




W9 L: Laser photoelectric switches: small, light and reliable

	Photoelectric proximity switch BGS
	Photoelectric reflex switch
	Through-beam photoelectric switch




Objects as small as hairs are detected just as reliably as fast operations are processed. Interference from external light sources is ignored, and cell phones are not detected. Innovative Teach-in technology means a simple push of a button for operating the W9 Laser series. To ensure that the W9 Laser series can be used without problems in the whole world, we have complied with all regulations and fulfilled all standards, for example, CE and CDRH.

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The W9 Laser series provides a complete series with innovative laser technology in compact plastic housing. Because our devices are controlled using the most modern μ P technology, we can provide a laser series that has excellent performance data in addition to its small size and slight weight.

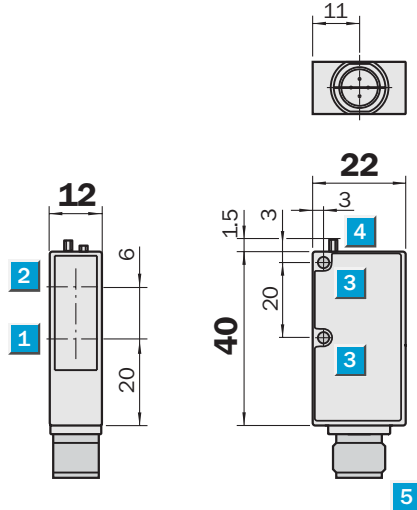
- Proximity switch with background suppression, which can be set very precisely,
- Photoelectric switch with simple Teach-in operation,
- Through-beam photoelectric switch with simple Teach-in operation,
- Temperature-compensated laser-protection electronics make constant performance of the laser possible in laser protection class 2.

Photoelectric proximity switch, WT9 Laser, BGS

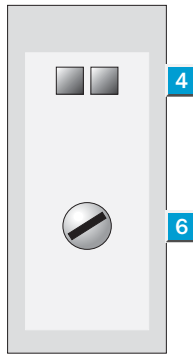

Scanning distance
 30 ... 150 mm
Photoelectric proximity switch

- Laser red light, class 2
- Background suppression adjustable
- Switching frequency 1000/s
- Compact housing made of ABS

Dimensional drawing



Adjustments possible

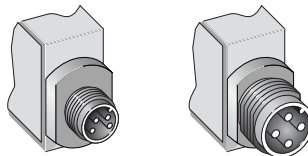


- 1 Centre of optical axis, sender
- 2 Centre of optical axis, receiver
- 3 Mounting hole \varnothing 3.2 mm
- 4 Power indicator green;
LED signal strength indicator yellow
- 5 Connector
- 6 Scanning distance adjustment



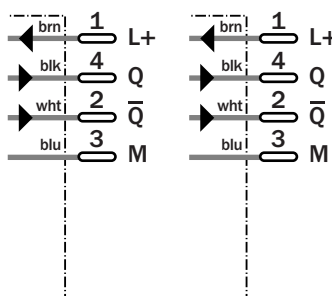
Connection type

WT9L-N330	WT9L-N430
WT9L-P330	WT9L-P430



M8, 4-pin

M12, 4-pin



Accessories

- Connector, M12, 4-pin
- Connector, M8, 4-pin
- Mounting systems

Technical specifications		WT9L-	N330	N430	P330	P430							
Operating distance	30 ... 150 mm ¹⁾												
Adjustment of operating distance	Potentiometer												
Light source, light type	Laser diode, Laser, red light ²⁾												
Laser protection class	2 (EN 60825-1/CDRH 1040.10)												
Light spot diameter	< 0.5 mm at 60 mm distance												
Supply voltage V _s	DC 10 ... 30 V ³⁾												
Ripple	< 5 V _{pp} ⁴⁾												
Power consumption	< 35 mA ⁵⁾												
Switching outputs	NPN antivalent												
	PNP antivalent												
Signal voltage PNP HIGH / LOW	V _s - < 2 V / approx. 0 V												
Signal voltage NPN HIGH / LOW	V _s / < 2 V												
Output current I _a max	< 100 mA												
Response time	< 0.6 ms ⁶⁾												
Switching frequency	1,000 Hz ⁷⁾												
Connection type	Connector, M8, 4-pin												
	Connector, M12, 4-pin												
VDE protection class	◇												
VDE protection class	□ ⁸⁾												
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression												
Enclosure rating	IP 67, IP 69K												
Ambient temperature operation	-10 °C ... +50 °C												
Ambient temperature storage	-25 °C ... +70 °C												
Weight	Ca. 20 g												
Housing material	ABS												

