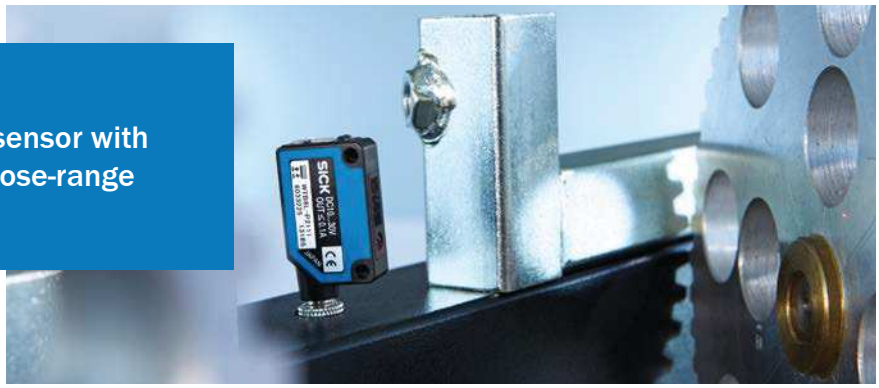
Laser photoelectric proximity sensor with background suppression for close-range applications



F

Product description

The WTB8L is a high-quality miniature photoelectric proximity sensor with laser emitter LEDs and outstanding background suppression specially designed for close-range applications. High switching frequencies of 2 kHz make these sensors suitable for a broad range of applications. The housing design, with M3 threaded mounting holes, ensures easy and secure mounting.

At a glance

- Laser class 1
- Background suppression
- Standard miniature housing with M3 threaded mounting holes
- Switching frequency up to 2 kHz
- Light/dark switching via rotary switch
- Mounting bracket BEF-W100-A is included with delivery

Your benefits

- Highly flexible design and operational capabilities due to precise background suppression
- Reliable detection of small objects, regardless of color or surface qualities
- Rapid switching frequency reliably detects objects travelling at high speeds which allows to optimize the production processes
- Highly visible laser light spot simplifies alignment
- All necessary accessories are included with delivery, reducing installation and procurement costs

CDRH

Additional information

→ **www.mysick.com/en/W8_Laser**

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.

8015327/2014-02-08
Subject to change without notice

Detailed technical data

Features

Sensor principle	Photoelectric proximity sensor
Detection principle	Background suppression
Dimensions (W x H x D)	11 mm x 31 mm x 20 mm
Housing design (light emission)	Rectangular
Sensing range max.	5 mm ... 300 mm [1] (depending on type)
Sensing range	20 mm ... 300 mm [1] (depending on type)
Type of light	Visible red light
Light source [2]	Laser
Wave length	650 nm
Laser class	I
Adjustment	Potentiometer, 4 turns

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

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

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Ripple [2]	± 10 %
Power consumption [3]	≤ 30 mA
Output type	PNP, open collector / NPN, open collector (depending on type)
Switching mode	Light/dark-switching (manually selectable)
Signal voltage PNP HIGH/LOW	Approx. V_S – 1.8 V / 0 V
Signal voltage NPN HIGH/LOW	Approx. V_S / < 1.8 V
Output current $I_{max.}$	≤ 100 mA
Response time [4]	≤ 0.25 ms
Switching frequency [5]	2,000 Hz
Connection type	Cable, 2 m [6] / Male connector, M8 (depending on type)
Circuit protection	A [7], B [8], D [9]
Weight	
Cable [6]	50 g
Connector	10 g
Housing material	ABS
Optics material	PMMA
Enclosure rating	IP 67
Items supplied	Stainless steel mounting bracket (1.4301/304) BEF-W100-A
Ambient operating temperature	–10 °C ... +50 °C
Ambient storage temperature	–40 °C ... +70 °C

[1] Limit values, 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] Do not bend below 0 °C.

