



# WLG4SP-8416K130A00

## W4

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
WLG4SP-8416K130A00	1139764

Other models and accessories → [www.sick.com/W4](http://www.sick.com/W4)

Detailed technical data

Features

<b>Functional principle</b>	Photoelectric retro-reflective sensor
<b>Functional principle detail</b>	Without reflector minimum distance (autocollimation/coaxial optics), ClearSens, MultiMode
<b>MultiMode</b>	Modes can only be configured via IO link
<b>Sensing range</b>	
Sensing range min.	0 m
Sensing range max.	7.1 m
Recommended sensing range for the best performance	0 m ... 5 m
<b>Emitted beam</b>	
Light source	PinPoint LED
Type of light	Visible red light
Shape of light spot	Point-shaped
Light spot size (distance)	150 mm (5 m)
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.5° (at Ta = +23 °C)
<b>Key LED figures</b>	
Normative reference	EN 62471:2008-09   IEC 62471:2006, modified
LED risk group marking	Free group
Wave length	635 nm
Average service life	100,000 h at Ta = +25 °C
<b>Adjustment</b>	
Teach-in button	BluePilot: for sensitivity adjustment
IO-Link	For configuring the sensor parameters and Smart Task functions
<b>Display</b>	

	LED blue	BluePilot: Alignment aid
	LED green	Operating indicator Static on: power on Flashing: IO-Link mode
	LED yellow	Status of received light beam Static on: object not present Static off: object present Flashing: Below the 1.5 function reserve
<b>Special features</b>		Pin2 pre-setting (MF): teach-in via cable MultiMode
<b>Special applications</b>		Detecting objects wrapped in film, Detecting transparent objects

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	1,590 years
<b>DC<sub>avg</sub></b>	0%

### Communication interface

<b>IO-Link</b>		✓ , IO-Link V1.1
	Data transmission rate	COM2 (38,4 kBaud)
	Cycle time	2.3 ms
	Process data length	16 Bit
	Process data structure	Bit 0 = switching signal Q <sub>L1</sub>
		Bit 1 = switching signal Q <sub>L2</sub>
		Bit 2 ... 15 = Current receiver level (live)
	VendorID	26
	DeviceID HEX	0x80035C
	DeviceID DEC	8389468
	Compatible master port type	A
	SIO mode support	Yes

### Electronics

<b>Supply voltage U<sub>B</sub></b>		10 V DC ... 30 V DC <sup>1)</sup>
<b>Ripple</b>		≤ 5 V <sub>pp</sub>
<b>Usage category</b>		DC-12 (According to EN 60947-5-2) DC-13 (According to EN 60947-5-2)
<b>Current consumption</b>		≤ 20 mA, without load. At U <sub>B</sub> = 24 V
<b>Protection class</b>		III
<b>Digital output</b>		
	Number	2
	Type	Push-pull: PNP/NPN
	Switching mode	Light/dark switching
	Signal voltage PNP HIGH/LOW	Approx. U <sub>B</sub> -2.5 V / 0 V
	Signal voltage NPN HIGH/LOW	Approx. U <sub>B</sub> / < 2.5 V
	Output current I <sub>max.</sub>	≤ 100 mA
	Circuit protection outputs	Reverse polarity protected

<sup>1)</sup> Limit values.

<sup>2)</sup> This switching output must not be connected to another output.

	Overcurrent protected
	Short-circuit protected
Response time	≤ 500 µs
Repeatability (response time)	150 µs
Switching frequency	1,000 Hz
<b>Pin/Wire assignment</b>	
Function of pin 4/black (BK)	Digital output, light switching, object present → output Q <sub>L1</sub> LOW <sup>2)</sup> IO-Link communication C
Function of pin 4/black (BK) – detail	The pin 4 function of the sensor can be configured Additional possible settings via IO-Link
Function of pin 2/white (WH)	Digital output, dark switching, object present → output Q̄ <sub>L1</sub> HIGH <sup>2)</sup>
Function of pin 2/white (WH) – detail	The pin 2 function of the sensor can be configured Additional possible settings via IO-Link

<sup>1)</sup> Limit values.

