laser, class 1	166 Hz / 50 Hz / 25 Hz / 12 Hz / 3 Hz		333 Hz / 100 Hz / 50 Hz / 25 Hz / 6 Hz	
Infrared laser, class 1	333 Hz / 100 Hz / 50 Hz / 25 Hz / 6 Hz			
Output rate ^{5) 7)}				
Red laser, class 2	1 ms / 2 ms / 4 ms / 8 ms / 32 ms		-	
Red laser, class 1	2 ms / 4 ms / 8 ms / 16 ms / 64 ms		1 ms / 2 ms / 4 ms / 8 ms / 32 ms	
Infrared laser, class 1	1 ms / 2 ms / 4 ms / 8 ms / 32 ms			
Light source				
Red laser, class 2	Laser, red ⁸⁾		-	
Red laser, class 1	Laser, red ⁹⁾		Laser, red ¹⁰⁾	
Infrared laser, class 1	Laser, infrared ¹¹⁾			
Laser class				
Red laser, class 2	2 (EN 60825-1)		-	
Red laser, class 1	1 (EN 60825-1)			
Infrared laser, class 1	1 (EN 60825-1)			
Typ. light spot size (distance)	15 mm x 15 mm (at 2 m)			
Additional function				
	Set speed: Super Fast ... Super Slow			
	Teach-in of switching output			
	Invertible switching output			
	IO-Link			
	Multifunctional input: laser off / external teach input / inactive			
	Reset to factory default			
	Switching mode: Distance to Object (DtO) / switching window (Wnd) / object between sensor and background (OBSB)		Switching mode: Distance to reflective tape (DtR) / switching window (Wnd) / object between sensor and background (OBSB)	
	Teach-in of analog output		Teach-in of analog output	
	Invertible analog output		Invertible analog output	
	Output Q ₂ , selectable: 4 mA ... 20 mA / 0 V ... 10 V / switching output		Output Q ₂ , selectable: 4 mA ... 20 mA / 0 V ... 10 V / switching output	
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⁾ On reflective tape "Diamond Grade".

⁵⁾ Dependent on the set speed: Super Fast ... Super Slow.

⁶⁾ Lateral entry of object into measuring range.

⁷⁾ Continuous change of distance in measuring range.

⁸⁾ Wavelength: 658 nm; max. output: 250 mW; pulse duration: 3 ns; pulse repetition rate: 1/250.

⁹⁾ Wavelength: 658 nm; max. output: 250 mW; pulse duration: 3 ns; pulse repetition rate: 1/500.

¹⁰⁾ Wavelength: 658 nm; max. output: 120 mW; pulse duration: 3 ns; pulse repetition rate: 1/250.

¹¹⁾ Wavelength: 827 nm; max. output: 130 mW; pulse duration: 3.5 ns; pulse repetition rate: 1/250.

Interfaces

	DT35	DS35	DL35	DR35
Resolution analog output	12 bit	-	12 bit	-
Multifunctional input (MF) ¹⁾	1 x			
Hysteresis ²⁾	0 mm ... 11,950 mm		0 mm ... 34,950 mm	
Data interface	IO-Link			

¹⁾ Response time ≤ 60 ms.

²⁾ Adjustable via IO-Link.

Mechanics/electronics

	DT35	DS35	DL35	DR35
Supply voltage V_s ^{1) 2)}	DC 12 V ... 30 V			
Ripple ³⁾	≤ 5 V _{pp}			
Power consumption ^{4) 5)}	≤ 1.7 W			
Initialization time	≤ 500 ms			
Warm-up time	≤ 20 min			
Housing material	Plastic (ABS and PC) Acrylic glass (PMMA)			
Connection type	Connector M12, 5-pin			
Indication	LEDs			
Weight	65 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 voltage output $V_s > 13$ V.

³⁾ May not fall short of or exceed V_s tolerances.

⁴⁾ At 20 °C.

⁵⁾ Without load.

