W4S-3 Inox Hygiene – highest reliability, maximum resistance and endless possibilities

IO-Link PinPoint by SICK

Stainless Steel

IP 69K ECOLAB

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Product description

The W4S-3 Inox Hygiene product family of photoelectric sensors combines hygienic requirements with best-in-class performance. These sensors are completely enclosed in a stainless steel housing and can be taught via a stainless steel teach-in button with a stainless steel membrane, an external teach wire or IO-Link. With built-in protection for the sensor cable, no additional mounting brackets or mounting holes are required for in-process machine integration. These sensors are designed for a completely hygienic sensor solution that is a necessity for the most hygienic machines.

At a glance

- Smooth stainless steel housing (316L/1.4404)
- Hygienic mounting using M12-adapter thread or D12-adapter shaft
- IP 66, IP 67, IP 68 and IP 69K enclosure rating and Ecolab certified
- Resistant to a variety of common cleaning and disinfection agents
- PinPoint LED technology provides a highly visible laser-like light spot
- Teach-in via stainless steel pushbutton with a metal membrane

Your benefits

- Smooth hygienic housing and accessories with no grooves or crevices eliminates the potential for bacteria to grow, providing a more hygienic solution.
- Long service life in harsh conditions ensures less downtime and fewer replacement costs
- Easy adjustment via a stainless steel metal membrane teach-in pushbutton
- Quick and easy alignment due to highly visible PinPoint emitter LED
- Remote monitoring and quick diagnostics via IO-Link (optional)

Detailed technical data

	WTB4S-3H	WTF4S-3H	WL4S-3H	WSE4S-3H
Light spot (distance)	Ø 6.5 mm (150 mm) [1] Ø 2.5 mm (100 mm) [2] Ø 2.5 mm (50 mm) [3]	Ø 6.5 mm (150 mm)	Ø 45 mm (1.5 m)	Ø 130 mm (2 m)
Housing design (light emission)	Cuboid, slim			
Light source [4]	PinPoint LED			
Type of light	Visible red light			
Wavelength	650 nm			
Teach-in	Single teach-in button and/or teach-in via cable [5]			–

[1] At sensing distance max. ≤ 500 mm.
[2] At sensing distance max. ≤ 280 mm.
[3] At sensing distance max. ≤ 120 mm.
[4] Average service life 100,000 h at T_A = +25 °C.
[5] setting via cable (ET): connect white cable or PIN to L+ (PNP) or to M (NPN) in line with the desired sensitivity > 2 ... < 8 s or > 8 s.

Mechanics/electronics

	WTB4S-3H	WTF4S-3H	WL4S-3H	WSE4S-3H
Supply voltage	10 V DC ... 30 V DC [1]			
Residual ripple [2]	< 5 V_{pp}			
Power consumption	≤ 30 mA [3]			≤ 20 mA [4]
Output current $I_{max.}$	≤ 100 mA			
Response time [5]	< 0.5 ms			
Switching frequency [6]	1,000 Hz			
Connection type [7]	Connector Cable with plug, 150 mm, PVC Cable, 2 m, PVC, 0.14 mm² (depending on type)	Cable with plug, 150 mm, PVC	Connector Cable with plug, 150 mm, PVC Cable, 2 m, PVC, 0.14 mm² (depending on type)	
Circuit protection	A [8] B [9] C [10]			
Protection class	III			
Weight				
Cable with plug, M8	50 g	50 g	50 g	50 g
Connector M8	140 g [11]	–	140 g [11]	140 g
Cable	80 g	–	80 g / 125 g [12]	80 g
Polarisation filter	–		I	–
IO-Link	COM2	–		
Housing material	Stainless steel 316L/V4A			
Enclosure rating	IP 66 / IP 67 / IP 68 / IP 69K [13] (depending on type)	IP 66 / IP 67 / IP 68 / IP 69K [13]	IP 66 / IP 67 / IP 68 / IP 69K [13] (depending on type)	IP 66 / IP 67 / IP 68 / IP 69K [13]
Test input sender off	–			TE to 0 V
Ambient temperature, operation	–30 °C ... +70 °C [14] –30 °C ... +60 °C			
Ambient temperature, storage	–30 °C ... +75 °C			

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network, max. 8 A.
[2] Limit values, operation in short-circuit protected network max. 8 A.
[3] May not exceed or fall short of V_S.
[4] Without load.
[5] Sender.
[6] Signal transit time with resistive load.
[7] With light/dark ratio 1:1.
[8] Do not bend below 0 °C.
[9] A = V_S connections reverse-polarity protected.
[10] B = inputs and outputs reverse-polarity protected.
[11] C = interference suppression.
[12] Version with mechanical connection D12 adapter shaft.
[13] Special version, sensor with cable, 5m.
[14] At V_S ≤ 24 V and I_A < 30 mA.

