



DT1000-S11112

Dx1000

LONG RANGE DISTANCE SENSORS

SICK
Sensor Intelligence.



Ordering information

Type	Part no.
DT1000-S11112	1097425

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



Detailed technical data

Features

Measurement principle	HDDM ⁺
Measuring range	0.2 m ... 155 m, 6% remission factor ^{1) 2) 3)} 0.2 m ... 460 m, 90% remission factor ^{1) 2) 3)}
Target	Natural objects
Resolution	0.001 mm ... 100 mm, adjustable ⁴⁾
Repeatability	≥ 1 mm, See repeatability characteristic lines ^{1) 5) 6) 7)}
Measurement accuracy	Typ. ± 15 mm ^{8) 9)}
Response time	3 ms ... 384 ms ⁷⁾
Measurement cycle time	1 ms 4 ms 16 ms 64 ms 128 ms
Output time	≥ 1 ms ¹⁰⁾
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)

¹⁾ With max. ambient light 100 kLux sunlight.

²⁾ See measuring range diagram.

³⁾ Dependent on remission and measuring cycle time.

⁴⁾ Data interface resolution.

⁵⁾ Statistical error 1 σ, environmental conditions constant, min. warm-up time > about 15 min.

⁶⁾ 6% ... 90% remission factor.

⁷⁾ Dependent on selected filter settings and measuring cycle time.

⁸⁾ See measurement accuracy diagram.

⁹⁾ At T = +23 °C and after warm-up time > about 15 min.

¹⁰⁾ Depending on interface used.

¹¹⁾ See light spot size diagram.

¹²⁾ For object temperatures > +1,200 °C, the use of the additional filter is required for high-temperature applications. The additional filter reduces the measuring range limit by approx. 25%.

¹³⁾ Measuring laser.

Typ. light spot size (distance)	5 mm x 20 mm (at 1 m) ¹¹⁾ 20 mm x 20 mm (at 5 m) ¹¹⁾ 35 mm x 25 mm (at 10 m) ¹¹⁾ 150 mm x 50 mm (at 50 m) ¹¹⁾ 290 mm x 80 mm (at 100 m) ¹¹⁾ 570 mm x 140 mm (at 200 m) ¹¹⁾
Filter	Rain and snow filter Fog filter Moving average distance value Kalman filter Moving average speed value
Max. object temperature	+1,400 °C ¹²⁾
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 ¹³⁾
Max. movement speed	128 m/s
Safety-related parameters	
	MTTF _D 101 years
	DC _{avg} 0%

¹⁾ With max. ambient light 100 kLux sunlight.

²⁾ See measuring range diagram.

³⁾ Dependent on remission and measuring cycle time.

⁴⁾ Data interface resolution.

⁵⁾ Statistical error 1 σ , environmental conditions constant, min. warm-up time > about 15 min.

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¹³⁾ Measuring laser.

Interfaces

Ethernet	✓, TCP/IP
Function	Parameterization, output of measurement data
Data transmission rate	10/100 MBit/s
Serial	✓, RS-422
Remark	Switchable to SSI
SSI	✓
Remark	Switchable to RS-422
Function	Output of measurement data
PROFINET	✓
Function	Parameterization, output of measurement data
Network load class	III

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 = $(U_V - 7 V) / 21.5 \text{ mA}$.

Inputs/outputs		In1/Q1	Digital input, digital output (Switchable)
		QA/Q2	Analog output, digital output (Switchable)
Digital input		Internal pull-down circuit HIGH switching voltage: min. 13 V ... max. supply voltage LOW switching voltage: max. 5 V switching functions: deactivate measuring laser, activate alignment laser, preset	
Digital output		Number	0 ... 2 ^{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.

Electronics

Supply voltage U_B	DC 18 V ... 30 V, reverse polarity protected
Power consumption	≤ 22 W, With heating switched off ¹⁾ ≤ 35 W, With heating switched on ¹⁾
Ripple	≤ 5 V _{pp} ²⁾
Initialization time	> 30 s
Indication	Graphical, resistive touch display, status LEDs
Enclosure rating	IP65 ³⁾ IP67 ³⁾
Protection class	III (EN 61140)

¹⁾ With external load.

²⁾ May not fall short of or exceed V_S tolerances.

³⁾ When plugged in with a suitable mating connector.