Ambient data

Enclosure rating	IP 65, IP 67
Protection class	III
Ambient temperature	Operation: -30 °C ... +55 °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⁾	Analog output ³⁾	Switching output ^{4) 5)}	Response time ^{6) 7)}	Variant	Model name	Part no.	
50 mm ... 12,000 mm, 90 % remission ²⁾	1 x 4 mA ... 20 mA ($\leq 450 \Omega$) / 1 x 0 V ... 10 V ($\geq 50 \text{ k}\Omega$) / -	1 x / 1 x / 2 x push-pull: PNP/NPN (100 mA), IO-Link ³⁾	2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Red laser, class 2	DT35-B15251	1057652	
			4.5 ms / 12.5 ms / 24.5 ms / 48.5 ms / 192.5 ms	Red laser, class 1	DT35-B15551	1057651	
			2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Infrared laser, class 1	DT35-B15851	1057653	
	50 mm ... 5,300 mm, 18 % remission ²⁾	-	2 x push-pull: PNP/NPN (100 mA), IO-Link	2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Red laser, class 2	DS35-B15221	1057655
				4.5 ms / 12.5 ms / 24.5 ms / 48.5 ms / 192.5 ms	Red laser, class 1	DS35-B15521	1057654
				2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Infrared laser, class 1	DS35-B15821	1057656
200 mm ... 35,000 mm, on "Diamond Grade"	1 x 4 mA ... 20 mA ($\leq 450 \Omega$) / 1 x 0 V ... 10 V ($\geq 50 \text{ k}\Omega$) / -	1 x / 1 x / 2 x push-pull: PNP/NPN (100 mA), IO-Link ³⁾	2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Red laser, class 1	DL35-B15552	1057657	
				Infrared laser, class 1	DL35-B15852	1057658	
	-	2 x push-pull: PNP/NPN (100 mA), IO-Link	2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Red laser, class 1	DR35-B15522	1057659	
				Infrared laser, class 1	DR35-B15822	1057660	

¹⁾ See characteristic curves repeatability.

²⁾ For speed setting Super Slow.

³⁾ Output Q_2 , selectable: 4 mA ... 20 mA / 0 V ... 10 V / switching output.

⁴⁾ Output Q, short-circuit protected.

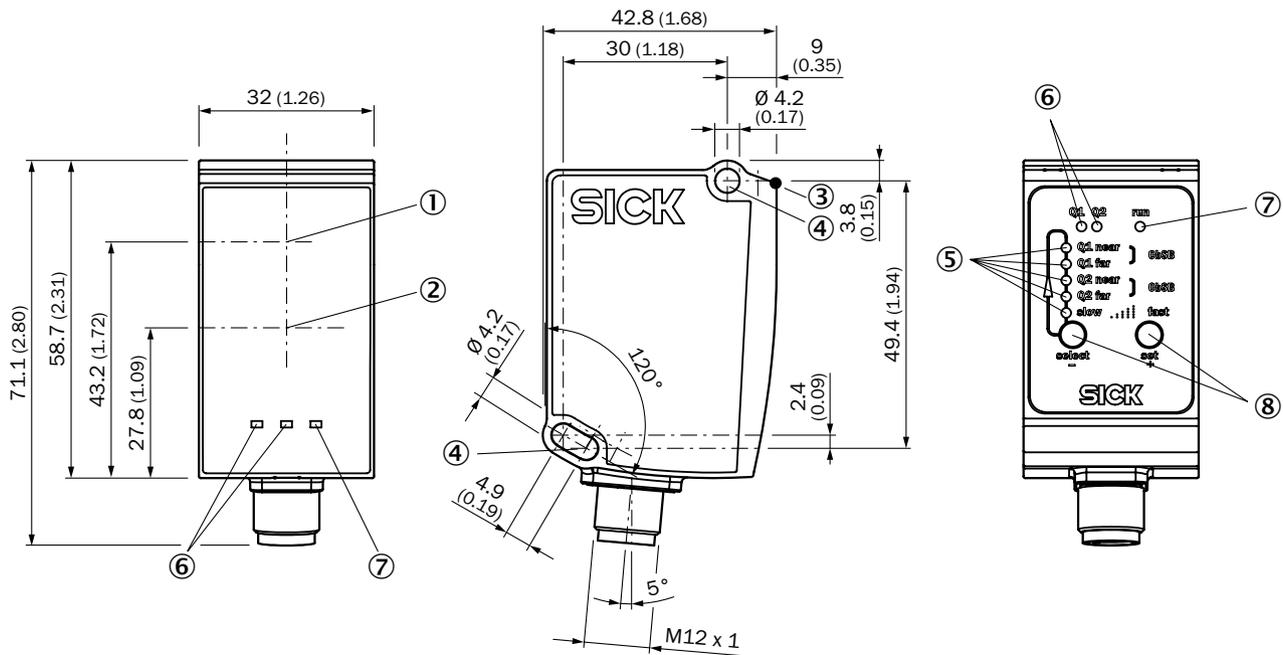
⁵⁾ Voltage drop < 3 V.

