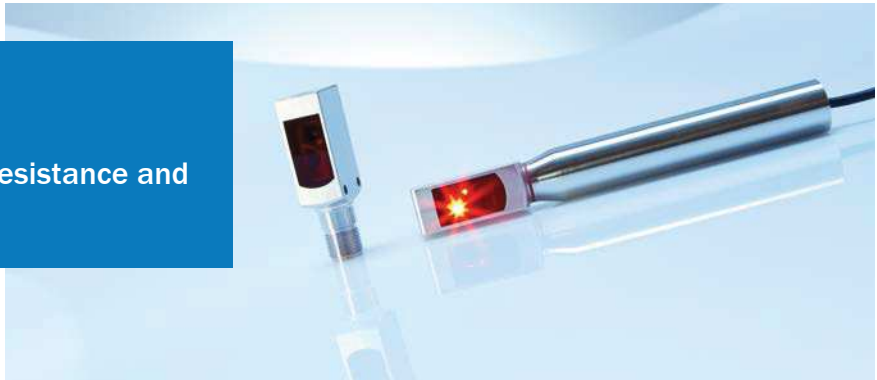


Highest reliability, maximum resistance and endless possibilities



STAIN-LESS STEEL IP 69K SIRIC®

Water spray icon Cleaning icon



Product description

The W4S-3 INOX photoelectric sensor series in WashDown-Design combines a rugged and water tight IP 69K stainless steel housing with “best-in-class” optical functionality. This product family features a compact design that saves space and ensures high plant availability due to

water tight teach-in pushbutton with a metal membrane and pin casting M12-connector. The stainless steel housing withstands stringent cleaning procedures in food and beverage, pharmaceutical, solar and semiconductor industries.

At a glance

- WashDown rated for fluid tightness (IP 66, IP 67, IP 68 and IP 69K) and Ecolab certified
- Tough stainless steel housing (316L/1.4404)
- Resistant to a variety of common cleaning and disinfection agents
- Highly visible laser-like light spot due to PinPoint LED
- Teach-in via stainless steel pushbutton with a metal membrane

Your benefits

- Long service life in harsh conditions ensures less downtime and fewer replacement costs
- Quick and easy alignment due to highly visible PinPoint emitter LED
- Easy adjustment via a stainless steel metal membrane teach-in pushbutton

F

CE III UL

SIRIC®
optical ASIC
invented by SICK

PinPoint
by SICK

ECOLAB®

Additional information

Detailed technical data F-299

Ordering information F-300

Dimensional drawings F-303

Characteristic curves F-305

Bar diagrams F-307

Connection diagram F-308

Recommended accessories F-309

→ www.mysick.com/en/W4S-3_Inox

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

Features

	WTB4S-3V	WTF4S-3V	WL4S-3V	WSE4S-3V
Sensor principle	Photoelectric proximity sensor		Photoelectric retro-reflective sensor	Through-beam photoelectric sensor
Detection principle	Background suppression	Foreground suppression	Autocollimation	–
Dimensions (W x H x D)	15.25 mm x 49.2 mm x 22.2 mm (depending on type)			15.25 mm x 48.6 mm x 22.2 mm (depending on type)
Housing design	Washdown			
Housing design (light emission)	Rectangular			
Sensing range max.	4 mm ... 500 mm ¹⁾ (depending on type)	20 mm ... 200 mm ¹⁾	0 m ... 5 m ²⁾ (depending on type)	0 m ... 5 m
Sensing range	10 mm ... 350 mm ¹⁾ (depending on type)	–	0 m ... 3 m ²⁾ (depending on type)	0 m ... 4.5 m
Type of light	Visible red light			
Light source ³⁾	PinPoint LED			
Wave length	650 nm			
Adjustment	Cable ⁴⁾ / Single teach-in button (depending on type)		Single teach-in button	–
Alarm output	–		✓ (depending on type)	–
Special feature	–	Detection of transparent objects	–	–

¹⁾ Object with 90 % reflectance (referred to standard white, DIN 5033)

²⁾ PL80A.

³⁾ Average service life of 100,000 h at T_A = +25 °C.

⁴⁾ External teach-in: pulse > 2 s with voltage U_v with PNP and M with NPN.

Mechanics/electronics

	WTB4S-3V	WTF4S-3V	WL4S-3V	WSE4S-3V
Supply voltage ¹⁾	10 V DC ... 30 V DC			
Ripple ²⁾	< 5 V _{pp}			
Power consumption ³⁾	≤ 30 mA			
Power consumption, sender	–			≤ 20 mA ³⁾
Power consumption, receiver	–			≤ 20 mA ³⁾
Output type	PNP / NPN (depending on type)	PNP	PNP / NPN (depending on type)	
Output function	Complementary			–
Switching mode	Light switching / Dark-switching / Light/dark-switching (depending on type)			
Output current I_{max.}	≤ 100 mA			
Response time ⁴⁾	< 0.5 ms			
Switching frequency ⁵⁾	1,000 Hz			
Connection type	Cable, 2 m ⁷⁾ / Male connector, M8 ⁶⁾ / Male connector, M12 ^{7) 8)} (depending on type)			
Circuit protection	A ⁹⁾ , B ¹⁰⁾ , C ¹¹⁾			
Protection class	III			
Weight				
	Cable, 4-wire	80 g	–	80 g
	Connector M8	40 g	–	–
	Connector M8, 4-pin	45 g	–	60 g

	WTB4S-3V	WTF4S-3V	WL4S-3V	WSE4S-3V
Polarisation filter	-		✓	-
Housing material	Stainless steel 316L			
Enclosure rating	IP 66, IP 67, IP 68, IP 69K ¹²⁾			
Test input sender off	-			"Test" to 0 V
Ambient operating temperature	-30 °C ... +70 °C ¹³⁾ -30 °C ... +60 °C			-30 °C ... +70 °C ¹³⁾
Ambient storage temperature	-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 tolerances.

