



WLF4FI-1G3111A0ZZZ

W4

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
WLF4FI-1G3111A0ZZZ	1122376

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

Detailed technical data

Features

Functional principle		Photoelectric retro-reflective sensor
Functional principle detail		With minimum distance to reflector (dual lens system)
Sensing range		
	Sensing range min.	0 m
	Sensing range max.	10 m
	Maximum distance range from reflector to sensor (operating reserve 1)	0.4 m ... 10 m
	Recommended distance range from reflector to sensor (operating reserve 3,75)	0.4 m ... 7 m
	Reference reflector	Reflector PL80
	Recommended sensing range for the best performance	0.4 m ... 7 m
Emitted beam		
	Light source	PinPoint LED
	Type of light	Infrared light
	Shape of light spot	Point-shaped
	Light spot size (distance)	Ø 40 mm (1,000 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	850 nm		
	Average service life	100,000 h at T _a = +25 °C		
Adjustment	None	–		
Display	LED green	Operating indicatorStatic on: power on		
	LED yellow	Status of received light beamStatic on: object not presentStatic off: object presentFlashing: Below the 1.5 function reserve		

Safety-related parameters

MTTF _D	708 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	≤ 20 mA, without load. At U _B = 24 V		
Protection class	III		
Digital output			
	Number	1	
	Type	Push-pull: PNP/NPN	
	Switching mode	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 μs	
	Repeatability (response time)	150 μs ²⁾	
	Switching frequency	1,000 Hz ³⁾	
Pin/Wire assignment			
	Function of pin 4/black (BK)	Digital output, dark switching, object present → output \bar{Q} HIGH ⁴⁾	

¹⁾ Limit values.²⁾ Signal transit time with resistive load in switching mode.³⁾ With light/dark ratio 1:1.⁴⁾ This switching output must not be connected to another output.

Mechanics

Housing	Rectangular
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Design detail	Flat
Dimensions (W x H x D)	16 mm x 40.1 mm x 12.1 mm
Connection	Cable, 3-wire, 2 m
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)	2 m
Material	
Housing	Plastic, VISTAL®
Front screen	Plastic, PMMA
Cable	Plastic, PVC
Weight	Approx. 30 g
Maximum tightening torque of the fixing screws	0.4 Nm

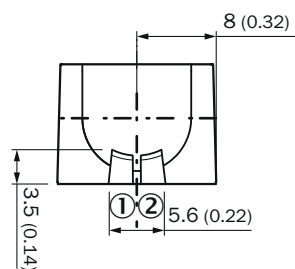
Ambient data

Enclosure rating	IP66 (EN 60529) IP67 (EN 60529) IP69 (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 % ... 95 %, relative humidity (no condensation)
Electromagnetic compatibility (EMC)	EN 60947-5-2
Resistance to cleaning agent	ECOLAB
UL File No.	NRKH.E181493 & NRKH7.E181493

Certificates

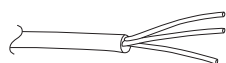
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China-RoHS	✓
ECOLAB certificate	✓
cULus certificate	✓
EAC certificate / DoC	✓
IO-Link	✓

display and adjustment elements

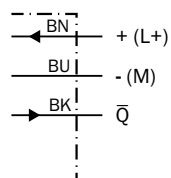


- ① LED green
- ② LED yellow

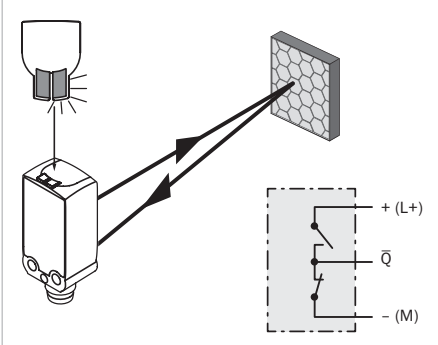
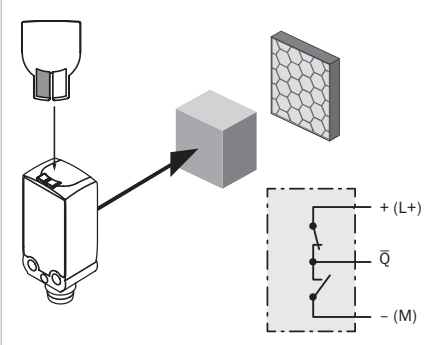
Connection type Cable, 3-wire