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

⁷⁾ Lateral entry of object into measuring range.

Dimensional drawing

dimensions in mm (inch)

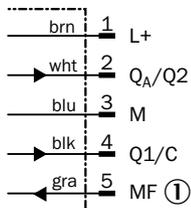
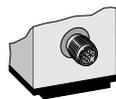


- ① Optical axis, sender
- ② Optical axis, receiver
- ③ Zero level
- ④ Mounting hole M4
- ⑤ LEDs, teach-in
- ⑥ LEDs, status Q₁/Q₂
- ⑦ Operating indicator
- ⑧ Control elements

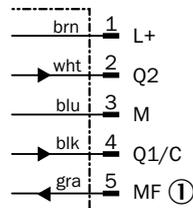
Connection type and diagram

DT35, DL35
Connector M12, 5-pin

DS35, DR35
Connector M12, 5-pin



① Multifunctional input (MF)



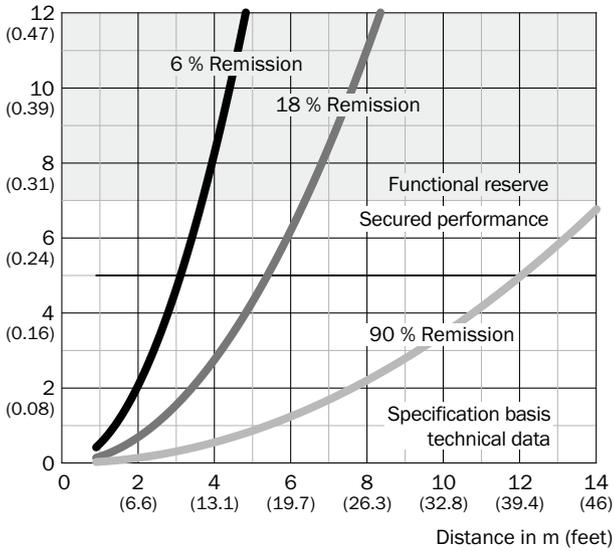
① Multifunctional input (MF)

Repeatability

DT35, DS35

Super Slow

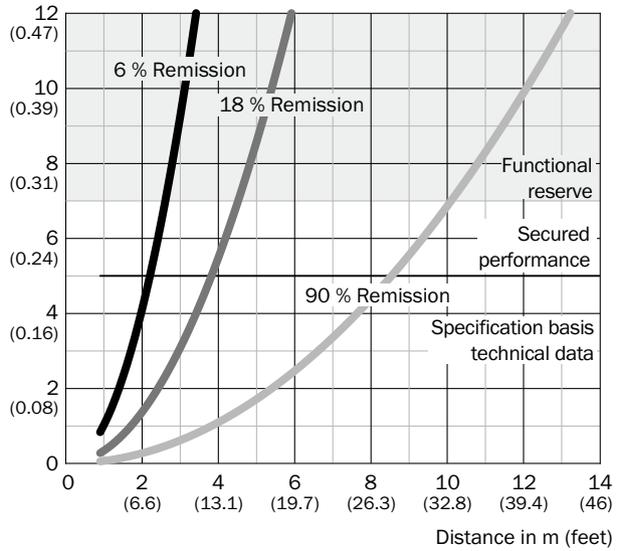
Repeatability in mm (inch)



