W 11: Economic and Reliable

The essential requirements of a sensor in standard applications are economy and reliability. Series W11 fulfils these requirements.

W11 options:

- Photoelectric reflex switch WL11 with 7 m range,
- Photoelectric reflex switch WL11 "Glass detection" with maximum range 4 m,
- Photoelectric proximity switch with background suppression and maximum scanning distance 250 mm,
- Photoelectric proximity switch with foreground suppression and maximum scanning distance 100 mm,
- Energetic photoelectric proximity switch with maximum scanning distance 1000 mm.

All W11 sensors have visible red sender diodes as standard. This visible light spot allows the sensors to align with the object rapidly and reliably. The 4-pole M12 device plug or the 2 m cable are also included in the standard option, as well as the 800 Hz switching frequency or the short-circuit protected switching outputs. The WL11 UC photoelectric reflex switch probably offers todays most compact photoelectric switch with relay output.

The Series W11 sensors fulfil the test requirements of

ECOLAB®

ECOLAB certifies that material resistance tests with cleaning agents and disinfectants in common use in the food-processing sector, were successfully completed.

Thanks to their reliability W11 sensors are routinely installed in typical application areas, such as the packaging industry, food and drinks, and the electronics and textile industries.

▼ Reliable detection of transparent objects like e.g. bottles with WL11G photoelectric reflex switch.

▲ WL11 Easy monitoring of doors and gates with WL11 photoelectric reflex switch.

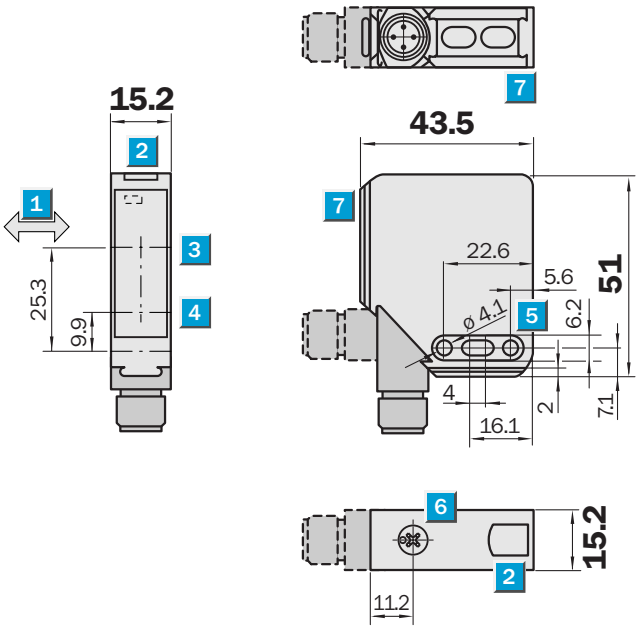
◀ WL11 as trigger reflex switch. In presence of available products a bar code scanner is activated.

Scanning distance 35 ... 100 mm

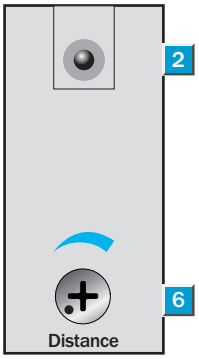
Photoelectric proximity switch

- Red light
- Insensitive to ambient light sources
- M12 plug rotatable by 90° or 2 m cable
- Adjustable foreground suppression
- ECOLAB material resistance tests

Dimensional drawing



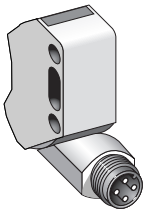
Adjustments possible



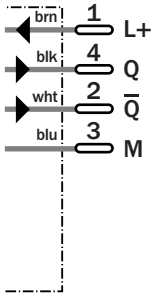
1 Standard direction of the material being scanned
2 LED signal strength indicator
3 Optical axis sender
4 Optical axis receiver
5 Mounting holes Ø 4.1 mm
6 Scanning distance adjuster
7 Dovetail

