

W26

Photoelectric sensors

The logo for SICK Sensor Intelligence. The word "SICK" is in a large, bold, blue sans-serif font. To its right, the words "Sensor Intelligence" are written in a smaller, blue sans-serif font.



Illustration may differ

PHOTOELECTRIC SENSORS

WLA26P-3B112100ZZZ

ORDERING INFORMATION

Type	part no.
WLA26P-3B112100ZZZ	1222791

Further device versions and accessories at www.sick.com/W26



DETAILED TECHNICAL DATA

FEATURES

Functional principle	Photoelectric retro-reflective sensor
Functional principle detail	Without reflector minimum distance (autocollimation/coaxial optics)
Sensing range	
Sensing range min.	0 m
Sensing range max.	18 m
Maximum distance range from reflector to sensor (operating reserve 1)	0 m ... 18 m
Recommended distance range from reflector to sensor (operating reserve 3,75)	0 m ... 12 m
Reference reflector	Reflector PL80A
Recommended sensing range for the best performance	0 m ... 12 m
Polarisation filter	Yes
Emitted beam	
Light source	PinPoint LED
Type of light	Visible red light
Shape of light spot	Point-shaped
Light spot size (distance)	Ø 100 mm (10 m)
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.0° (at T ₀ = +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
Display	
LED blue	BluePilot: Alignment aid
LED green	Operating indicator Static on: power on
LED yellow	Status of received light beam Static on: object not present Static off: object present Flashing: Below the 1.5 function reserve

Special applications	Detecting objects wrapped in film
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SAFETY-RELATED PARAMETERS

MTTF _D	690 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	≤ 30 mA, without load. At U _B = 24 V ²⁾																				
Protection class	III																				
Digital output	<table> <tr> <td>Number</td><td>2 (Complementary)</td></tr> <tr> <td>Type</td><td>Push-pull: PNP/NPN</td></tr> <tr> <td>Switching mode</td><td>Light/dark switching</td></tr> <tr> <td>Signal voltage PNP HIGH/LOW</td><td>Approx. U_B - 2.5 V / 0 V</td></tr> <tr> <td>Signal voltage NPN HIGH/LOW</td><td>Approx. U_B / < 2.5 V</td></tr> <tr> <td>Output current I_{max}</td><td>≤ 100 mA</td></tr> <tr> <td>Circuit protection outputs</td><td>Reverse polarity protected Overcurrent and short-circuit protected</td></tr> <tr> <td>Response time</td><td>≤ 500 μs ³⁾</td></tr> <tr> <td>Repeatability (response time)</td><td>150 μs</td></tr> <tr> <td>Switching frequency</td><td>1,000 Hz ⁴⁾</td></tr> </table>	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 ³⁾	Repeatability (response time)	150 μs	Switching frequency	1,000 Hz ⁴⁾
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Pin/Wire assignment	<table> <tr> <td>Function of pin 4/black (BK)</td><td>Digital output, light switching, object present → output Q LOW ⁵⁾</td></tr> <tr> <td>Pin 5 function/white (WH)</td><td>Digital output, dark switching, object present → output Q̄ HIGH</td></tr> </table>	Function of pin 4/black (BK)	Digital output, light switching, object present → output Q LOW ⁵⁾	Pin 5 function/white (WH)	Digital output, dark switching, object present → output Q̄ HIGH																
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¹⁾ Limit values.²⁾ 10 V DC ... 16 V DC, without load.³⁾ Signal transit time with resistive load in switching mode.⁴⁾ With light/dark ratio 1:1.⁵⁾ This switching output must not be connected to another output.**MECHANICS**

Housing	Rectangular												
Dimensions (W x H x D)	24.6 mm x 82.5 mm x 53.3 mm												
Connection	Cable with Q7 male connector, 7-pin, DC-coded, 298 mm												
Connection detail	<table> <tr> <td>Deep-freeze property</td><td>Do not bend below 0 °C</td></tr> <tr> <td>Conductor size</td><td>0.14 mm²</td></tr> <tr> <td>Cable diameter</td><td>Ø 4.8 mm</td></tr> <tr> <td>Length of cable (L)</td><td>270 mm</td></tr> <tr> <td>Bending radius</td><td>For flexible use > 12 x cable diameter</td></tr> <tr> <td>Bending cycles</td><td>1,000,000</td></tr> </table>	Deep-freeze property	Do not bend below 0 °C	Conductor size	0.14 mm ²	Cable diameter	Ø 4.8 mm	Length of cable (L)	270 mm	Bending radius	For flexible use > 12 x cable diameter	Bending cycles	1,000,000
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Material	<table> <tr> <td>Housing</td><td>Plastic, VISTAL®</td></tr> <tr> <td>Front screen</td><td>Plastic, PMMA</td></tr> <tr> <td>Cable</td><td>Plastic, PVC</td></tr> <tr> <td>Male connector</td><td>Plastic, VISTAL®</td></tr> </table>	Housing	Plastic, VISTAL®	Front screen	Plastic, PMMA	Cable	Plastic, PVC	Male connector	Plastic, VISTAL®				
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Weight	Approx. 100 g
Maximum tightening torque of the fixing screws	1.3 Nm