DT35, DS35

Slow

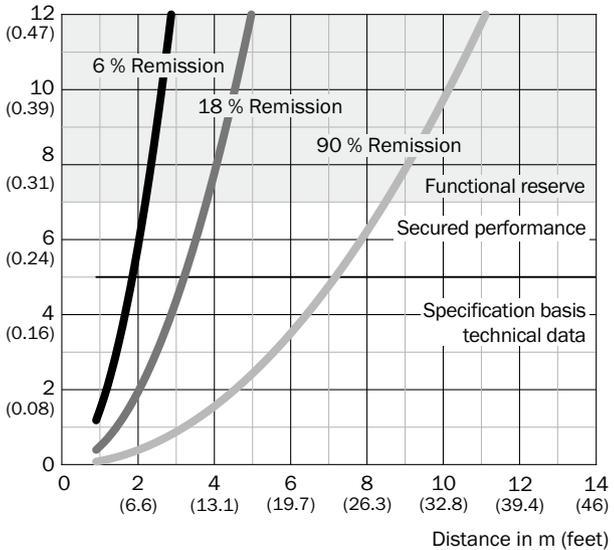
Repeatability in mm (inch)



DT35, DS35

Medium

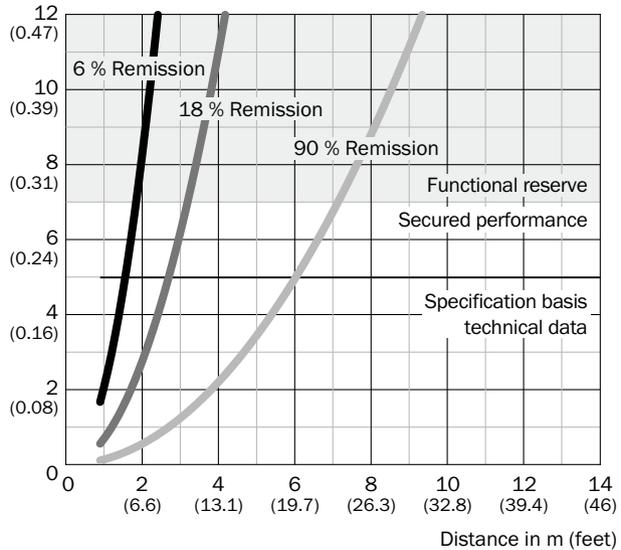
Repeatability in mm (inch)



DT35, DS35

Fast

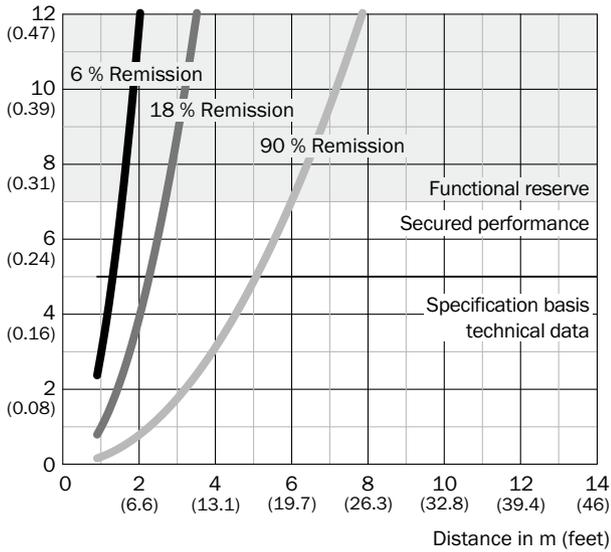
Repeatability in mm (inch)



DT35, DS35

Super Fast

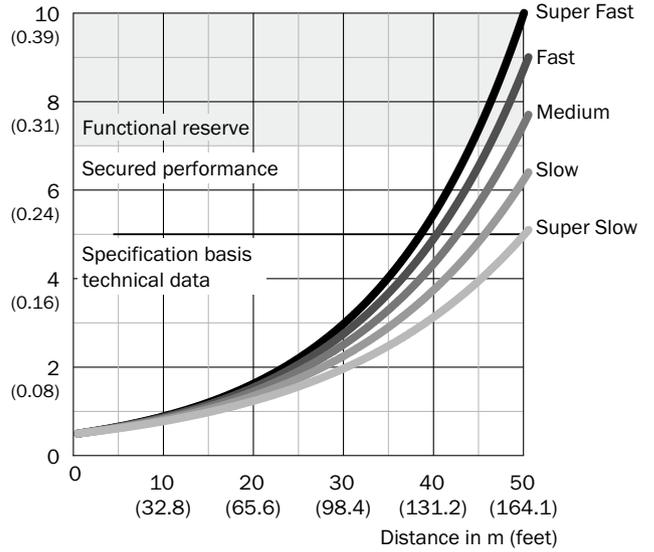
Repeatability in mm (inch)