<sup>2)</sup> This switching output must not be connected to another output.

## Mechanics

<b>Housing</b>	Rectangular
<b>Design detail</b>	Slim
<b>Dimensions (W x H x D)</b>	12.1 mm x 41.9 mm x 18.6 mm
<b>Connection</b>	Cable with M12 male connector, 4-pin, 190 mm
<b>Connection detail</b>	
Deep-freeze property	Do not bend below 0 °C
Conductor size	0.14 mm <sup>2</sup>
Cable diameter	Ø 3.4 mm
Length of cable (L)	142 mm
Length of male connector	48 mm
<b>Material</b>	
Housing	Plastic, VISTAL®
Front screen	Plastic, PMMA
Cable	Plastic, PVC
Male connector	Plastic, VISTAL®
<b>Maximum tightening torque of the fixing screws</b>	0.4 Nm

## Ambient data

<b>Enclosure rating</b>	IP66 (EN 60529) IP67 (EN 60529)
<b>Ambient operating temperature</b>	–40 °C ... +60 °C
<b>Ambient temperature, storage</b>	–40 °C ... +75 °C
<b>Typ. Ambient light immunity</b>	Artificial light: ≤ 50,000 lx Sunlight: ≤ 50,000 lx
<b>Shock resistance</b>	30 g, 11 ms (3 positive and 3 negative shocks along X, Y, Z axes, 18 total shocks (EN60068-2-27))
<b>Vibration resistance</b>	10 Hz ... 1,000 Hz (Amplitude 1 mm, 3 x 30 min (EN60068-2-6))

<b>Air humidity</b>	35 % ... 95 %, relative humidity (no condensation)
<b>Electromagnetic compatibility (EMC)</b>	EN 60947-5-2
<b>Resistance to cleaning agent</b>	ECOLAB
<b>UL File No.</b>	NRKH.E181493 & NRKH7.E181493

## Smart Task

<b>Smart Task name</b>	Base logics
<b>Logic function</b>	Direct AND OR
<b>Timer function</b>	Deactivated Switch-on delay Off delay ON and OFF delay Impulse (one shot)
<b>Inverter</b>	Yes
<b>Switching frequency</b>	SIO Logic: 800 Hz <sup>1)</sup>
<b>Response time</b>	SIO Logic: 600 µs <sup>1)</sup>
<b>Repeatability</b>	SIO Logic: 200 µs <sup>1)</sup>
<b>Switching signal</b>	
Switching signal $Q_{L1}$	Switching output
Switching signal $\bar{Q}_{L1}$	Switching output

<sup>1)</sup> Use of Smart Task functions without IO-Link communication (SIO mode).

## Diagnosis

<b>Device temperature</b>	
Measuring range	Very cold, cold, moderate, warm, hot
<b>Device status</b>	Yes
<b>Detailed device status</b>	Yes
<b>Operating hour counter</b>	Yes
<b>Operating hours counter with reset function</b>	Yes
<b>Quality of teach</b>	Yes
<b>Quality of run</b>	Yes, Contamination display

## Certificates

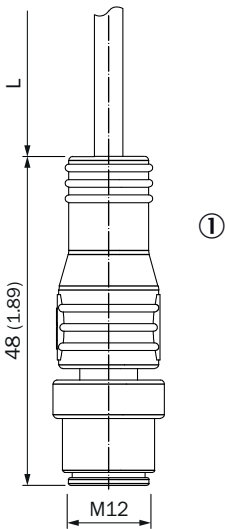
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China RoHS</b>	✓
<b>cULus certificate</b>	✓
<b>Information according to Art. 3 of Data Act (Regulation EU 2023/2854)</b>	✓

