



DL1000-S11101

Dx1000

LONG RANGE DISTANCE SENSORS

SICK
Sensor Intelligence.



Ordering information

Type	Part no.
DL1000-S11101	1075438

Other models and accessories → www.sick.com/Dx1000



Detailed technical data

Mechanics/electronics

Supply voltage V_s	DC 18 V ... 30 V, reverse polarity protected
Ripple	$\leq 5 V_{pp}$ ¹⁾
Power consumption	≤ 22 W, With heating switched off ²⁾ ≤ 35 W, With heating switched on ²⁾
Initialization time	> 15 s
Housing material	Metal (Aluminum alloy (AlSi12))
Window material	Glass
Connection type	Round connector M12 x 1
Indication	Graphical, resistive touch display, status LEDs
Weight	980 g
Dimensions (W x H x D)	84 mm x 104.4 mm x 140.5 mm
Enclosure rating	IP65 ³⁾ IP67 ³⁾
Protection class	III (EN 61140)

¹⁾ May not fall short of or exceed V_s tolerances.

²⁾ With external load.

³⁾ When plugged in with a suitable mating connector.

Performance

Measurement principle	HDDM ⁺
Measuring range	0.2 m ... 1,500 m, on "diamond grade" reflective tape ^{1) 2) 3)}
Target	Reflector
Resolution	0.001 mm ... 100 mm, adjustable ⁴⁾
Repeatability	≥ 1 mm, See repeatability characteristic lines ^{1) 5) 6) 7)}
Accuracy	Typ. ± 15 mm, See measurement accuracy diagram ⁸⁾
Response time	3 ms ... 384 ms ⁷⁾
Measurement cycle time	1 ms 4 ms 16 ms
Output time	≥ 1 ms ⁹⁾
Light source	Infrared light (905 nm, measuring laser) Visible red light (650 nm, Adjustment aid)
Laser class	1, even with simultaneous operation of measurement and alignment laser (IEC 60825-1:2014, EN 60825-1:2014)
Typ. light spot size (distance)	5 mm x 20 mm (at 1 m) ¹⁰⁾ 20 mm x 20 mm (at 5 m) ¹⁰⁾ 35 mm x 25 mm (at 10 m) ¹⁰⁾ 150 mm x 50 mm (at 50 m) ¹⁰⁾ 290 mm x 80 mm (at 100 m) ¹⁰⁾ 4,200 mm x 920 mm (at 1,500 m) ¹⁰⁾
Filter	Rain and snow filter Fog filter Moving average distance value Kalman filter Moving average speed value
Additional function	Selection of relevant distance and signal level range, Selection of first or last echo in selected distance and signal level range
Average laser service life (at 25 °C)	100,000 h ¹¹⁾
Max. movement speed	128 m/s

- 1) With max. ambient light 100 kLux sunlight.
- 2) See measuring range diagram.
- 3) Dependent on reflector size and measuring cycle time.
- 4) Data interface resolution.
- 5) Statistical error 1 σ, environmental conditions constant, min. warm-up time > about 15 min.
- 6) On "diamond grade" reflective tape.
- 7) Dependent on selected filter settings and measuring cycle time.
- 8) At T = +23 °C and after warm-up time > about 15 min.
- 9) Depending on interface used.
- 10) See light spot size diagram.
- 11) Measuring laser.

Interfaces

Ethernet	✓, TCP/IP
Function	Parameterization, output of measurement data

- 1) Short-circuit protected, switching voltage U_V - 4 V.
- 2) Internal pull-down switching, switching voltage HIGH: min. 13 V ... max. supply voltage, switching voltage LOW: max. 5 V.
- 3) Max. load = $(U_V - 7 V) / 21.5 \text{ mA}$.

	Data transmission rate	10/100 MBit/s
Serial		✓, RS-422
	Remark	Switchable to SSI
	Function	Parameterization, output of measurement data
SSI		✓
	Remark	Switchable to RS-422
	Function	Output of measurement data
Inputs/outputs	In1/Q1	Digital input, digital output (Switchable)
	QA/Q2	Analog output, digital output (Switchable)
	Q3	Digital output
	Q4	Digital output
	In2	Digital input
	Digital input	
Digital output	Number	2 ... 4 ^{1) 2)}
	Type	Push-pull: PNP/NPN
	Maximum output current I _A	≤ 100 mA
	Analog output	
	Number	1
	Type	Current output
	Current	4 mA ... 20 mA ³⁾
	Resolution	16 bit

¹⁾ Short-circuit protected, switching voltage U_V - 4 V.

