



WSE4SP-22162800A00

W4

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Ordering information

Type	part no.
WSE4SP-22162800A00	1142680

Other models and accessories → www.sick.com/W4

Illustration may differ



Detailed technical data

Features

Functional principle	Through-beam photoelectric sensor	
Sensing range		
Sensing range min.	0 m	
Sensing range max.	2.5 m	
Maximum distance range from receiver to sender (operating reserve 1)	0 m ... 2.5 m	
Recommended distance range from receiver to sender (operating reserve 2)	0 m ... 2 m	
Recommended sensing range for the best performance	0 m ... 2 m	
Emitted beam		
Light source	PinPoint LED	
Type of light	Visible red light	
Shape of light spot	Point-shaped	
Light spot size (distance)	60 mm (2 m)	
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.5° (at Ta = +23 °C)	
Key LED figures		
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	
Adjustment		
IO-Link	For configuring the sensor parameters and Smart Task functions	
Display		
LED blue	BluePilot: Alignment aid	
LED green	Operating indicatorStatic on: power onFlashing: IO-Link mode	

	LED yellow	Status of received light beamStatic on: object not presentStatic off: object presentFlashing: Below the 1.5 function reserve
Special features		Pinhole Ø 2 mm on front screen
Special applications		Detection of poorly remitting and tilted objects
Part number of individual components		WS04SP-223ZZ8A0ZZ #2142188, WE04SP-2216280A00 #2142187

Communication interface

IO-Link	✓, 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_{L1} Bit 1 = switching signal Q_{L2} Bit 2 ... 15 = empty
VendorID	26
DeviceID HEX	0x800367
DeviceID DEC	8389479
Supported DeviceIDs for predecessor DEZ models	8389479
Compatible master port type	A
SIO mode support	Yes

Electronics

Supply voltage U_B	10 V DC ... 30 V DC ¹⁾
Ripple	$\leq 5 V_{pp}$
Usage category	DC-12 (According to EN 60947-5-2) DC-13 (According to EN 60947-5-2)
Current consumption	≤ 20 mA, without load. At $U_B = 24$ V
Protection class	III
Digital output	
Number	2
Type	Push-pull: PNP/NPN
Switching mode	Light/dark switching
Signal voltage PNP HIGH/LOW	Approx. $U_B - 2.5$ V / 0 V
Signal voltage NPN HIGH/LOW	Approx. $U_B / < 2.5$ V
Output current $I_{max.}$	≤ 100 mA
Circuit protection outputs	Reverse polarity protected Overcurrent protected Short-circuit protected
Response time	≤ 500 μ s
Repeatability (response time)	150 μ s
Switching frequency	1,000 Hz
Pin/Wire assignment, sender	

¹⁾ Limit values.²⁾ This switching output must not be connected to another output.

Function of pin 4/black (BK)	Input, sender off, LOW active
Pin/Wire assignment, receiver	
Function of pin 4/black (BK)	Digital output, light switching, object present → output Q_{L1} LOW ²⁾
	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 \bar{Q}_{L1} HIGH
Function of pin 2/white (WH) – detail	The pin 2 function of the sensor can be configured, Additional possible settings via IO-Link

¹⁾ Limit values.

²⁾ This switching output must not be connected to another output.

Mechanics

Housing	Rectangular	
Design detail	Slim	
Dimensions (W x H x D)	12.1 mm x 41.9 mm x 18.6 mm	
Connection	Male connector M8, 4-pin	
Material		
Housing	Plastic, VISTAL®	
Front screen	Plastic, PMMA	
Male connector	Plastic, VISTAL®	
Maximum tightening torque of the fixing screws	0.4 Nm	