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

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

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

F

Ordering information

Other models available at www.mysick.com/en/W8_Laser

WTB8L

- **Sensor principle:** photoelectric proximity sensor
- **Detection principle:** background suppression
- **Switching mode:** light/dark-switching
- **Adjustment:** potentiometer, 4 turns

Sensing range max. [1]	Light spot size (distance)	Output type	Connection	Connection diagram	Model name	Part no.
5 mm ... 100 mm	Ø 1 mm (100 mm)	PNP	Cable, 4-wire 2 m PVC	Cd-116	WTB8L-P1111	6033223
			Connector M8, 3-pin	Cd-045	WTB8L-P2111	6033225
			Connector M8, 4-pin	Cd-078	WTB8L-P2211	6033227
		NPN	Cable, 4-wire 2 m PVC	Cd-116	WTB8L-N1111	6033222
			Connector M8, 3-pin	Cd-045	WTB8L-N2111	6033224
			Connector M8, 4-pin	Cd-078	WTB8L-N2211	6033226
30 mm ... 300 mm	Ø 1.5 mm (300 mm)	PNP	Cable, 4-wire 2 m PVC	Cd-116	WTB8L-P1131	6033217
			Connector M8, 3-pin	Cd-045	WTB8L-P2131	6033219
			Connector M8, 4-pin	Cd-078	WTB8L-P2231	6033221
		NPN	Cable, 4-wire 2 m PVC	Cd-116	WTB8L-N1131	6033216
			Connector M8, 3-pin	Cd-045	WTB8L-N2131	6033218
			Connector M8, 4-pin	Cd-078	WTB8L-N2231	6033220

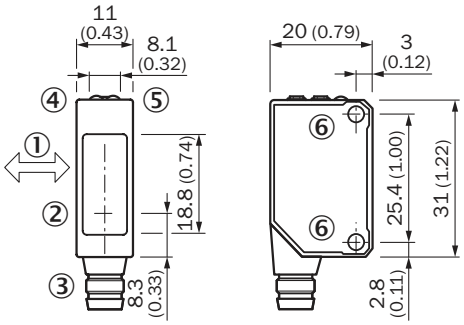
[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

F

Dimensional drawings

Dimensions in mm (inch)

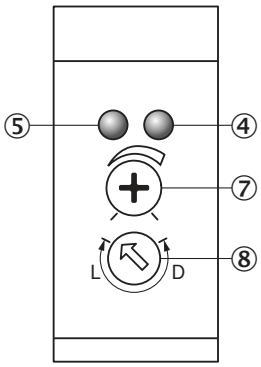
WTB8L



① Standard direction
② Center of optical axis
③ Connection
④ Orange LED indicator: switching output active
⑤ LED indicator green: stability indicator
⑥ Threaded mounting hole M3, max. tightening torque: 0.6 Nm

Adjustments

WTB8L

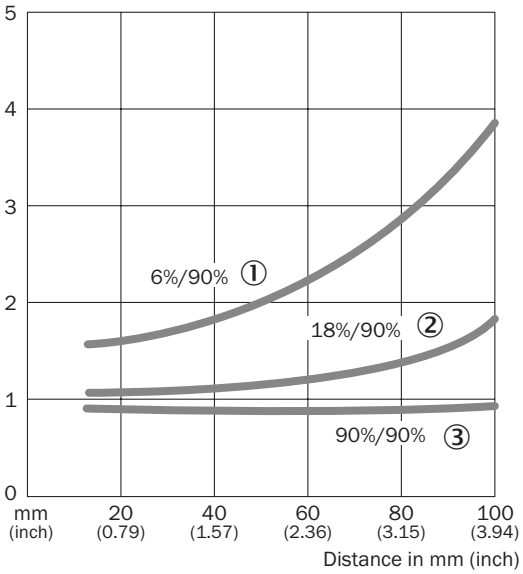


④ Orange LED indicator: switching output active
⑤ LED indicator green: stability indicator
⑦ Sensing range adjustment
⑧ Light/ dark rotary switch:
L = light switching, D = dark switching