²⁾ Internal pull-down switching, switching voltage HIGH: min. 13 V ... max. supply voltage, switching voltage LOW: max. 5 V.

³⁾ Max. load = (U_V - 7 V) / 21.5 mA.

Ambient data

Ambient temperature, operation	-40 °C ... +55 °C ¹⁾ -40 °C ... +95 °C, operation with cooling case
Ambient temperature, storage	-40 °C ... +75 °C
Max. rel. humidity (not condensing)	≤ 95 %
Effect of air pressure	0.3 ppm/hPa
Effect of air temperature	-1 ppm/K
Temperature drift	Typ. 0.25 mm/K
Typ. Ambient light immunity	≤ 100,000 lx
Mechanical load	Shock: 30 g / 6 ms according to DIN EN 60068-2-27 (Ea), 6 axes Continuous shock: 25 g / 6 ms according to DIN EN 60068-2-27 (fatigue), 500 shocks, 6 axes

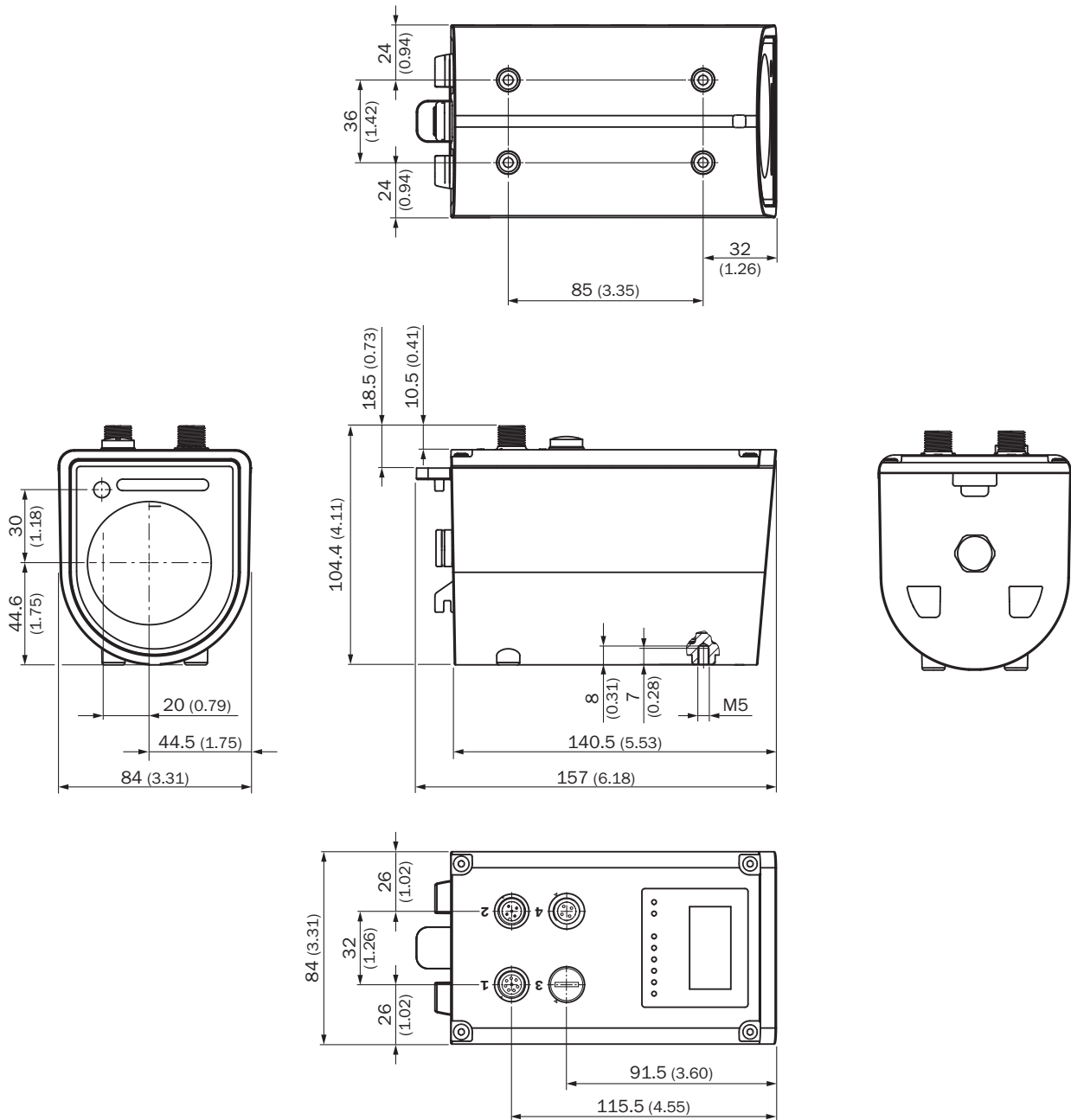
¹⁾ At a temperature of -40 °C, a warm-up time of typ. 20 minutes is required (when supply voltage V_s = 24 V).

