SICK.COM



DATA SHEET

DS35-B15221

Dx35
Time-of-flight sensors

SICK Sensor Intelligence



TIME-OF-FLIGHT SENSORS

DS35-B15221

ORDERING INFORMATION

Type	part no.
DS35-B15221	1057655

Further device versions and accessories at www.sick.com/Dx35

DETAILED TECHNICAL DATA

FEATURES

Measuring range	50 mm ... 12,000 mm, 90% remission factor [1) 2)] 50 mm ... 5,300 mm, 18% reflection factor 50 mm ... 3,100 mm, 6% remission factor
Target	Natural objects
Resolution	100 µm
Repeatability	≥ 0.5 mm [2) 3)]
Measurement accuracy	Typ. ± 10 mm [4)]
Response time	2.5 ms ... 96.5 ms, 2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms [5) 6)]
Switching frequency	333 Hz / 100 Hz / 50 Hz / 25 Hz / 6 Hz [5) 6)]
Output time	1 ms ... 32 ms, 1 ms/2 ms/4 ms/8 ms/32 ms [5) 7)]
Emitted beam	
Light source	Laser, red [8)]
Type of light	Visible red light
Typ. light spot size (distance)	15 mm x 15 mm (at 2 m)
Key laser figures	
Normative reference	IEC 60825-1:2014, EN 60825-1:2014
Laser class	2 [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: 4 ns; duty cycle: 1/250.

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 Switching mode: Distance to Object (DtO) / switching window / object between sensor and background (ObSB) Teach-in of digital output and digital output invertible Multifunctional input: laser off / external teach / deactivated Reset to factory default
Safety-related parameters	
$MTTF_D$	101 years
DC_{avg}	0%

[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: 4 ns; duty cycle: 1/250.

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

INTERFACES

IO-Link	✓, IO-Link V1.1
Function	Process data, parameterization, diagnosis
Data transmission rate	38.4 kbit/s
Digital output	
Number	2 [1] [2]
Type	Push-pull: PNP/NPN
Function	Output Q_2, adaptable: digital output/Q_1 not/deactivated
Maximum output current I_A	≤ 100 mA
Multifunctional input (MF)	1 x [3]
Hysteresis	0 mm ... 11,950 mm [4]

[1] Output Q short-circuit protected.

[2] Voltage drop < 3 V.

[3] Response time ≤ 60 ms.

[4] Configurable via IO-Link.

ELECTRONICS

Supply voltage U_B	DC 12 V ... 30 V [1] [2]
Power consumption	≤ 1.7 W [3]
Ripple	≤ 5 V_{pp} [4]
Initialization time	≤ 500 ms
Warm-up time	≤ 20 min
Display	LEDs
Enclosure rating	IP65 IP67

[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.

[3] Without load, at +20 °C.

[4] May not fall short of or exceed V_s tolerances.

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.

[3] Without load, at +20 °C.

[4] May not fall short of or exceed V_s tolerances.

MECHANICS

Dimensions (W x H x D)	32 mm x 58.67 mm x 42.7 mm
Housing material	Plastic (ABS/PC)
Window material	Plastic (PMMA)
Weight	65 g

