Data sheet

DT80-311111

Dx80

TIME-OF-FLIGHT SENSORS

SICK
Sensor Intelligence.

Ordering information

Type	part no.
DT80-311111	1118113

Other models and accessories ➜ 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)

[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.

	12.5 mm x 8 mm (at 20 m)
	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.
[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.

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)]
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

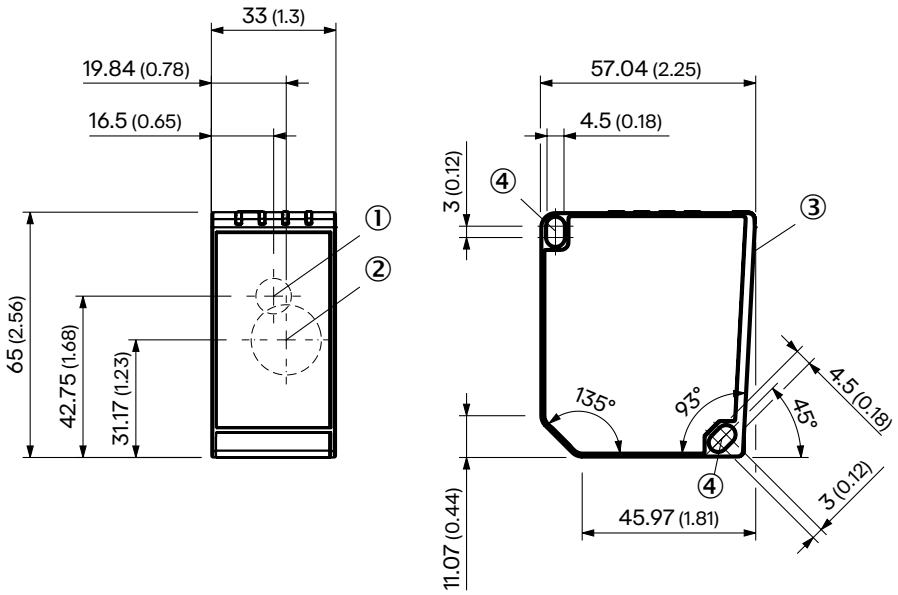
EU declaration of conformity	✓

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)	✓

Classifications

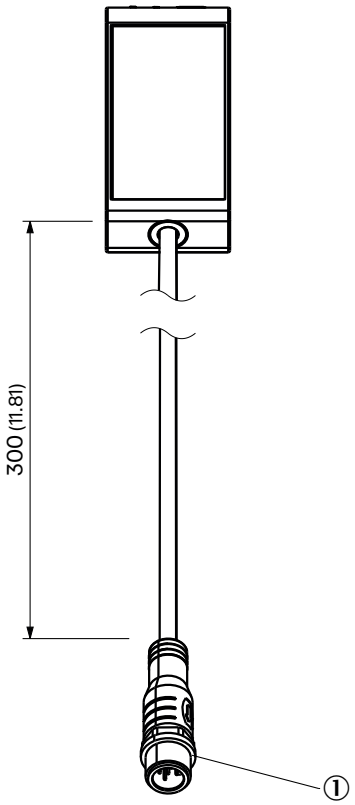
ECLASS 5.0	27270801
ECLASS 5.1.4	27270801
ECLASS 6.0	27270801
ECLASS 6.2	27270801
ECLASS 7.0	27270801
ECLASS 8.0	27270801
ECLASS 8.1	27270801
ECLASS 9.0	27270801
ECLASS 10.0	27270801
ECLASS 11.0	27270801
ECLASS 12.0	27270916
ETIM 5.0	EC001825
ETIM 6.0	EC001825
ETIM 7.0	EC001825
ETIM 8.0	EC001825
UNSPSC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