Classifications

ECl@ss 5.0	27270801
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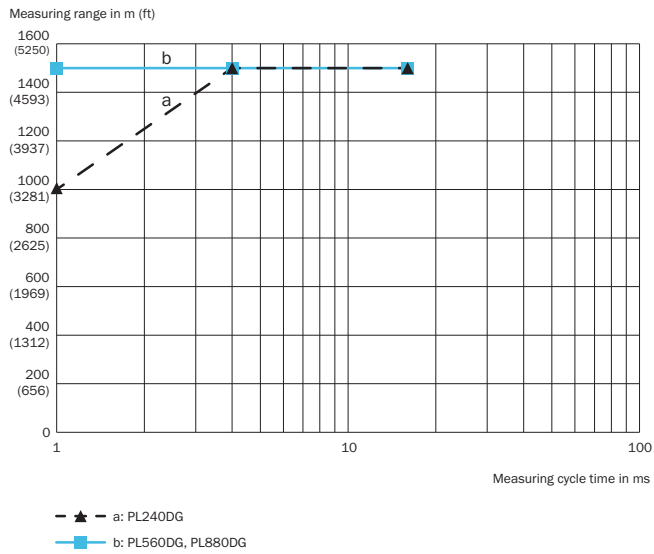
ECl@ss 5.1.4	27270801
ECl@ss 6.0	27270801
ECl@ss 6.2	27270801
ECl@ss 7.0	27270801
ECl@ss 8.0	27270801
ECl@ss 8.1	27270801
ECl@ss 9.0	27270801
ECl@ss 10.0	27270801
ECl@ss 11.0	27270801
ETIM 5.0	EC001825
ETIM 6.0	EC001825
ETIM 7.0	EC001825
ETIM 8.0	EC001825
UNSPSC 16.0901	41111613

Dimensional drawing (Dimensions in mm (inch))



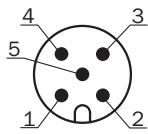
Working range diagram

DL1000 measuring range based on measurement cycle time and reflector type



Connection type

Connection 2: Auxiliary

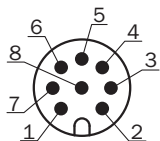


Connector M12, 5-pin, A-coded

- ① nc
- ② Q₃
- ③ nc
- ④ Q₄
- ⑤ In₂

PIN assignment

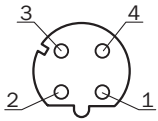
Connection 1: power, RS-422/SSI, Q1/In1, Q2/QA



Connector M12, 8-pin, A-coded

- ① Q1/In1
- ② L+
- ③ RX-/CLK-
- ④ RX+/CLK+
- ⑤ TX-/Data-
- ⑥ TX+/Data+
- ⑦ M
- ⑧ Q2/QA