DL35, DR35

Super Slow ... Super Fast

Repeatability in mm (inch)



Accessories

Device protection (mechanical)

Front screen protection

Description	Model name	Part no.	DT35	DS35	DL35	DR35
Front screen protection set (protects sensors from damage by flying sparks and welding beads)	LPC-DX35	2067367	●	●	●	●

Mounting brackets/plates

Mounting brackets

	Description	Model name	Part no.	DT35	DS35	DL35	DR35
	Mounting bracket, steel, zinc coated, incl. mounting material	BEF-WN-DX50	2048370	●	●	●	●
	Mounting bracket: horizontal sending axis for ceiling or floor installation or vertical sending axis for wall installation, steel, zinc coated, incl. mounting material	BEF-WN-DX35	2069592	●	●	●	●

Others

	Description	Model name	Part no.	DT35	DS35	DL35	DR35
	IO-Link-Master	IOLSHPB-P3104R01	6039728	●	●	●	●

Plug connectors and cables

Connecting cable (female connector-open)

- Connection type head B: cable

	Connection type head A	Material	Special feature	Cable length	Model name	Part no.	DT35	DS35	DL35	DR35
 Illustration may differ	Female connector, M12, 5-pin, straight	PVC	-	2 m	DOL-1205-G02M	6008899	●	●	●	●
				5 m	DOL-1205-G05M	6009868	●	●	●	●
				10 m	DOL-1205-G10M	6010544	●	●	●	●
				15 m	DOL-1205-G15M	6029215	●	●	●	●
	Female connector, M12, 5-pin, straight	PUR, halogen-free	-	2 m	DOL-1205-G02MC	6025906	●	●	●	●
				5 m	DOL-1205-G05MC	6025907	●	●	●	●
				9 m	DOL-1205-G09MC	6037154	●	●	●	●
			Shielded	5 m	DOL-1205-G05MAC	6036384	●	●	●	●
				10 m	DOL-1205-G10MAC	6036385	●	●	●	●
				20 m	DOL-1205-G20MAC	6036386	●	●	●	●
	Female connector, M12, 5-pin, angled	PVC	-	2 m	DOL-1205-W02M	6008900	●	●	●	●
				5 m	DOL-1205-W05M	6009869	●	●	●	●
				10 m	DOL-1205-W10M	6010542	●	●	●	●
	Female connector, M12, 5-pin, angled	PUR, halogen-free	-	2 m	DOL-1205-W02MC	6025909	●	●	●	●
				5 m	DOL-1205-W05MC	6025910	●	●	●	●
				10 m	DOL-1205-W10MC	6025911	●	●	●	●
	Female connector, M12, 5-pin, angled	PUR, halogen-free	Drag chain use	5 m	DOL-1205-W05MAC	6041751	●	●	●	●
				10 m	DOL-1205-W10MAC	6041752	●	●	●	●

Connection cable (male-female connector)

	Connection type head A	Connection type head B	Cable length	Model name	Part no.	DT35	DS35	DL35	DR35
	Connector, M12, 5-pin, straight	Female connector, M12, 5-pin, straight	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 (ready to assemble)

	Connection type head A	Model name	Part no.	DT35	DS35	DL35	DR35
	Female connector, M12, 5-pin, straight	DOS-1205-G	6009719	●	●	●	●
	Female connector, M12, 5-pin, straight	DOS-1205-GA	6027534	●	●	●	●
	Female connector, M12, 5-pin, angled	DOS-1205-W	6009720	●	●	●	●

Male connector (ready to assemble)

	Connection type head A	Model name	Part no.	DT35	DS35	DL35	DR35
	Connector, M12, 5-pin, straight	STE-1205-G	6022083	●	●	●	●
	Connector, M12, 5-pin, straight	STE-1205-GA	6027533	●	●	●	●
	Connector, M12, 5-pin, angled	STE-1205-W	6022082	●	●	●	●

