

WTB4FP-P02

PHOTOELECTRIC SENSORS





Illustration may differ

Ordering information

Туре	part no.
WTB4FP-P02	1126426

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

Detailed technical data

Features

reatures	
Functional principle	Photoelectric proximity sensor
Functional principle detail	Background suppression
Sensing range	
Sensing range min.	4 mm
Sensing range max.	48 mm
Emitted beam	
Light source	PinPoint LED
Type of light	Visible red light
Shape of light spot	Point-shaped
Light spot size (distance)	Ø 4.2 mm (130 mm)
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 T _a = +25 °C
Smallest detectable object (MDO) typ.	
	0.2~mm (At 130 mm distance (object with remission factor of 90% (complies with standard white according to DIN 5033)))
Adjustment	
None	-
Display	
LED green	Operating indicator Static on: power on
LED yellow	Status of received light beam Static on: object present Static off: object not present
Special features	Fixed sensing range 48 mm

	Foam protection frame on front screen
Safety-related parameters	
MTTF _D	642 years
DC _{avg}	0 %
T _M (mission time)	20 years
Electronics	
Supply voltage U _B	10 V DC 30 V DC ¹⁾
Ripple	≤ 5 V _{pp}
Usage category	DC-12 (According to EN 60947-5-2) DC-13 (According to EN 60947-5-2)
Current consumption	\leq 25 mA, without load. At U _B = 24 V
Protection class	III
Digital output	
Number	1
Туре	Push-pull: PNP/NPN
Switching mode	Light switching
Signal voltage PNP HIGH/LOW	Approx. U _B -2.5 V / 0 V
Signal voltage NPN HIGH/LOW	Approx. $U_B / < 2.5 \text{ V}$

1) Limit values

 $^{^{2)}\,\}mathrm{Signal}$ transit time with resistive load in switching mode.

Pin/Wire assignment

Output current $I_{max.} \le 100 \text{ mA}$

Response time

Switching frequency

Repeatability (response time)

Circuit protection outputs Reverse polarity protected

Overcurrent protected
Short-circuit protected

Function of pin 4/black (BK) Digital output, light switching, object present \rightarrow output Q HIGH $^{4)}$

 $\leq 500 \ \mu s^{2)}$ 150 \ \mu s

1,000 Hz 3)

Mechanics

Housing	Rectangular
Design detail	Flat
Dimensions (W x H x D)	16 mm x 40.1 mm x 12.1 mm
Connection	Cable with connector M8, 3-pin, 110 mm
Connection detail	
Deep-freeze property	Do not bend below 0 °C
Conductor size	0.14 mm ²
Cable diameter	Ø 3.4 mm
Length of cable (L)	77 mm
Material	

³⁾ With light/dark ratio 1:1.

 $^{^{\}rm 4)}$ This switching output must not be connected to another output.

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Housing	Plastic, VISTAL®
Front screen	Plastic, PMMA
Cable	Plastic, PVC
Male connector	Plastic, VISTAL®
Weight	Approx. 30 g
Maximum tightening torque of the fixing screws	0.4 Nm

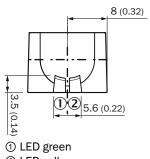
Ambient data

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: ≤ 50,000 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	$35\ \% \dots 95\ \%,$ relative humidity (no condensation)
Electromagnetic compatibility (EMC)	EN 60947-5-2
Resistance to cleaning agent	ECOLAB
UL File No.	NRKH.E181493 & NRKH7.E181493

Classifications

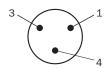
ECLASS 5.0	27270904
ECLASS 5.1.4	27270904
ECLASS 6.0	27270904
ECLASS 6.2	27270904
ECLASS 7.0	27270904
ECLASS 8.0	27270904
ECLASS 8.1	27270904
ECLASS 9.0	27270904
ECLASS 10.0	27270904
ECLASS 11.0	27270904
ECLASS 12.0	27270903
ETIM 5.0	EC002719
ETIM 6.0	EC002719
ETIM 7.0	EC002719
ETIM 8.0	EC002719
UNSPSC 16.0901	39121528

display and adjustment elements



- ② LED yellow

Connection type Connector M8, 3-pin



Connection diagram Cd-045



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

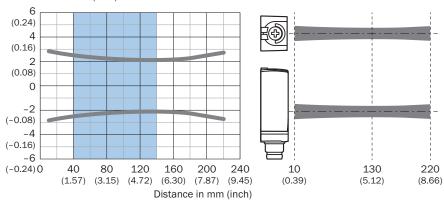
	Dark switching $\overline{\mathbb{Q}}$ (normally closed (upper switch), normally open (lower switch))		
	Object not present → Output HIGH	Object present → Output LOW	
Light receive		\bigcirc	
Light receive indicator		::	
Load resistance to L+		4	
Load resistance to M	A		
	+ (L+) \(\overline{Q}\) - (M)	+ (L+) Q - (M)	

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

	Light switching Q (normally open (upper switch), normally closed (lower switch))		
	Object not present → Output LOW	Object present → Output HIGH	
Light receive		$igstar{igstar}$	
Light receive indicator		(0)	
Load resistance to L+	A		
Load resistance to M		A	
	+ (L+) Q - (M)	+ (L+) Q - (M)	

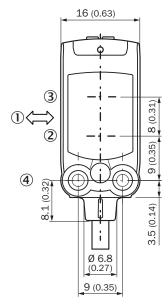
Light spot size

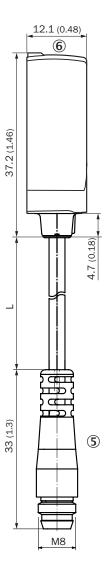
Dimensions in mm (inch)



Recommended sensing range for the best performance

Dimensional drawing





Dimensions in mm (inch)

For length of cable (L), see technical data

- ① Standard direction of the material being detected
- ② Center of optical axis, sender
- 3 Center of optical axis, receiver
- 4 M3 mounting hole
- (5) cable with connector M8
- (6) display and adjustment elements

Recommended accessories

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

	Brief description	Туре	part no.	
Mounting syst	Mounting systems			
2000	 Description: Mounting bracket for wall mounting Material: Stainless steel Details: Stainless steel 1.4571 Items supplied: Mounting hardware included Suitable for: W4S, W4F, W4S 	BEF-W4-A	2051628	
W FELL	 Description: Mounting bracket for floor mounting Material: Stainless steel Details: Stainless steel 1.4571 Items supplied: Mounting hardware included Suitable for: W4S, W4F, W4S 	BEF-W4-B	2051630	
	 Description: Plate N08 for universal clamp bracket Material: Steel, zinc diecast Details: Zinc plated steel (sheet), Zinc die cast (clamping bracket) Items supplied: Universal clamp (5322626), mounting hardware Usable for: 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 	BEF-KHS-N08	2051607	
connectors an	nd cables			
0	 Connection type head A: Female connector, M8, 3-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 3-wire, PVC Description: Sensor/actuator cable, unshielded Application: Zones with chemicals, Uncontaminated zones 	YF8U13-050VA1XLEAX	2095884	
No.	 Connection type head A: Female connector, M8, 3-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 3-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation 	YF8U13-050UA1XLEAX	2094788	
	 Connection type head A: Male connector, M8, 3-pin, straight, A-coded Description: Unshielded Connection systems: Screw-type terminals Permitted cross-section: 0.14 mm² 0.5 mm² 	STE-0803-G	6037322	

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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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