Ambient data

Enclosure rating	IP66 (EN 60529) IP67 (EN 60529)
Ambient operating temperature	-40 °C ... +60 °C
Ambient temperature, storage	-40 °C ... +75 °C
Typ. Ambient light immunity	Artificial light: ≤ 15,000 lx Sunlight: ≤ 50,000 lx
Shock resistance	30 g, 11 ms (3 positive and 3 negative shocks along X, Y, Z axes, 18 total shocks (EN60068-2-27))
Vibration resistance	10 Hz ... 1,000 Hz (Amplitude 1 mm, 3 x 30 min (EN60068-2-6))
Air humidity	35 % ... 95 %, relative humidity (no condensation)
Electromagnetic compatibility (EMC)	EN 60947-5-2
Resistance to cleaning agent	ECOLAB
UL File No.	NRKH.E181493 & NRKH7.E181493

Smart Task

Smart Task name	Base logics
Logic function	Direct AND OR
Timer function	Deactivated Switch-on delay Off delay ON and OFF delay

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

Inverter	Impulse (one shot)	
Switching frequency	Yes	
Response time	SIO Logic: 800 Hz ¹⁾	
Repeatability	SIO Logic: 600 μ s ¹⁾	
Switching signal	Switching signal Q_{L1}	Switching output
	Switching signal \bar{Q}_{L1}	Switching output

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

Diagnosis

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

Certificates

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

Classifications

ECLASS 5.0	27270901
ECLASS 5.1.4	27270901
ECLASS 6.0	27270901
ECLASS 6.2	27270901
ECLASS 7.0	27270901
ECLASS 8.0	27270901
ECLASS 8.1	27270901
ECLASS 9.0	27270901
ECLASS 10.0	27270901
ECLASS 11.0	27270901
ECLASS 12.0	27270901
ETIM 5.0	EC002716
ETIM 6.0	EC002716
ETIM 7.0	EC002716

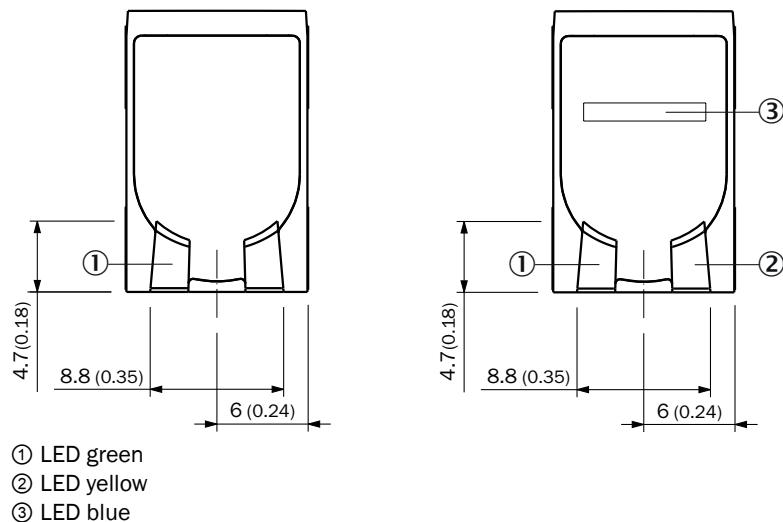
ETIM 8.0

EC002716

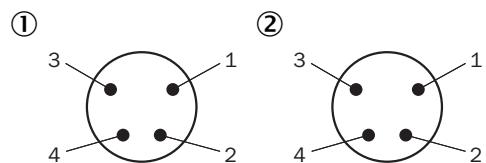
UNSPSC 16.0901

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display and adjustment elements