¹⁾ Object with 90 % remission (based on standard white to DIN 5033)

²⁾ Average service life 50,000 h

at T_a = +25 °C

³⁾ Limit values

⁴⁾ May not exceed or fall short of

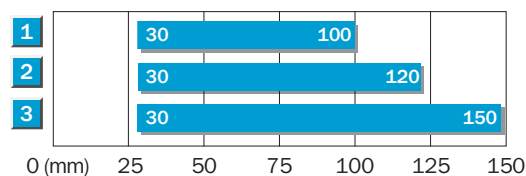
V_s tolerances

⁵⁾ Without load

⁶⁾ Signal transit time with resistive load

⁷⁾ With light/dark ratio 1:1

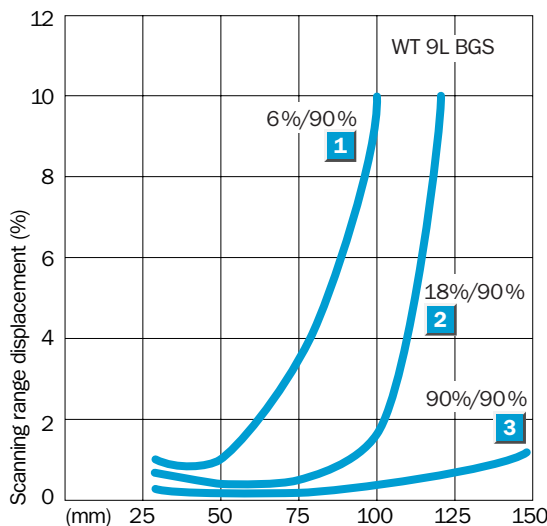
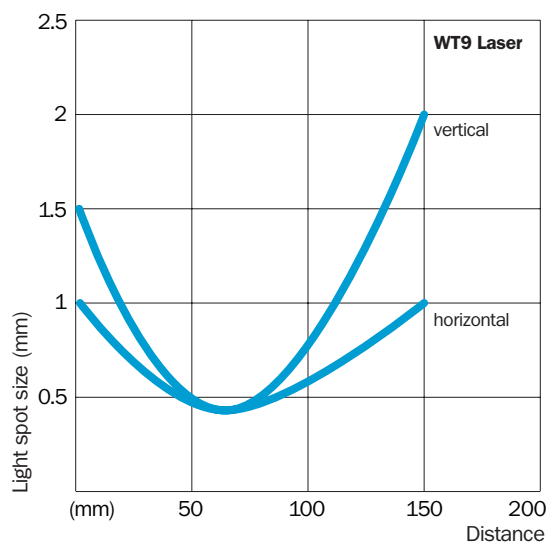
⁸⁾ Reference voltage 50 V DC



Operating distance

- 1 Scanning range on black, 6 % remission
- 2 Scanning range on grey, 18 % remission
- 3 Scanning range on white, 90 % remission


Light spot size



Ordering information

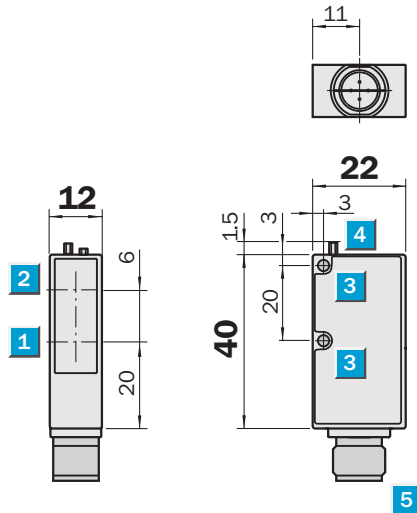
Type	Part Number
WT9L-N330	1 023 991
WT9L-N430	1 023 990
WT9L-P330	1 023 977
WT9L-P430	1 023 959