³⁾ Without load.

⁴⁾ Signal transit time with resistive load.

⁵⁾ With light/dark ratio 1:1.

⁶⁾ Tightening torque, max.: 0.6 Nm.

⁷⁾ Do not bend below 0 °C.

⁸⁾ Tightening torque, max.: 0.7 Nm.

⁹⁾ A = V_s connections reverse-polarity protected.

¹⁰⁾ B = inputs and output reverse-polarity protected.

¹¹⁾ C = interference suppression.

¹²⁾ Only in case of correctly mounted IP 69K connecting cable.

¹³⁾ At UV ≤ 24 V and IA < 30 mA.

Ordering information

Other models available at www.mysick.com/en/W4S-3_Inox



WTB4S-3V

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

Sensing range max. ¹⁾	Light spot size (distance)	Output type	Switching mode	Adjustment	Connection	Con- nection diagram	Model name	Part no.
4 mm ... 120 mm	Ø 2.5 mm (50 mm)	PNP	Light switching	Single teach-in button	Connector M8, 3-pin	Cd-045	WTB4S-3P2132V	1046397
				Cable ²⁾	Connector M12, 4-pin	Cd-083	WTB4S-3P2432V	1054672
			Dark-switching	Connector M8, 4-pin	Cd-092	WTB4S-3P2235V	1045093	
		NPN	Light switching	Single teach-in button	Connector M8, 3-pin	Cd-045	WTB4S-3F2132V	1046404
				Cable, 4-wire, 2 m, PVC	Cd-094	WTB4S-3P1132V	1046402	
			Light/dark-switching	Single teach-in button	Connector M8, 3-pin	Cd-045	WTB4S-3N2132V	1046405
4 mm ... 280 mm	Ø 2.5 mm (100 mm)	PNP	Light switching	Single teach-in button	Cable, 3-wire, 2 m, PVC	Cd-044	WTB4S-3N1332V	1046406
				Cable	Connector M12, 4-pin	Cd-083	WTB4S-3N2432V	1054674
			Light/dark-switching	Single teach-in button	Connector M8, 4-pin	Cd-092	WTB4S-3P2204VS02	1047652
		NPN	Light switching	Connector M8, 4-pin	Cd-092	WTB4S-3F2234VS08	1053075	
				Cable ²⁾	Connector M8, 4-pin	Cd-092	WTB4S-3P2205VS01	1046214
			Light/dark-switching	Single teach-in button ²⁾	Connector M8, 4-pin	Cd-092	WTB4S-3P2234VS05	1050833
			Cable	Single teach-in button	Connector M12, 4-pin	Cd-098	WTB4S-3P2402VS09	1054706

¹⁾ Object with 90 % reflectance (referred to standard white, DIN 5033)

²⁾ External teach-in: pulse > 2 s with voltage U_v with PNP and M with NPN.

Sensing range max. ¹⁾	Light spot size (distance)	Output type	Switching mode	Adjustment	Connection	Con- nection diagram	Model name	Part no.
4 mm ... 500 mm	Ø 6.5 mm (150 mm)	PNP	Light switching	Single teach-in button	Connector M8, 3-pin	Cd-045	WTB4S-3P2162V	1046384
			Dark-switching	Single teach-in button	Connector M8, 3-pin	Cd-045	WTB4S-3F2162V	1046389
			Light/dark-switching	Single teach-in button	Connector M8, 4-pin	Cd-083	WTB4S-3P2262V	1046383
		Connector M12, 4-pin			Cd-083	WTB4S-3P2462V	1054675	
		NPN	Light/dark-switching	Single teach-in button	Cable, 4-wire, 2 m, PVC	Cd-094	WTB4S-3N1162V	1046391
					Connector M12, 4-pin	Cd-083	WTB4S-3N2462V	1054703

¹⁾ Object with 90 % reflectance (referred to standard white, DIN 5033)

²⁾ External teach-in: pulse > 2 s with voltage U_v with PNP and M with NPN.

WTF4S-3V, Detection of transparent objects

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

Sensing range max. ¹⁾	Light spot size (dis- tance)	Output type	Switching mode	Adjustment	Connection	Con- nection diagram	Model name	Part no.
20 mm ... 200 mm	Ø 6.5 mm (150 mm)	PNP	Light switching	Cable ²⁾	Connector M8, 4-pin	Cd-083	WTF4S-3P2265V	1045094
			Light/dark-switching	Single teach-in button	Connector M8, 4-pin	Cd-083	WTF4S-3P2262V	1046410

¹⁾ Object with 90 % reflectance (referred to standard white, DIN 5033)

²⁾ External teach-in: pulse > 2 s with voltage U_v with PNP and M with NPN.