Dimensional drawing, sensor



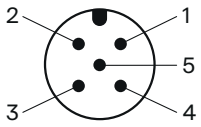
Dimensions in mm (inch)
① Center of optical axis, sender
② Center of optical axis, receiver
③ Reference surface (corresponds to distance 0 mm)
④ Mounting hole, Ø 4.5 mm

dimensional drawing, connection type



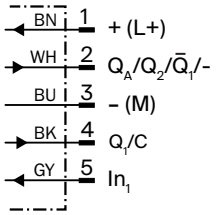
Dimensions in mm (inch)
① Cable with plug, M12, 5-pin, A-coded

Pinouts, see table Technical data: Electronics



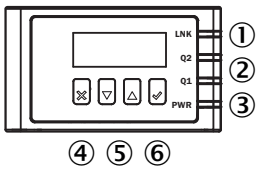
Connector M12, 5-pin, A-coded

connection diagram



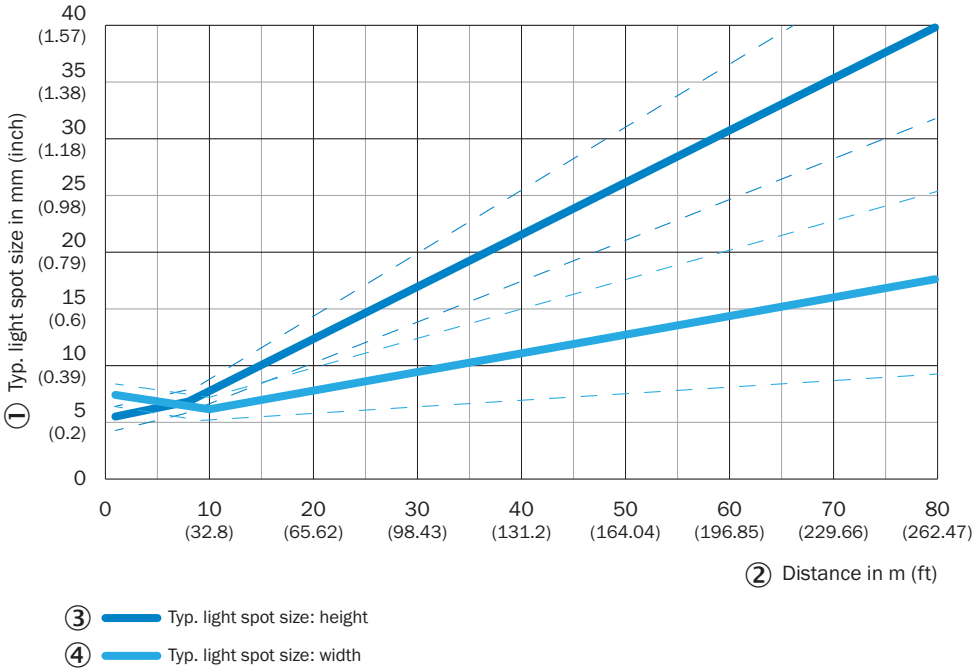
Supply voltage & I/O: plug, 5-pin

display and adjustment elements



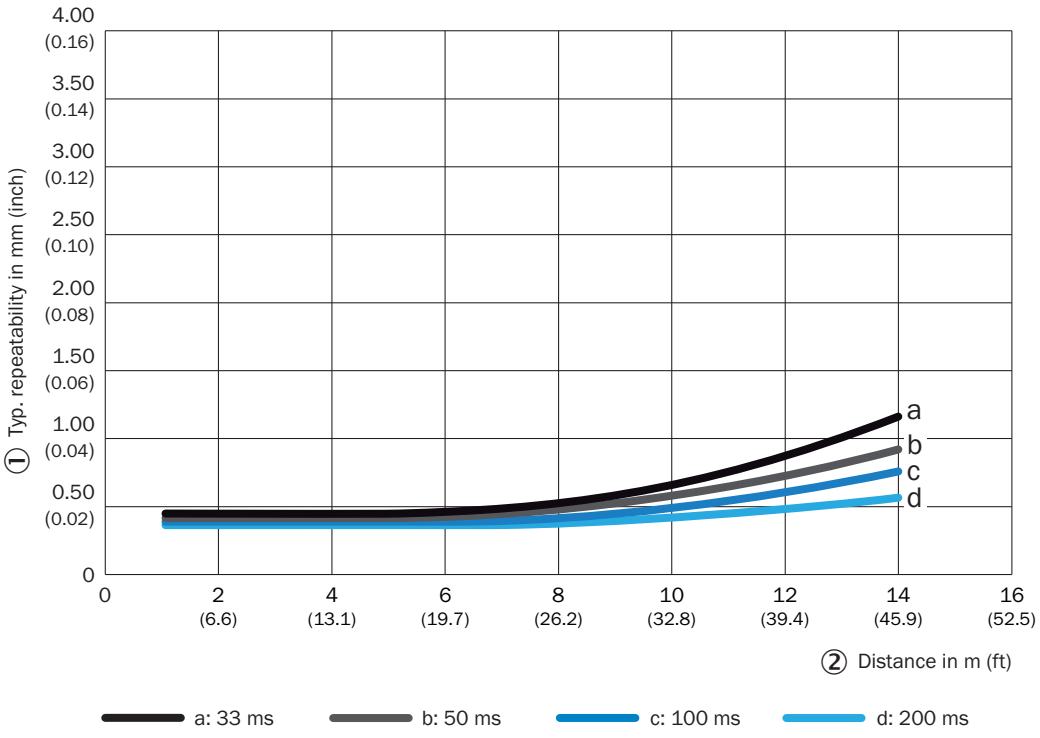
① "Communication" status LED
② "Q1, Q2" status LED
③ "Power" status LED
④ "Cross" pushbutton
⑤ "DOWN, UP" pushbutton
⑥ "Tick" pushbutton

Light spot size



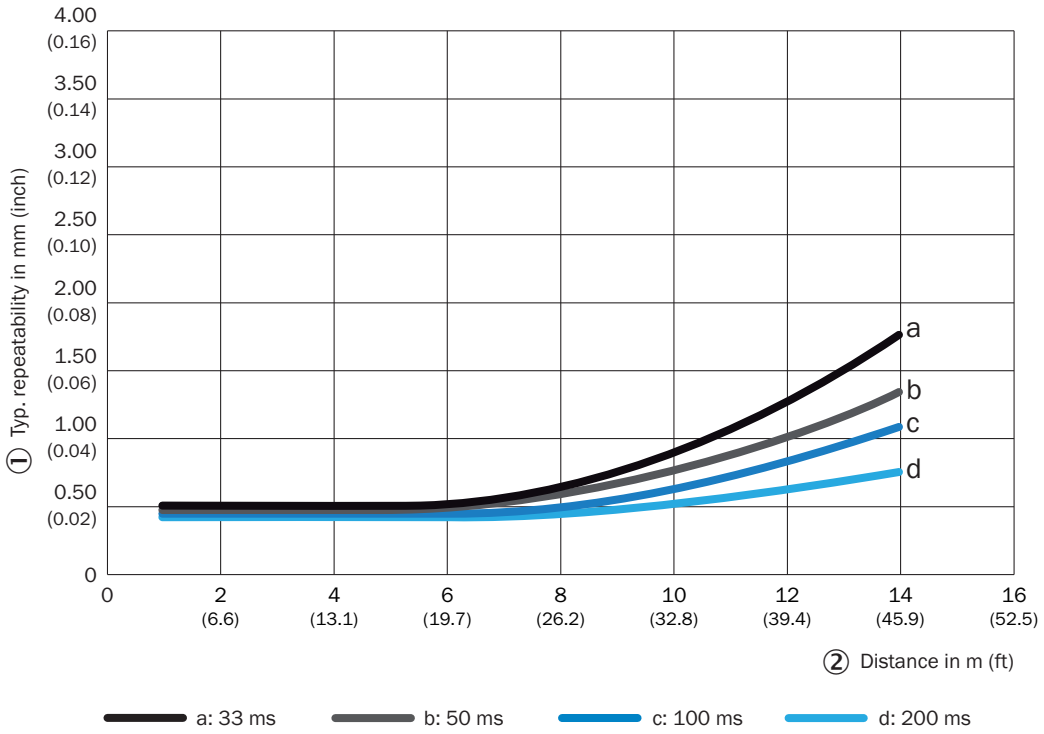
Light spot size at different distances
① Typ. light spot size in mm (inch)
② Distance in meters (feet)
③ Typ. light spot size: Height
④ Typ. light spot size: Width