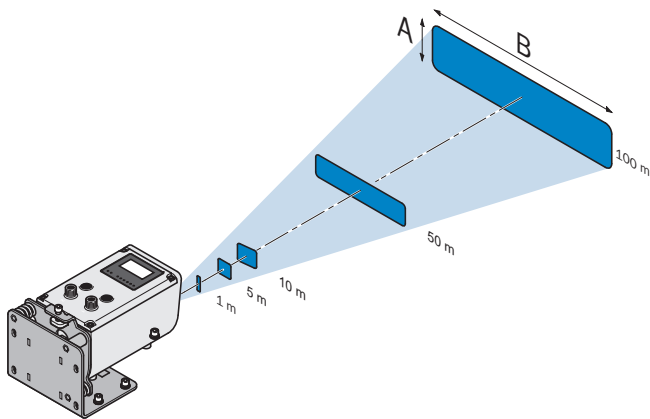
Connection 4: Ethernet



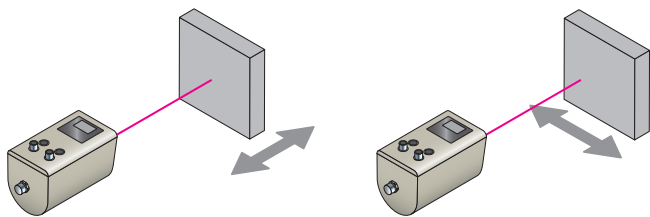
M12 female connector, 4-pin, D-coded

- ① TX+
- ② RX+
- ③ TX-
- ④ RX-

Light spot size

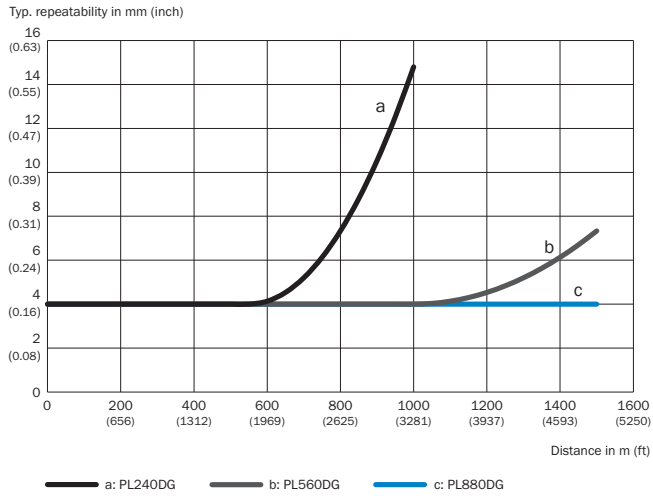


Functional principle

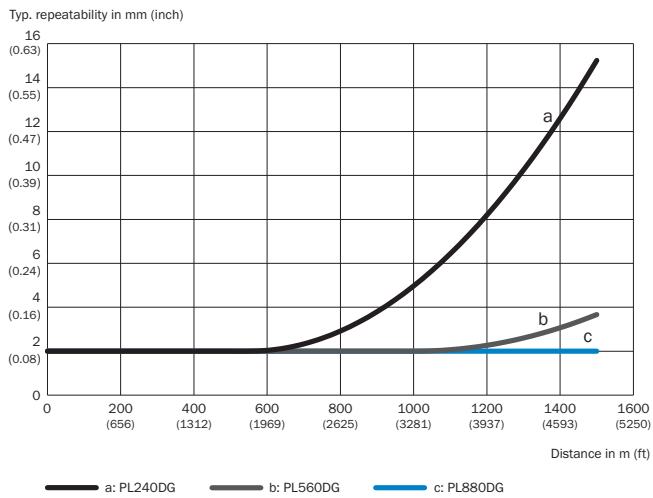


Repeatability

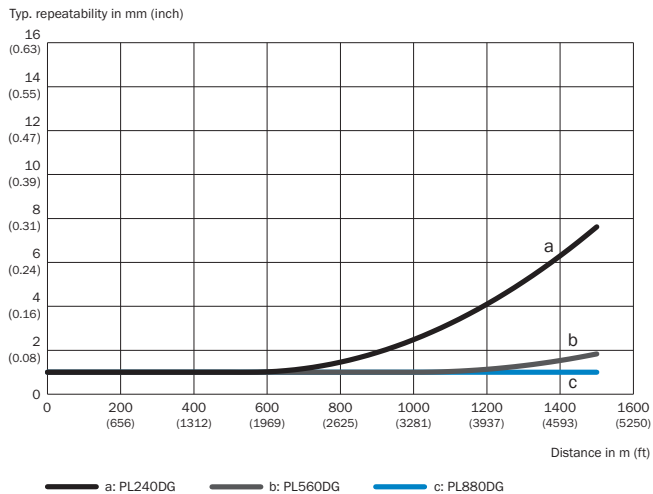
DL1000 for various reflector types, with 1 ms measurement cycle time



DL1000 for various reflector types, with 4 ms measurement cycle time

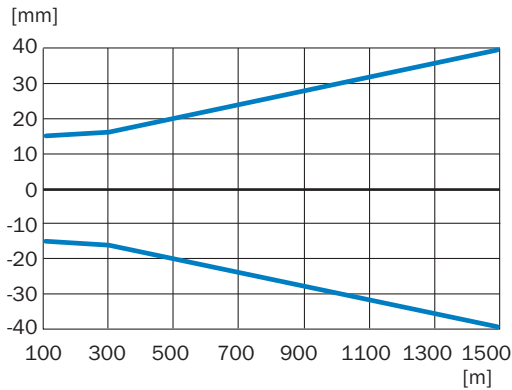


DL1000 for various reflector types, with 16 ms measurement cycle time

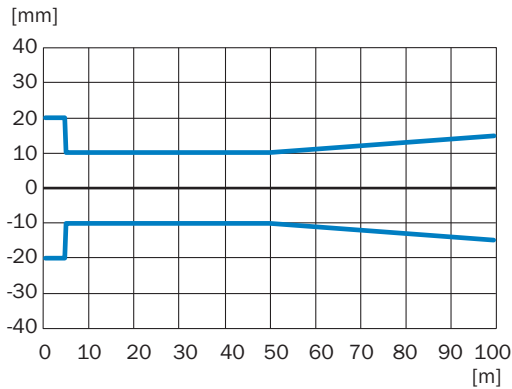


Measurement accuracy

Typically DL1000, x-axis: Distance, y-axis: Typical measurement accuracy








Typically DL1000, x-axis: Distance, y-axis: Typical measurement accuracy



Recommended accessories

Other models and accessories → www.sick.com/Dx1000

	Brief description	Type	Part no.
Device protection (mechanical)			
	Can be opened upward without tools. Conductor for connections on the back. Due to space constraints, connecting cables with 90° angled, pre-assembled male connectors/female connectors are required., Weatherproof housing (BEF-AH-DX1000, tube for weatherproof housing and rain cover for protective housing are not included with delivery)	Weatherproof housing	2087690