WL4S-3V

- **Sensor principle:** photoelectric retro-reflective sensor
- **Detection principle:** autocollimation

Sensing range max. ¹⁾	Light spot size (distance)	Output type	Switching mode	Adjustment	Connection	Con- nection diagram	Model name	Part no.
0 m ... 4 m	Ø 45 mm (1.5 m)	PNP	Light switching	-	Cable, 3-wire, 2 m, PVC	Cd-044	WL4S-3P1330V	1048044
			Dark-switching	-	Connector M8, 3-pin	Cd-045	WL4S-3F2130V	1045096
			Light/dark-switching	-	Connector M8, 4-pin	Cd-083	WL4S-3P2230V	1045095
		NPN	Dark-switching	-	Cable, 3-wire, 2 m, PVC	Cd-044	WL4S-3E1330V	1046420
					Connector M8, 3-pin	Cd-045	WL4S-3E2130V	1045097
0 m ... 5 m	Ø 45 mm (1.5 m)	PNP	Light switching	Single teach-in button	Cable, 3-wire, 2 m, PVC	Cd-044	WL4S-3P1332V	1046427
					Connector M8, 3-pin	Cd-045	WL4S-3P2132V	1046424
			Dark-switching	Single teach-in button	Cable, 3-wire, 2 m, PVC	Cd-044	WL4S-3F1332V	1046430
					Connector M8, 3-pin	Cd-045	WL4S-3F2132V	1046428
			Light/dark-switching	Single teach-in button	Connector M8, 4-pin	Cd-083	WL4S-3P2232V	1046421
					Connector M12, 4-pin, PVC	Cd-083	WL4S-3P2432V	1054715
		NPN	Light/dark-switching	Single teach-in button	Connector M8, 3-pin	Cd-045	WL4S-3N2132V	1046432
					Connector M8, 3-pin	Cd-045	WL4S-3E2132V	1046435
					Connector M12, 4-pin, PVC	Cd-083	WL4S-3N2432V	1054722

¹⁾ PL80A.

WL4S-3V, Alarm output

- **Sensor principle:** photoelectric retro-reflective sensor
- **Detection principle:** autocollimation

Sensing range max. ¹⁾	Light spot size (distance)	Output type	Switching mode	Adjustment	Connection	Con-nection diagram	Model name	Part no.
0 m ... 5 m	Ø 45 mm (1.5 m)	PNP	Dark-switching	Single teach-in button	Connector M8, 4-pin	Cd-107	WL4S-3V2232V	1046422

¹⁾ PL80A.

WSE4S-3V

- **Sensor principle:** through-beam photoelectric sensor

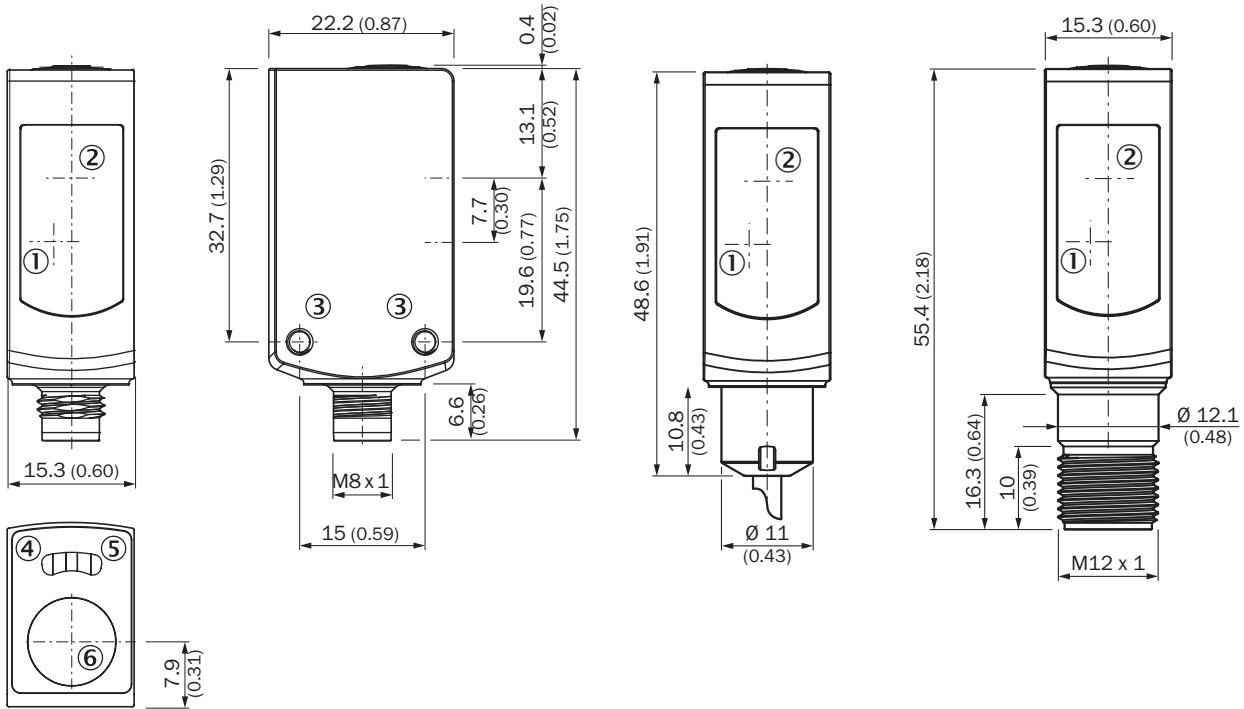
Sensing range max.	Light spot size (distance)	Output type	Switching mode	Connection	Con-nection diagram	Model name	Part no.
0 m ... 5 m	Ø 40 mm (2 m)	PNP	Light switching	Cable, 3-wire, 2 m, PVC	Cd-061	WSE4S-3P1330V	1052887
				Connector M8, 3-pin	Cd-069	WSE4S-3P2130V	1052893
			Dark-switching	Cable, 3-wire, 2 m, PVC	Cd-061	WSE4S-3F1330V	1052880
				Connector M8, 3-pin	Cd-069	WSE4S-3F2130V	1052891
		NPN	Dark-switching	Cable, 3-wire, 2 m, PVC	Cd-061	WSE4S-3E1330V	1052869
				Connector M8, 3-pin	Cd-069	WSE4S-3E2130V	1052877
			Light switching	Cable, 3-wire, 2 m, PVC	Cd-061	WSE4S-3N1330V	1052874
				Connector M8, 3-pin	Cd-069	WSE4S-3N2130V	1052878