Connection type

WT11-P440



M12, 4-pin



See chapter Accessories

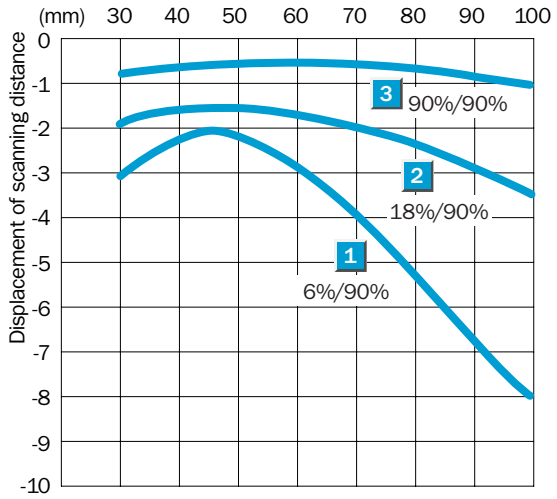
Connector, M12, 4-pin

Mounting systems

Technical specifications	WT11-	P440
Operating distance	35 ... 100 mm	
Adjustment of operating distance	Potentiometer	
Light source, light type	LED, Red light[1]	
Supply voltage V_S	10 ... 30 V DC[2]	
Ripple	≤ 5 V_{ss}[3]	
Power consumption	≤ 30 mA[4]	
Switching outputs	PNP antivalent	
Output current $I_a$max	< 100 mA	
Response time	≤ 625 µs[5]	
Switching frequency	800 Hz[6]	
Connection type	Connector, M12, 4-pin	
VDE protection class	⧈[7]	
Circuit protection	V_S connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression	
Enclosure rating	IP 65	
Ambient temperature operation	-20 °C ... +60 °C	
Ambient temperature storage	-20 °C ... +75 °C	
Housing material	ABS	

[1] Average service life 100,000 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

Scanning distance



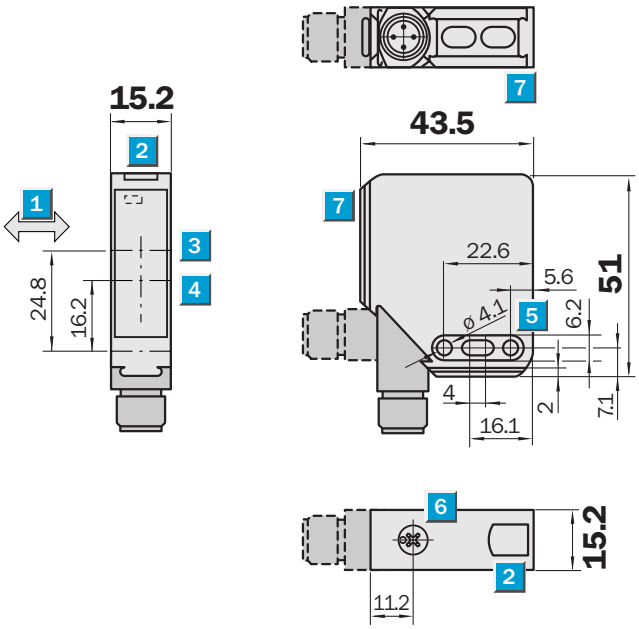
Order information	
Type	**Order No.**
WT11-P440	1 022 049

Scanning distance 20 ... 250 mm

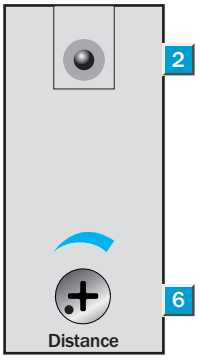
Photoelectric proximity switch

- Red light
- Insensitive to ambient light sources
- M12 plug rotatable by 90° or 2 m cable
- Adjustable background suppression
- ECOLAB material resistance tests

Dimensional drawing

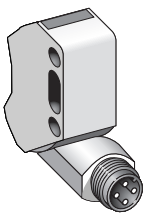
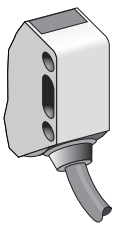
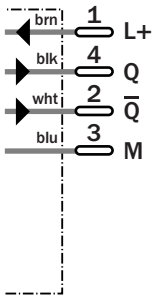
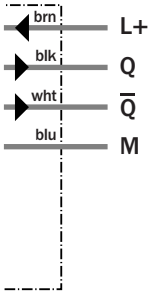


Adjustments possible



1 Standard direction of the material being scanned
2 LED signal strength indicator
3 Optical axis sender
4 Optical axis receiver
5 Mounting holes Ø 4.1 mm
6 Scanning distance adjuster
7 Dovetail