Reflectors

Angular shaped

	Description	Model name	Part no.	DT35	DS35	DL35	DR35
	Reflector plate, reflective tape "Diamond Grade", 330 mm x 330 mm, material base plate: aluminum, screw connection	PL240DG	1017910	-	-	●	●
	Reflector plate, reflective tape "Diamond Grade", 330 mm x 330 mm, material base plate: aluminum, screw connection, heated	PL240DG-H	1022926	-	-	●	●
	Reflector plate, reflective tape "Diamond Grade", 665 mm x 665 mm, material base plate: aluminum, screw connection	PL560DG	1016806	-	-	●	●
	Reflector plate, reflective tape "Diamond Grade", 665 mm x 665 mm, material base plate: aluminum, screw connection, heated	PL560DG-H	1023888	-	-	●	●
	Reflector plate, reflective tape "Diamond Grade", 1,000 mm x 1,000 mm, material base plate: aluminum, screw connection	PL880DG	1018975	-	-	●	●
	Reflector plate, reflective tape "Diamond Grade", 1,200 mm x 1,200 mm, material base plate: aluminum, screw connection	PL1200DG	1051679	-	-	●	●

Reflective tape

	Description	Model name	Part no.	DT35	DS35	DL35	DR35
	Reflective tape "Diamond Grade", self-adhesive, sheet	REF-DG	5320565	-	-	●	●
	Reflective tape "Diamond Grade", self-adhesive, customizable size by sheet	REF-DG-K	4019634	-	-	●	●

Terminal and alignment brackets

Alignment brackets

	Description	Model name	Part no.	DT35	DS35	DL35	DR35
	Alignment unit, steel, zinc coated, mounting hardware for the sensor included	BEF-AH-DX50	2048397	●	●	●	●

Universal bar clamp systems

	Description	Model name	Part no.	DT35	DS35	DL35	DR35
	Plate NO2 for universal clamp bracket, mounting hardware	BEF-KHS-NO2	2051608	●	●	●	●
	Plate NO2N for universal clamp bracket, mounting hardware	BEF-KHS-NO2N	2051618	●	●	●	●
	Plate NO3 for universal clamp bracket, mounting hardware	BEF-KHS-NO3	2051609	●	●	●	●
	Plate NO3N for universal clamp bracket, mounting hardware	BEF-KHS-NO4N	2051619	●	●	●	●
	Mounting bar, straight, 200 mm, without mounting hardware	BEF-MS12G-A	4056054	●	●	●	●
	Mounting bar, straight, 300 mm, without mounting hardware	BEF-MS12G-B	4056055	●	●	●	●
	Mounting bar, straight, 200 mm	BEF-MS12G-NA	4058914	●	●	●	●
	Mounting bar, straight, 300 mm	BEF-MS12G-NB	4058915	●	●	●	●

	Description	Model name	Part no.	DT35	DS35	DL35	DR35
	Mounting bar, L-shaped, 150 mm x 150 mm, without mounting hardware	BEF-MS12L-A	4056052	●	●	●	●
	Mounting bar, L-shaped, 250 x 250 mm, without mounting hardware	BEF-MS12L-B	4056053	●	●	●	●
	Mounting bar, L-shaped, 150 mm x 150 mm	BEF-MS12L-NA	4058912	●	●	●	●
	Mounting bar, L-shaped, 250 mm x 250 mm	BEF-MS12L-NB	4058913	●	●	●	●
	Mounting rod, U-shape, bending radius 26 mm	BEF-MS12U	4065437	●	●	●	●
	Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm, without mounting hardware	BEF-MS12Z-A	4056056	●	●	●	●
	Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm, without mounting hardware	BEF-MS12Z-B	4056057	●	●	●	●
	Mounting bar, Z-shaped, 100 mm x 150 mm x 200 mm, without mounting hardware	BEF-MS12Z-C	4064563	●	●	●	●
	Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm	BEF-MS12Z-NA	4058916	●	●	●	●
	Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm	BEF-MS12Z-NB	4058917	●	●	●	●
	Bar clamp for bar diameter of 12 mm (fixing the mounting rod), 2 screws M6 x 30, 2 spring discs	BEF-RMC-D12	5321878	●	●	●	●

Simple integration into your automation world

Our intelligent sensor solutions and safety controllers make available different integration technologies that 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 availability with a continuous diagnostic concept.