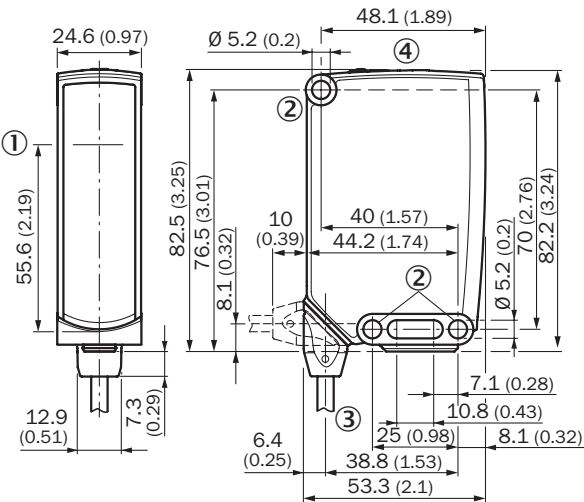
AMBIENT DATA

Enclosure rating	IP65 (EN 60529)
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
UL File No.	NRKH.E181493 & NRKH7.E181493

CERTIFICATES

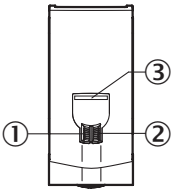
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
China Compulsory Product Certification (CCC) exempt	✓
ECOLAB certificate	✓
cULus certificate	✓
Photobiological safety (DIN EN 62471) certificate	✓

DIMENSIONAL DRAWING, SENSOR



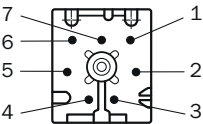
- Dimensions in mm (inch)
- ① Center of optical axis
 - ② Mounting hole, Ø 5.2 mm
 - ③ Connection
 - ④ display and adjustment elements

DISPLAY AND ADJUSTMENT ELEMENTS

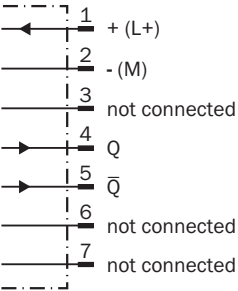


- ① LED indicator green
- ② LED indicator yellow
- ③ LED blue

CONNECTION TYPE CUBIC CONNECTOR, 7-PIN



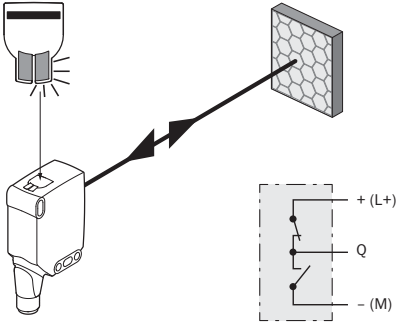
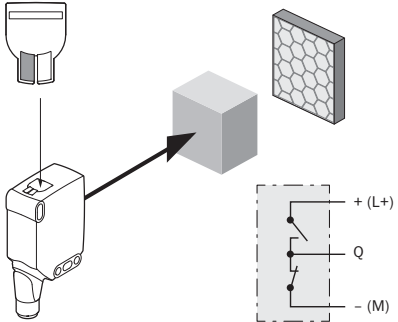
CONNECTION DIAGRAM CD-191