Photoelectric reflex switch, WL9 Laser

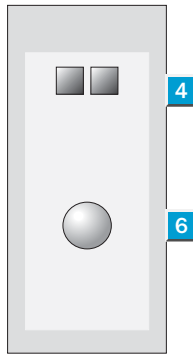

Scanning range
0.1 ... 12 m
 Photoelectric reflex switch

- Laser red light, class 2
- Teach-in
- Switching frequency 1000/s
- Polarising filter
- Compact housing made of ABS

Dimensional drawing



Adjustments possible

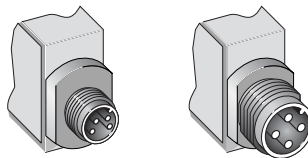


- 1 Centre of optical axis, sender
- 2 Centre of optical axis, receiver
- 3 Mounting hole \varnothing 3.2 mm
- 4 Power indicator green;
LED signal strength indicator yellow
- 5 Connector
- 6 Teach-in button



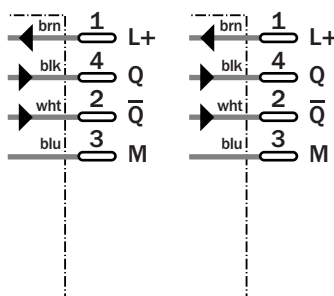
Connection type

WL9L-N330	WL9L-N430
WL9L-P330	WL9L-P430



M8, 4-pin

M12, 4-pin



Accessories

Connector, M12, 4-pin

Connector, M8, 4-pin

Mounting systems

Reflectors

Technical specifications		WL9L-	N330	N430	P330	P430						
Scanning range typ. max.	0.1 ... 12 m											
Scanning range, recommended	0.1 ... 8 m											
Relating to	Reflector PL80A											
Light source, light type	Laser diode, Laser, red light ¹⁾											
Laser protection class	2 (EN 60825-1/CDRH 1040.10)											
Light spot diameter	< 1 mm at 500 mm distance											
Polarisation filter	✓											
Supply voltage V_s	DC 10 ... 30 V ²⁾											
Ripple	< 5 V _{pp} ³⁾											
Power consumption	< 35 mA ⁴⁾											
Switching outputs	NPN antivalent											
	PNP antivalent											
Signal voltage PNP HIGH / LOW	$V_s - < 2 V$ / approx. 0 V											
Signal voltage NPN HIGH / LOW	$V_s / < 2 V$											
Output current I_a max	< 100 mA											
Response time	< 0.6 ms ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Connection type	Connector, M8, 4-pin											
	Connector, M12, 4-pin											
VDE protection class	◇											
VDE protection class	□ ⁷⁾											
Circuit protection	V_s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression											
Enclosure rating	IP 67, IP 69K											
Ambient temperature operation	-10 °C ... +50 °C											
Ambient temperature storage	-25 °C ... +70 °C											
Weight	Ca. 20 g											
Housing material	ABS											

¹⁾ Average service life 50,000 h at $T_a = +25 °C$

²⁾ Limit values
³⁾ May not exceed or fall short of

V_s tolerances
⁴⁾ Without load

⁵⁾ Signal transit time with resistive load
⁶⁾ With light/dark ratio 1:1
⁷⁾ Reference voltage 50 V DC

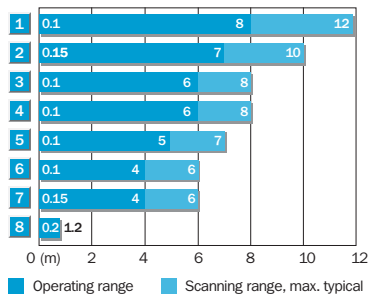
Teach-in function standard

- Align the photoelectric switch with the reflector. LED yellow/green = on.
- Press Teach-in button > 2 s. LED green = off/on. Teach-in is initiated.
LED yellow/green = blinking.
- The signal is stored permanently after you release the button.
The switching threshold is set to standard sensitivity.

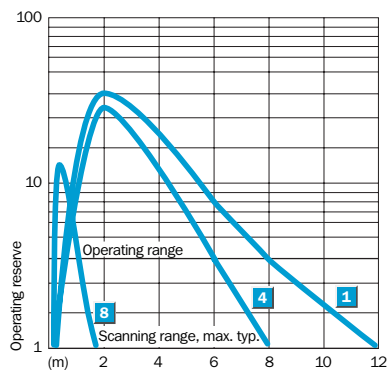
Precise setting:

- Align the photoelectric switch with the reflector. LED yellow/green = on.
- Press Teach-in button > 5 s. LED green = off/on.
Teach-in is initiated. LED yellow/green = blinking.
- The signal is stored permanently after you release the button.
The switching threshold is set to a low degree of sensitivity (detection of transparent objects is possible).