Ordering information

WTB4S-3H

- **Sensor principle:** photoelectric proximity sensor
- **Detection principle:** background suppression

Sensing range max.	Sensing range	Switching output	Switching mode	Adjustment	IO-Link	Mechanical connection	Electrical connection	Model name	Part no.
≤ 500 mm [1]	10 ... 350 mm [1]	PNP	Light-switching	Cable	–	M12 adapter threads	Cable with plug, M8, 4-pin	WTB4S-3P3265H	1048102
				Teach, cable	–	M12 adapter threads	Cable with plug, M8, 4-pin	WTB4S-3P3264H	1048047
			Comple-mentary	Teach	–	M12 adapter threads	Cable with plug, M8, 4-pin	WTB4S-3P3262H	1048094
				Teach, cable	I	M12 adapter threads	Cable with plug, M8, 4-pin	WTB4SC-3P3262H	1048108
		NPN	Light-switching	Cable	–	M12 adapter threads	Cable, 4-wire	WTB4S-3N1165H	1048107
			Comple-mentary	Teach	–	M12 adapter threads	Cable, 4-wire	WTB4S-3N1162H	1048095
≤ 280 mm [1]	10 ... 150 mm [1]	PNP	Light-switching	Teach, cable	–	D12 adapter shaft	Cable with plug, M8, 4-pin	WTB4S-3P5204HS02	1054865
≤ 120 mm [1]	10 ... 120 mm [1]			Cable	–	M12 adapter threads	Cable with plug, M8, 4-pin	WTB4S-3P3235H	1048100
				Teach, cable	–	M12 adapter threads	Cable with plug, M8, 4-pin	WTB4S-3P3234H	1048097
			Comple-mentary	Teach	–	M12 adapter threads	Cable with plug, M8, 4-pin	WTB4S-3P3232H	1048096
						M12 adapter threads	Connector M8, 4-pin	WTB4S-3P5232H	1054864
					I	M12 adapter threads	Cable with plug, M8, 4-pin	WTB4SC-3P3232H	1048099
		NPN	Light-switching	Cable	–	M12 adapter threads	Cable, 4-wire	WTB4S-3N1135H	1048101
			Comple-mentary	Teach	–	M12 adapter threads	Cable, 4-wire	WTB4S-3N1132H	1048098

[1] Object with 90 % remission (referred to standard white DIN 5033).

WTF4S-3H

- **Sensor principle:** photoelectric proximity sensor
- **Detection principle:** foreground suppression

Sensing range max.	Switching output	Switching mode	Adjustment	Mechanical connection	Electrical connection	Model name	Part no.
≤ 200 mm	PNP	Light-switching	Teach, cable	M12 adapter threads	Cable with plug, M8, 4-pin	WTF4S-3P3264H	1048109

WL4S-3H

- **Sensor principle:** photoelectric retro-reflective sensor
- **Detection principle:** autocollimation
- **Switching mode:** complementary

Sensing range max.	Sensing range	Switching output	Adjustment	Alarm output	Mechanical connection	Electrical connection	Model name	Part no.
≤ 4 m	0 ... 2,5 m [1]	PNP	–	–	M12 adapter threads	Cable with plug, M8, 4-pin	WL4S-3P3230H	1048115
					D12 adapter shaft	Cable with plug, M8, 4-pin	WL4S-3P5230H	1057052
		NPN	–	–	M12 adapter threads	Cable, 4-wire	WL4S-3N1130H	1048116
≤ 5 m	0 ... 3 m [1]	PNP	Teach	I	M12 adapter threads	Cable with plug, M8, 4-pin	WL4S-3V3232H	1048118
				–	M12 adapter threads	Cable with plug, M8, 4-pin	WL4S-3P3232H	1048117
		NPN	Teach	–	M12 adapter threads	Cable, 4-wire	WL4S-3N1132H	1048119

[1] Relating to the reflector PL80A.

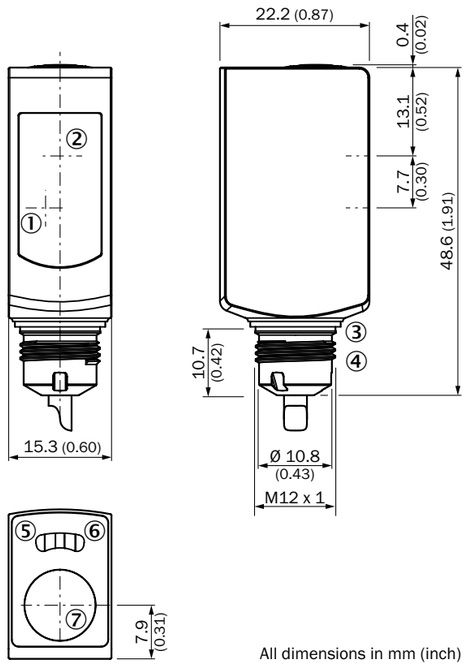
WSE4S-3H

- **Sensor principle:** Through-beam photoelectric sensor
- **Sensing range max.:** ≤ 5 m
- **Adjustment:** no adjustment possibility

Switching output	Switching mode	Connection	Model name	Part no.
PNP	Dark-switching	Cable with plug, M8, 3-pin	WSE4S-3F3130H	1052888
	Light-switching	Cable with plug, M8, 3-pin	WSE4S-3P3130H	1052882
	Complementary	Cable with plug, M8, 4-pin	WSE4S-3P5230H	1054896
NPN	Dark-switching	Cable, 3-wire	WSE4S-3E1330H	1052873
		Cable with plug, M8, 3-pin	WSE4S-3E3130H	1052868
	Light-switching	Cable, 3-wire	WSE4S-3N1330H	1052870