Mechanics

Dimensions (W x H x D)	84 mm x 104.4 mm x 140.5 mm
Housing material	Metal (Aluminum alloy (AlSi12))
Window material	Glass
Weight	1,000 g
Connection type	Round connector M12 x 1

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

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

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

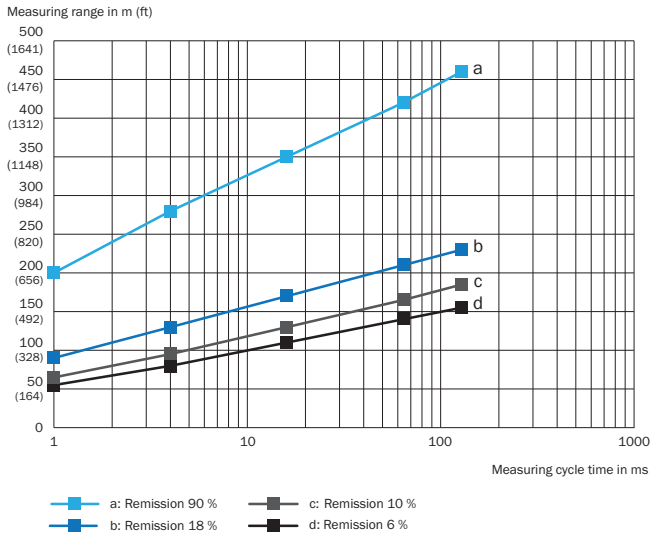
¹⁾ At a temperature of -40 °C, a warm-up time of typ. 20 minutes is required (when supply voltage $V_s = 24$ V).

Classifications

ECLASS 5.0	27270801
ECLASS 5.1.4	27270801
ECLASS 6.0	27270801
ECLASS 6.2	27270801
ECLASS 7.0	27270801
ECLASS 8.0	27270801
ECLASS 8.1	27270801
ECLASS 9.0	27270801
ECLASS 10.0	27270801
ECLASS 11.0	27270801
ECLASS 12.0	27270916
ETIM 5.0	EC001825
ETIM 6.0	EC001825
ETIM 7.0	EC001825
ETIM 8.0	EC001825
UNSPSC 16.0901	41111613

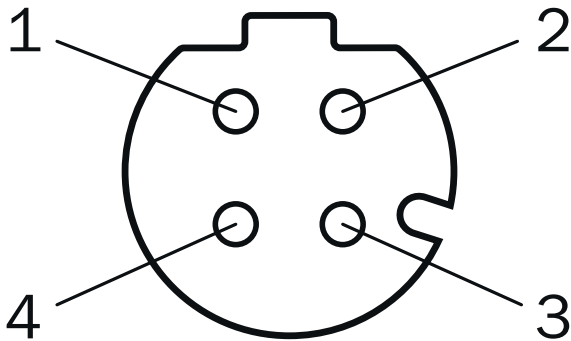
Working range diagram

DT1000 measuring range based on measurement cycle time and object remission



PIN assignment

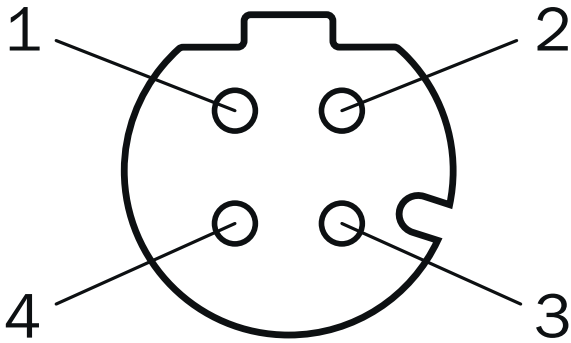
Connection 3: PROFINET (port 2)



M12 female connector, 4-pin, D-coded

- ① TX+
- ② RX+
- ③ TX-
- ④ RX-

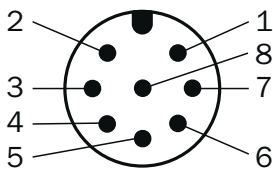
Connection 2: PROFINET (port 1)



M12 female connector, 4-pin, D-coded

- ① TX+
- ② RX+
- ③ TX-
- ④ RX-

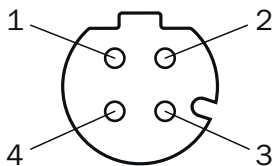
Connection 1: power, RS-422/SSI, Q1/In1, Q2/QA



