
Photoelectric proximity switch BGS


Photoelectric reflex switch


Through-beam photoelectric switch

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

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.

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 µP technology, we can provide a laser series that has excellent performance data in addition to its small size and slight weight.

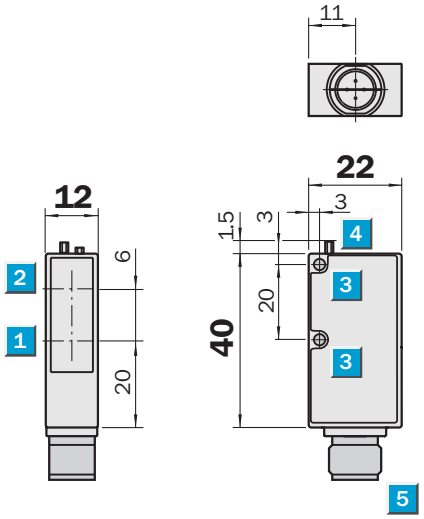
- Proximity switch with background suppression, which can be set very precisely,
- Photoelectric switch with simple Teach-in operation,
- Through-beam photoelectric switch with simple Teach-in operation,
- Temperature-compensated laser-protection electronics make constant performance of the laser possible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

Scanning distance
30 ... 150 mm

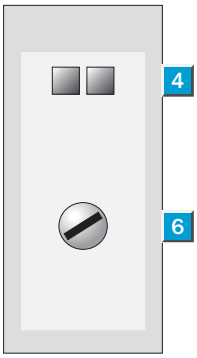
Photoelectric proximity switch

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

Dimensional drawing



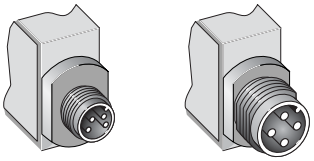
Adjustments possible



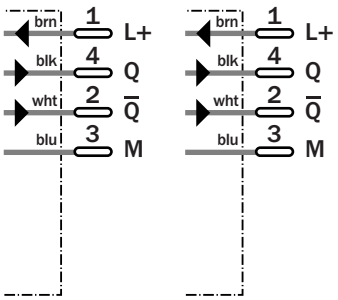
1 Centre of optical axis, sender
2 Centre of optical axis, receiver
3 Mounting hole Ø 3.2 mm
4 Power indicator green;
LED signal strength indicator yellow
5 Connector
6 Scanning distance adjustment

Connection type

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



M8, 4-pin	M12, 4-pin

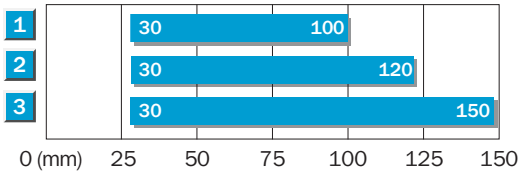


Accessories

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

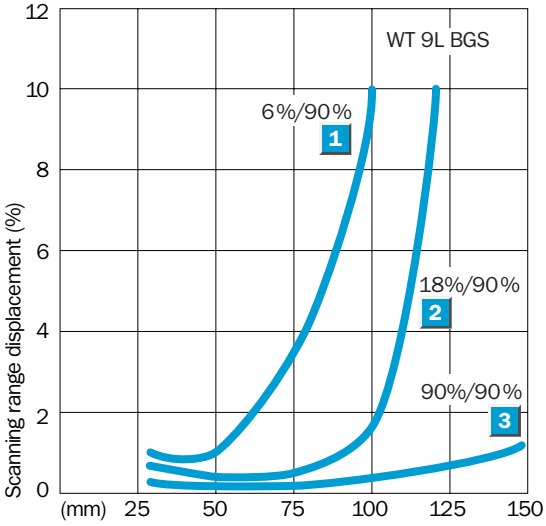
Technical specifications	WT9L-	N330	N430	P330	P430
Operating distance	30 ... 150 mm[1]	■	■	■	■
Adjustment of operating distance	Potentiometer	■	■	■	■
Light source, light type	Laser diode, Laser, red light[2]	■	■	■	■
Laser protection class	2 (EN 60825-1/CDRH 1040.10)	■	■	■	■
Light spot diameter	< 0.5 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
[3] 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