pinouts

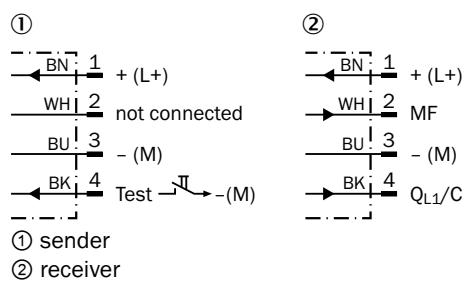


male connector M8, 4-pin

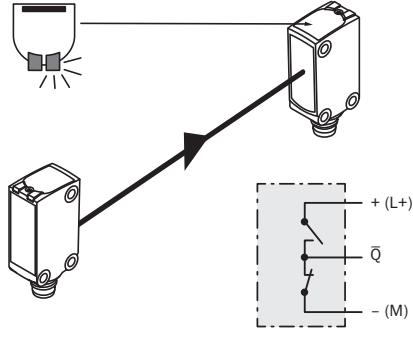
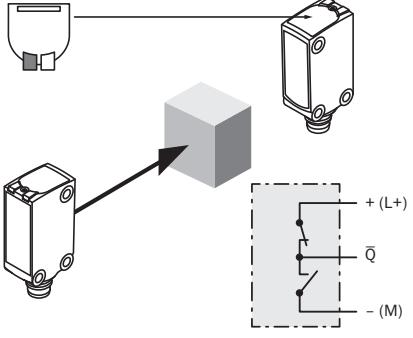
① receiver

② sender

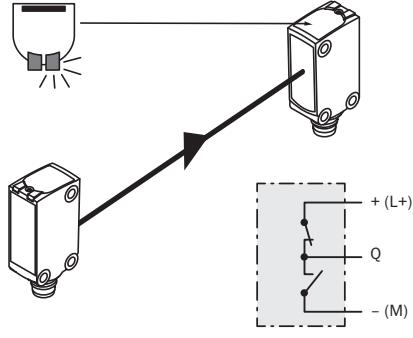
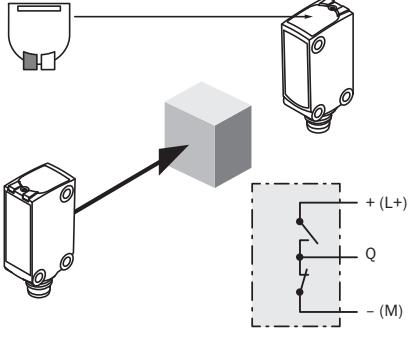
Connection diagram Cd-392



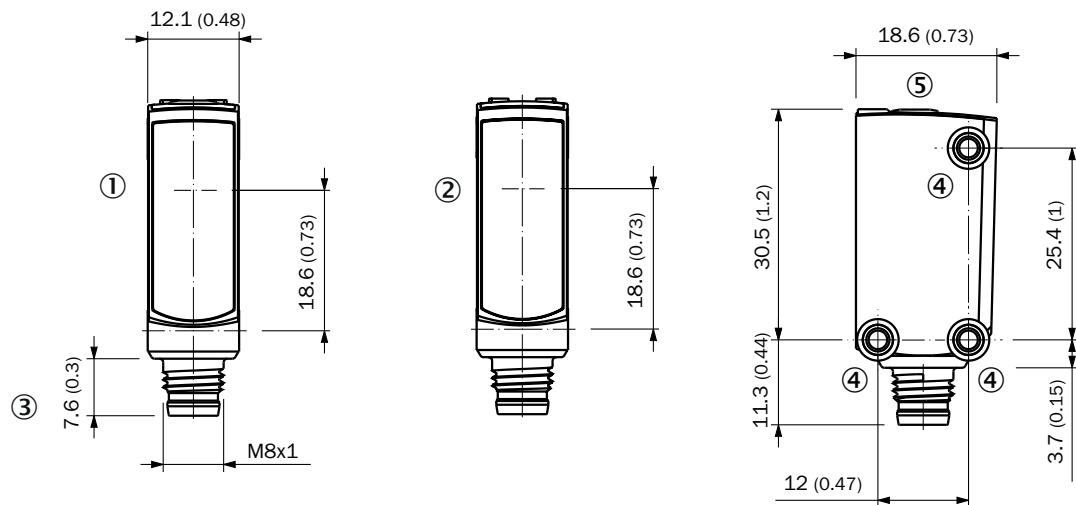
Truth table Push-pull: PNP/NPN – dark switching \bar{Q}

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	✗	✗
		

Dimensional drawing, sensor



Dimensions in mm (inch)

- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Connection
- ④ M3 mounting hole
- ⑤ display and adjustment elements

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