WLG16P-84161120A00
W16

SMALL PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

WLG16P-84161120A00 | W16

SMALL PHOTOELECTRIC SENSORS

Illustration may differ
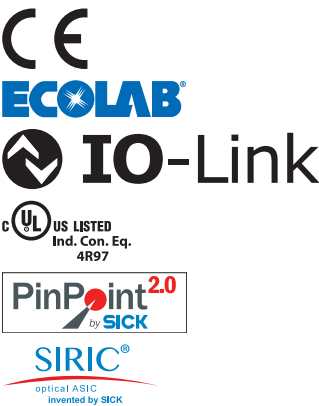
Ordering information

Type	Part no.
WLG16P-84161120A00	1222693

Other models and accessories ➜ www.sick.com/W16

Detailed technical data

Features

Functional principle	Photoelectric retro-reflective sensor
Functional principle detail	Without reflector minimum distance (autocollimation/coaxial optics), ClearSens
Sensing range	
Sensing range min.	0 m
Sensing range max.	5 m
Maximum distance range from reflector to sensor (operating reserve 1)	0 m ... 5 m
Reference reflector	Reflector P250F
Recommended sensing range for the best performance	0 m ... 5 m
Polarisation filters	Yes
Emitted beam	
Light source	PinPoint LED
Type of light	Visible red light
Shape of light spot	Point-shaped
Light spot size (distance)	Ø 80 mm (5 m)
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.0 ° (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
Adjustment	
Teach-Turn adjustment	BluePilot: Teach-in plus user mode selector
IO-Link	For configuring the sensor parameters and Smart Task functions
Indication	
LED blue	BluePilot: Mode display
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
Special applications	Detecting transparent objects

Safety-related parameters

$MTTF_D$	690 years
DC_{avg}	0%
T_M (mission time)	20 years (EN ISO 13849, rate of use: 60 %)

Communication interface

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	0x800170
DeviceID DEC	8388976
Compatible master port type	A
SIO mode support	Yes

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	≤ 30 mA, without load. At U_B = 24 V
Protection class	III
Digital output	

[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.

Number	2 (Complementary)
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 and short-circuit protected
Response time	≤ 500 µs [2]
Repeatability (response time)	150 µs
Switching frequency	1,000 Hz [3]
Pin/Wire assignment	
Function of pin 4/black (BK)	Digital output, dark switching, object present → output $\bar{Q}_{L1}$ HIGH; IO-Link communication C [4]
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, light switching, object present → output Q_{L1} LOW [4]
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] 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
Dimensions (W x H x D)	20 mm x 55.7 mm x 42 mm
Connection	Cable with M12 male connector, 4-pin, 188 mm
Connection detail	
Deep-freeze property	Do not bend below 0 °C
Conductor size	0.14 mm²
Cable diameter	Ø 4.8 mm
Length of cable (L)	140 mm
Length of male connector	48 mm
Bending radius	For flexible use > 12 x cable diameter
Bending cycles	1,000,000
Material	
Housing	Plastic, VISTAL®
Front screen	Plastic, PMMA
Cable	Plastic, PVC
Male connector	Plastic, VISTAL®
Weight	Approx. 70 g
Maximum tightening torque of the fixing screws	1.3 Nm

Ambient data

Enclosure rating	IP66 (EN 60529) IP67 (EN 60529) IP69 (EN 60529) [1]
Ambient operating temperature	–40 °C ... +60 °C
Ambient temperature, storage	–40 °C ... +75 °C
Shock resistance	50 g, 11 ms (25 positive and 25 negative shocks per axis, for X, Y, Z axes, 150 shocks in total (EN60068-2-27)) 50 g, 6 ms (5,000 positive and 5,000 negative shocks per axis, for X, Y, Z axes, 30,000 shocks in total (EN60068-2-27))
Vibration resistance	10 Hz ... 2,000 Hz (Amplitude 0.5 mm / 10 g, 20 sweeps per axis, for X, Y, Z axes, 1 octave/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

[1] Replaces IP69K with ISO 20653: 2013-03.