AMBIENT DATA

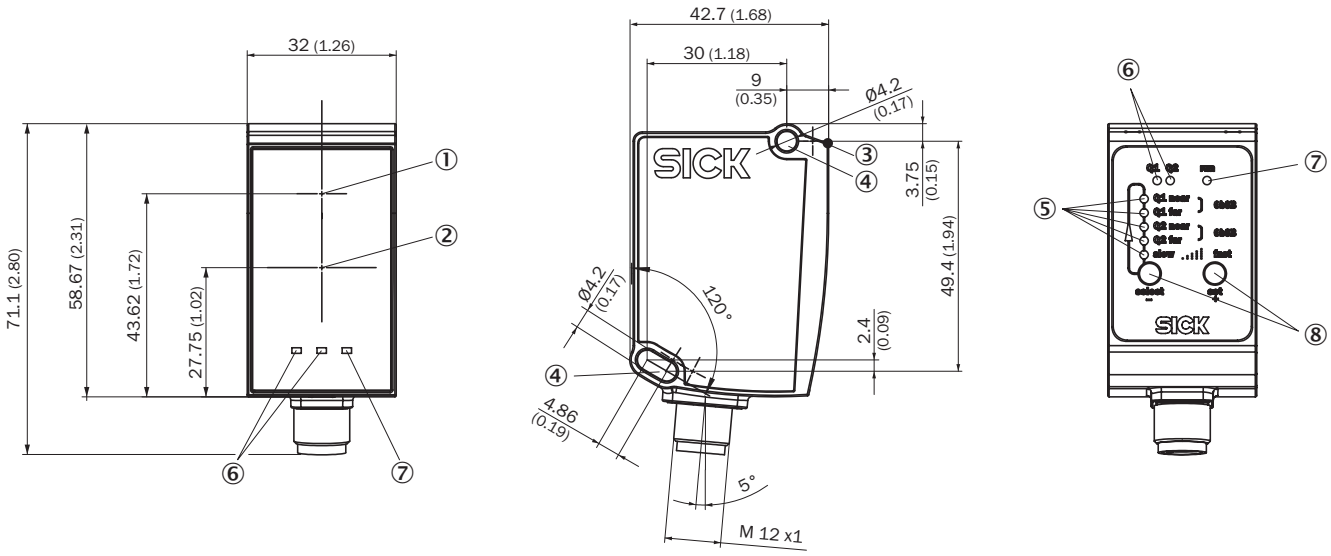
Ambient temperature, operation	–30 °C ... +55 °C, U_v ≤ 24 V
Ambient temperature, storage	–40 °C ... +75 °C
Max. rel. humidity (not condensing)	≤ 95 %
Typ. Ambient light immunity	40 klx
Vibration resistance	EN 60068-2-6, EN 60068-2-64
Shock resistance	EN 60068-2-27
Electromagnetic compatibility (EMC)	EN 61000-6-2, EN 61000-6-3, EN 61000-6-4 [1]

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

CERTIFICATES

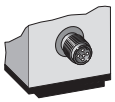
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cTUVus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING

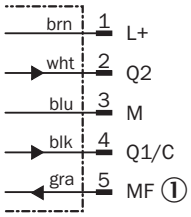


Dimensions in mm (inch)
① Optical axis, sender
② Optical axis, receiver
③ Zero level
④ Mounting hole M4
⑤ status indicator output Qa/Q2
⑥ Status LEDs output Q_1
⑦ Operating indicator
⑧ Control elements

CONNECTION TYPE PLUG, M12, 5-PIN



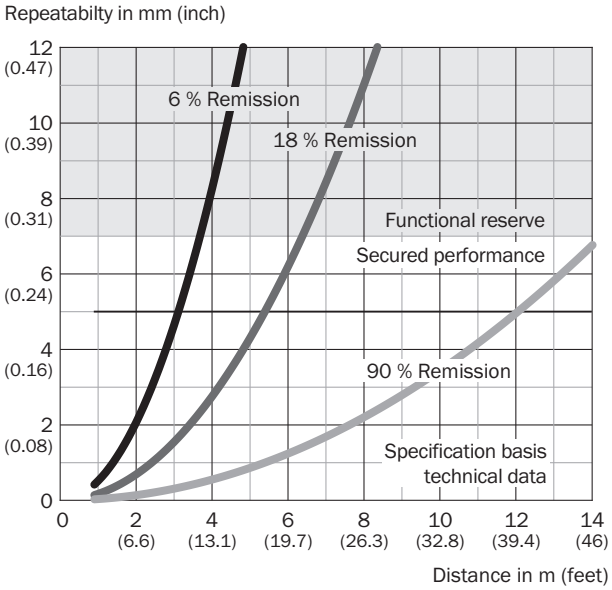
CONNECTION DIAGRAM



① Multifunctional input (MF)