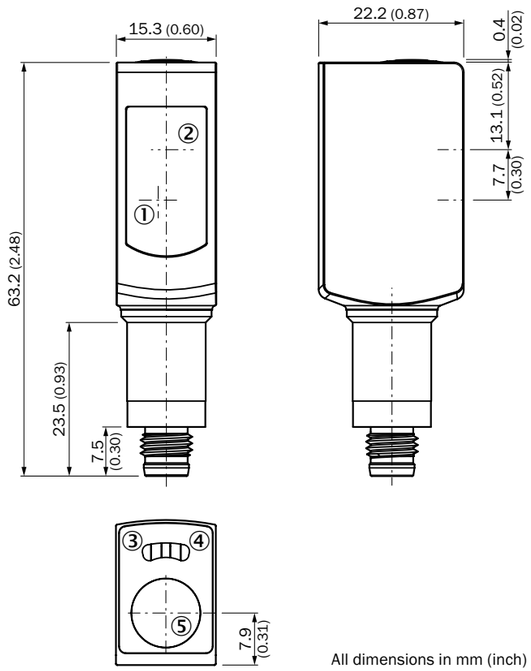
Dimensional drawings

WTB4S-3H, WTF4S-3H, with single teach-in button



All dimensions in mm (inch)

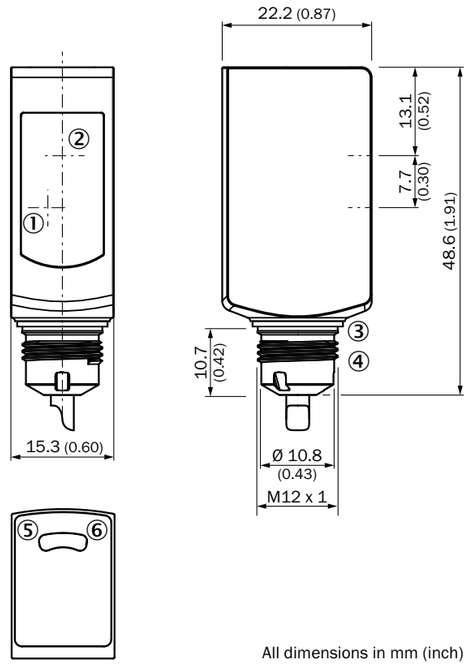
① Center of optical axis, receiver
② Center of optical axis, sender
③ Gasket (tightening torque 6 Nm)
④ Connection M12 plug
⑤ Status indicator LED, yellow: status of received light beam
⑥ Status indicator LED green: power on
⑦ Teach-in button



All dimensions in mm (inch)

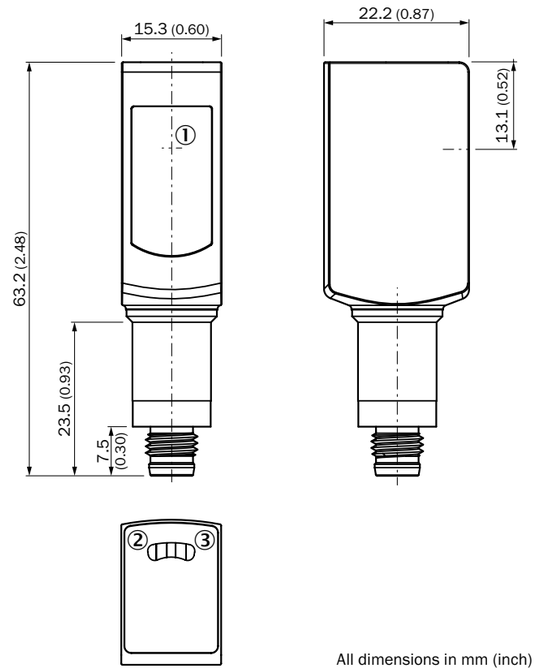
① Center of optical axis, receiver
② Center of optical axis, receiver
③ Status indicator LED, yellow: status of received light beam
④ Status indicator LED green: power on
⑤ Teach-in button

WTB4S-3H, WTF4S-3H, no single teach-in button



All dimensions in mm (inch)