Dimensional drawings

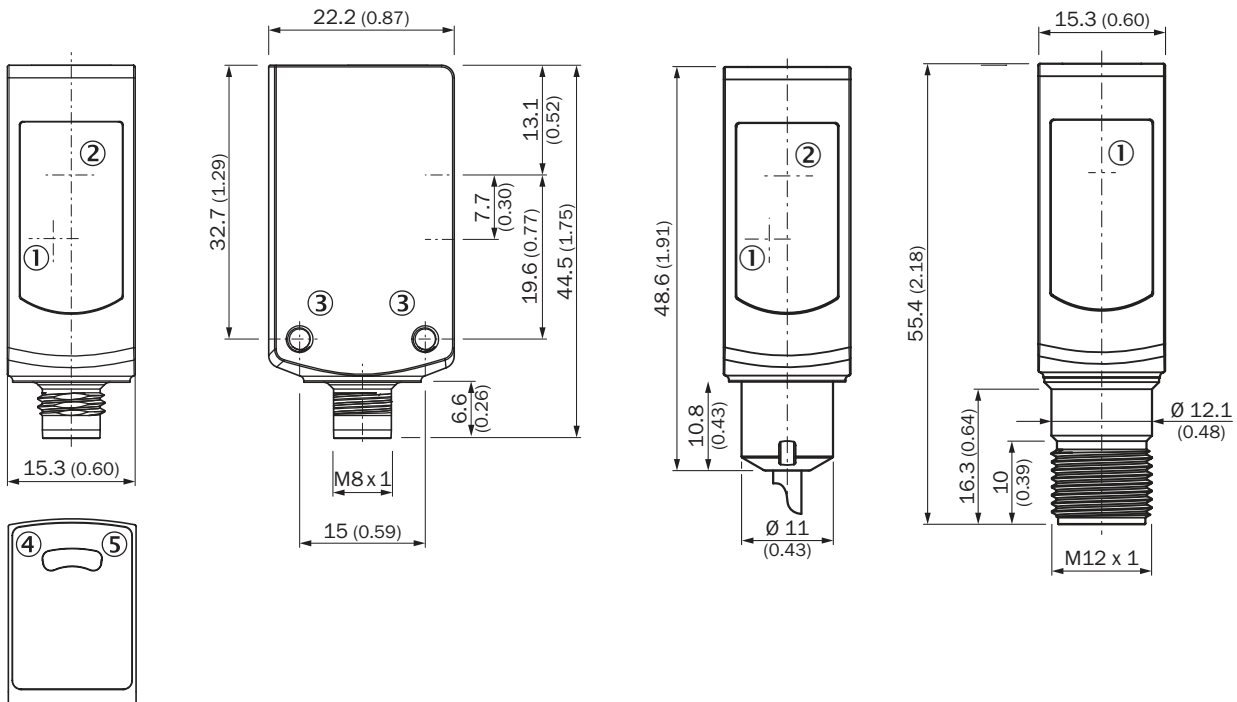
Dimensions in mm (inch)

WTB4S-3V, WTF4S-3V, Single teach-in button



- ① Center of optical axis, receiver
- ② Center of optical axis, sender
- ③ Threaded mounting hole M3
- ④ Status indicator LED, yellow: Status of received light beam
- ⑤ Status indicator LED green: power on
- ⑥ Teach-in button