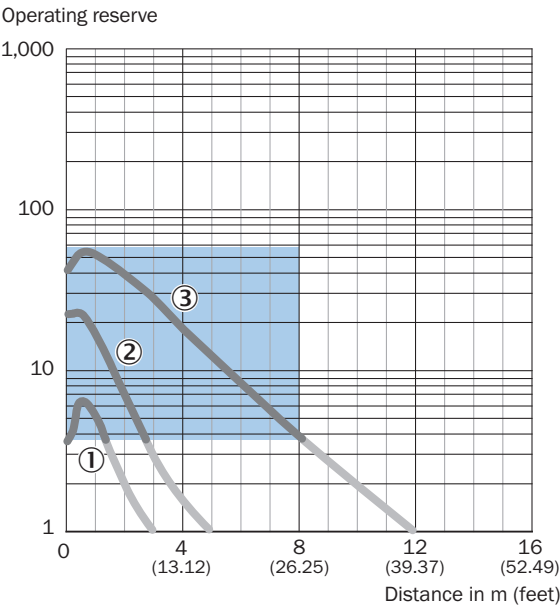
TRUTH TABLE PUSH-PULL: PNP/NPN – DARK SWITCHING $\bar{Q}$

	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	⚡	✗
		

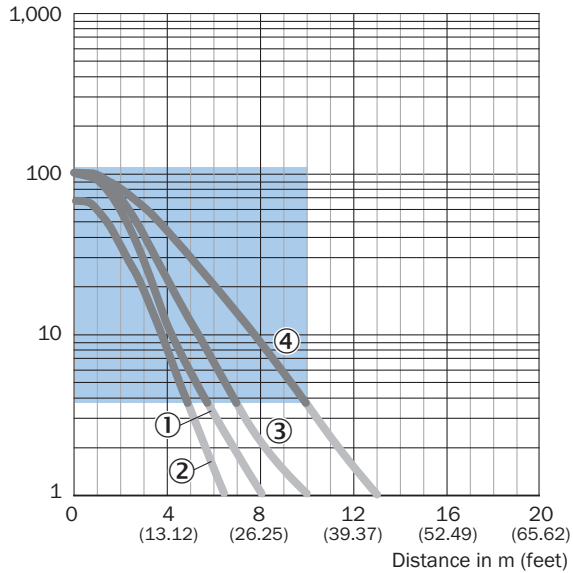
CHARACTERISTIC CURVE REFLECTIVE TAPE



- Recommended sensing range for the best performance
- 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)

CHARACTERISTIC CURVE FINE TRIPLE REFLECTORS

Operating reserve

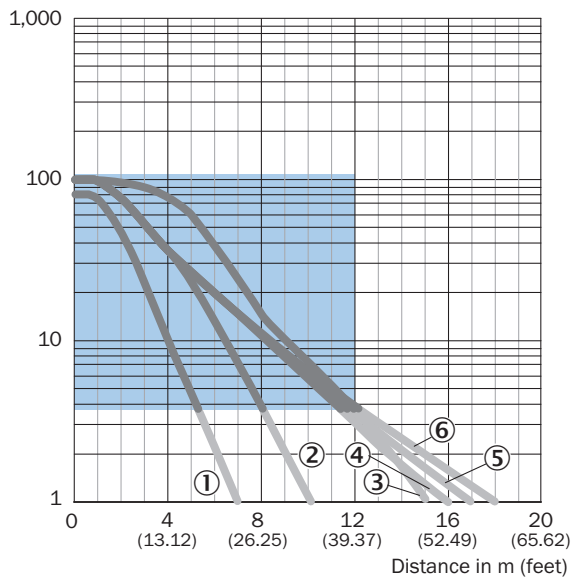


Recommended sensing range for the best performance

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

CHARACTERISTIC CURVE STANDARD REFLECTORS

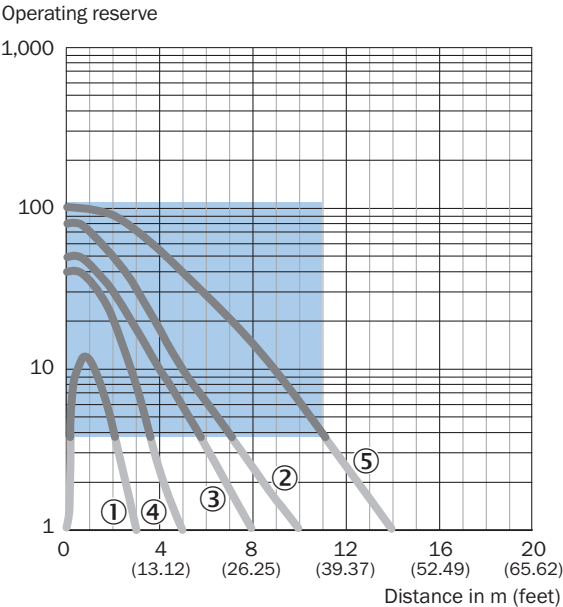
Operating reserve



Recommended sensing range for the best performance

- ① Reflector PL20A
- ② Reflector PL22
- ③ Reflector PL250
- ④ Reflector PL30A
- ⑤ Reflector PL40A
- ⑥ Reflector PL80A, C110A