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

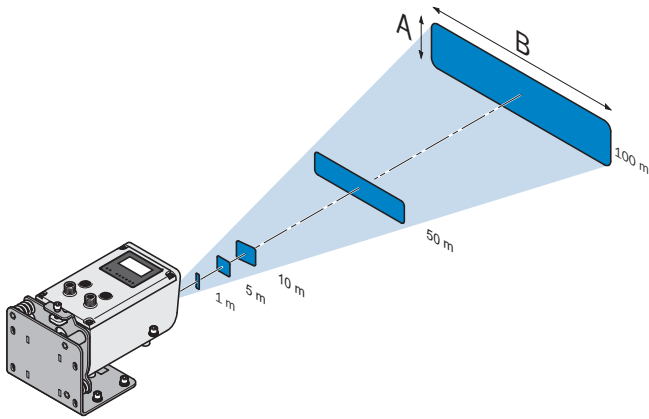
Connection 4: Ethernet



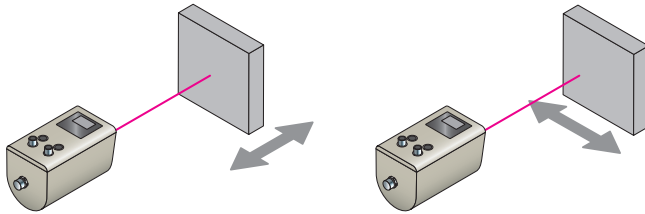
M12 female connector, 4-pin, D-coded

- ① TX+
- ② RX+
- ③ TX-
- ④ RX-

Light spot size

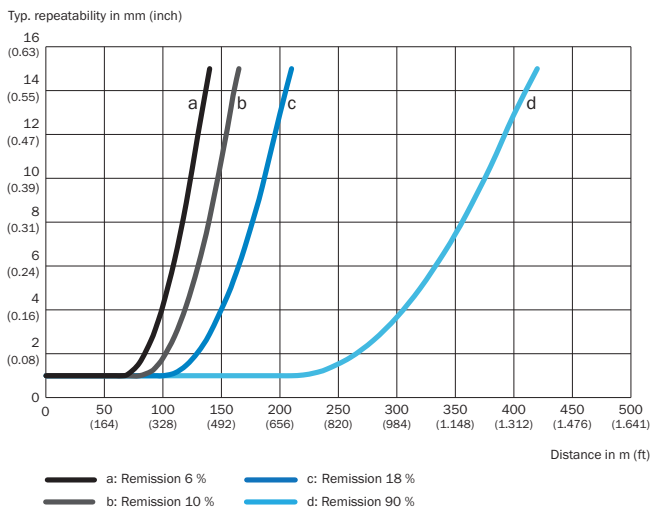


Functional principle

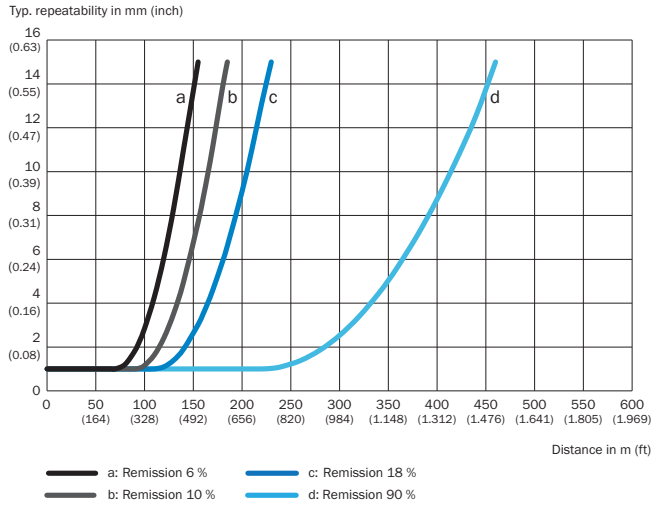


Repeatability

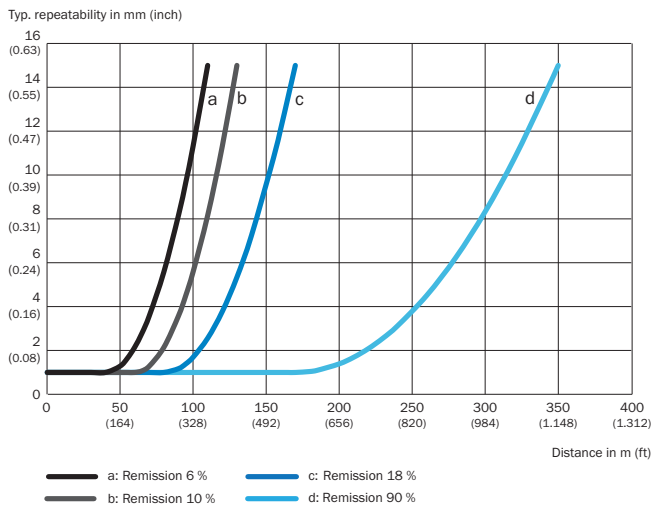
DT1000, with 64 ms measurement cycle time