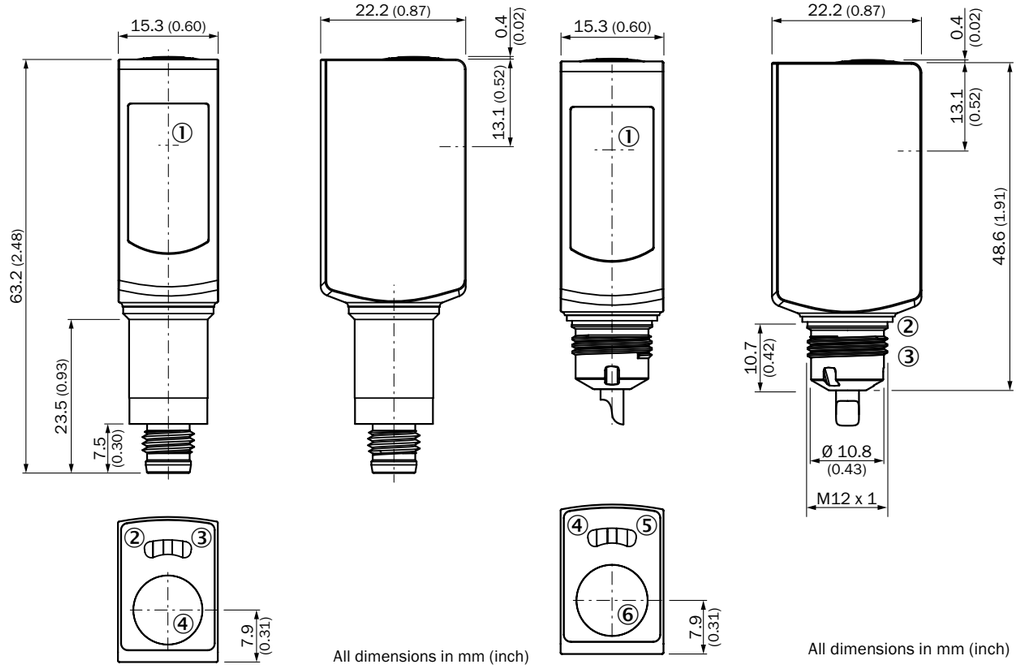
① Center of optical axis, receiver
② Center of optical axis, sender
③ Gasket (tightening torque 6 Nm)
④ Connection M12 plug
⑤ Status indicator LED, yellow: status of received light beam
⑥ Status indicator LED green: power on



All dimensions in mm (inch)

① Center of optical axis
② Status indicator LED, yellow: status of received light beam
③ Status indicator LED green: power on

WL4S-3H, WLG4S-3H, with single teach-in button



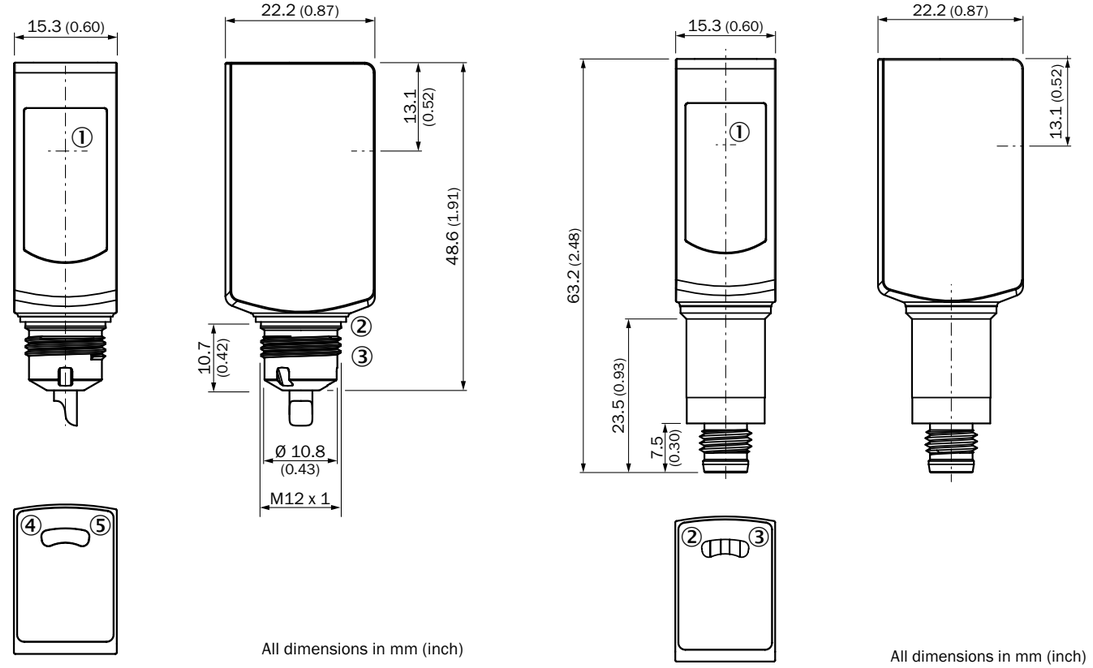
All dimensions in mm (inch)

① Center of optical axis
② Status indicator LED, yellow: status of received light beam
③ Status indicator LED green: power on
④ Teach-in button

All dimensions in mm (inch)

① Center of optical axis
② Gasket (tightening torque 6 Nm)
③ Connection M12 plug
④ Status indicator LED, yellow: status of received light beam
⑤ Status indicator LED green: power on
⑥ Teach-in button

WL4S-3H, WLG4S-3H, WSE4S-3H, no single teach-in button



All dimensions in mm (inch)

① centre of optical axis, sender (WS) and receiver (WE)
② Gasket (tightening torque 6 Nm)
③ Connection M12 plug
④ Status indicator LED, yellow: status of received light beam
⑤ Status indicator LED green: supply voltage active

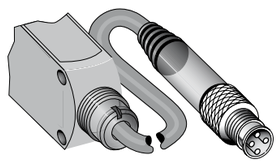
All dimensions in mm (inch)

① Center of optical axis
② Status indicator LED, yellow: status of received light beam
③ Status indicator LED green: power on