Plug connectors and cables			
	Head A: female connector, M12, 8-pin, angled Head B: Flying leads Cable: RS-422, SSI, PUR, halogen-free, shielded, 10 m	YG2A68-100XXXLECX	6051482
	Head A: male connector, RJ45, 4-pin, straight Head B: male connector, M12, 4-pin, angled, D-coded Cable: Ethernet, PUR, halogen-free, 10 m	SSL-2J04-F10MZO2	6061538

	Brief description	Type	Part no.
Reflectors			
	Reflector plate, "diamond grade" reflective tape, 665 mm x 665 mm, base plate material: aluminum, screw connection, Screw-on, 4 hole mounting	PL560DG	1016806
Terminal and alignment brackets			
	Alignment bracket for mounting and precise alignment of the sensor in a horizontal and vertical direction, stainless steel, mounting hardware included	BEF-AH-DX1000	2080392

Recommended services

Additional services → www.sick.com/Dx1000

	Type	Part no.
Warranty extensions		
<ul style="list-style-type: none"> • Product area: Identification solutions, machine vision, Distance sensors, Detection and ranging solutions • Range of services: The services correspond to the scope of the statutory manufacturer warranty (SICK general terms and conditions of purchase) • Duration: Five-year warranty from delivery date. 	Extended warranty for a total of five years from delivery date	1680671

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