Connection type

WT11-N430 WT11-P430	WT11-N130 WT11-P130
	
M12, 4-pin	4 x 0.25 mm²
	

See chapter Accessories

Connector, M12, 4-pin

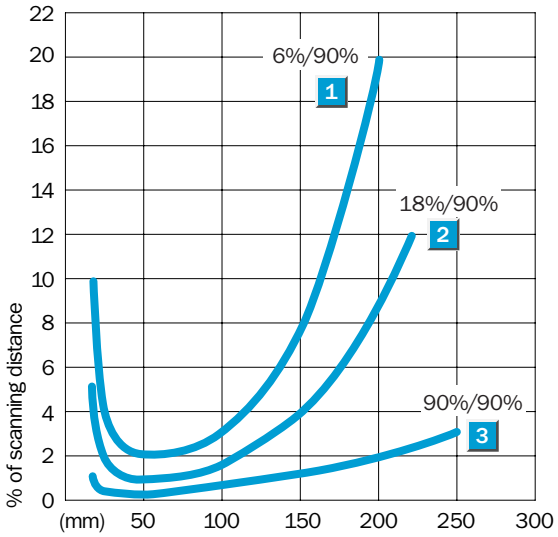
Mounting systems

Technical specifications	WT11-	N130	N430	P130	P430
Operating distance	20 ... 250 mm[1]	■	■	■	■
Adjustment of operating distance	Potentiometer	■	■	■	■
Light source, light type	LED, Red light[2]	■	■	■	■
Light spot diameter	Approx. 10 mm at 200 mm distance	■	■	■	■
Supply voltage V_S	10 ... 30 V DC[3]	■	■	■	■
Ripple	≤ 5 V_{ss}[4]	■	■	■	■
Power consumption	≤ 40 mA[5]	■	■		
	≤ 30 mA[5]			■	■
Switching outputs	NPN antivalent	■	■		
	PNP antivalent			■	■
Output current $I_a$max	≤ 100 mA	■	■	■	■
Response time	≤ 625 µs[6]	■	■	■	■
Switching frequency	800 Hz[7]	■	■	■	■
Connection type	Cable, PVC, 2 m[8]	■		■	
	Connector, M12, 4-pin		■		■
VDE protection class	⧈[9]	■	■	■	■
Circuit protection	V_S connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression	■	■	■	■
Enclosure rating	IP 65	■	■	■	■
Ambient temperature operation	-20 °C ... +60 °C	■	■	■	■
Ambient temperature storage	-20 °C ... +75 °C	■	■	■	■
Weight	Approx. 200 g	■		■	
	Approx. 120 g		■		■
Housing material	ABS	■	■	■	■

[1] Object with 90 % remission (based on standard white to DIN 5033)
[2] Average service life 100,000 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] do not bend below 0 °C
[9] Reference voltage 50 V DC

Scanning distance

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



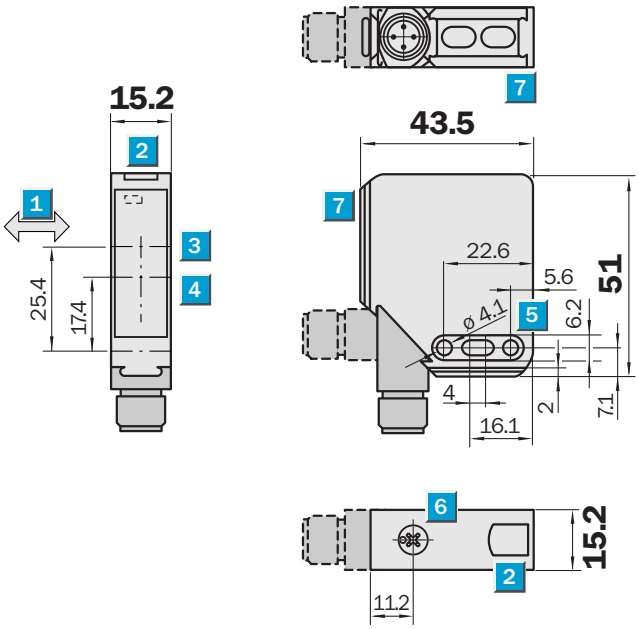
Order information	
Type	**Order No.**
WT11-N130	1 018 684
WT11-N430	1 018 685
WT11-P130	1 018 683
WT11-P430	1 018 511

Scanning distance
10 ... 1,000 mm

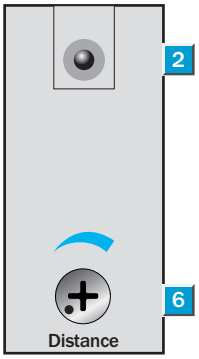
Photoelectric proximity switch

- Red light
- Insensitive to ambient light sources
- M12 plug rotatable by 90° or 2 m cable
- Energetic proximity switch, adjustable
- ECOLAB material resistance tests