repeatability, 6% remission, 10,000 lux



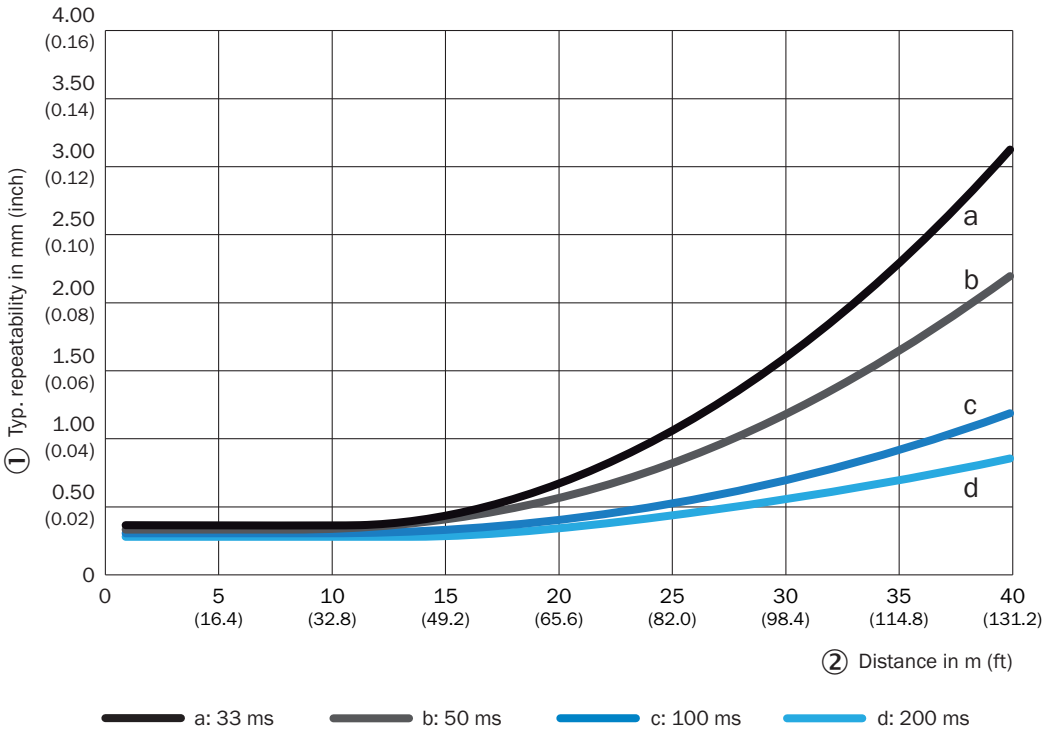
① typical repeatability in mm (inches)
② Distance in meters (feet)