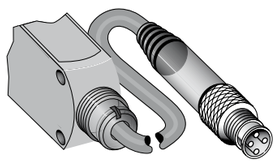
Connection type and diagram

WTB4-3H, WTF4S-3H, WL4S-3H, WLG4S-3H, WSE4S-3H

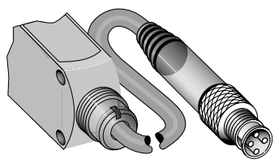
Teach-in via cable



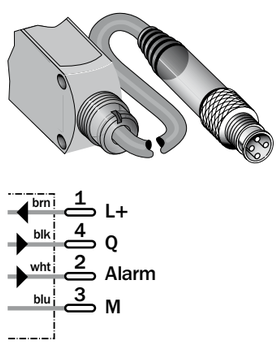
Single teach-in button or fix adjustment



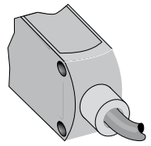
Single teach-in button + IO-Link



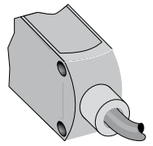
Single teach-in button + alarm output



Teach-in via cable



Single teach-in button or fix adjustment



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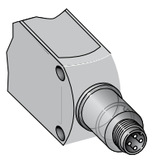
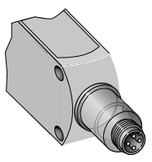
Miniature photoelectric sensors
W4S-3 Inox Hygiene

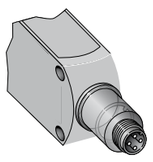
Teach-in via cable



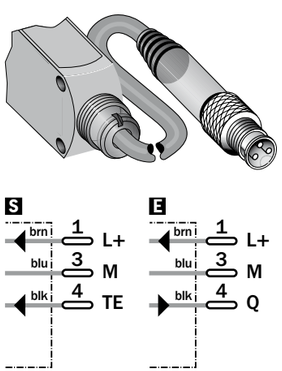
Single teach-in button or fix adjustment



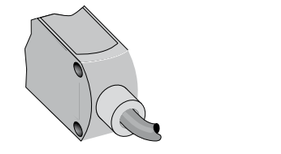
Single teach-in button + IO-Link



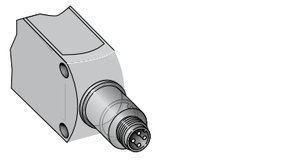
Fix adjustment + Test input



Fix adjustment + Test input



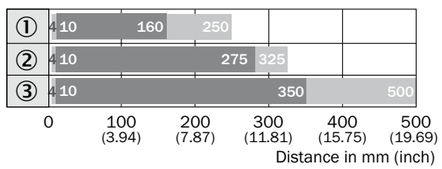
Fix adjustment + Test input



S Sender
E Receiver

Sensing distance

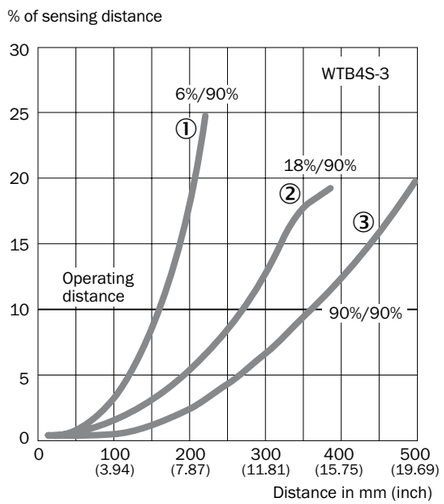
WTB4S-3, sensing distance, 500 mm



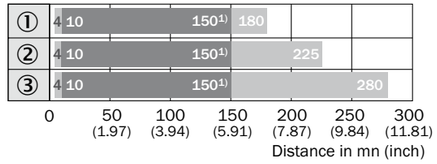
Operating distance Sensing distance typ. max.

① Sensing distance on black, 6 % remission
② Sensing distance on grey, 18 % remission
③ Sensing distance on white, 90 % remission

WTB4S-3, sensing distance, 500 mm



WTB4S-3, sensing distance, 280 mm

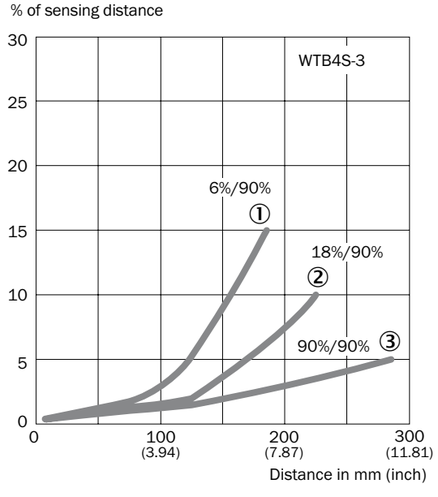


Operating distance Sensing distance typ. max.