Dimensional drawing

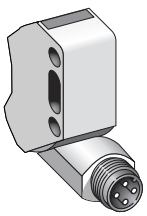
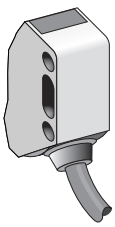
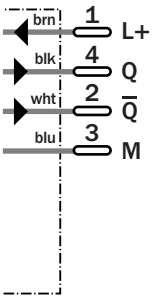
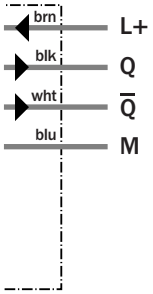


Adjustments possible



1 Standard direction of the material being scanned
2 LED signal strength indicator
3 Optical axis sender
4 Optical axis receiver
5 Mounting holes Ø 4.1 mm
6 Scanning distance adjuster
7 Dovetail

Connection type

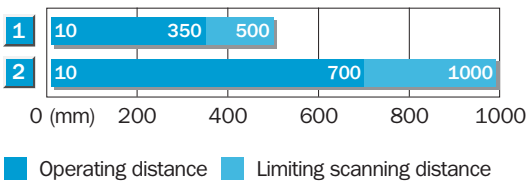
WT11-N450 WT11-P450	WT11-N150 WT11-P150
	
M12, 4-pin	4 x 0.25 mm²
	

See chapter Accessories
Connector, M12, 4-pin
Mounting systems

Technical specifications	WT11-	N150	N450	P150	P450
Scanning distance typ. max.	10 ... 1,000 mm[1]	■	■	■	■
Operating distance	80 ... 700 mm[1]	■	■	■	■
Adjustment of operating distance	Potentiometer	■	■	■	■
Light source, light type	LED, Red light[2]	■	■	■	■
Light spot diameter	Approx. 30 mm at 600 mm distance	■	■	■	■
Supply voltage V_S	10 ... 30 V DC[3]	■	■	■	■
Ripple	≤ 5 V_{SS}[4]	■	■	■	■
Power consumption	≤ 40 mA[5]	■	■		
	≤ 30 mA[5]			■	■
Switching outputs	NPN antivalent	■	■		
	PNP antivalent			■	■
Output current $I_a$max	≤ 100 mA	■	■	■	■
Response time	≤ 625 µs[6]	■	■	■	■
Switching frequency	800 Hz[7]	■	■	■	■
Connection type	Cable, PVC, 2 m[8]	■		■	
	Connector, M12, 4-pin		■		■
VDE protection class	⧈[9]	■	■	■	■
Circuit protection	V_S connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression	■	■	■	■
Enclosure rating	IP 65	■	■	■	■
Ambient temperature operation	-20 °C ... +60 °C	■	■	■	■
Ambient temperature storage	-20 °C ... +75 °C	■	■	■	■
Weight	Approx. 200 g	■		■	
	Approx. 120 g		■		■
Housing material	ABS	■	■	■	■

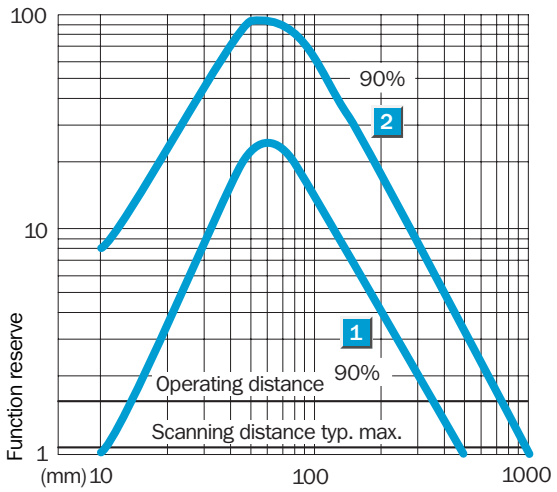
[1] Object with 90 % remission (based on standard white to DIN 5033)
[2] Average service life 100,000 h
at T_a = +25 °C
[3] Limit values
[4] may not exceed or fall short of V_S tolerances
[5] without load
[6] Signal transit time with resistive load
[7] with light/dark ratio 1:1
[8] do not bend below 0 °C
[9] Reference voltage 50 V DC