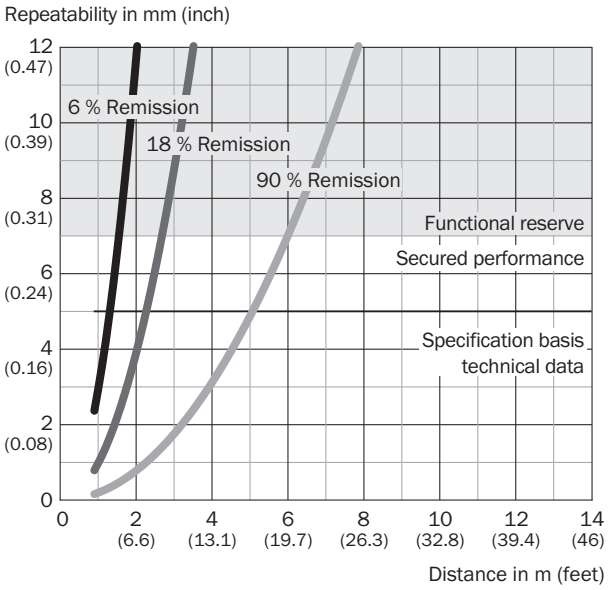
CHARACTERISTIC CURVE 1) SUPER SLOW

Super Slow



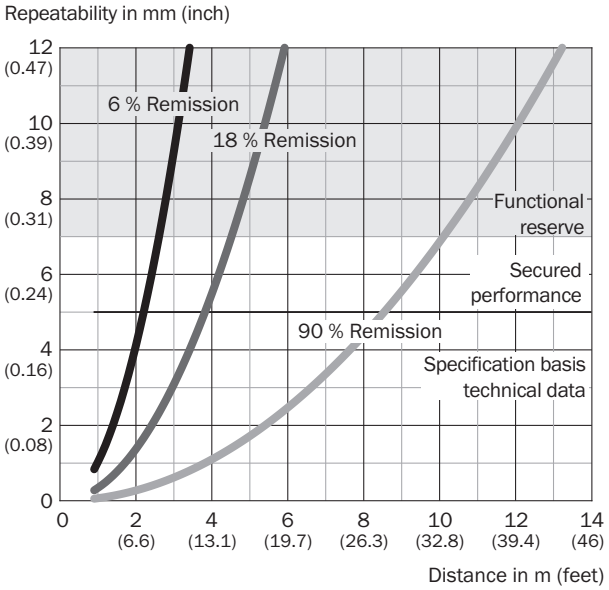
CHARACTERISTIC CURVE 5) SUPER FAST

Super Fast



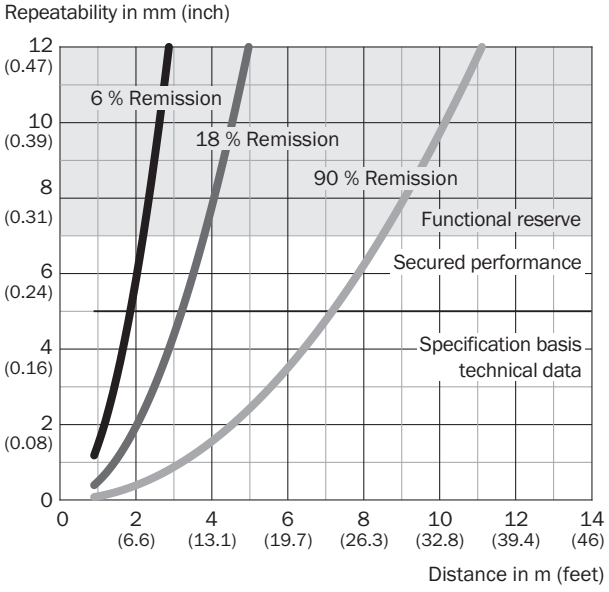
CHARACTERISTIC CURVE 2) SLOW

Slow



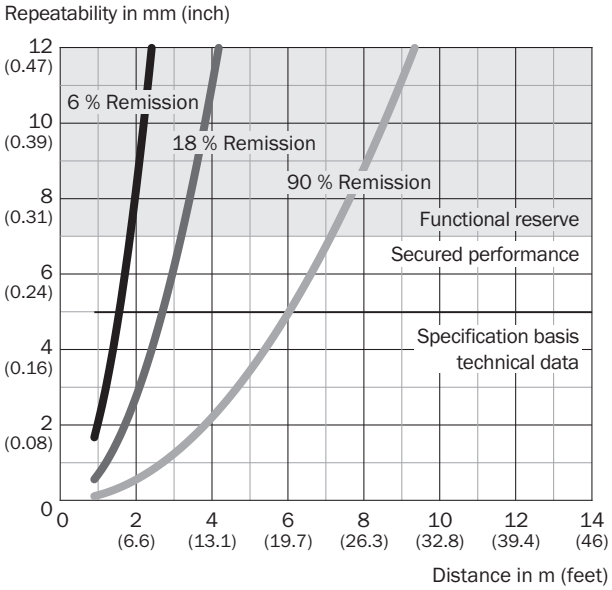
CHARACTERISTIC CURVE 3) MEDIUM

Medium



CHARACTERISTIC CURVE 4) FAST

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/1057655

SICK AG
WALDKIRCH
GERMANY
SICK.COM

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