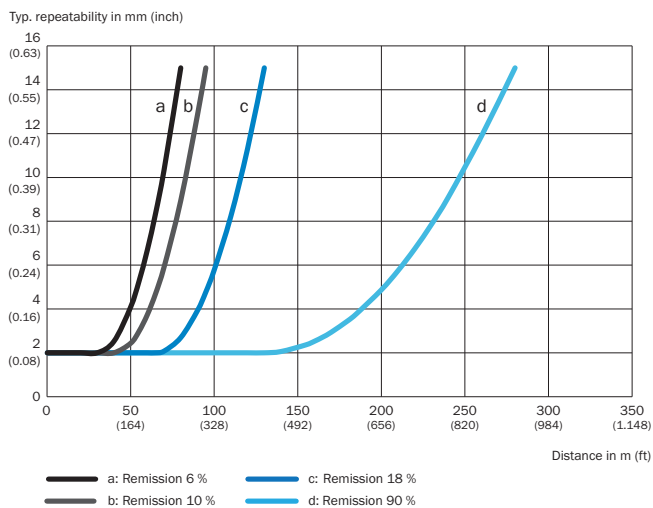
DT1000, with 128 ms measurement cycle time



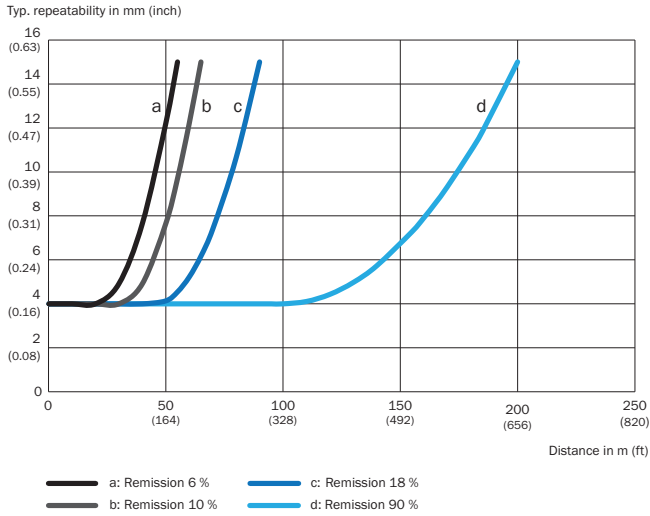
DT1000, with 16 ms measurement cycle time



DT1000, with 4 ms measurement cycle time

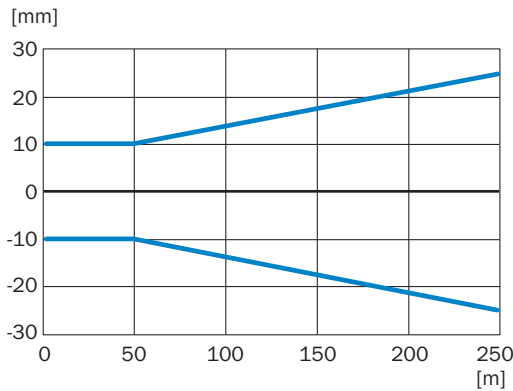


DT1000, with 1 ms measurement cycle time




Measurement accuracy




Typically DT1000, 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)	Weather-proof housing	2087690

	Brief description	Type	Part no.
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
Others			
	<ul style="list-style-type: none"> • Connection type head A: Male connector, M12, 4-pin, angled, D-coded • Connection type head B: Male connector, RJ45, 4-pin, straight • Signal type: Ethernet, PROFINET • Cable: 10 m, 4-wire, PUR, halogen-free • Description: Ethernet, PROFINET, shielded • Application: Drag chain operation, Zones with oils and lubricants 	YN2D24-100PN1MRJA4	2106164
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 8-pin, angled • Connection type head B: Flying leads • Signal type: RS-422, SSI • Cable: 10 m, 8-wire, PUR, halogen-free • Description: RS-422, SSI, shielded 	YG2A68-100XXXXLECX	6051482

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.”

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