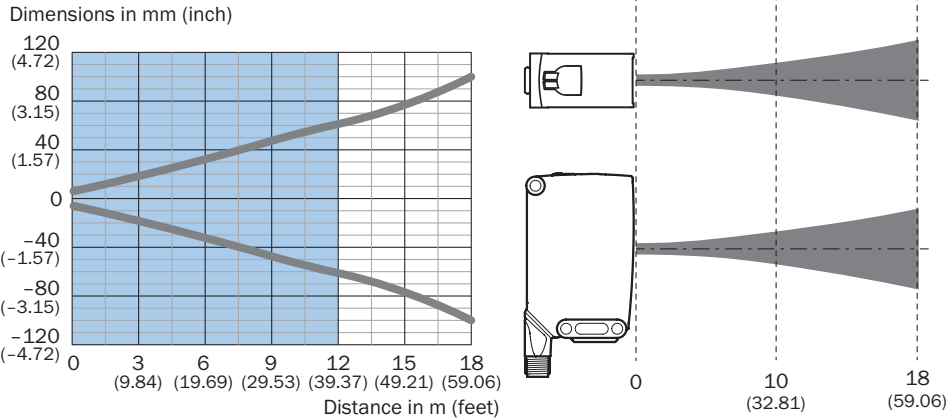
CHARACTERISTIC CURVE CHEMICAL-RESISTANT REFLECTORS



Recommended sensing range for the best performance

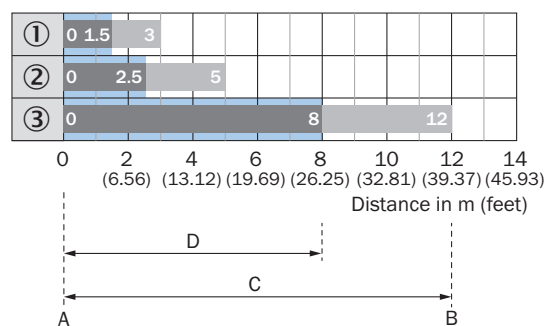
- ① PL10F CHEM reflector
- ② Reflector P250H
- ③ Reflector P250 CHEM
- ④ Reflector PL20 CHEM
- ⑤ Reflector PL40A Antifog

LIGHT SPOT SIZE WLA26P-XXXXX1XX



Recommended sensing range for the best performance

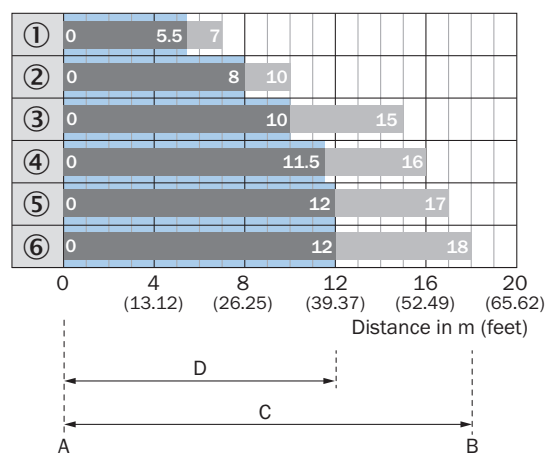
SENSING RANGE DIAGRAM REFLECTIVE TAPE



Recommended sensing range for the best performance

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)
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)

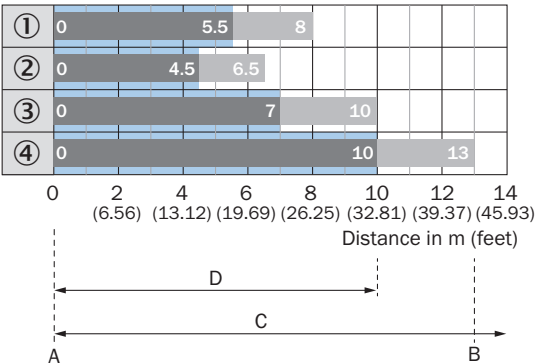
SENSING RANGE DIAGRAM STANDARD REFLECTORS