Scanning distance



Operating distance Limiting scanning distance

1 Scanning distance on grey, 18 % remission
2 Scanning distance on white, 90 % remission



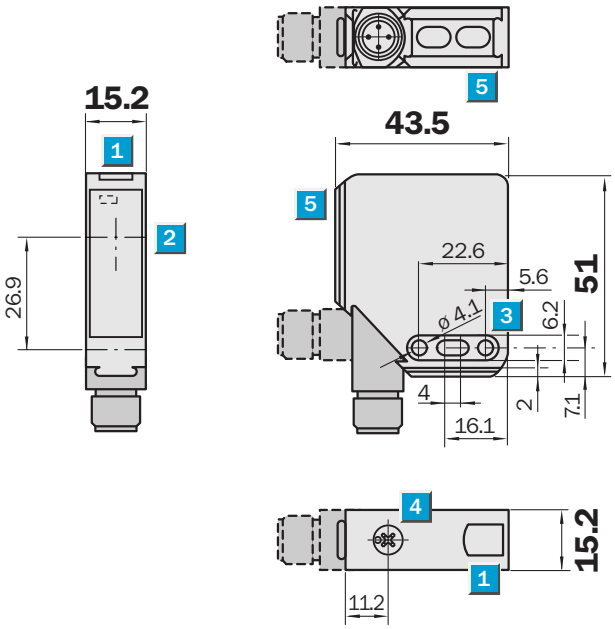
Order information	
Type	**Order No.**
WT11-N150	1 018 688
WT11-N450	1 018 689
WT11-P150	1 018 686
WT11-P450	1 018 687

Scanning range
0 ... 7 m

Photoelectric reflex switch

- Red light
- Insensitive to ambient light sources
- M12 plug rotatable by 90° or 2 m cable
- Adjustable sensitivity
- ECOLAB material resistance tests

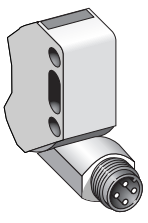
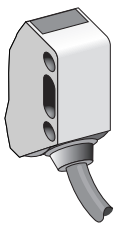
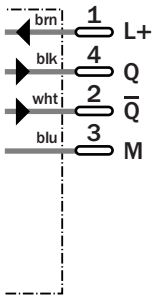
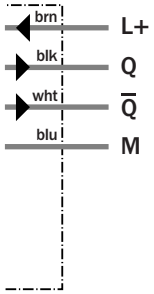
Dimensional drawing



Adjustments possible

1 LED signal strength indicator
2 Middle of optical axis
3 Mountig holes Ø 4.1 mm
4 Sensitivity control
5 Dovetail

Connection type

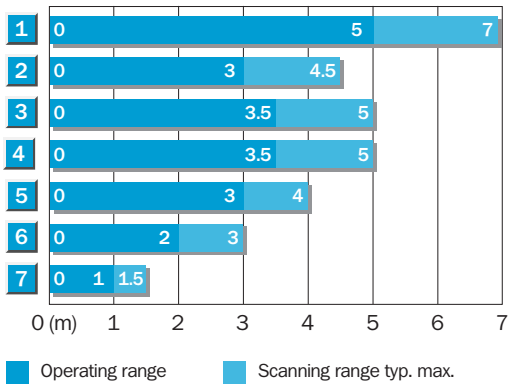
WL11-N430 WL11-P430	WL11-N130 WL11-P130
	
M12, 4-pin	4 x 0.25 mm²
	

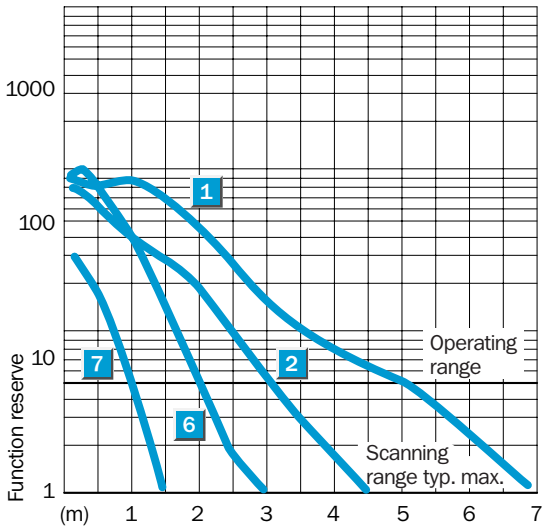
See chapter Accessories
Mounting systems
Reflectors