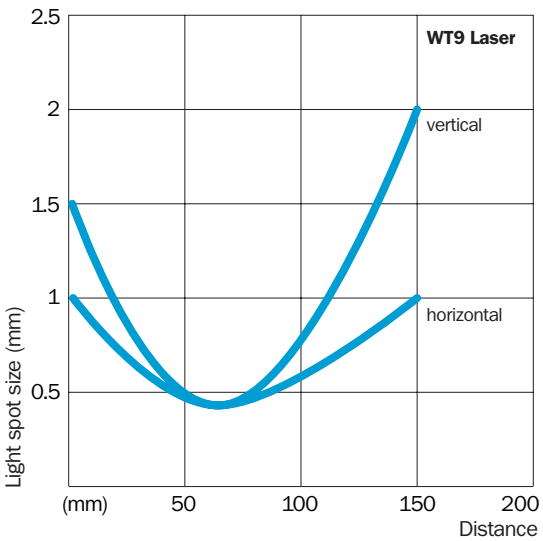


Operating distance

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

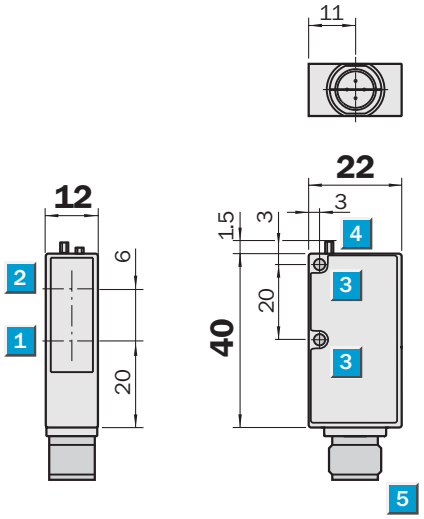
Type	Part Number
WT9L-N330	1 023 991
WT9L-N430	1 023 990
WT9L-P330	1 023 977
WT9L-P430	1 023 959

Scanning range 0.1 ... 12 m

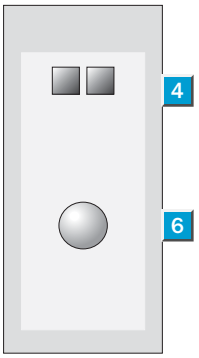
Photoelectric reflex switch

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

Dimensional drawing



Adjustments possible



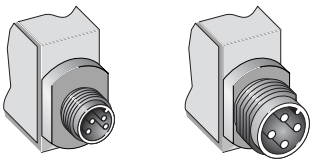
1 Centre of optical axis, sender
2 Centre of optical axis, receiver
3 Mounting hole Ø 3.2 mm
4 Power indicator green;
LED signal strength indicator yellow
5 Connector
6 Teach-in button

CE CDRH

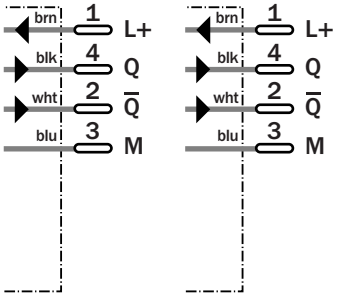
ECOLAB c UL us

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

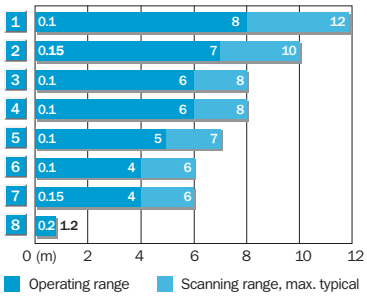
Teach-in function standard

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

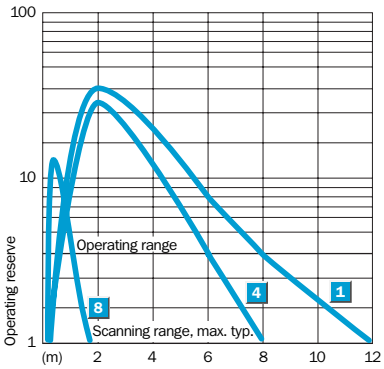
Precise setting:

1. Align the photoelectric switch with the reflector. LED yellow/green = on.
2. Press Teach-in button > 5 s. LED green = off/on.
   Teach-in is initiated. LED yellow/green = blinking.
3. 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).