Recommended sensing range for the best performance

1	Reflector PL20A
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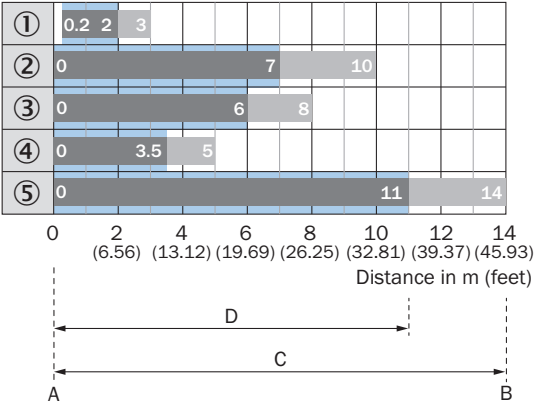
SENSING RANGE DIAGRAM FINE TRIPLE REFLECTORS



Recommended sensing range for the best performance

1	PL10FH-1 reflector
2	PL10F reflector
3	Reflector PL20F
4	Reflector P250F
A	Sensing range min. in m
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SENSING RANGE DIAGRAM CHEMICAL-RESISTANT REFLECTORS

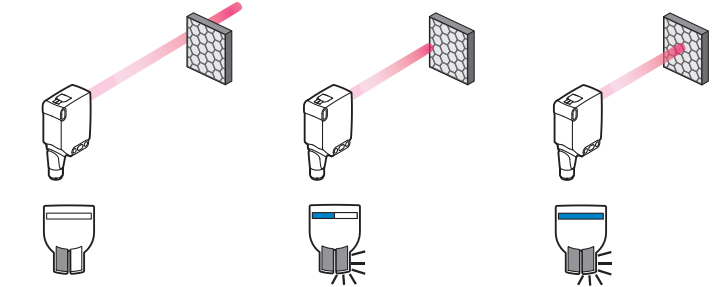
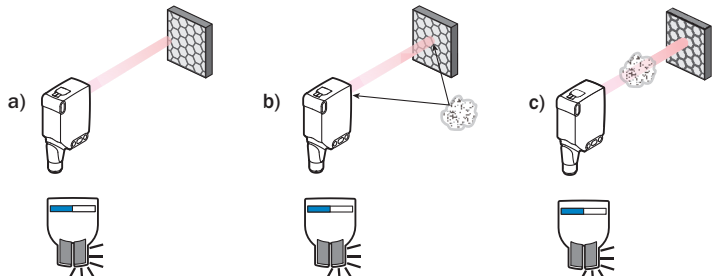


Recommended sensing range for the best performance

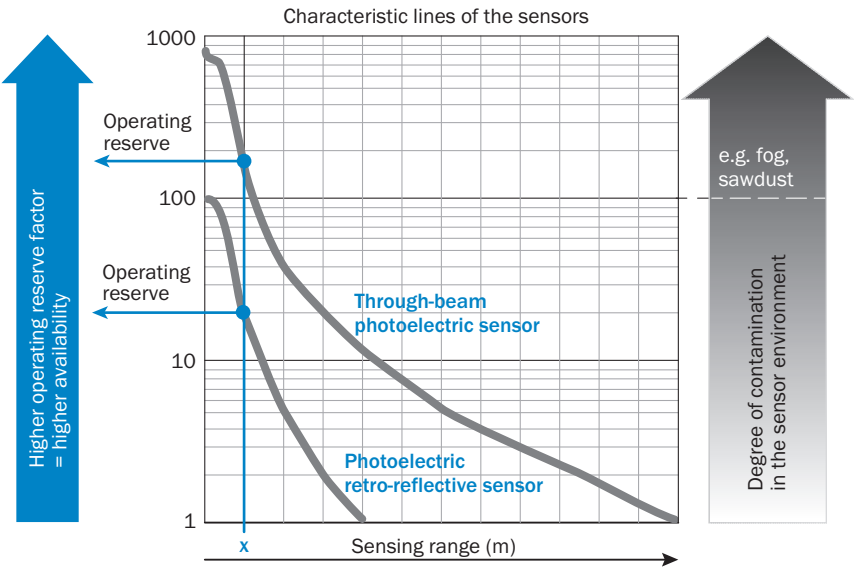
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4	Reflector PL20 CHEM
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A	Sensing range min. in m
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FUNCTIONS OPERATION NOTE

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	

FUNCTIONS 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 availability, otherwise the sensor switches due to pollution although there is no object in the path of the light beam.

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1222791



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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

SICK
Sensor Intelligence