Smart Task

Smart Task name	Base logics
Logic function	Direct AND OR Window Hysteresis
Timer function	Deactivated Switch-on delay Off delay ON and OFF delay Impulse (one shot)
Inverter	Yes
Switching frequency	SIO Logic: 800 Hz [1] IOL: 650 Hz [2]
Response time	SIO Logic: 600 µs [1] IOL: 750 µs [2]
Repeatability	SIO Logic: 300 µs [1] IOL: 400 µs [2]
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).

[2] Use of Smart Task functions with IO-Link communication function.

Diagnosis

Device status	Yes
Quality of teach	Yes
Quality of run	Yes, Contamination display

Classifications

ECLASS 5.0	27270902

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

Dimensional drawing (Dimensions in mm (inch))

Maßzeichnung (Dimensions in mm (inch))

Dimensional drawing, sensor

① Center of optical axis
② Mounting hole, Ø 4.1 mm
③ Connection
④ Display and adjustment elements
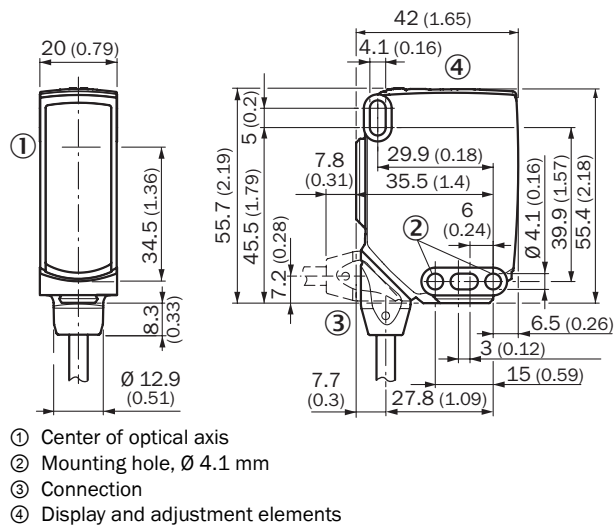
Dimensional drawing, connection

48 (1.89)

L

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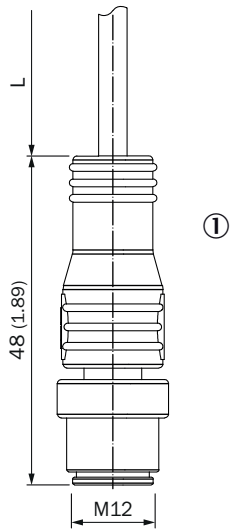
For length of cable (L), see technical data
① Cable with M12 male connector

Adjustments
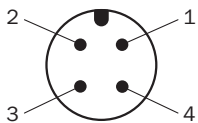
Display and adjustment elements
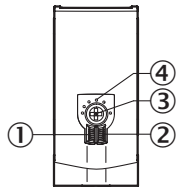
① LED indicator green
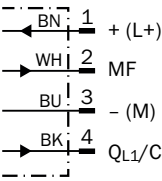② LED indicator yellow
③ Teach-Turn adjustment
④ LED blue

Connection type

M12 male connector, 4-pin

Connection diagram

Cd-390

BN	1	+ (L+)
WH	2	MF
BU	3	– (M)
BK	4	Q_{L1}/C

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	⚠	⊗

Push-pull: PNP/NPN – dark switching Q̄

	Dark switching Q̄ (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	⊗	⚠

Light spot size

WLG16P-xxxxx1xx

Dimensions in mm (inch)

Distance in m (feet)

Recommended sensing range for the best performance
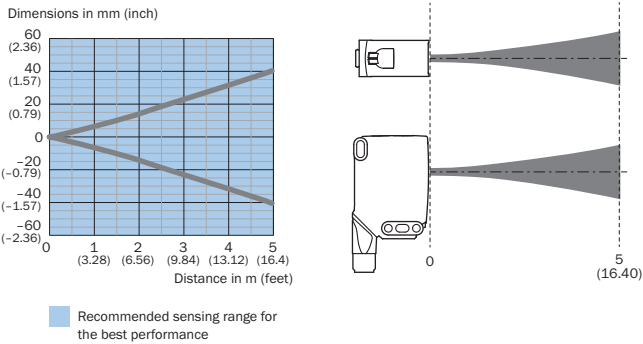
Sensing range diagram