Technical specifications	WL11-	N130	N430	P130	P430
Scanning range typ. max.	0 ... 7 m	■	■	■	■
Scanning range, recommended	0 ... 5 m	■	■	■	■
Relating to	Reflector PL80A	■	■	■	■
Sensitivity adjustment	Potentiometer	■	■	■	■
Light source, light type	LED, Red light[1]	■	■	■	■
Light spot diameter	Approx. 80 mm at 3 m distance	■	■	■	■
Supply voltage V_S	10 ... 30 V DC[2]	■	■	■	■
Ripple	≤ 5 V_{ss}[3]	■	■	■	■
Power consumption	≤ 40 mA[4]	■	■		
	≤ 30 mA[4]			■	■
Switching outputs	NPN antivalent	■	■		
	PNP antivalent			■	■
Output current $I_a$max	≤ 100 mA	■	■	■	■
Response time	≤ 625 µs[5]	■	■	■	■
Switching frequency	800 Hz[6]	■	■	■	■
Connection type	Cable, PVC, 2 m[7]	■		■	
	Connector, M12, 4-pin		■		■
VDE protection class	⧈[8]	■	■	■	■
Circuit protection	V_S connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression	■	■	■	■
Enclosure rating	IP 65	■	■	■	■
Ambient temperature operation	-20 °C ... +60 °C	■	■	■	■
Ambient temperature storage	-20 °C ... +75 °C	■	■	■	■
Weight	Approx. 200 g	■		■	
	Approx. 120 g		■		■
Housing material	ABS	■	■	■	■

[1] Average service life 100,000 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] do not bend below 0 °C
[8] Reference voltage 50 V DC

Scanning range and operating reserve





	Reflector type	Operating range
1	PL 80 A	0 – 5.0 m
2	C 110	0 – 3.0 m
3	PL 50 A	0 – 3.5 m
4	PL 40 A	0 – 3.5 m
5	PL 30 A	0 – 3.0 m
6	PL 20 A	0 – 2.0 m
7	Reflective tape	0 – 1.0 m

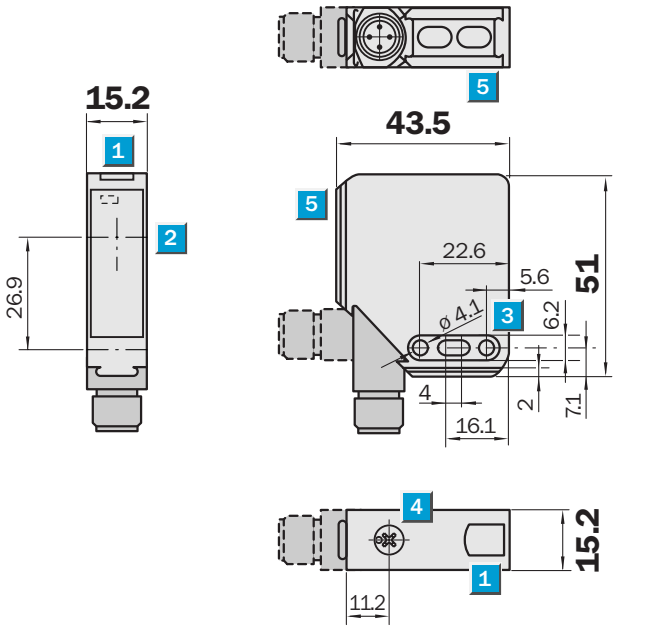
Order information	
Type	**Order No.**
WL11-N130	1 018 681
WL11-N430	1 018 682
WL11-P130	1 018 680
WL11-P430	1 018 510

Scanning range
0 ... 4 m

Photoelectric reflex switch

- Red light
- Insensitive to ambient light sources
- Detection of glass and transparent films
- Adjustable sensitivity
- ECOLAB material resistance tests

Dimensional drawing

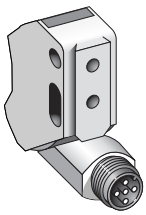


Adjustments possible

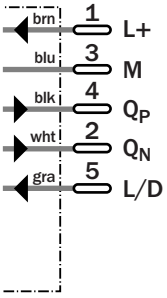
1 LED signal strength indicator
2 Middle of optical axis
3 Mountig holes Ø 4.1 mm
4 Sensitivity control
5 Dovetail

