








W 12-2: Fantastic performance – years of experience

	Photoelectric proximity switches, FGS
	Photoelectric proximity switches, BGS
	Photoelectric proximity switches, energetic



insensitivity to ambient light and mutual interference when units are installed close together, are all device standards.

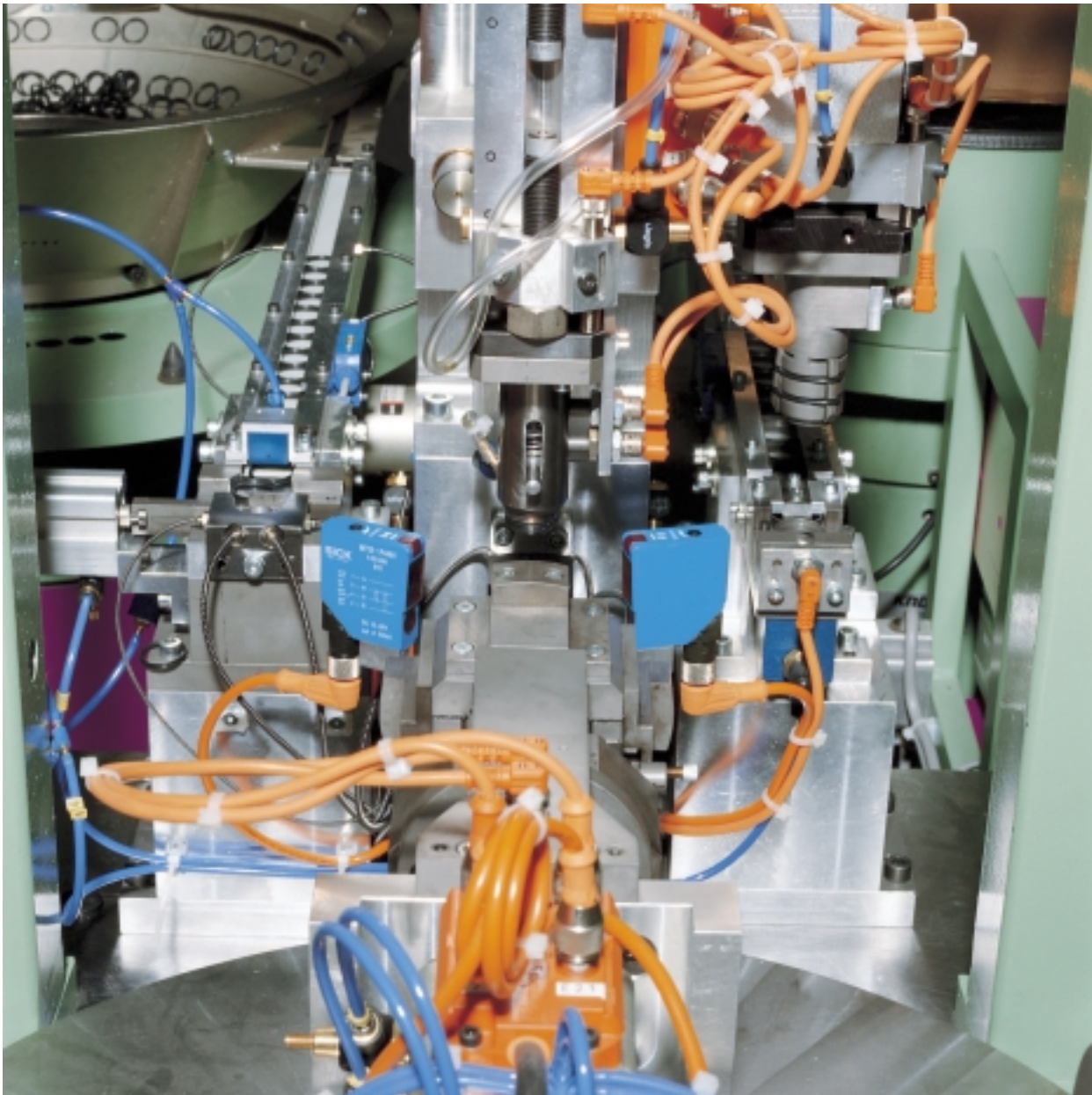
The WL 12 G "glass photoelectric switch" designed for filling systems used in the beverage industry, represents more than just a technical advance. This intelligent sensor needs to be configured just once using the teach-in method and then it is able to adapt its switching threshold to increasing contamination continuously and fully automatically during operation. As a result, transparent objects, e.g. transparent films or filled PET mineral water bottles, can now be detected much more reliably. Continual cleaning and realignment are, therefore, a thing of the past. Monitoring the flow of bottles, and bottle counting, has been made possible while simultaneously minimising maintenance requirements.