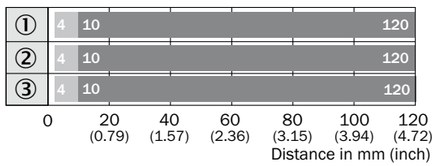
① Sensing distance on black, 6 % remission
② Sensing distance on grey, 18 % remission
③ Sensing distance on whitw, 90 % remission

¹⁾ Due to the focus of the light spot at 100 mm (3.94 inch)

WTB4S-3, sensing distance, 280 mm



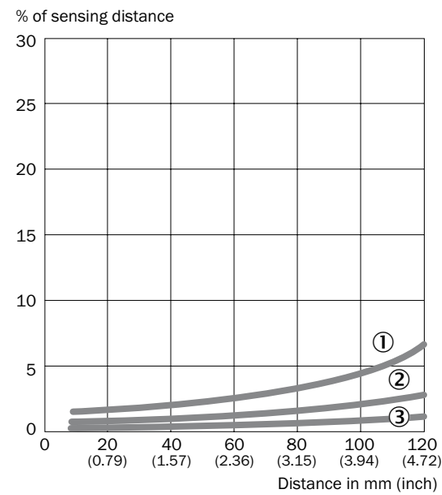
WTB4S-3, sensing distance, 120 mm



Operating distance Sensing distance max. typ.

① Sensing distance on black, 6 % remission
② Sensing distance on grey, 18 % remission
③ Sensing distance on white, 90 % remission

WTB4S-3, sensing distance, 120 mm



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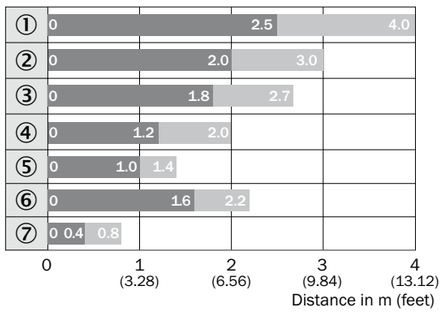
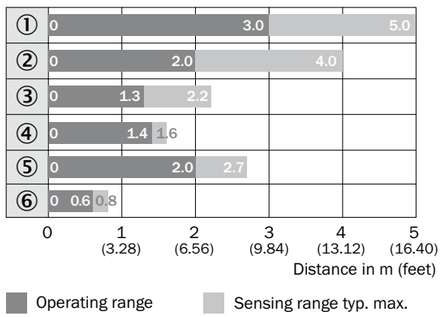
Sensing range

WL4S-3, WLG4S-3, sensing range 4 m



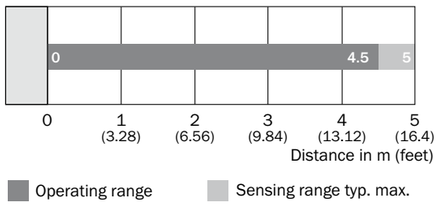
① Reflector type PL80A
② Reflector type PL250F
③ Reflector type PL40A
④ Reflector type PL20A
⑤ Reflector type PL10F
⑥ Reflector type P250 CHEM
⑦ Reflective tape REF-IRF-56

WL4S-3, WLG4S-3, sensing range 5 m



① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type PL10F
⑤ Reflector type P250 CHEM
⑥ Reflective tape REF-IRF-56

WSE4S-3, sensing range 5 m



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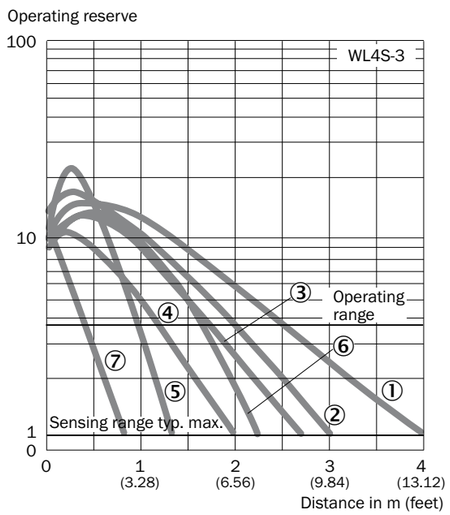
Subject to change without notice

Operating reserve

WL4S-3, WLG4S-3, sensing range 4 m



① Reflector type PL80A
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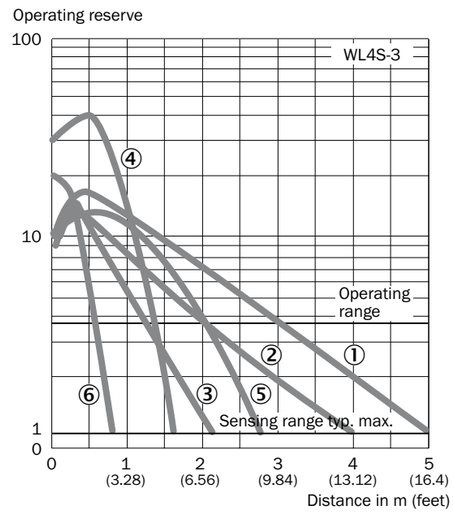
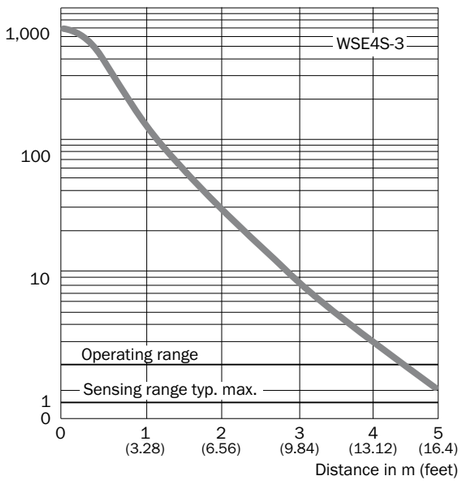
⑤ Reflector type PL10F
⑥ Reflector type P250 CHEM
⑦ Reflective tape REF-IRF-56

