Product data sheet

WLA16P-24162100A00

W16

SMALL PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
WLA16P-24162100A00	1218660

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

Detailed technical data

Features

Sensor/ detection principle	Photoelectric retro-reflective sensor, autocollimation
Dimensions (W x H x D)	20 mm x 55.7 mm x 42 mm
Housing design (light emission)	Rectangular
Sensing range max.	0 m ... 10 m [1]
Type of light	Visible red light
Light source	PinPoint LED [2]
Light spot size (distance)	Ø 80 mm (5 m)
Wave length	635 nm
Adjustment	
IO-Link	For configuring the sensor parameters and Smart Task functions
Indication	
LED indicator blue	BluePilot: Alignment aid
LED indicator green	Operating indicator Static: power on Flashing: IO-Link mode
LED indicator yellow	Status of received light beam Static: object not present

[1] Reflector PL80A.
[2] Average service life: 100,000 h at T_U = +25 °C.

	Static off: object present Flashing: Below the 1.5 function reserve
Pin 2 configuration	External input, Teach-in, switching signal
Special applications	Detecting objects wrapped in film

[1] Reflector PL80A.

[2] Average service life: 100,000 h at T_U = +25 °C.

Mechanics/electronics

Supply voltage	10 V DC ... 30 V DC [1]
Ripple	< 5 V_{pp}
Current consumption	30 mA [2] 50 mA [3]
Switching output	Push-pull: PNP/NPN
Output: Q_{L1} / C	Switching output or IO-Link mode
Output function	Factory setting: Pin 2 / white (MF): NPN normally closed (light switching), PNP normally open (dark switching), Pin 4 / black (QL1 / C): NPN normally open (dark switching), PNP normally closed (light switching), IO-Link
Switching mode	Light/dark switching
Signal voltage PNP HIGH/LOW	Approx. V_S – 2.5 V / 0 V
Signal voltage NPN HIGH/LOW	Approx. VS / < 2.5 V
Output current $I_{max.}$	≤ 100 mA
Response time	≤ 500 µs [4]
Switching frequency	1,000 Hz [5]
Connection type	Male connector M12, 4-pin
Circuit protection	A [6] B [7] C [8] D [9]
Protection class	III
Weight	50 g
Polarisation filter	✓
Housing material	Plastic, VISTAL®
Optics material	Plastic, PMMA
Enclosure rating	IP66 (According to EN 60529) IP67 (According to EN 60529) IP69 (According to EN 60529) [10]
Ambient operating temperature	–40 °C ... +60 °C

[1] Limit values.

[2] 16 V DC ... 30 V DC, without load.

[3] 10 V DC ... 16 V DC, without load.

[4] Signal transit time with resistive load in switching mode. Different values possible in COM2 mode.

[5] With light/dark ratio 1:1 in switching mode. Different values possible in IO-Link mode.

[6] A = V_S connections reverse-polarity protected.

[7] B = inputs and output reverse-polarity protected.

[8] C = interference suppression.

[9] D = outputs overcurrent and short-circuit protected.

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

Ambient temperature, storage	–40 °C ... +75 °C
UL File No.	NRKH.E181493 & NRKH7.E181493

[1] Limit values.
[2] 16 V DC ... 30 V DC, without load.
[3] 10 V DC ... 16 V DC, without load.
[4] Signal transit time with resistive load in switching mode. Different values possible in COM2 mode.
[5] With light/dark ratio 1:1 in switching mode. Different values possible in IO-Link mode.
[6] A = V_S connections reverse-polarity protected.
[7] B = inputs and output reverse-polarity protected.
[8] C = interference suppression.
[9] D = outputs overcurrent and short-circuit protected.
[10] Replaces IP69K with ISO 20653: 2013-03.

