SICK.COM



DATA SHEET

DT80-311111

Dx80
Time-of-flight sensors

SICK Sensor Intelligence



TIME-OF-FLIGHT SENSORS

DT80-311111

ORDERING INFORMATION

Type	part no.
DT80-311111	1118113

Further device versions and accessories at www.sick.com/Dx80

DETAILED TECHNICAL DATA

FEATURES

Measuring range	50 mm ... 80,000 mm, 90% remission factor [1] 50 mm ... 40,000 mm, 90% remission factor 50 mm ... 14,000 mm, 6% remission factor [2]
Target	Natural objects
Resolution	0.1 mm
Repeatability	≥ 0.2 mm [3] [4] [5]
Measurement accuracy	± 2 mm [5] [6]
Response time	33 ms ... 68 ms [7]
Output time	33 ms, 50 ms, 100 ms, 200 ms ... 3000 ms [8]
Emitted beam	
Light source	Laser, red
Type of light	Visible red light
Typ. light spot size (distance)	5.5 mm x 7.5 mm (at 1 m) [9] 6.5 mm x 7 mm (at 5 m) 7.5 mm x 6.5 mm (at 10 m) 12.5 mm x 8 mm (at 20 m)

[1] At good ambient conditions, at measurement cycle time ≤ 3,000 ms.

[2] At the maximum permissible ambient temperature, the maximum measuring range may be reduced by up to 40%.

[3] See diagrams for repeatability.

[4] Equivalent to 1 σ.

[5] 6% ... 90% remission factor.

[6] Typical temperature drift: 0.1 mm/K.

[7] Depends on the object and filter settings.

[8] Continuously changing data output.

[9] See light spot size diagram.

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

	21.5 mm x 11 mm (At 40 m)
Key laser figures	
Normative reference	IEC 60825-1:2014, EN 60825-1:2014+A11:2021
Laser class	2 [10]
Wave length	655 nm
Pulse duration	> 400 µs
Maximum pulse power	< 1 mW
Average laser service life (at 25 °C)	100,000 h
Safety-related parameters	
$MTTF_D$	101 years

[1] At good ambient conditions, at measurement cycle time ≤ 3,000 ms.

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INTERFACES

IO-Link	✓ , IO-Link V1.1
Function	Process data, parameterization, diagnosis, data storage
Data transmission rate	230,4 kbit/s (COM3)
Digital input	In_1
Number	1
Digital output	
Number	1 ... 2 [1] [2] [3]
Type	Push-pull: PNP/NPN
Function	Complementary digital outputs (Q, $\bar{Q}$)
	Output Q_2 adaptable: Current output / Voltage output / Digital output / Q_1 not / deactivated
Maximum output current I_A	≤ 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, ≤ 450 Ω
Voltage	0 V ... 10 V, ≤ 10,000 Ω
Resolution	16 bit
Hysteresis	0 mm ... 40,000 mm

[1] Output Q short-circuit protected.

[2] Voltage drop < 3 V.

[3] Max. total output current < 200 mA.

ELECTRONICS

Supply voltage U_B	12 V ... 30 V [1] [2]

[1] Limit values, reverse-polarity protected. Short circuit-protected mains operation: max. 5 A at 30 V DC.

[2] When using IO-Link output V_s > 18 V. When using analog voltage output V_s > 13 V.

[3] Without load, at ambient temperature ≥ 0 °C.

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

Power consumption	≤ 2 W [3]
Ripple	≤ 5 V_{pp} [4]
Initialization time	1,100 ms
Warm-up time	≤ 1 min
Display	4 x LED, Full color LCD display
Enclosure rating	IP65, IP67
Protection class	III
Connection type	
Supply voltage & I/O	Cable with plug M12, 5-pin, 300 mm
Pinouts for Supply voltage & I/O	
BN 1	+ (L+)
WH 2	QA/Q2/Q̄1/-
BU 3	- (M)
BK 4	Q_1/C
GY 5	In_1

[1] Limit values, reverse-polarity protected. Short circuit-protected mains operation: max. 5 A at 30 V DC.