WL4S-3, WLG4S-3, sensing range 5 m



① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type PL10F
⑤ Reflector type P250 CHEM
⑥ Reflective tape REF-IRF-56

WSE4S-3V, WSE4S-3H



8014798/2011-12-dd
Subject to change without notice

W4S-3 Inox Hygiene Glass – reliable detection of transparent objects

Product description

The WLG4S-3 Inox Hygiene photoelectric retro-reflective sensors combine strict hygiene requirements based on EHEDG with best-in-class optical performance. The continuous threshold adaptation of the switching threshold enables reliable transparent object detection and reduces the frequency that the sensor or reflector needs. Enclosed in an IP 69K stainless steel housing, these sensors can be adjusted via a stainless steel pushbutton with a metal membrane. With built-in protection for the sensor cable, no additional mounting brackets or mounting holes are required for in-process machine integration. These sensors as well as additional hygienic reflectors are designed for a completely hygienic sensor solution that is a necessity for the most hygienic machines.

At a glance

- Hygienic designed stainless steel housing and accessories (316L/1.4404)
- Hygienic mounting using M12-adapter thread or D12-adapter shaft
- IP 66, IP 67, IP 68 and IP 69K enclosure rating and Ecolab certified
- Resistant to a variety of common cleaning and disinfection agents
- PinPoint LED technology provides a highly visible laser-like light spot
- Teach-in stainless steel metal membrane or external teach-in

Your benefits

- Smooth hygienic housing and accessories with no grooves or crevices eliminates the potential for bacteria to grow, providing a more hygienic solution.
- Long service life in harsh conditions ensures less downtime and fewer replacement costs
- Reliable detection of all transparent objects in the pharmaceutical and food and beverage industries
- Quick and easy adjustment via a stainless steel metal membrane teach-in pushbutton
- Quick and easy alignment due to highly visible PinPoint emitter LED
- Remote monitoring and fast diagnostics via IO-Link (optional)

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Detailed technical data

Light spot (distance)	Ø 45 mm (1.5 m)
Sensing range [1]	0 m ... 3 m
Signal attenuation min.	8%
Housing design (light emission)	Cuboid, slim
Light source [2]	PinPoint LED
Type of light	Visible red light
Wavelength	650 nm
Teach-in	Single teach-in button and/or teach-in via cable [3]

[1] PL80A.
[2] Average service life 100,000 h at T_A = +25 °C.
[3] setting via cable (ET): connect white cable or PIN to L+ (PNP) or to M (NPN) in line with the desired sensitivity > 2 ... < 8 s or > 8 s.

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Residual ripple [2]	< 5 V_{pp}
Power consumption [3]	≤ 30 mA
Output current $I_{max.}$	≤ 100 mA
Response time [4]	< 0.5 ms
Switching frequency [5]	1,000 Hz
Connection type [6]	Connector Cable with plug, 4-pin, 150 mm, PVC Cable, 4-wire, 2 m, PVC, 0.14 mm² (depending on type)
Circuit protection	A [7] B [8] C [9]
Protection class	III
Weight Cable with plug, M8, 4-pin Cable, 4-wire Connector, M8, 4-wire	 50 g 80 g 140 g [10]
Polarisation filter	I
Housing material	Edelstahl 316L/V4A
Enclosure rating	IP 66, IP 67, IP 68, IP 69K [11]
Ambient temperature, operation	–30 °C ... +70 °C [12] –30 °C ... +60 °C
Ambient temperature, storage	–30 °C ... +75 °C

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network, max. 8 A.
[2] May not exceed or fall short of V_S.
[3] Without load.
[4] Signal transit time with resistive load.
[5] With light/dark ratio 1:1.
[6] Do not bend below 0 °C.
[7] A = V_S connections reverse-polarity protected.
[8] B = inputs and outputs reverse-polarity protected.
[9] C = interference suppression.
[10] Version with mechanical connection D12 adapter shaft.
[11] Only in case of correctly mounted IP 69K connecting cable.
[12] At V_S ≤ 24 V and I_A < 30 mA.

Ordering information

- **Sensor principle:** photoelectric retro-reflective sensor
- **Detection principle:** autocollimation
- **Sensing range max.:** ≤ 5 m

Switching output	Switching mode	Adjustment	Alarm output	Mechanical connection	Electrical connection	Model name	Part no.
PNP	Complementary	Teach	–	M12 adapter threads	Cable with plug, M8, 4-pin	WLG4S-3P3232H	1048120
						WLG4S-3P5232H	1057053
			–	M12 adapter threads	Cable with plug, M8, 4-pin	WLG4S-3P3232HS02	1050665
	Dark-switching	Teach, cable	–	D12 adapter shaft	Cable with plug, M8, 4-pin	WLG4S-3F3234H	1048121
		Teach	–	M12 adapter threads	Cable with plug, M8, 4-pin	WLG4S-3V3232H	1048122
		Teach, cable	I	M12 adapter threads	Cable with plug, M8, 4-pin	WLG4S-3F3234HS01	1048535
NPN	Complementary	Teach	–	M12 adapter threads	Cable, 4-wire	WLG4S-3N1132H	1048123
	Dark-switching	Teach, cable	–	M12 adapter threads	Cable, 4-wire	WLG4S-3E1134H	1048124
		Cable	–	M12 adapter threads	Cable, 4-wire	WLG4S-3E1135H	1048126