	Photoelectric reflex switches
	Through-beam photoelectric switches
	Photoelectric switches with fibre-optic cable
Proximity mode	
	Photoelectric switches with fibre-optic cable
Through-beam mode	

The W 12-2 series of photoelectric switches is in use all over the world. The key advantage for the user is the wealth of experience gained from the previous W 12 series. The W 12-2 series is backed by years of know-how gained from many thousands of applications.

A sturdy metal housing protects the WT 12-2 photoelectric proximity switch, the WL 12-2 photoelectric reflex switch and the WS/WE 12-2 through-beam photoelectric switch. Rotatable plugs provide flexibility of location and cable installation. Features such as foreground and background suppression, ASI interface, fibre-optic cable versions,

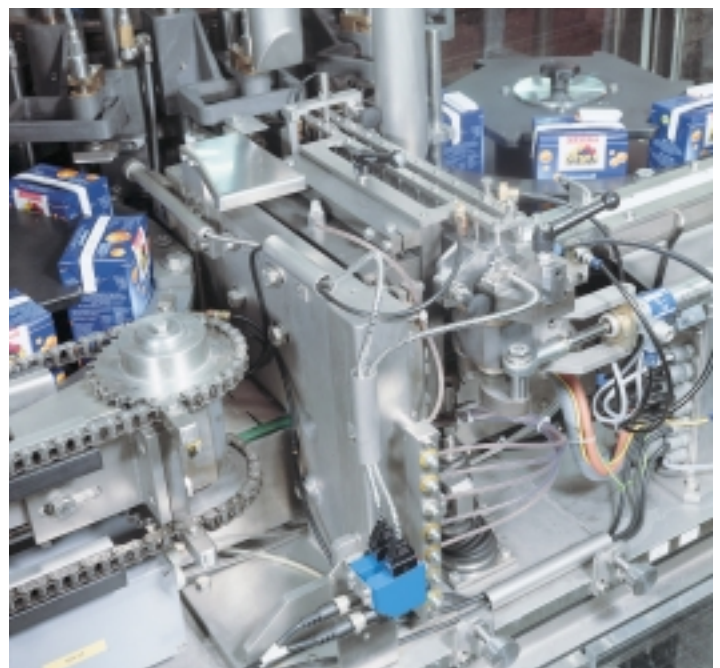
The Teflon-coated version is an added bonus for use in, for example, the beverage industry.



◀ WT 12-2 photoelectric proximity switches used to ensure that sealing rings are supplied smoothly in a fully automatic system for assembling low-power motors.



▲ Five-pack instead of six-pack: WT 12-2 photoelectric proximity switches with background suppression detecting gaps in the flow of bottles in an automatic loader.



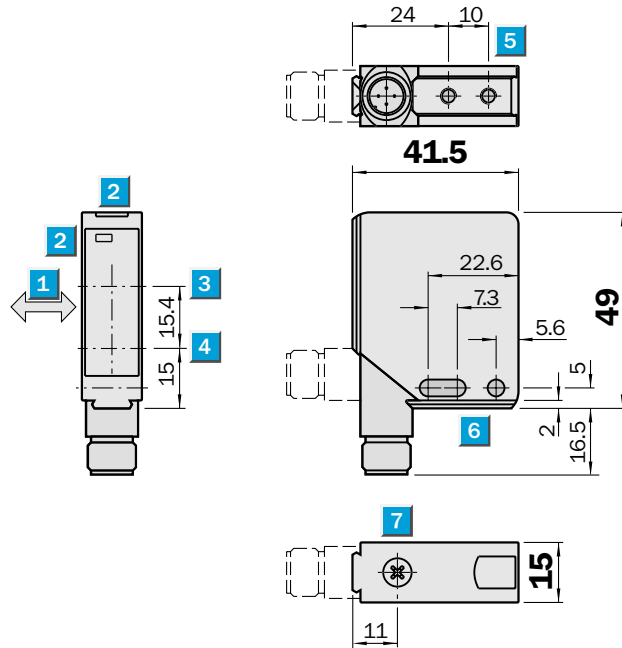
▲ Direct object detection using fibre-optic cables: WLL 12 photoelectric reflex switches signalling the presence of the spout in each drink container.