[2] When using IO-Link output V_s > 18 V. When using analog voltage output V_s > 13 V.

[3] Without load, at ambient temperature ≥ 0 °C.

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

MECHANICS

Dimensions (W x H x D)	33 mm x 65 mm x 57.04 mm
Housing material	Metal (zinc diecast)
Window material	Plastic (PMMA)
Weight	280 g

AMBIENT DATA

Ambient temperature, operation	–10 °C ... +50 °C, U_v ≤ 30 V –10 °C ... +80 °C, Operation with 2 cooling plates(2138205)/optionally with heat protection filter(2137825) [1]
Ambient temperature, storage	–25 °C ... +70 °C
Temperature drift	Typ. 0.1 mm/K
Typ. Ambient light immunity	30,000 lx
Vibration resistance	(IEC 60068-2-6:2007) Sinusoidal vibrations: 10 Hz ... 500 Hz, 10 g, 10 frequency cycles (IEC 60068-2-64:2008) Noise test: 10 Hz ... 500 Hz, 13.5 g RMS, 5 h
Shock resistance	(IEC 60068-2-27:2008) 100 g, 6 ms, 3 axes, ± 3 single shocks/axis (IEC 60068-2-27:2008) 40 g, 6 ms, 3 axes, ± 4,000 continuous shocks/axis (IEC 60068-2-27:2008) 50 g, 3 ms, 3 axes, ± 5,000 continuous shocks/axis (IEC 60068-2-27:2008) 70 g, 6 ms, Y-axis, ± 100,000 shocks
Electromagnetic compatibility (EMC)	EN 61000-6-2 / EN 61000-6-3

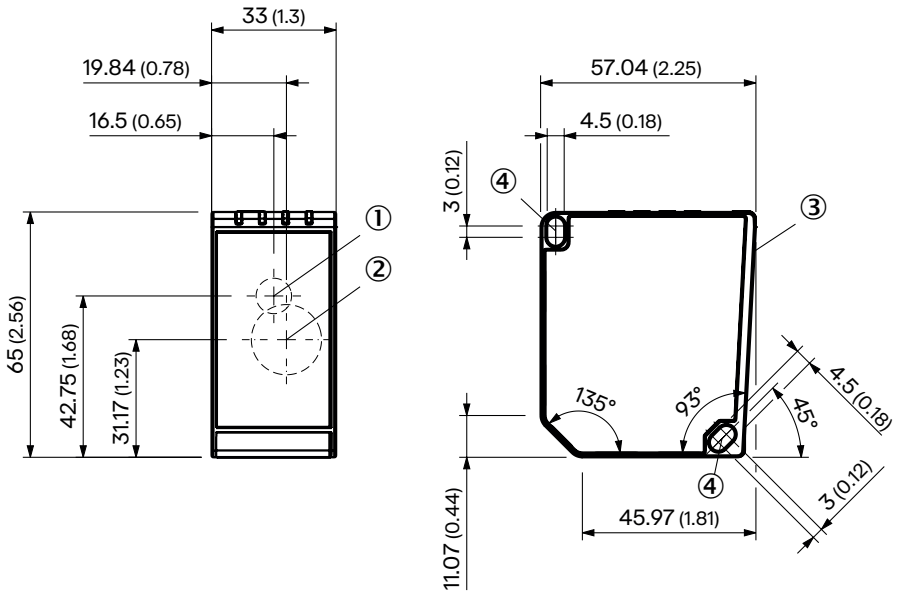
[1] With water cooling.