Safety-related parameters

$MTTF_D$	627 years
DC_{avg}	0%

Communication interface

Communication interface	IO-Link V1.1
Communication Interface detail	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	0x80016C
DeviceID DEC	8388972

Smart Task

Smart Task name	Base logics
Logic function	Direct AND OR Window Hysteresis
Timer function	Deactivated On delay Off delay ON and OFF delay Impulse (one shot)
Inverter	Yes
Switching frequency	SIO Direct: 1000 Hz [1] SIO Logic: 800 Hz [2] IOL: 650 Hz [3]
Response time	SIO Direct: 500 µs [1] SIO Logic: 600 µs [2] IOL: 750 µs [3]

[1] SIO Direct: sensor operation in standard I/O mode without IO-Link communication and without using internal sensor logic or time parameters (set to "direct"/"deactivated").
[2] SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters plus Automation Functions used.
[3] IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

Repeatability	SIO Direct: 150 µs [1] SIO Logic: 300 µs [2] IOL: 750 µs [3]
Switching signal Q_{L1}	Switching output
Switching signal Q_{L2}	Switching output

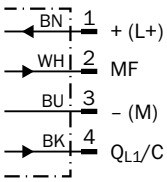
[1] SIO Direct: sensor operation in standard I/O mode without IO-Link communication and without using internal sensor logic or time parameters (set to "direct"/"deactivated").
[2] SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters plus Automation Functions used.
[3] IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

Classifications

ECl@ss 5.0	27270902
ECl@ss 5.1.4	27270902
ECl@ss 6.0	27270902
ECl@ss 6.2	27270902
ECl@ss 7.0	27270902
ECl@ss 8.0	27270902
ECl@ss 8.1	27270902
ECl@ss 9.0	27270902
ECl@ss 10.0	27270902
ECl@ss 11.0	27270902
ETIM 5.0	EC002717
ETIM 6.0	EC002717
ETIM 7.0	EC002717
UNSPSC 16.0901	39121528

Connection diagram

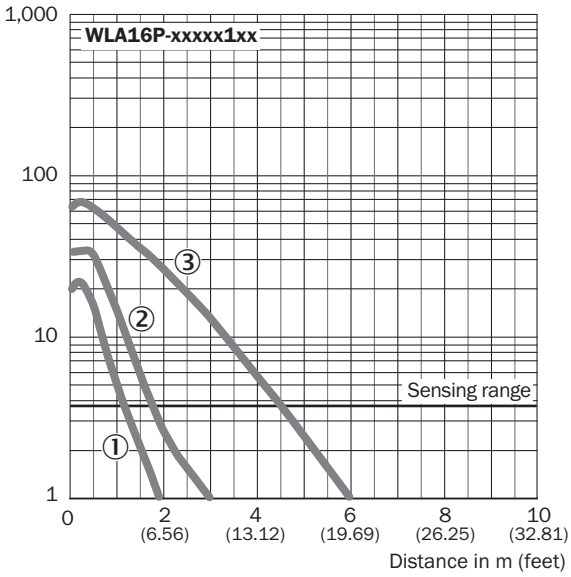
Cd-390



Characteristic curve

Reflective tape

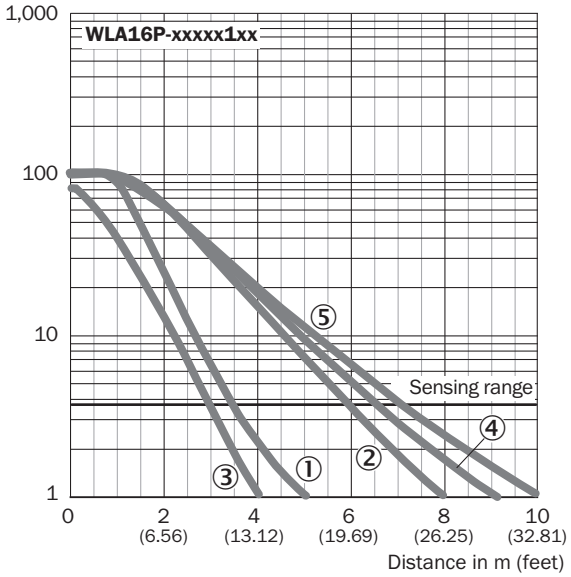
Function reserve



① Reflective tape REF-DG (50 x 50 mm)
② Reflective tape REF-IRF-56 (50 x 50 mm)
③ Reflective tape REF-AC1000 (50 x 50 mm)