## Classifications

<b>ECLASS 5.0</b>	27270902
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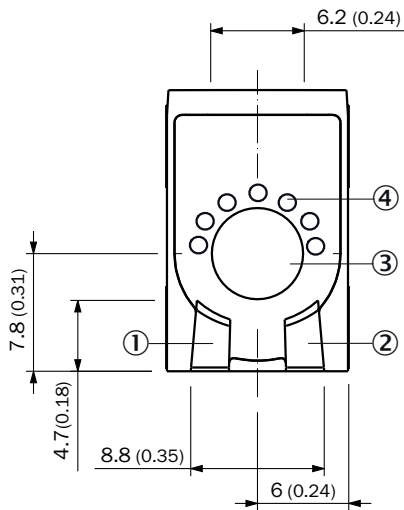
<b>ECLASS 5.1.4</b>	27270902
<b>ECLASS 6.0</b>	27270902
<b>ECLASS 6.2</b>	27270902
<b>ECLASS 7.0</b>	27270902
<b>ECLASS 8.0</b>	27270902
<b>ECLASS 8.1</b>	27270902
<b>ECLASS 9.0</b>	27270902
<b>ECLASS 10.0</b>	27270902
<b>ECLASS 11.0</b>	27270902
<b>ECLASS 12.0</b>	27270902
<b>ETIM 5.0</b>	EC002717
<b>ETIM 6.0</b>	EC002717
<b>ETIM 7.0</b>	EC002717
<b>ETIM 8.0</b>	EC002717
<b>UNSPSC 16.0901</b>	39121528

Dimensional drawing, connection



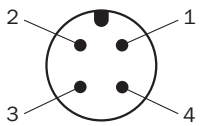
Dimensions in mm (inch)  
For length of cable (L), see technical data  
① Cable with M12 male connector

## display and adjustment elements

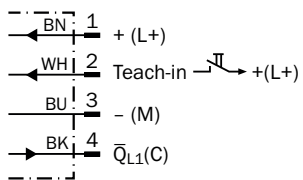


- ① LED green
- ② LED yellow
- ③ Teach-in button
- ④ LED blue

## Connection type M12 male connector, 4-pin



## Connection diagram Cd-510



Truth table Push-pull: PNP/NPN – dark switching  $\bar{Q}$

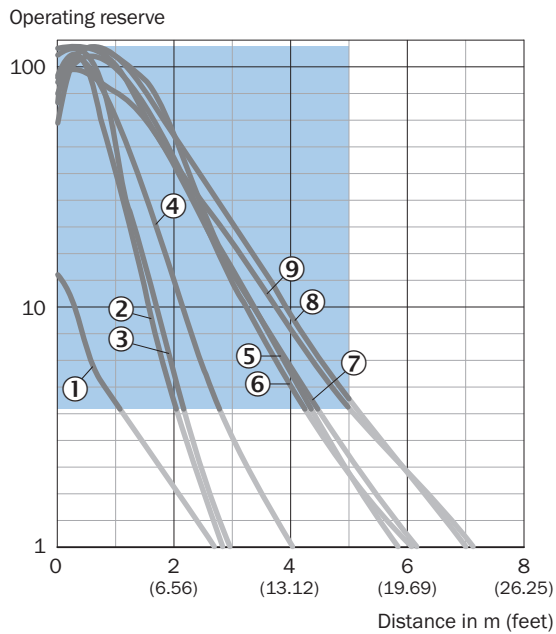
	Dark switching $\bar{Q}$ (normally open (upper switch), normally closed (lower switch))	
	Object not present → Output LOW	Object present → Output HIGH
Light receive	✓	✗
Light receive indicator	☀	✗
Load resistance to L+	⚡	✗
Load resistance to M	✗	⚡

Truth table Push-pull: PNP/NPN - light switching Q

	Light switching Q (normally closed (upper switch), normally open (lower switch))	
	Object not present → Output HIGH	Object present → Output LOW
Light receive	✓	✗
Light receive indicator	☀	✗
Load resistance to L+	✗	⚡
Load resistance to M	⚡	✗