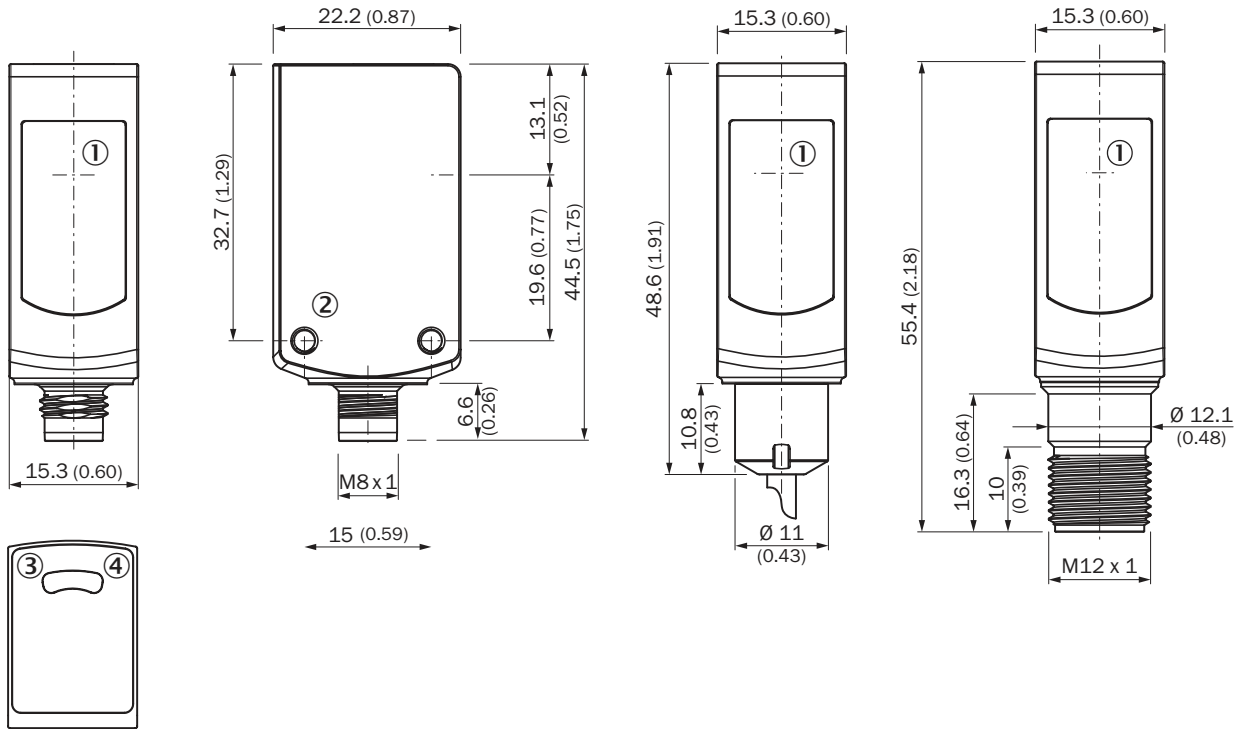
WTB4S-3V, WTF4S-3V, without single teach-in button



- ① Center of receiver's optical axis
- ② Center of optical axis, sender
- ③ Threaded mounting hole M3
- ④ Status indicator LED, yellow: Status of received light beam
- ⑤ Status indicator LED green: power on

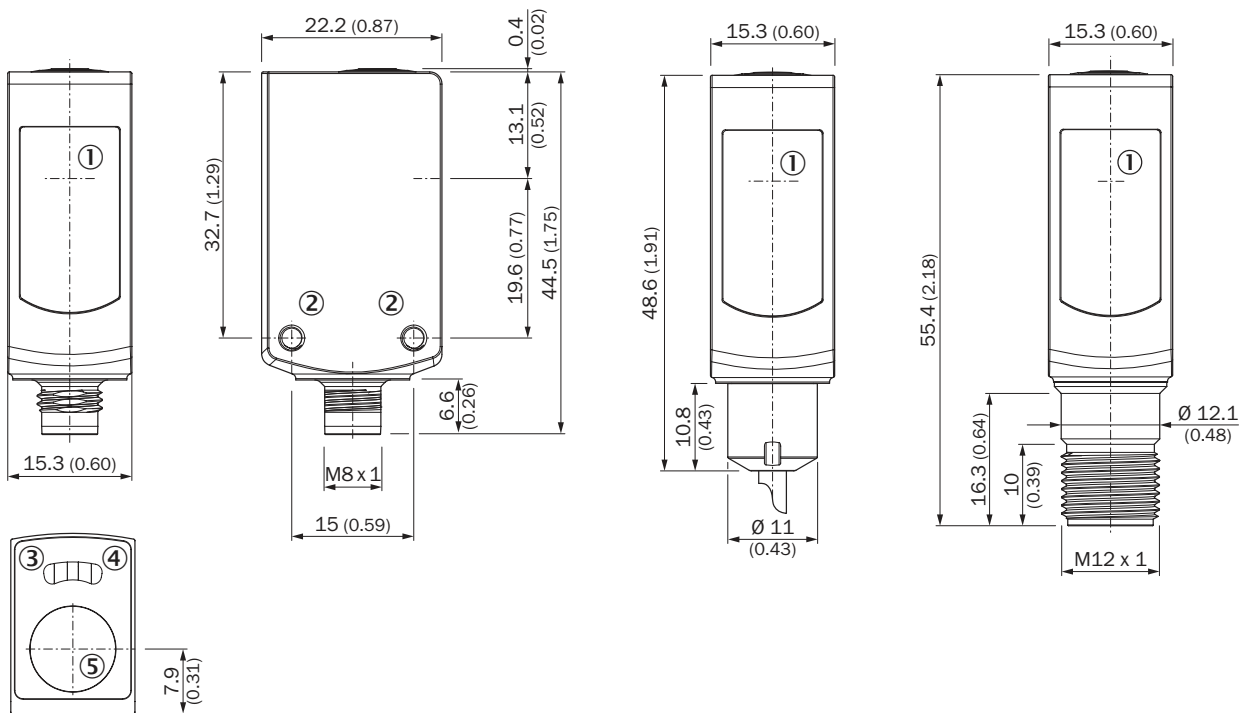


WL4S-3V, WSE4S-2V, without single teach-in button



- ① Center of optical axis
- ② Threaded mounting hole M3
- ③ Status indicator LED, yellow: Status of received light beam
- ④ Status indicator LED green: power on