Standard reflectors

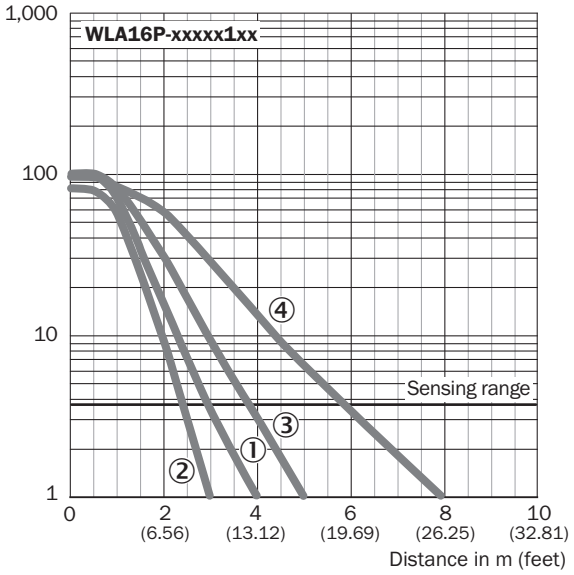
Function reserve



① Reflector PL22
② Reflector P250, PL30A
③ Reflector PL20A
④ Reflector PL40A
⑤ Reflector PL80A, C110A

Fine triple reflectors

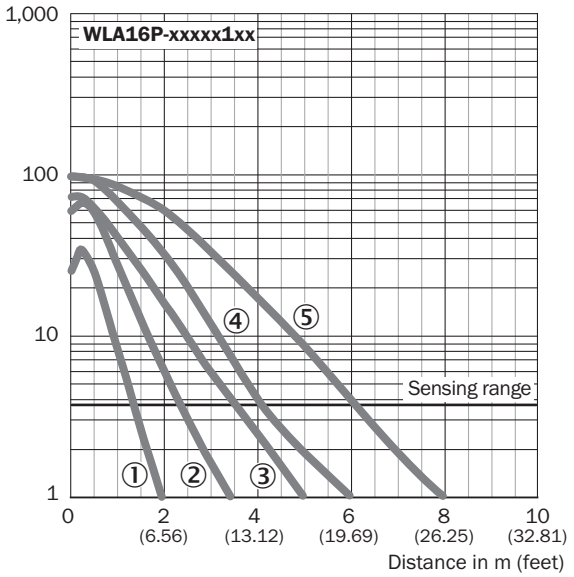
Function reserve



① PL10FH-1 reflector
② PL10F reflector
③ Reflector PL20F
④ Reflector P250F

Chemical-resistant reflectors

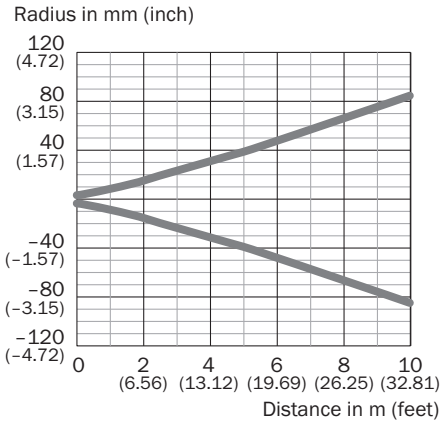
Function reserve



① PL10F CHEM reflector
② Reflector PL20 CHEM
③ Reflector P250 CHEM
④ Reflector P250H
⑤ Reflector PL40A Antifog