Connection type

WL11-B560



M12, 5-pin



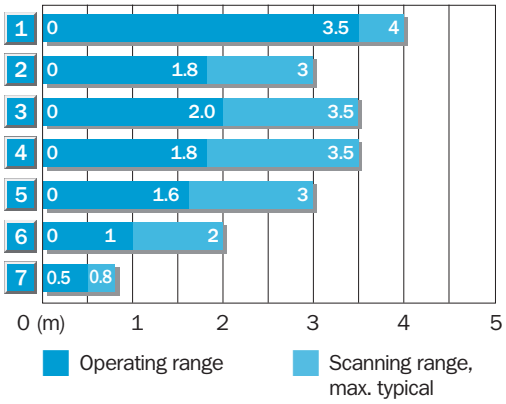
See chapter Accessories

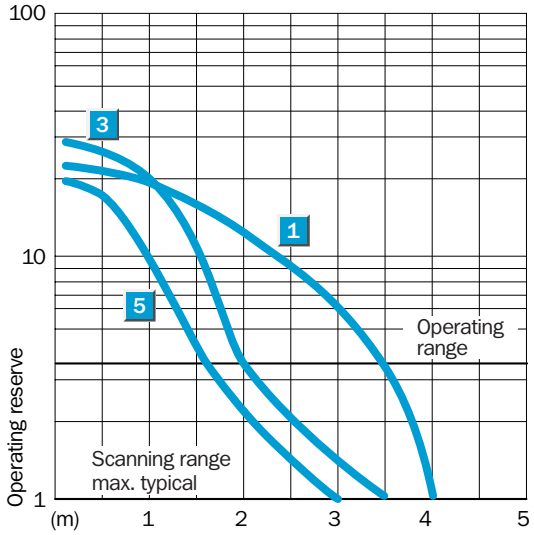
Connector, M12, 5-pin
Mounting systems
Reflectors

Technical specifications	WL11-	B560
Scanning range typ. max.	0 ... 4 m	
Scanning range, recommended	0 ... 3.5 m	
Relating to	Reflector PL80A	
Sensitivity adjustment	Potentiometer	
Light source, light type	LED, Red light[1]	
Light spot diameter	30 mm at 1.5 m distance	
Supply voltage V_S	10 ... 30 V DC[2]	
Ripple	≤ 5 V_{ss}[3]	
Power consumption	≤ 30 mA[4]	
Switching outputs	Transistor outputs Q_p and Q_n	
Switching mode	Light-/dark-switching, switchable	
Output current $I_a$max	100 mA	
Response time	< 625 µs[5]	
Switching frequency	800 Hz[6]	
Connection type	Connector, M12, 5-pin	
VDE protection class	⊡	
Circuit protection	V_S connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression	
Enclosure rating	IP 65	
Ambient temperature operation	-20 °C ... +60 °C	
Ambient temperature storage	-20 °C ... +75 °C	
Housing material	ABS	

[1] Average service life 100,000 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

Scanning range and operating reserve





Reflector type		Operating range
1	PL80A	0 ... 3.5 m
2	C110	0 ... 1.8 m
3	PL50A	0 ... 2.0 m
4	PL40A	0 ... 1.8 m
5	PL30A	0 ... 1.6 m
6	PL20A	0 ... 1.0 m
7	Reflective tape	0 ... 0.5 m

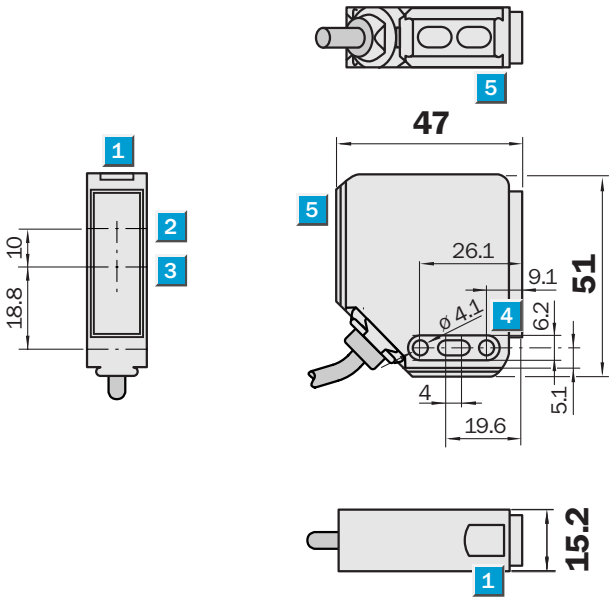
Order information	
Type	**Order No.**
WL11-B560	1 019 704