WL4S-3V, with single teach-in button



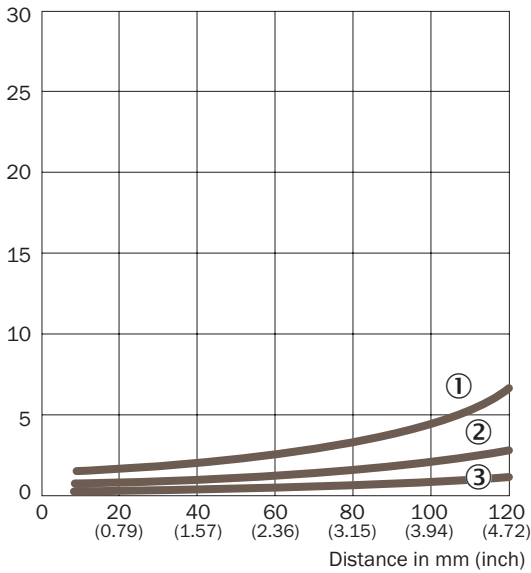
- ① Center of optical axis
- ② Threaded mounting hole M3
- ③ Status indicator LED, yellow: Status of received light beam
- ④ Status indicator LED green: power on
- ⑤ Teach-in button

F

Characteristic curves

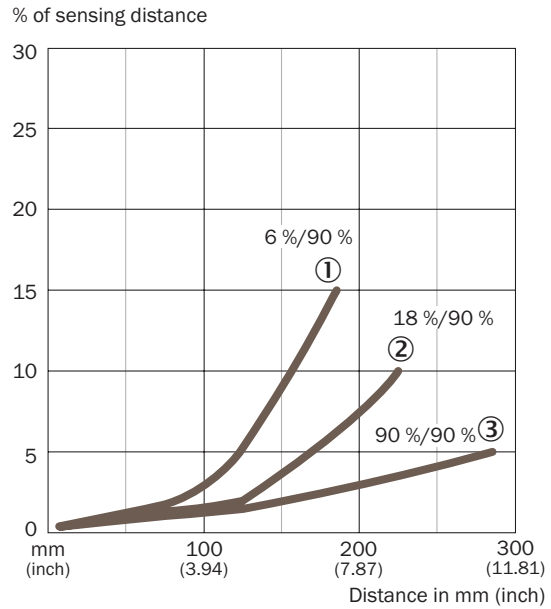
Black-white shift

WTB4S-3, 120 mm

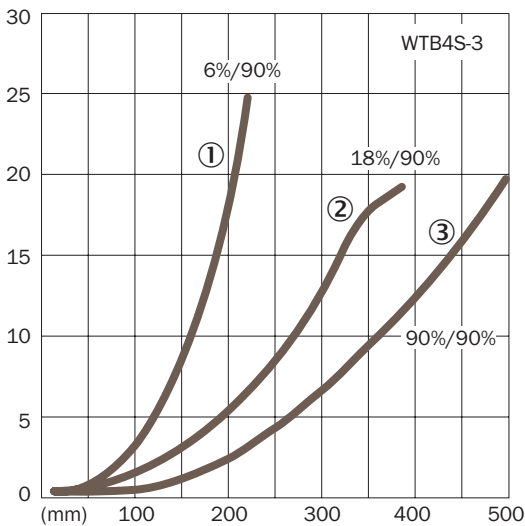


- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission

WTB4S-3, 280 mm



WTB4S-3, 500 mm

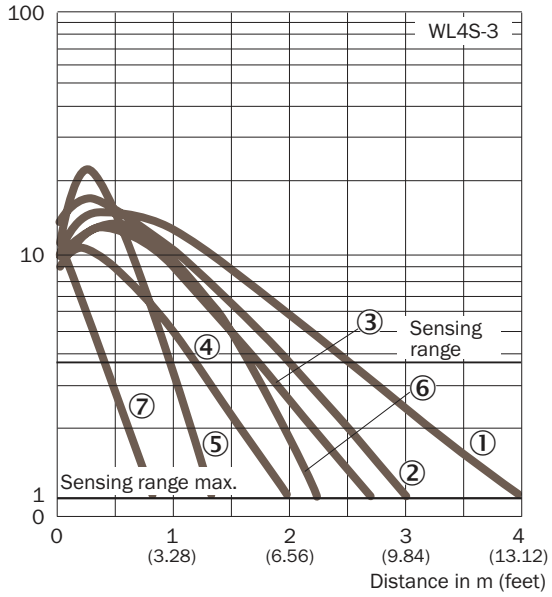


- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission



Operating reserve

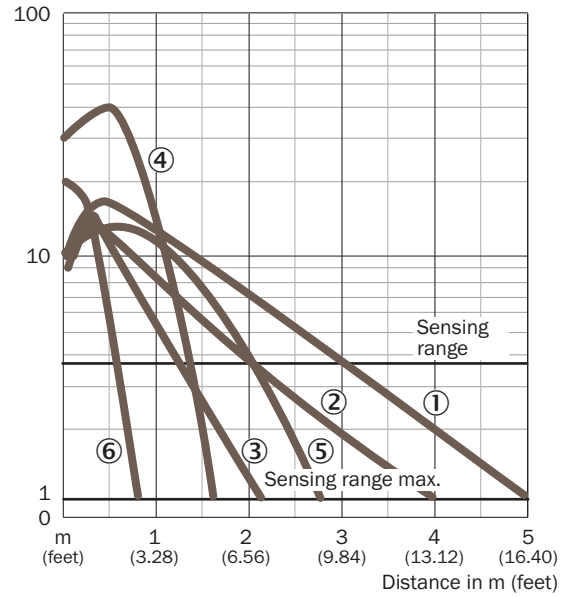
WL4S-3, 4 m



- ① PL80A
- ② P250F
- ③ PL40A
- ④ PL20A
- ⑤ PL10F
- ⑥ P250 CHEM
- ⑦ REF-IRF-56

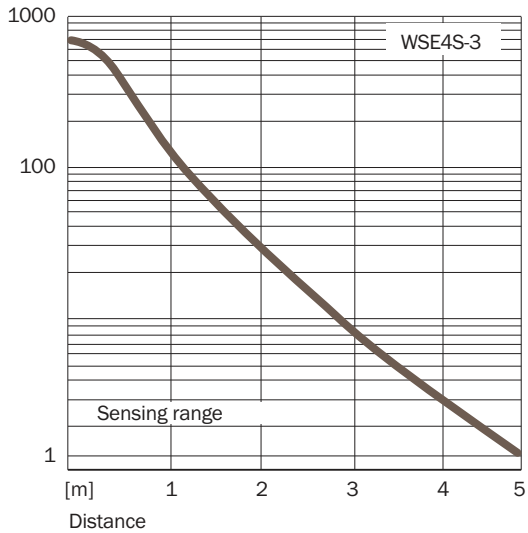
WL4S-3, 5 m

Operating reserve



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

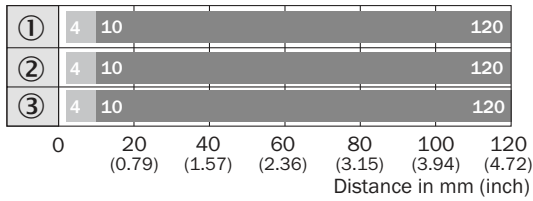
WSE4S-3V, WSE4S-3H



F