CERTIFICATES

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
IO-Link certificate	✓

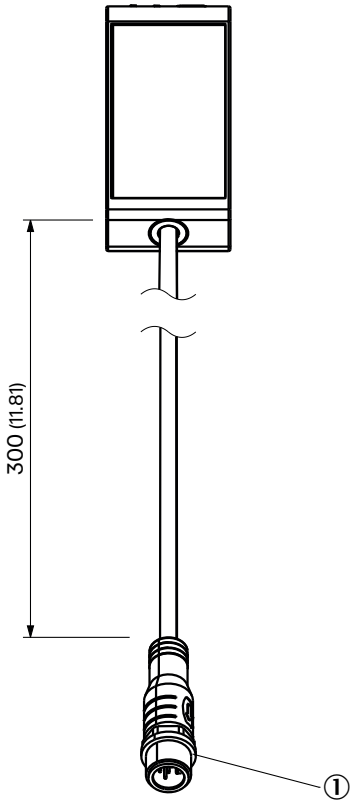
cTUVus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING, SENSOR



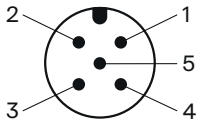
Dimensions in mm (inch)
① Center of optical axis, sender
② Center of optical axis, receiver
③ Reference surface (corresponds to distance 0 mm)
④ Mounting hole, Ø 4.5 mm

DIMENSIONAL DRAWING, CONNECTION TYPE



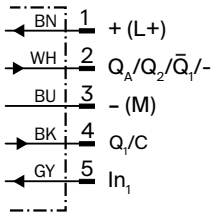
Dimensions in mm (inch)
① Cable with plug, M12, 5-pin, A-coded