Scanning range
0.1 ... 7 m

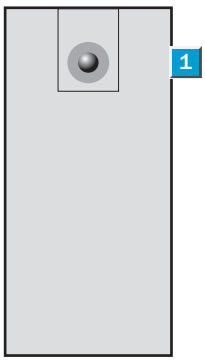
Photoelectric reflex switch

- Red light
- Polarisation filter
  allowing detection of objects
  with reflective surfaces
- CE-emitted interference
  EN 61000-6-3 (“Residential and
  Industrial Areas”)
- ECOLAB material resistance tests

Dimensional drawing



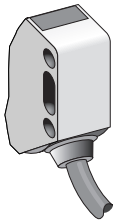
Adjustments possible



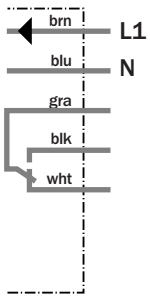
1 LED signal strength indicator
2 Middle of optic axis, sender
3 Middle of optic axis, receiver
4 Mountig holes Ø 4.1 mm
5 Dovetail

Connection type

WL11-R130



5 x 0.25 mm²

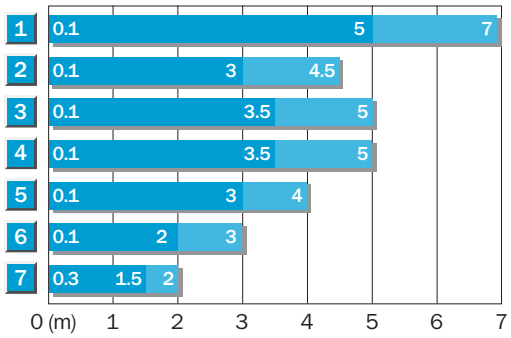


See chapter Accessories
Mounting systems
Reflectors

Technical specifications	WL11-	R130
Scanning range typ. max.	0.1 ... 7 m	
Scanning range, recommended	0.1 ... 5 m	
Relating to	Reflector PL80A	
Light source, light type	LED, Red light[1]	
Light spot diameter	Approx. 80 mm at 3 m distance	
Angle of dispersion	2 °	
Polarisation filter	✓	
Supply voltage V_S	24 ... 240 V DC / 24 ... 240 V AC[2]	
Switching outputs	Relay 1 x c/o, electrically isolated	
Max. switching voltage	AC 250 V AC / 120 V DC	
Switching current max.	3 A/250 V AC; 3A/30 V DC[3]	
Max. switching power	750 VA AC / 30 V DC	
Response time	≤ 25 ms[4]	
Switching frequency	20 Hz[5]	
Connection type	Cable, 2 m[6]	
VDE protection class	⧈[7]	
Circuit protection	V_S connections reverse-polarity protected / Interference suppression	
Enclosure rating	IP 65	
Ambient temperature operation	-25 °C ... +55 °C	
Ambient temperature storage	-40 °C ... +70 °C	
Weight	Approx. 200 g	
Housing material	ABS, PMMA	

[1] Average service life 100,000 h at T_a = +25 °C
[2] Tolerance: +10 %, -20 %
[3] Usage category to EN 60947-1, AC-15, DC-13
[4] Signal transit time with resistive load
[5] with light/dark ratio 1:1
[6] do not bend below 0 °C
[7] Reference voltage 50 V DC

Scanning range and operating reserve



	Reflector type	Operating range
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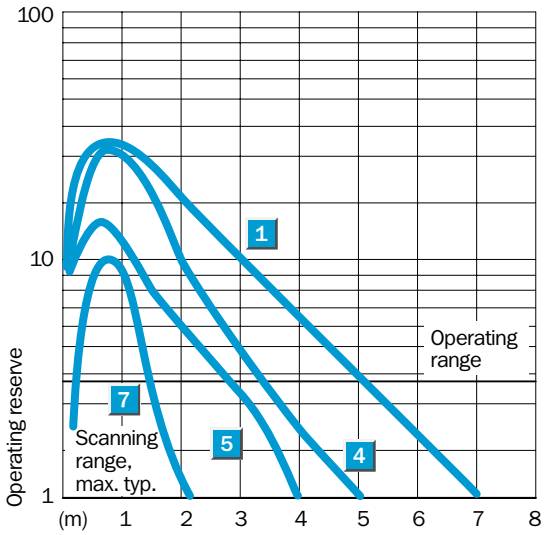
4	PL 40 A	0.1 – 3.5 m
5	PL 30 A	0.1 – 3.0 m
6	PL 20 A	0.1 – 2.0 m
7	Reflective tape	0.3 – 1.5 m



Order information	
Type	**Order No.**
WL11-R130	1 026 232