Bar diagrams

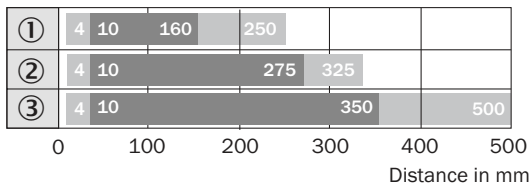
WTB4S-3, 120 mm



■ Sensing range ■ Sensing range max.

- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission

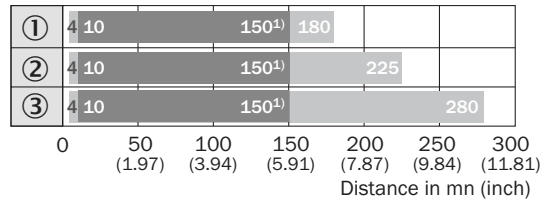
WTB4S-3, 500 mm



■ Sensing range ■ Sensing range max.

- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission

WTB4S-3, 280 mm

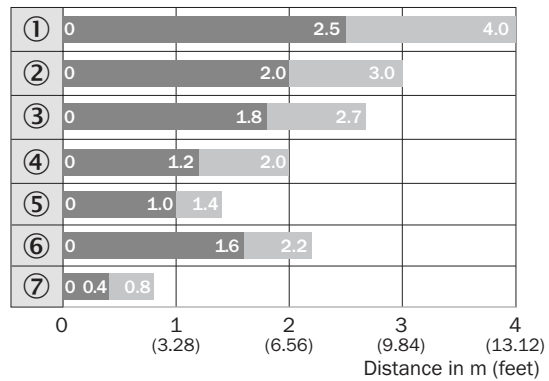


■ Operating distance ■ Sensing distance typ. max.

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

⁴⁾ Due to the focus of the light spot at 100 mm (3.94 inch)

WL4S-3, 4 m

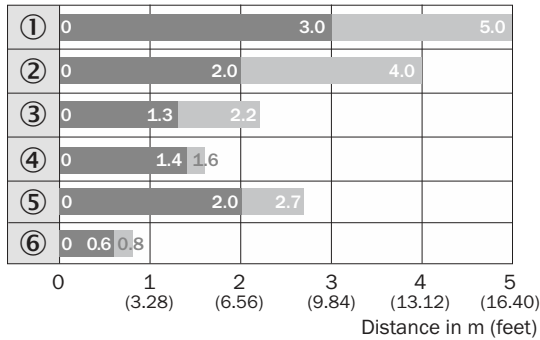


■ Sensing range ■ Sensing range max.

- ① PL80A
- ② P250F
- ③ PL40A
- ④ PL20A
- ⑤ PL10F
- ⑥ P250 CHEM
- ⑦ REF-IRF-56



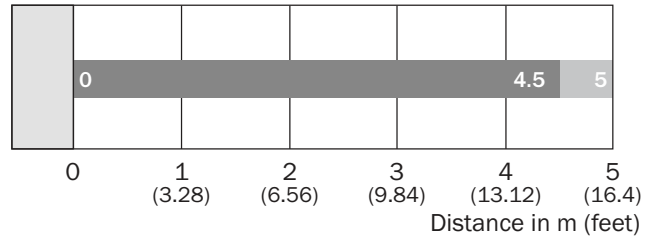
WL4S-3, 5 m



■ Sensing range ■ Sensing range max.

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

WSE4S-3

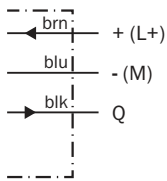


■ Sensing range ■ Sensing range max.