PINOUTS, SEE TABLE TECHNICAL DATA: ELECTRONICS



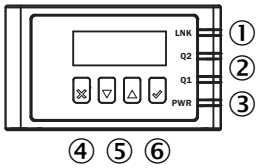
Connector M12, 5-pin, A-coded

CONNECTION DIAGRAM



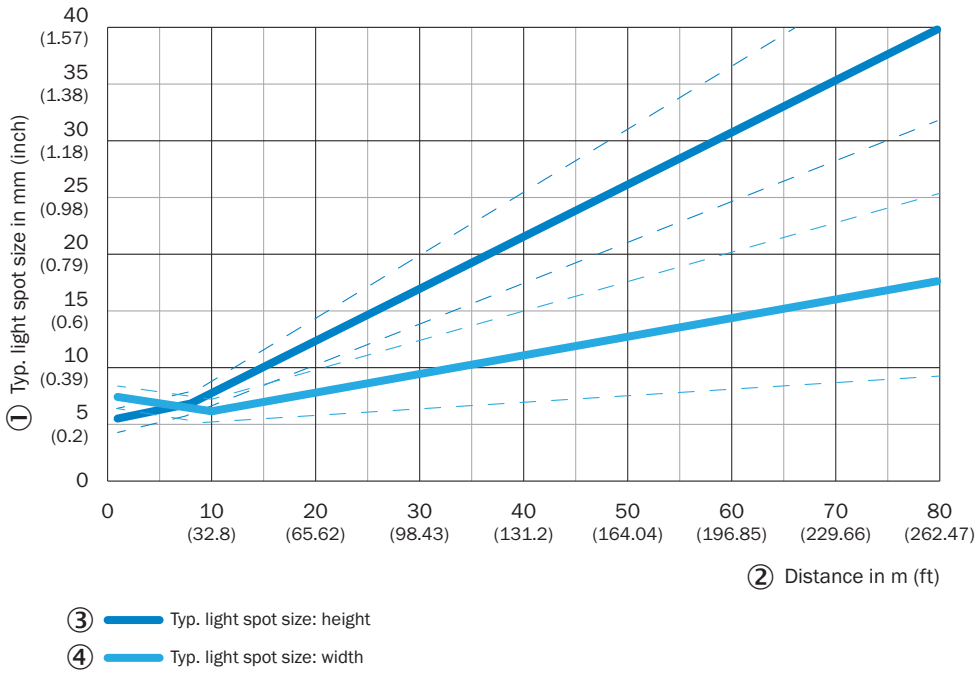
Supply voltage & I/O: plug, 5-pin

DISPLAY AND ADJUSTMENT ELEMENTS



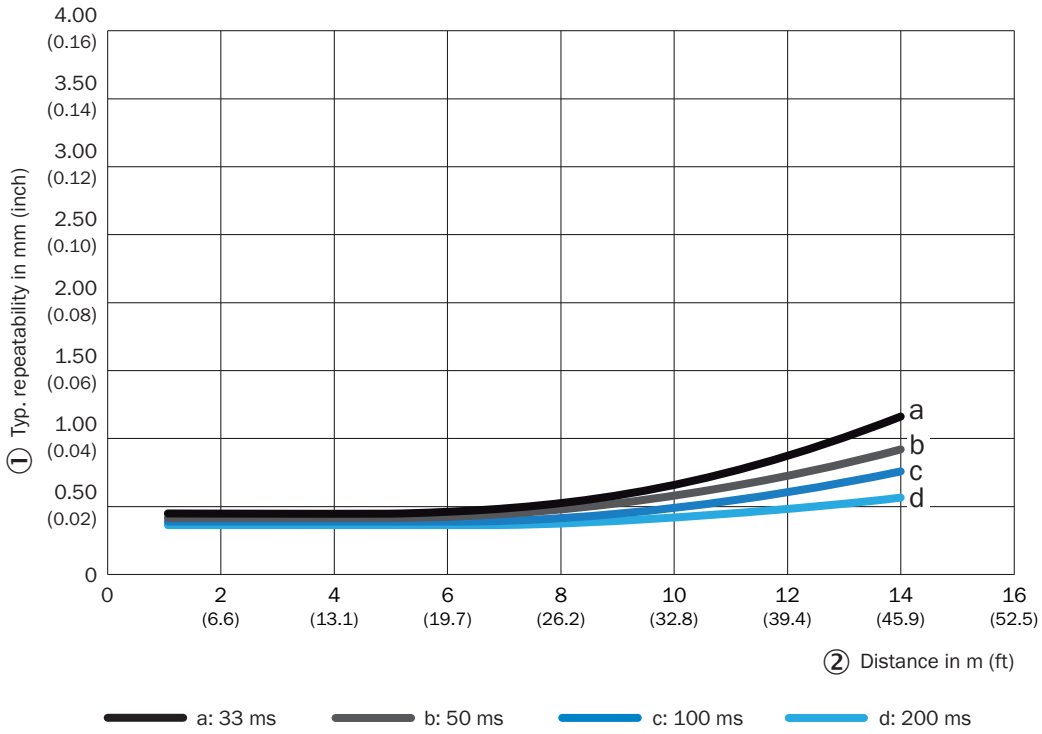
① "Communication" status LED
② "Q1, Q2" status LED
③ "Power" status LED
④ "Cross" pushbutton
⑤ "DOWN, UP" pushbutton
⑥ "Tick" pushbutton