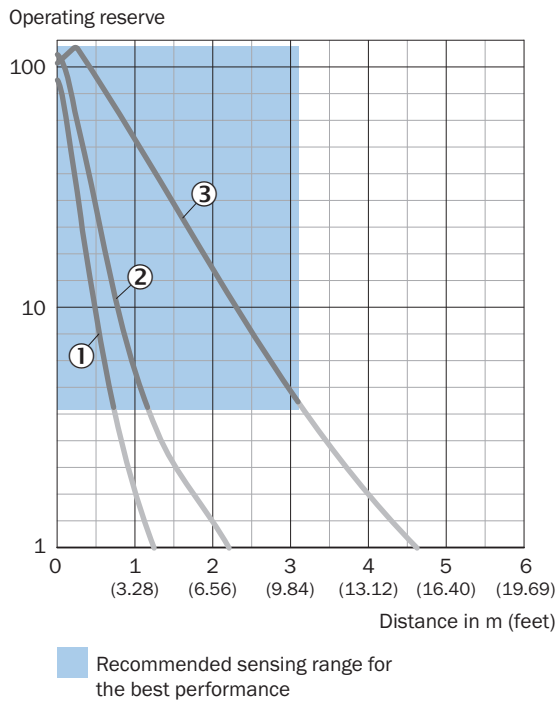
## Characteristic curve Standard reflectors



Recommended sensing range for the best performance

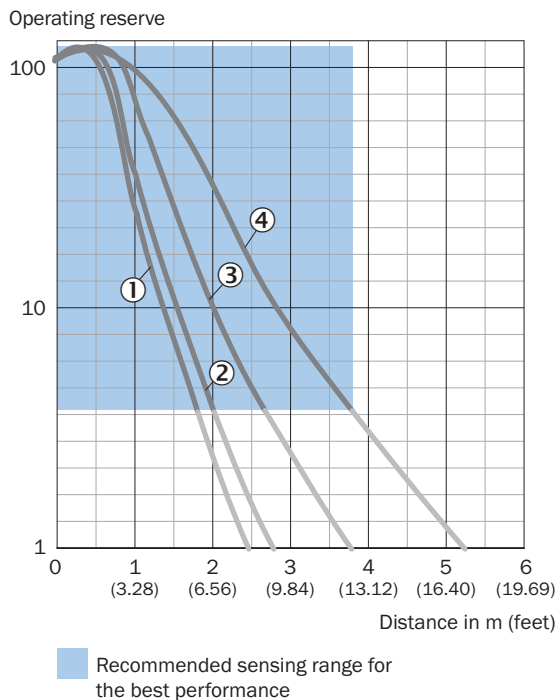
- ① Reflector PL40A Antifog
- ② Reflector PL20A
- ③ reflector PL22-2
- ④ Reflector P250H
- ⑤ Reflector P250
- ⑥ Reflector PL30A
- ⑦ Reflector PL40A
- ⑧ Reflector C110A
- ⑨ Reflector PL80A

### Characteristic curve Reflective tape



- ① Reflective tape REF-DG
- ② Reflective tape REF-IRF-56
- ③ Reflective tape REF-AC1000