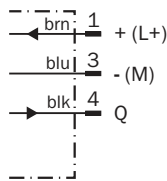
Connection diagram

F

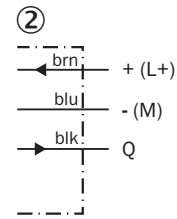
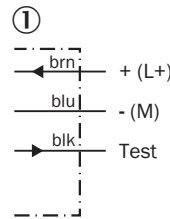
Cd-044



Cd-045

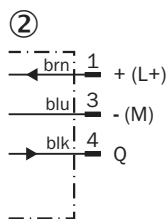
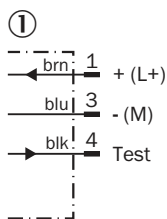


Cd-061



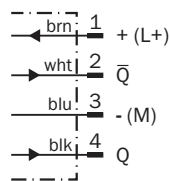
① Sender
② Receiver

Cd-069

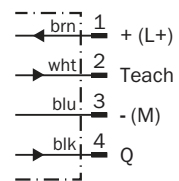


① Sender
② Receiver

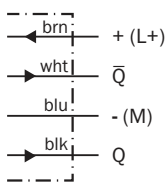
Cd-083



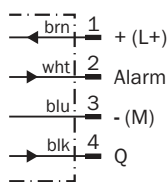
Cd-092



Cd-094



Cd-107






Recommended accessories




Plug connectors and cables

Connecting cable (female connector-open), hygienic systems




- Cable material: PVC
- Connector material: PVC

Figure	Connection type head A	Connection type head B	Connecting cable	Enclosure rating	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	IP 67, IP 69K	DOL-0803-G02MN	6033664
			5 m, 3-wire	IP 67, IP 69K	DOL-0803-G05MN	6033665
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	IP 67, IP 69K	DOL-0803-W02MN	6033667
			5 m, 3-wire	IP 67, IP 69K	DOL-0803-W05MN	6033668
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	IP 67, IP 69K	DOL-0804-G02MN	6033670
			5 m, 4-wire	IP 67, IP 69K	DOL-0804-G05MN	6033671
Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	IP 67, IP 69K	DOL-0804-W02MN	6033673	
		5 m, 4-wire	IP 67, IP 69K	DOL-0804-W05MN	6033674	
	Female connector, M12, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	IP 67, IP 69K	DOL-1204-G02MN	6028128
			5 m, 4-wire	IP 67, IP 69K	DOL-1204-G05MN	6028130
	Female connector, M12, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	IP 67, IP 69K	DOL-1204-W02MN	6028129
			5 m, 4-wire	IP 67, IP 69K	DOL-1204-W05MN	6028131

Female connector (ready to assemble)

Figure	Connection type head A	Connection type head B	Connector material	Enclosure rating	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	PBT	IP 67	DOS-0803-G	7902077
	Female connector, M8, 4-pin, straight	Screw-type terminals	PBT	IP 67	DOS-0804-G	6009974
	Female connector, M12, 4-pin, straight	Screw-type terminals	PBT	IP 67	DOS-1204-GN	6028357

Male connector (ready to assemble)



Figure	Connection type head A	Connection type head B	Connector material	Enclosure rating	Model name	Part no.
	Male connector, M8, 3-pin, straight	Screw-type terminals	PBT	IP 67	STE-0803-G	6037322
	Male connector, M8, 4-pin, straight	Screw-type terminals	PBT	IP 67	STE-0804-G	6037323
	Male connector, M12, 4-pin, straight	Screw-type terminals	PBT	IP 67	STE-1204-GN	6028359

Universal bar clamp systems



Figure	Material	Description	Model name	Part no.
	Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp)	Plate N02N for universal clamp bracket	BEF-KHS-N02N	2051618

Reflectors

Angular

Figure	Material	Description	Model name	Part no.
	Plastic	Chemically resistant, screw connection, 47 mm x 47 mm	P250 CHEM	5321097
	PMMA/ABS	Rectangular, screw connection, 80 mm x 80 mm	PL80A	1003865

Fine triple reflectors

Figure	Material	Description	Model name	Part no.
	Plastic	Fine triple, chemically resistant, screw connection, 18 mm x 18 mm	PL10F CHEM	5321636
		Fine triple, chemically resistant, screw connection, suitable for laser sensors, 16 mm x 38 mm	PL20F-CHEM	5326089

Reflective tape

Figure	Description	Model name	Part no.
	Self-adhesive, 50 mm x 60 mm	REF-IRF-56	5314244

Special reflectors







Figure	Material	Description	Model name	Part no.
	Plastic	Chemically resistant, screw connection, 38 mm x 15 mm	PL20 CHEM	5321089
	PMMA/ABS	Antifog, for prevention of moisture fogging on the reflection area, screw connection, 56 mm x 37 mm	PL40A Antifog	5322011
	Plastic	Rectangular, screw connection M3, countersunk screw head, chemical resistant, 56 mm x 37 mm	PL40B-CHEM	5326088

Figure	Material	Description	Model name	Part no.
	Stainless steel V4A (1.4404, 316L)	Stainless steel reflector, hygienic design, chemically resistant, Enclosure rating IP 69K, D12-adapter shaft, 25 mm x 25 mm	PLH25-D12	2063404
		Stainless steel reflector, hygienic design, chemically resistant, Enclosure rating IP 69K, M12-adapter thread, 25 mm x 25 mm	PLH25-M12	2063403
		Stainless steel reflector, wash-down design, chemically resistant, Enclosure rating IP 69K, screw connection, 14 mm x 14 mm	PLV14-A	2063405

→ For additional accessories, please see page L-861