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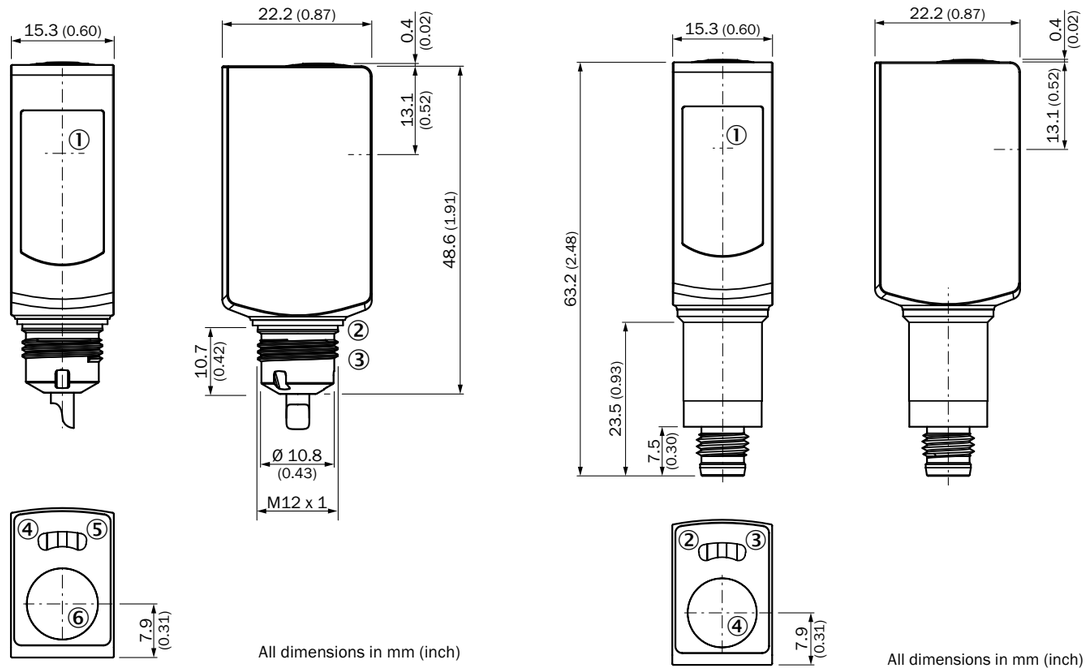
Dimensional drawings

WL4S-3H, WLG4S-3H, with single teach-in button



All dimensions in mm (inch)

① Center of optical axis
② Gasket (tightening torque 6 Nm)
③ Connection M12 plug
④ Status indicator LED, yellow: status of received light beam
⑤ Status indicator LED green: power on
⑥ Teach-in button

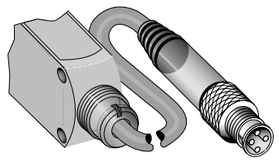
All dimensions in mm (inch)

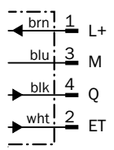
① Center of optical axis
② Status indicator LED, yellow: status of received light beam
③ Status indicator LED green: power on
④ Teach-in button

Connection type and diagram

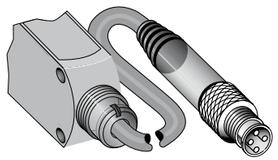
WLG4S-3H

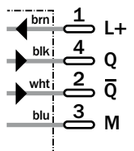
Teach-in via cable



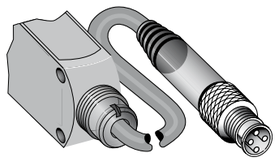


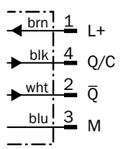
Single teach-in button or fix adjustment



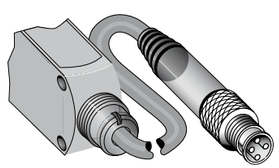


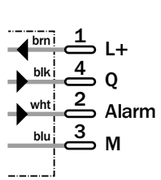
Single teach-in button + IO-Link



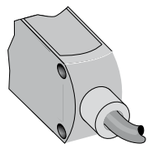


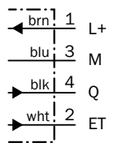
Single teach-in button + alarm output



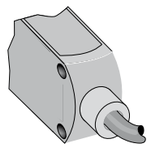


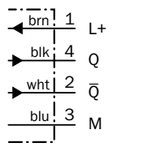
Teach-in via cable





Single teach-in button or fix adjustment





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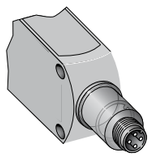
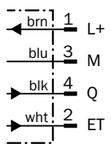
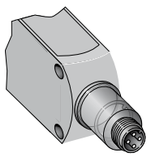
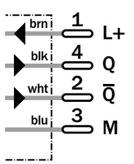
Teach-in via cable





Single teach-in button or fix adjustment





Single teach-in button + IO-Link