LIGHT SPOT SIZE



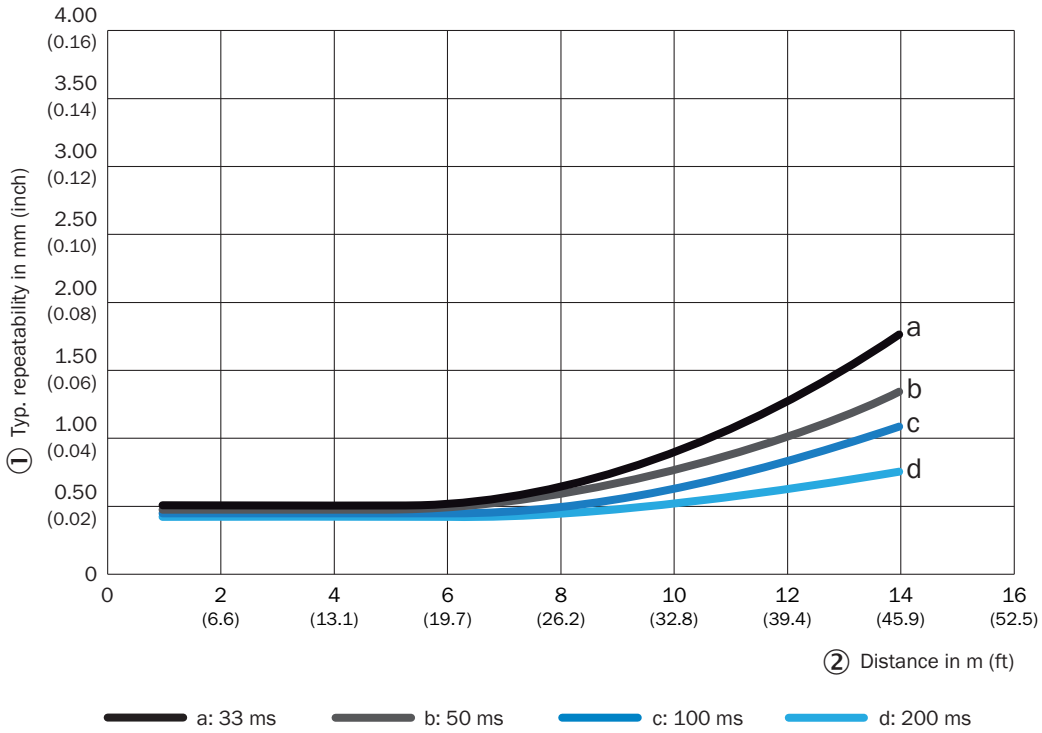
Light spot size at different distances
① Typ. light spot size in mm (inch)
② Distance in meters (feet)
③ Typ. light spot size: Height
④ Typ. light spot size: Width

REPEATABILITY, 6% REMISSION, 10,000 LUX



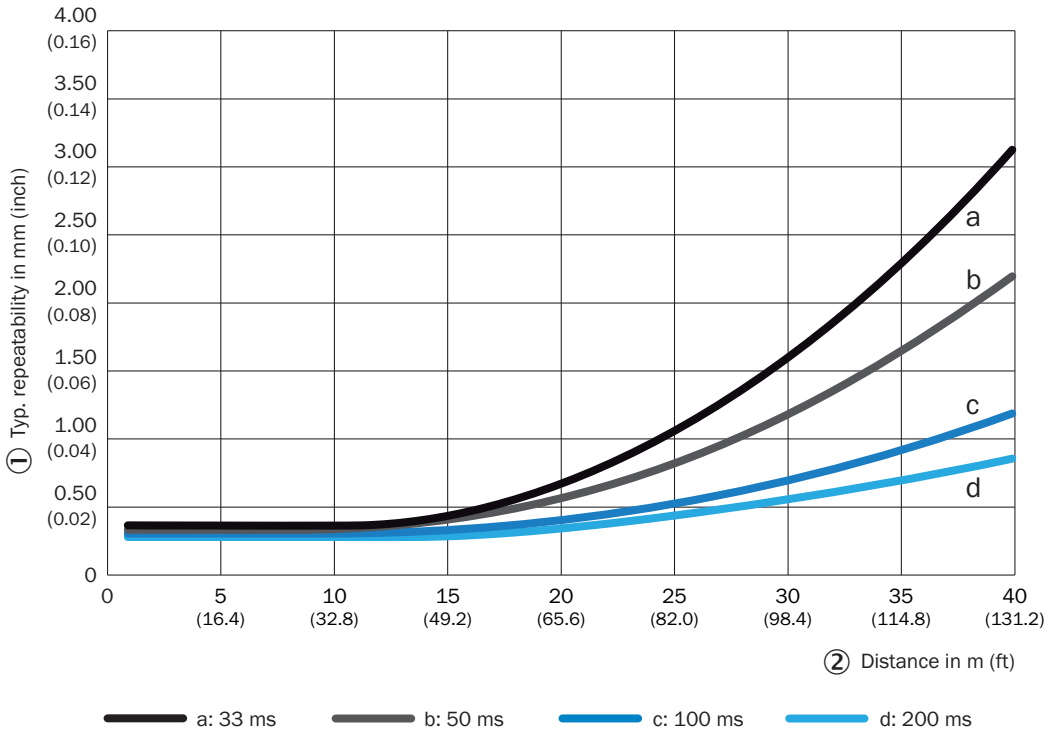
① typical repeatability in mm (inches)
② Distance in meters (feet)