### Characteristic curve Fine triple reflectors

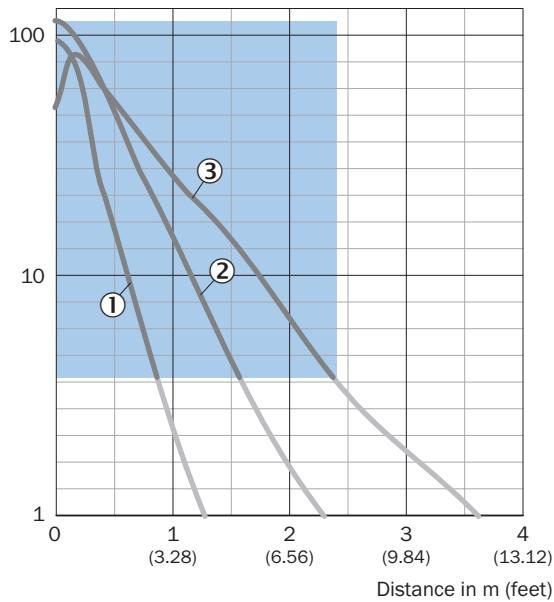


- ① PL10F reflector
- ② PL10FH-1 reflector

- ③ Reflector PL20F
- ④ Reflector P250F

## Characteristic curve Chemical-resistant reflectors

Operating reserve

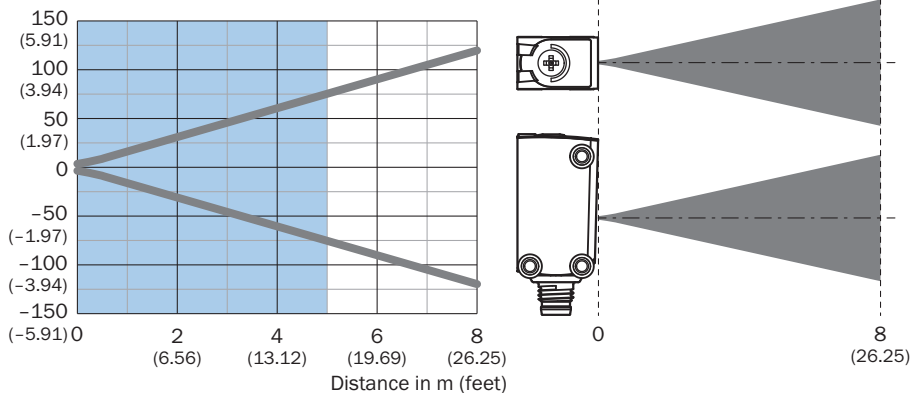


Recommended sensing range for the best performance

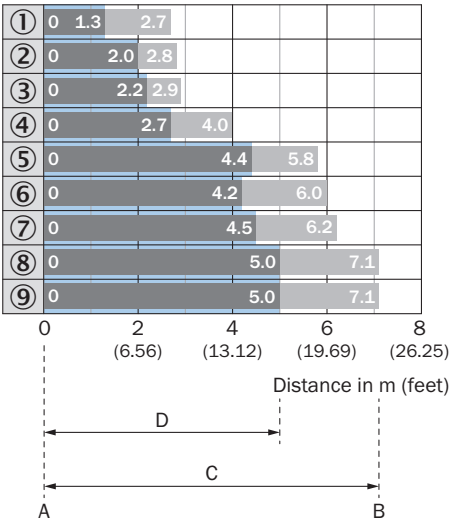
- ① PL10F CHEM reflector
- ② Reflector PL20 CHEM
- ③ Reflector P250 CHEM

## Light spot size

Dimensions in mm (inch)



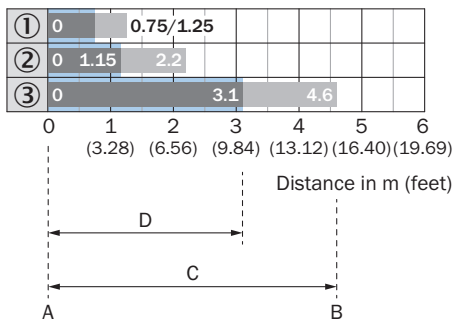
Sensing range diagram Standard reflectors



Recommended sensing range for the best performance

1	Reflector PL40A Antifog
2	Reflector PL20A
3	Reflector PL22-2
4	Reflector P250H
5	Reflector P250
6	Reflector PL30A
7	Reflector PL40A
8	Reflector C110A
9	Reflector PL80A
A	Sensing range min. in m
B	Sensing range max. in m
C	Maximum distance range from reflector to sensor (operating reserve 1)
D	Recommended distance range from re- flector to sensor (operating reserve 3,75)