Characteristic curves

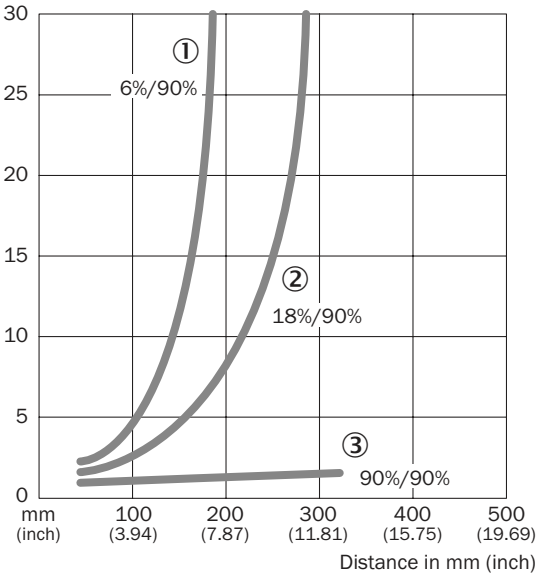
Black-white shift

WTB8L, 100 mm



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

WTB8L, 300 mm

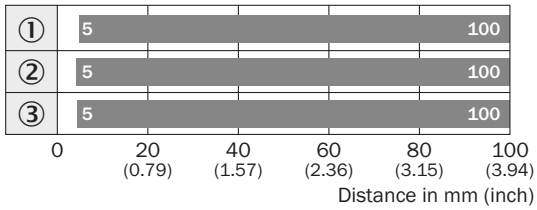


① Sensing range on black, 6 % remission
② Sensing range on gray, 18 % remission
③ Sensing range on white, 90 % remission

F

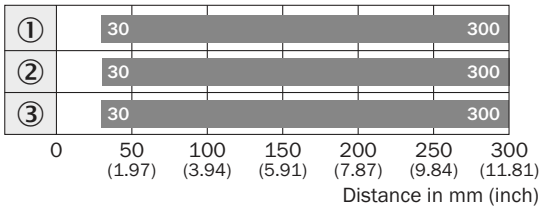
Bar diagrams

WTB8L, 100 mm



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

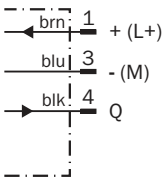
WTB8L, 300 mm



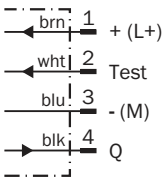
① Sensing range on black, 6 % remission
② Sensing range on gray, 18 % remission
③ Sensing range on white, 90 % remission

Connection diagram

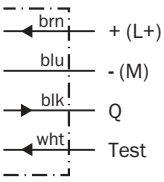
Cd-045



Cd-078



Cd-116



Recommended accessories

Mounting brackets/plates

Mounting brackets

Figure	Material	Description	Model name	Part no.
	Stainless steel	Mounting bracket for wall mounting	BEF-W100-A	5311520
	Steel, zinc coated	Mounting bracket for floor mounting	BEF-W100-B	5311521

Plug connectors and cables

Connecting cable (female connector-open), PVC

- **Cable material:** PVC
- **Connector material:** TPU

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	DOL-0803-G02M	6010785
			5 m, 3-wire	IP 67	DOL-0803-G05M	6022009
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	IP 67	DOL-0803-W02M	6008489
			5 m, 3-wire	IP 67	DOL-0803-W05M	6022010
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	IP 67	DOL-0804-G02M	6009870
			5 m, 4-wire	IP 67	DOL-0804-G05M	6009872
	Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	IP 67	DOL-0804-W02M	6009871
			5 m, 4-wire	IP 67	DOL-0804-W05M	6009873

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, 3-pin, angled	Pin penetration	PBT	IP 67	DOS-0803-W	7902078
	Female connector, M8, 4-pin, straight	Screw-type terminals	PBT	IP 67	DOS-0804-G	6009974
	Female connector, M8, 4-pin, angled	Pin penetration	PBT	IP 67	DOS-0804-W	6009975

Universal bar clamp systems

Figure	Material	Description	Model name	Part no.
	Zinc plated steel (sheet), Diecast zinc (clamp)	Plate N08 for universal clamp bracket	BEF-KHS-N08	2051607

F

Device protection (mechanical)

Protective housing/tubes

Figure	Material	Description	Model name	Part no.
	Stainless steel 1.4571	Safety bracket for floor mounting	BEF-SW-W4S	2051497

→ For additional accessories, please see page L-861

F