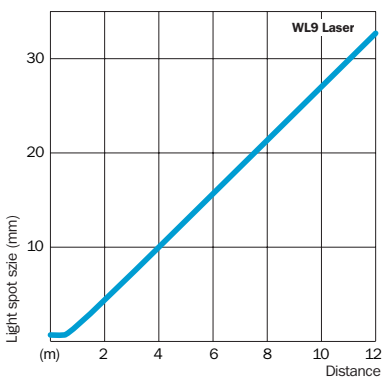
Scanning range and operating reserve



	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



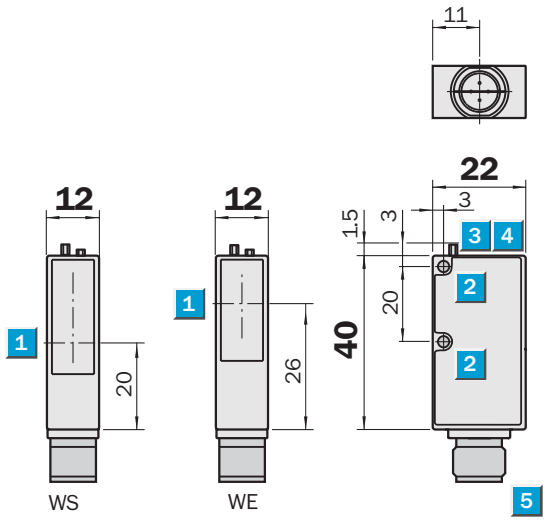
Ordering information	
Type	**Part Number**
WL9L-N330	1 023 989
WL9L-N430	1 023 988
WL9L-P330	1 023 976
WL9L-P430	1 023 958

Scanning range
0 ... 50 m

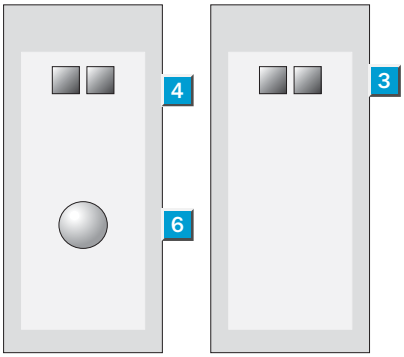
Through-beam photoelectric switch

- 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 Ø 3.2 mm
3 Power indicator green, WS in operation
4 LED signal strength indicator yellow
5 Connector
6 Teach-in button

CE CDRH

ECOLAB c UL us

Connection type

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

Sender M8, 4-pin	Receiver M8, 4-pin	Sender M12, 3-pin	Receiver M12, 4-pin
brn 1 L+	brn 1 L+	brn 1 L+	brn 1 L+
blk 4 NC	blk 4 Q	blk 4 NC	blk 4 Q
wht 2 NC	wht 2 $\overline{Q}$	wht 2 NC	wht 2 $\overline{Q}$
blu 3 M	blu 3 M	blu 3 M	blu 3 M

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

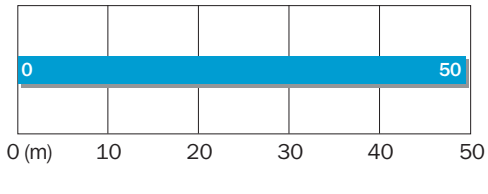
Teach-in function standard

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

Precise setting:

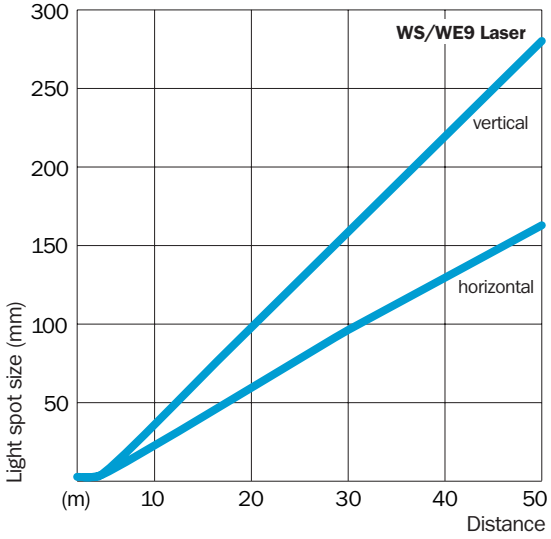
1. Align the photoelectric switch with the reflector. LED yellow/green = on.
2. Press Teach-in button > 5 s. LED green = off/on.
   Teach-in is initiated. LED yellow/green = blinking.
3. The signal is stored permanently after you release the button.
   The switching threshold is set to a low degree of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

Scanning range



Operating range/Scanning range, max. typical

Light spot size



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