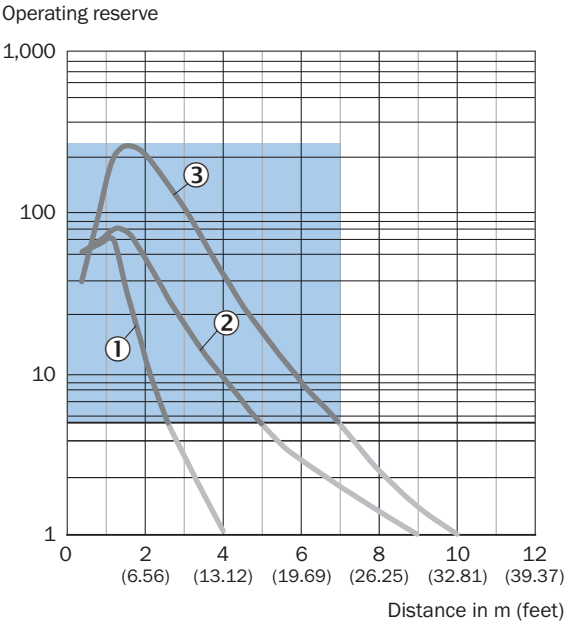
Connection diagram Cd-513



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	✗	⚡
		

Characteristic curve

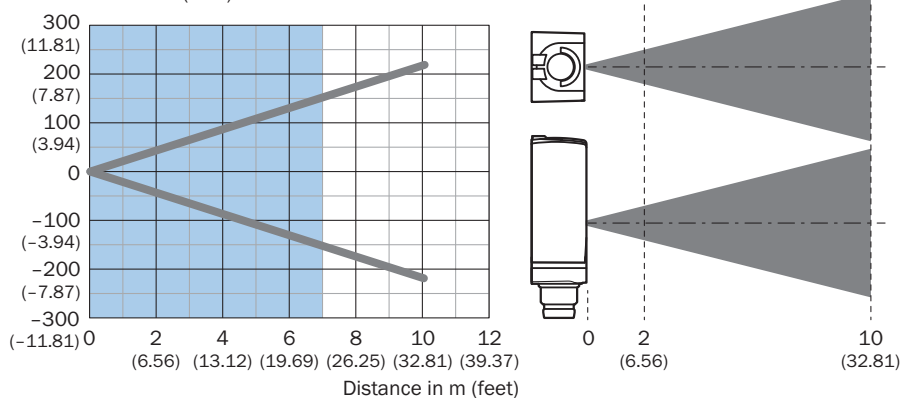


Recommended sensing range for the best performance

- ① Reflector PL80A
- ② Reflector PL30A
- ③ Reflective tape REF-DG

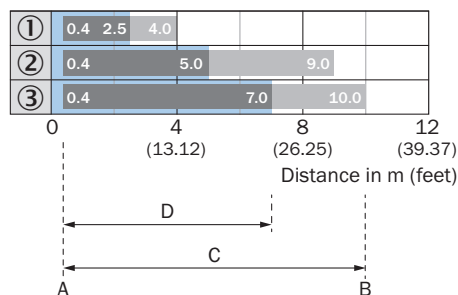
Light spot size

Dimensions in mm (inch)



Recommended sensing range for the best performance

Sensing range diagram

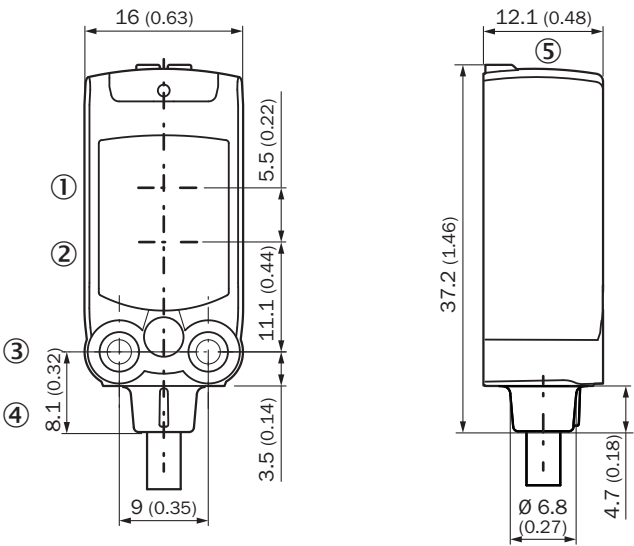


A = Sensing range min. in m
B = Sensing range max. in m
C = Maximum distance range from reflector to sensor (operating reserve 1)
D = Recommended distance range from reflector to sensor (operating reserve 3.75)

Recommended sensing range for the best performance

- ① Reflective tape REF-DG
- ② Reflector PL30A
- ③ Reflector PL80A



Dimensional drawing




- Dimensions in mm (inch)
- ① Center of optical axis, sender
 - ② Center of optical axis, receiver
 - ③ M3 mounting hole
 - ④ Connection
 - ⑤ display and adjustment elements

Recommended accessories

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

Brief description		Type	part no.
Mounting systems			
	<ul style="list-style-type: none">Description: Mounting bracket for wall mountingMaterial: Stainless steelDetails: Stainless steel 1.4571Items supplied: Mounting hardware includedSuitable for: W4S, W4F, W4S	BEF-W4-A	2051628
reflectors and optics			
	<ul style="list-style-type: none">Description: Fine triple reflector, screw connection, suitable for laser sensorsDimensions: 20 mm 32 mmAmbient operating temperature: -30 °C ... +65 °C	PL10F	5311210

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none">• 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

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