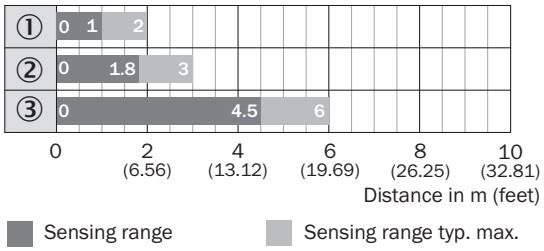
Light spot size

WLA16P-xxxxx1xx



Sensing range diagram

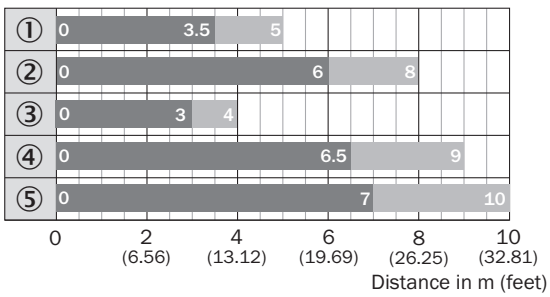
Reflective tape



Sensing range Sensing range typ. max.

WLA16P-xxxxx1xx
① Reflective tape REF-DG (50 x 50 mm)
② Reflective tape REF-IRF-56 (50 x 50 mm)
③ Reflective tape REF-AC1000 (50 x 50 mm)

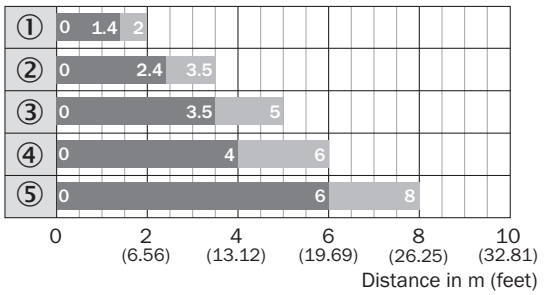
Standard reflectors



Sensing range Sensing range typ. max.

WLA16P-xxxxx1xx
① Reflector PL22
② Reflector P250, PL30A
③ Reflector PL20A
④ Reflector PL40A
⑤ Reflector PL80A, C110A

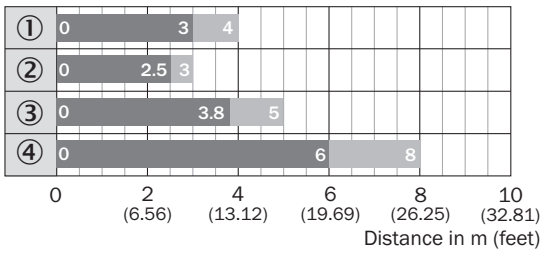
Chemical-resistant reflectors



Sensing range Sensing range typ. max.

WLA16P-xxxxx1xx
① PL10F CHEM reflector
② Reflector PL20 CHEM
③ Reflector P250 CHEM
④ Reflector P250H
⑤ Reflector PL40A Antifog

Fine triple reflectors



Sensing range Sensing range typ. max.

WLA16P-xxxxx1xx
① PL10FH-1 reflector
② PL10F reflector
③ Reflector PL20F
④ Reflector P250F

Functions

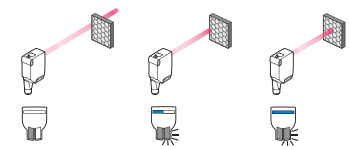
Operation note

BluePilot: Blue indicator LEDs with double benefits

Easy and quick sensor alignment with the help of the LED indicator

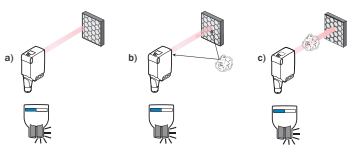
All blue LEDs illuminate
– optimum alignment
– highest possible operating reserve