Industrial communication



SICK's fieldbus and network solutions allow sensors and safety controllers from SICK to be connected to all common automation systems. This guarantees simple and fast access to all available data and information.

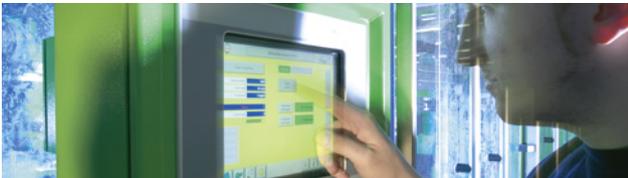


PLC and engineering tool integration



Whether the issue is generic integration using device description files, standardized interfaces (e.g. TCI, FDT/DTM) for diagnosis or integration into the PLC program via function blocks – the user-friendly tools from SICK support you in implementation.

HMI integration



SICK offers a wide range of means to integrate process, status, and diagnostic data from SICK sensors into a visualization system. Tools such as OPC servers, web servers, or SCL allow simple and fast integration into your individual HMI solution – independent of the technology used.

Software and tools

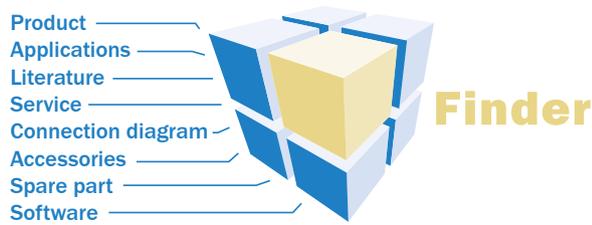


Our software tools support you in establishing connections, parameterizing and diagnosing sensors and safety controllers from SICK. The intuitive user interface permits simple and fast designing and realization of the application required.

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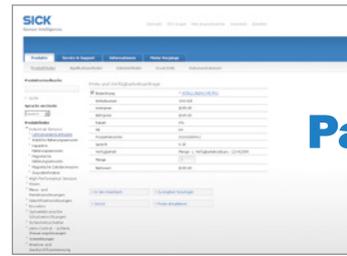


Product Finder: We can help you to quickly target the product that best matches your application.

Applications Finder: Select the application description on the basis of the challenge posed, industrial sector, or product group.

Literature Finder: Go directly to the operating instructions, technical information, and other literature on all aspects of SICK products.

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Globally available experts for cost-effective solutions



Product & System Support

Fast and reliable, by telephone or on location



Verification & Optimization

Checks and recommendations for increased availability



Upgrade & Retrofits

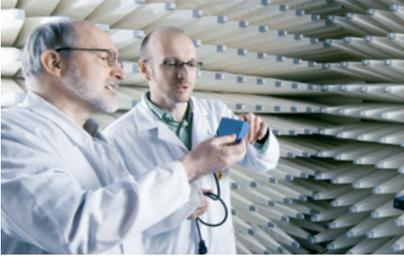
Uncovers new potential for machines and systems



Training & Education

Employee qualification for increased competitiveness

SICK at a glance



Leading technologies

With a staff of more than 5,800 and nearly 50 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.



Unique product range

- Non-contact detecting, counting, classifying, positioning and measuring of any type of object or media
- Accident and operator protection with sensors, safety software and services
- Automatic identification with bar code and RFID readers
- Laser measurement technology for detecting the volume, position and contour of people and objects
- Complete system solutions for analysis and flow measurement of gases and liquids



Comprehensive services

- SICK LifeTime Services – for safety and productivity
- Application centers in Europe, Asia and North America for the development of system solutions under real-world conditions
- E-Business Partner Portal www.mysick.com – price and availability of products, requests for quotation and online orders

Worldwide presence with subsidiaries in the following countries:

Australia
Belgium/Luxembourg
Brasil
Česká Republika
Canada
China
Danmark
Deutschland
España
France
Great Britain
India
Israel
Italia
Japan

México
Nederland
Norge
Österreich
Polska
România
Russia
Schweiz
Singapore
Slovenija
South Africa
South Korea
Suomi
Sverige
Taiwan
Türkiye
United Arab Emirates
USA

Please find detailed addresses and additional representatives and agencies in all major industrial nations at www.sick.com