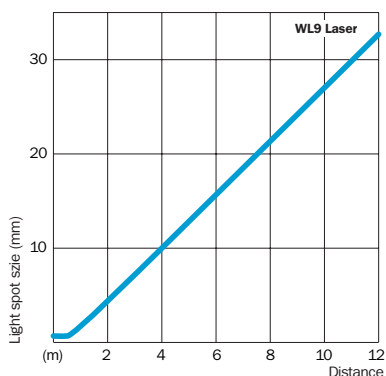
Scanning range and operating reserve



Reflector type	Operating range	
1	PL80A	0.1 – 8.0 m
2	PL250F	0.15 – 7.0 m
3	PL50A	0.1 – 6.0 m
4	PL40A	0.1 – 6.0 m
5	PL30A	0.1 – 5.0 m
6	PL20A	0.1 – 4.0 m
7	PL20F	0.15 – 4.0 m
8	Reflective tape	0.1 – 1.2 m



Light spot size



Ordering information

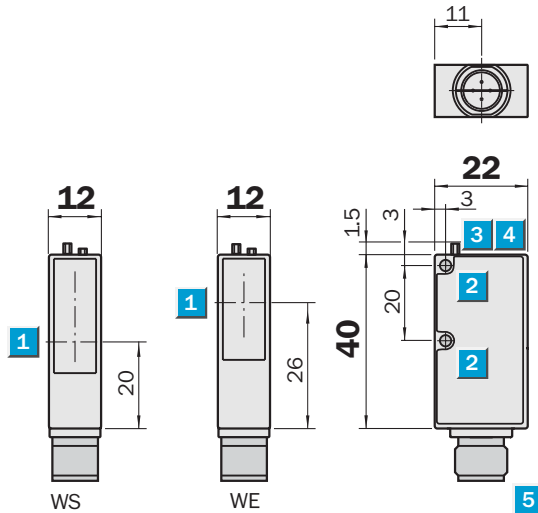
Type	Part Number
WL9L-N330	1 023 989
WL9L-N430	1 023 988
WL9L-P330	1 023 976
WL9L-P430	1 023 958

Scanning range
0 ... 50 m

Through-beam photoelectric switch

- Laser red light, class 2
- Teach-in
- Switching frequency 1000/s
- Compact housing made of ABS

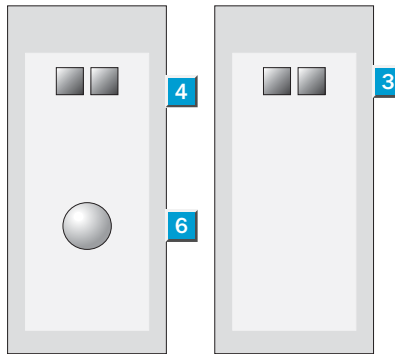
Dimensional drawing



Adjustments possible

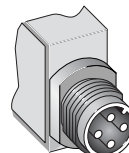
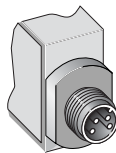
WS/WE9L-N330	WS/WE9L-P330
WS/WE9L-N430	WS/WE9L-P430

- 1 Centre of optical axis
- 2 Mounting hole \varnothing 3.2 mm
- 3 Power indicator green, WS in operation
- 4 LED signal strength indicator yellow
- 5 Connector
- 6 Teach-in button