WLA photoelectric retro-reflection sensor alignment

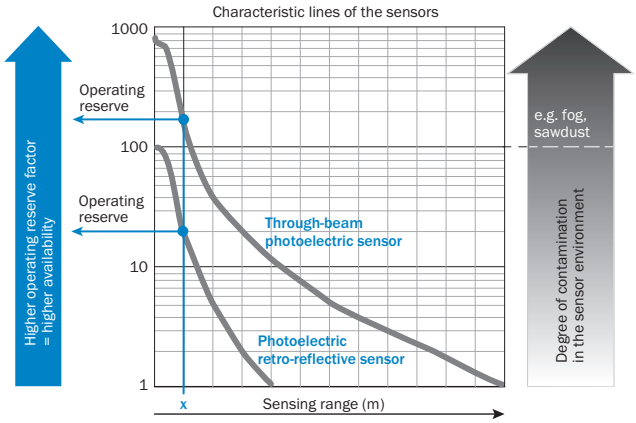


Service note
A reduction in sensor availability is displayed by a decrease of the blue LEDs.

Possible causes:
a) insufficient alignment
b) contamination of the optical surfaces
c) particles in the light beam



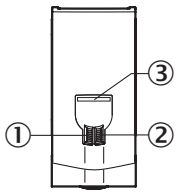
Operation note



At a sensing range of „**x**“ the photoelectric retro-reflective and through-beam photoelectric sensors have different operating reserves (see blue arrow). The higher the operating reserve factor, the better the sensor can compensate the contamination in the air or in the light beam and on the optical surfaces (front screen, reflector), i.e. the sensor has the maximum availablity, otherwise the sensor switches due to pollution although there is no object in the path of the light beam.

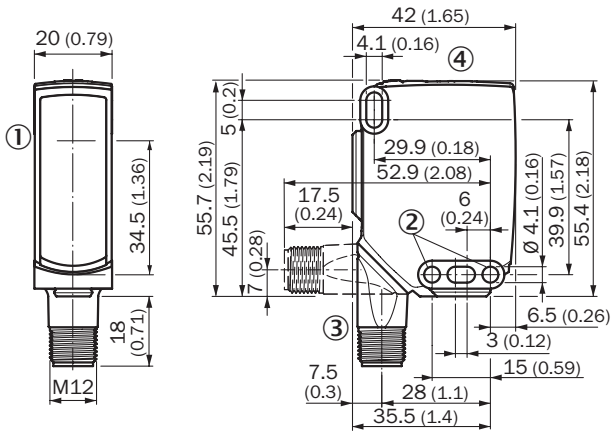
Adjustments

Display and adjustment elements



① LED indicator green
② LED indicator yellow
③ LED indicator blue

Dimensional drawing (Dimensions in mm (inch))



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

Recommended accessories

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

	Brief description	Type	Part no.
Universal bar clamp systems			
	Plate N02 for universal clamp bracket, Zinc plated steel (sheet), Zinc die cast (clamping bracket), Universal clamp (5322626), mounting hardware	BEF-KHS-N02	2051608
Mounting brackets and plates			
	Universal mounting bracket for reflectors, steel, zinc coated	BEF-WN-REFX	2064574
	Adapter for mounting W16 sensors in existing W14-2/W18-3 installations or L25 sensors in existing L28 installations, plastic, fastening screws included	BEF-AP-W16	2095677
Reflectors			
	Rectangular, screw connection, 84 mm x 84 mm, PMMA/ABS, Screw-on, 2 hole mounting	PL80A	1003865
Plug connectors and cables			
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A14-050VB3XLEAX	2096235
	Head A: male connector, M12, 4-pin, straight Head B: - Cable: unshielded	STE-1204-G	6009932

Recommended services

Additional services ➜ www.sick.com/W16

	Type	Part no.
Function Block Factory		
• **Description:** The Function Block Factory supports common programmable logic controllers (PLCs) from various manufacturers, such as Siemens, Beckhoff, Rockwell Automation and B&R. More information on the FBF can be found here.	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