repeatability, 6% remission, 30,000 lux



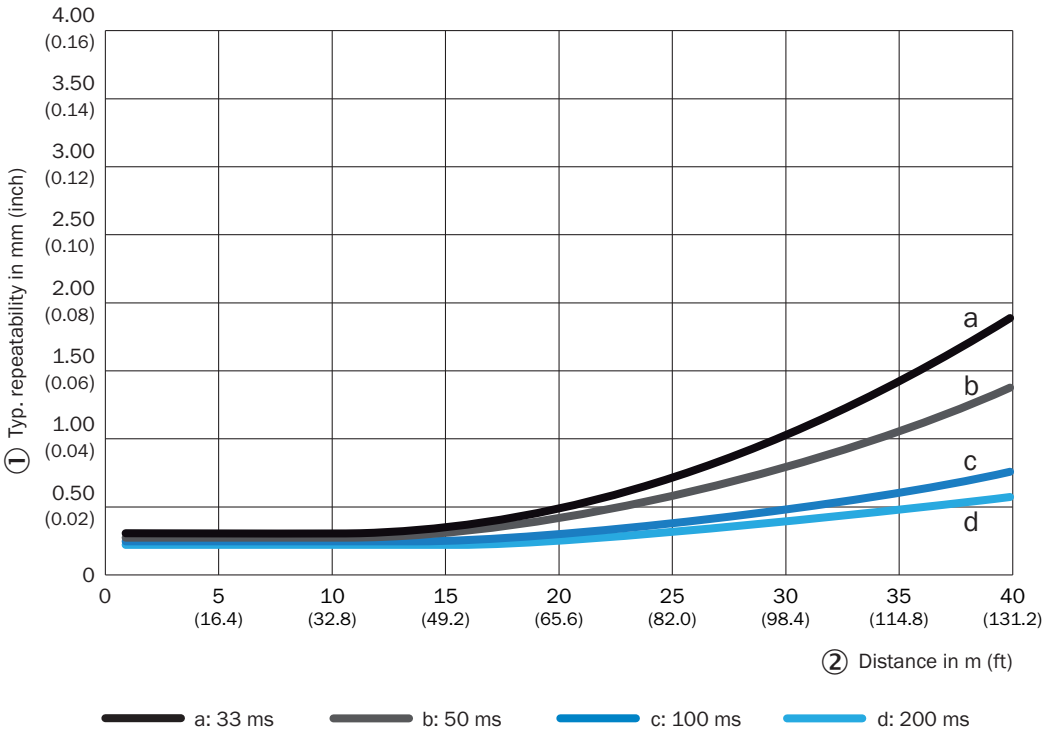
① typical repeatability in mm (inches)
② Distance in meters (feet)

repeatability, 90% remission, 30,000 lux



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

repeatability, 90% remission, 10,000 lux

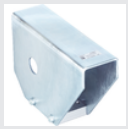


① typical repeatability in mm (inches)

② Distance in meters (feet)

Recommended accessories

Other models and accessories ➜ www.sick.com/Dx80

	Brief description	Type	part no.
Mounting systems			
	• **Description:** Mounting bracket, steel, zinc coated • **Material:** Steel • **Details:** Steel, zinc coated • **Items supplied:** Mounting hardware for the sensor included • **Suitable for:** Dx50, Dx80, Dx50, Dx80	BEF-WN-DX50	2048370
	• **Description:** Alignment unit • **Material:** Steel • **Details:** Steel, zinc coated • **Items supplied:** Mounting hardware for the sensor included	BEF-AH-DX50	2048397
device protection and care			
	• **Description:** Weather protection hood for Dx35 / Dx50 / Dx50-2 / Dx80	OBW-KHS-M02	2050205
	• **Description:** Cooling plate for Dx80 (for water cooling) • **Usable for:** Dx80	BEF-KP-Dx80	2138205
	• **Description:** Thermal shield for Dx80 with NIR filter for use with 2x cold plate BEF-KP-Dx80	Heat protection filter for Dx80	2137825

	Brief description	Type	part no.
connectors and cables			
	• **Description:** Sensor/actuator cable, shielded • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 5-wire, PUR, halogen-free • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A85-050UB6M2A85	2096119
	• **Description:** Sensor/actuator cable, unshielded • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 5-wire, PUR, halogen-free • **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A15-050UE3M2A15	2140039
	• **Description:** Sensor/actuator cable, unshielded • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 5-wire, PUR, halogen-free • **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A15-050UE3XLEAX	2140038
	• **Description:** Sensor/actuator cable, shielded • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 5-wire, PUR, halogen-free • **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-050UB6XLEAX	2095733
	• **Description:** Sensor/actuator cable, shielded • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 2 m, 5-wire, PUR, halogen-free • **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-020UB6XLEAX	2145583
	• **Description:** Sensor/actuator cable, shielded • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 1 m, 5-wire, PUR, halogen-free • **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-010UB6XLEAX	2145582
	• **Description:** Sensor/actuator cable, shielded • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 0.6 m, 5-wire, PUR, halogen-free • **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-C60UB6XLEAX	2145581

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