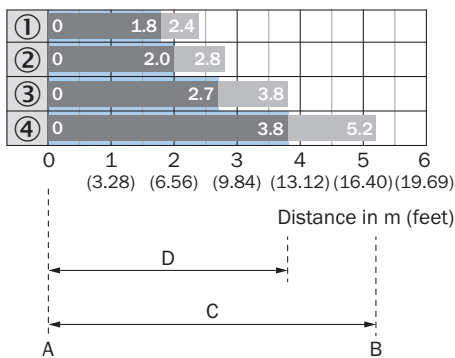
## Sensing range diagram Reflective tape



Recommended sensing range for the best performance

1	Reflective tape REF-DG
2	Reflective tape REF-IRF-56
3	Reflective tape REF-AC1000
A	Sensing range min. in m
B	Sensing range max. in m
C	Maximum distance range from reflector to sensor (operating reserve 1)
D	Recommended distance range from reflector to sensor (operating reserve 3,75)

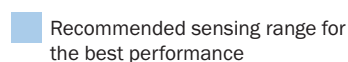
## Sensing range diagram Fine triple reflectors



Recommended sensing range for the best performance

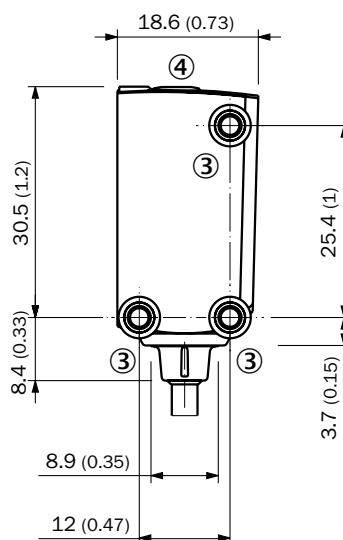
1	PL10F reflector
2	PL10FH-1 reflector
3	Reflector PL20F
4	Reflector P250F
A	Sensing range min. in m
B	Sensing range max. in m
C	Maximum distance range from reflector to sensor (operating reserve 1)

## Sensing range diagram Chemical-resistant reflectors



1	PL10F CHEM reflector
2	Reflector PL20 CHEM
3	Reflector P250 CHEM
A	Sensing range min. in m
B	Sensing range max. in m
C	Maximum distance range from reflector to sensor (operating reserve 1)
D	Recommended distance range from re- flector to sensor (operating reserve 3,75)

## Dimensional drawing, sensor


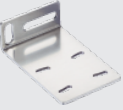






Dimensions in mm (inch)

- ① Center of optical axis
- ② Connection
- ③ M3 mounting hole
- ④ display and adjustment elements

## Recommended accessories

Other models and accessories → [www.sick.com/W4](http://www.sick.com/W4)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"> <li><b>Description:</b> Plate N08 for universal clamp bracket</li> <li><b>Material:</b> Steel, zinc diecast</li> <li><b>Details:</b> Zinc plated steel (sheet), Zinc die cast (clamping bracket)</li> <li><b>Items supplied:</b> Universal clamp (5322626), mounting hardware</li> <li><b>Usable for:</b> W100, W150, W4S, W4F, W8, W9-3, W8G, W8 Laser, W8 Inox, G6, W100 Laser, W100-2, W10, G6 Inox, RAY10, W4SLG-3, W9, GR18, MultiPulse, Reflex Array, MultiLine, LUT3, KT5, KT8, KT10, CS8</li> </ul>	BEF-KHS-N08	2051607
	<ul style="list-style-type: none"> <li><b>Material:</b> Stainless steel</li> <li><b>Details:</b> Stainless steel (1.4301)</li> <li><b>Suitable for:</b> W4S, W4S</li> </ul>	BEF-WN-G6	2062909
reflectors and optics			
	<ul style="list-style-type: none"> <li><b>Description:</b> Rectangular, screw connection</li> <li><b>Dimensions:</b> 84 mm 84 mm</li> <li><b>Ambient operating temperature:</b> -30 °C ... +65 °C</li> </ul>	PL80A	1003865
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A14-050VB3XLEAX	2096235
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A14-050UB3XLEAX	2095608
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li><b>Description:</b> Unshielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm²</li> </ul>	STE-1204-G	6009932

## 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](http://www.sick.com)