REPEATABILITY, 6% REMISSION, 30,000 LUX



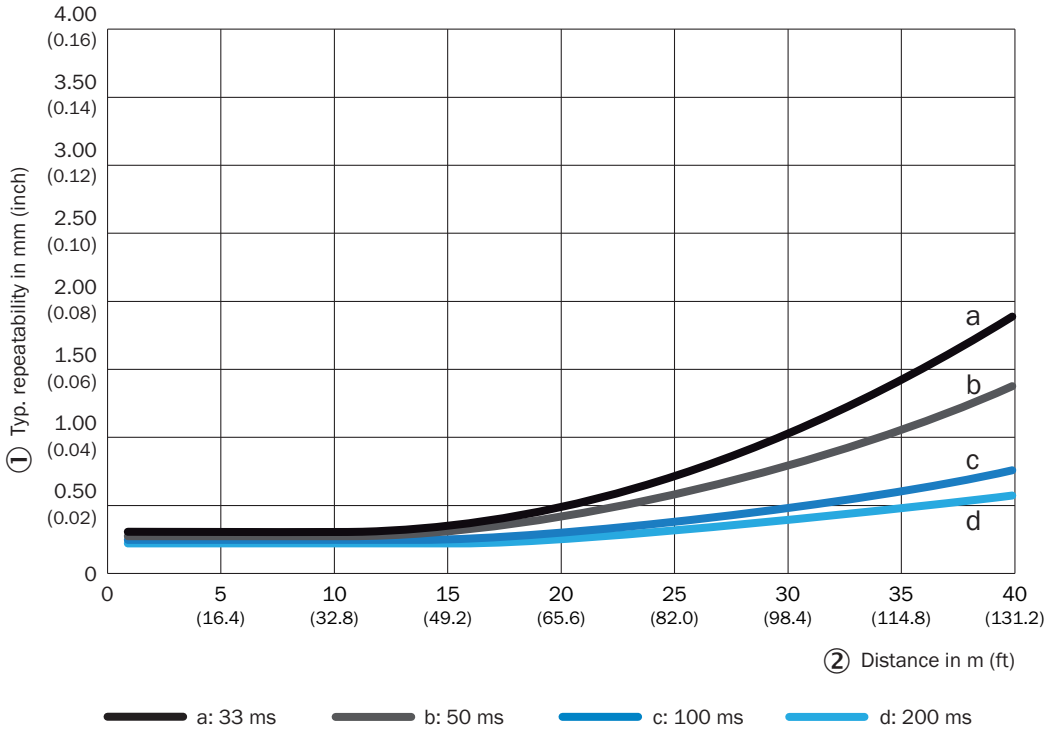
① typical repeatability in mm (inches)
② Distance in meters (feet)

REPEATABILITY, 90% REMISSION, 30,000 LUX



① typical repeatability in mm (inches)
② Distance in meters (feet)

REPEATABILITY, 90% REMISSION, 10,000 LUX



① typical repeatability in mm (inches)
② Distance in meters (feet)

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/1118113

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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

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