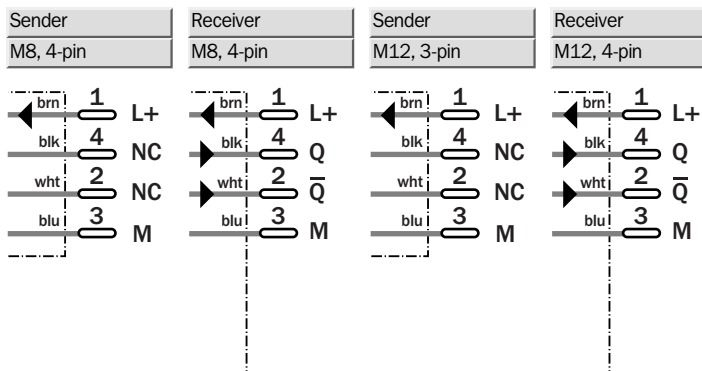
Connection type

WS/WE9L-N330	WS/WE9L-N430
WS/WE9L-P330	WS/WE9L-P430



Accessories

- Connector, M12, 4-pin
- Connector, M8, 4-pin
- Mounting systems



Technical specifications		WS/WE9L-	N330	N430	P330	P430						
Scanning range, recommended	0 ... 50 m											
Light source, light type	Laser diode, Laser, red light ¹⁾											
Laser protection class	2 (EN 60825-1/CDRH 1040.10)											
Light spot diameter	< 1 mm at 500 mm distance											
Supply voltage V_s	DC 10 ... 30 V ²⁾											
Ripple	< 5 V _{pp} ³⁾											
Power consumption, sender	< 35 mA ⁴⁾											
Power consumption, receiver	< 25 mA ⁴⁾											
Switching outputs	NPN antivalent											
	PNP antivalent											
Signal voltage PNP HIGH / LOW	$V_s - < 2 V$ / approx. 0 V											
Signal voltage NPN HIGH / LOW	$V_s / < 2 V$											
Output current I_a max	< 100 mA											
Response time	< 0.6 ms ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Connection type	Connector, M8, 4-pin											
	Cable with plug, M12, 4-pin											
	Connector, M12, 4-pin											
VDE protection class	◇											
VDE protection class	□ ⁷⁾											
Circuit protection	V_s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression											
Enclosure rating	IP 67, IP 69K											
Ambient temperature operation	-10 °C ... +50 °C											
Ambient temperature storage	-25 °C ... +70 °C											
Weight	Ca. 20 g											
Housing material	ABS											

¹⁾ Average service life 50,000 h at $T_a = +25 °C$

²⁾ Limit values
³⁾ May not exceed or fall short of

V_s tolerances
⁴⁾ Without load

⁵⁾ Signal transit time with resistive load
⁶⁾ With light/dark ratio 1:1
⁷⁾ Reference voltage 50 V DC

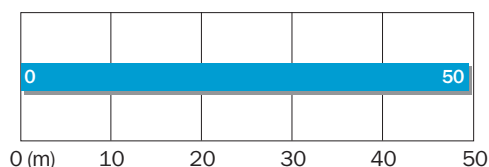
Teach-in function standard

- Align the photoelectric switch with the reflector. LED yellow/green = on.
- Press Teach-in button > 2 s. LED green = off/on. Teach-in is initiated.
LED yellow/green = blinking.
- The signal is stored permanently after you release the button.
The switching threshold is set to standard sensitivity.

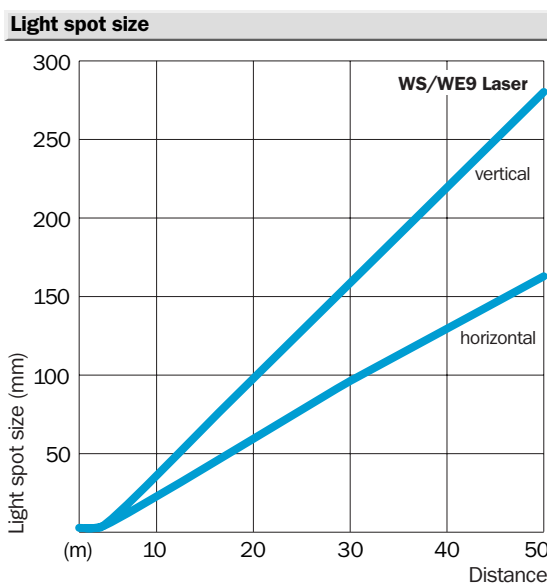
Precise setting:

- Align the photoelectric switch with the reflector. LED yellow/green = on.
- Press Teach-in button > 5 s. LED green = off/on.
Teach-in is initiated. LED yellow/green = blinking.
- The signal is stored permanently after you release the button.
The switching threshold is set to a low degree of sensitivity (detection of transparent objects is possible).

Scanning range



■ Operating range/Scanning range, max. typical



Ordering information

Type	Part Number
WS/WE9L-N330	1 023 995
WS/WE9L-N430	1 023 994
WS/WE9L-P330	1 023 993
WS/WE9L-P430	1 023 992