WLG16P-xxxxx1xx

①	0 ... 1.2
②	0 ... 4
③	0 ... 2.8
④	0 ... 2.5
⑤	0 ... 3.5
⑥	0 ... 5

Distance in m (feet)

Recommended sensing range for the best performance
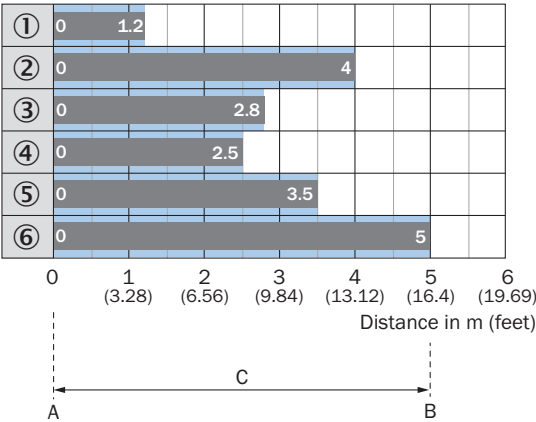
1	PL10F CHEM reflector
2	Reflective tape REF-AC1000 (50 x 50 mm)
3	PL10FH-1 reflector
4	PL10F reflector
5	Reflector PL20F
6	Reflector P250F
A	Sensing range min. in m
B	Sensing range max. in m
C	Maximum distance range from reflector to sensor (operating reserve 1)

Recommended accessories

Other models and accessories ➜ www.sick.com/W16

	Brief description	Type	Part no.
Mounting brackets and plates			
	• **Description:** Adapter for mounting W16 sensors in existing W14-2/W18-3 installations or L25 sensors in existing L28 installations • **Material:** Plastic • **Details:** Plastic • **Items supplied:** Fastening screws included	BEF-AP-W16	2095677
	• **Description:** Universal mounting bracket for reflectors • **Dimensions (W x H x L):** 85 mm x 90 mm x 35 mm • **Material:** Steel • **Details:** Steel, zinc coated • **Suitable for:** C110A, P250, PL20, PL30A, PL40A, PL80A	BEF-WN-REFX	2064574
Universal bar clamp systems			
	• **Description:** Plate N02 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:** W4S-3 Glass, W10, W4SLG-3, W4S-3 Inox, W4S-3 Inox Glass, W9, W11-2, W12-3, W12-2 Laser, W12G, W12 Teflon, W16, W250, W250-2, PowerProx, W11G-2, TranspaTect, WTT12, UC12, P250, G6 Inox, W4S, W4SL-3V, W4SLG-3V, W4SL-3H	BEF-KHS-N02	2051608
Others			
	• **Description:** Fine triple reflector, screw connection, suitable for laser sensors • **Dimensions:** 52 mm 62 mm • **Ambient operating temperature:** –30 °C ... +65 °C	P250F	5308843
	• **Connection type head A:** Female connector, M12, 4-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 4-wire, PVC • **Description:** Sensor/actuator cable, unshielded • **Application:** Zones with chemicals, Uncontaminated zones	YF2A14-050VB3XLEAX	2096235

Recommended services

Additional services ➜ www.sick.com/W16

	Type	Part no.
Function Block Factory		
• **Description:** The Function Block Factory is an engineering tool for creating device and environment-specific function blocks that enable IO-Link sensors to be integrated into programmable logic controllers. The Function Block Factory supports common programmable logic controllers (PLCs) of various manufacturers such as Siemens, Beckhoff, Rockwell Automation B&R and more. More information on the FBF can be found here . • **Provision:** Customers can obtain access to the Function Block Factory and the license via https://fbf.cloud.sick.com.	Function Block Factory	On request

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**

SICK AG | Waldkirch | Germany | www.sick.com

SICK
Sensor Intelligence.