Scanning distance
35...100 mm

Photoelectric proximity switches

- Red light
- Insensitive to ambient light sources
- M 12 plug rotatable by 90°, or 2 m cable
- Adjustable foreground suppression and scanning distance

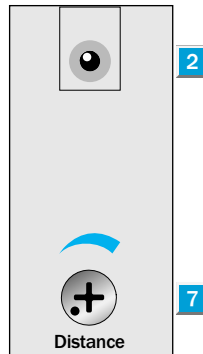
Dimensional drawing



Adjustments possible

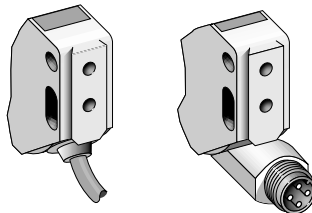
WT 12-2P 440	WT 12-2N 440
WT 12-2P 140	WT 12-2N 140

- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Receiver's optical axis
- 4 Transmitter's optical axis
- 5 M 4 threaded mounting hole – 4 mm deep
- 6 Mounting holes \varnothing 4.2 mm
- 7 Scanning distance adjustment

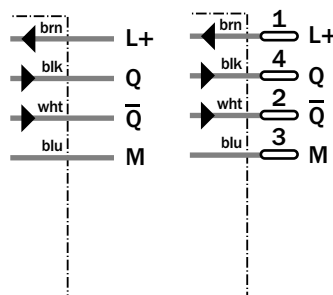


Connection types

WT 12-2P 140	WT 12-2P 440
WT 12-2N 140	WT 12-2N 440



4 x 0.25 mm² 4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510

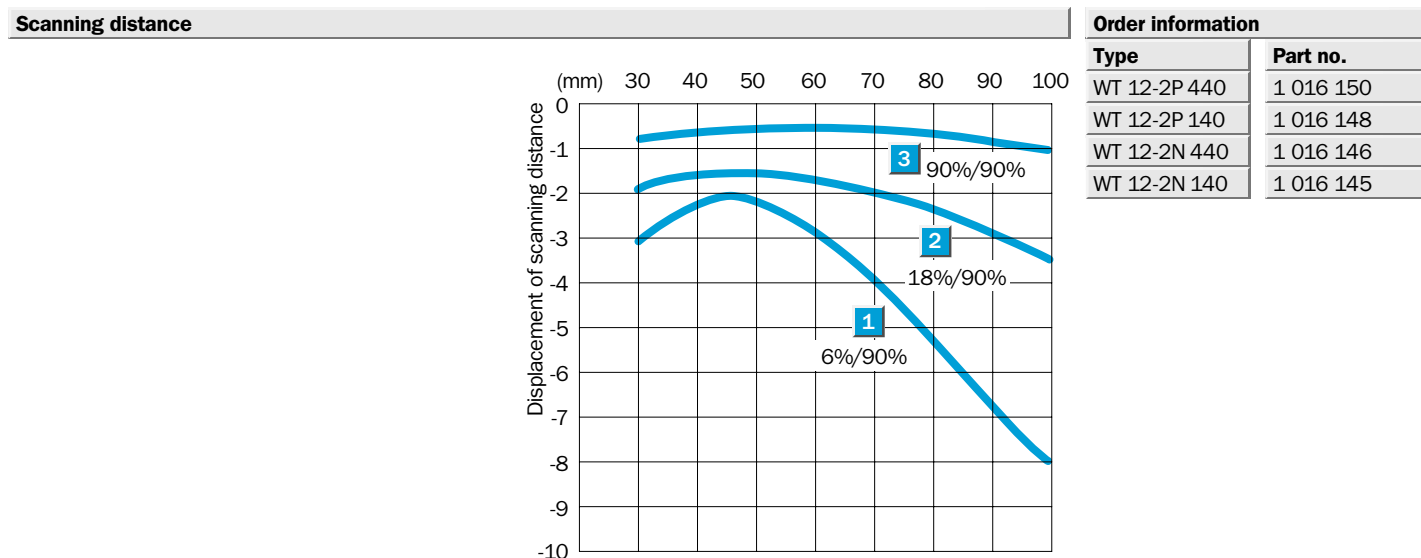
* 2 pieces included with delivery

Technical data		WT 12-2	P 440	P 140	N 440	N 140						
Scanning distance	35...100 mm, adjustable											
Light source¹⁾, light type	LED, red light											
Light spot size	3 x 3 mm at 60 mm											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple ³⁾	$\leq 5 V_{SS}$											
Current consumption ⁴⁾	≤ 30 mA											
	≤ 40 mA											
Switching outputs	PNP, Q and \bar{Q}											
	NPN, Q and \bar{Q}											
Output current I_A max.	≤ 100 mA											
Response time ⁵⁾	≤ 330 μ s											
Max. switching frequency ⁶⁾	1500 Hz											
Connection types	Cable ⁷⁾ , 2 m											
	4-pin, M 12 plug											
VDE protection class⁸⁾	<input type="checkbox"/>											
Circuit protection⁹⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation -40 °C...+60 °C											
	Storage -40 °C...+75 °C											
Weight	With plug: 120 g											
	With cable: 200 g											
Housing material	Zinc die-cast housing											

- 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

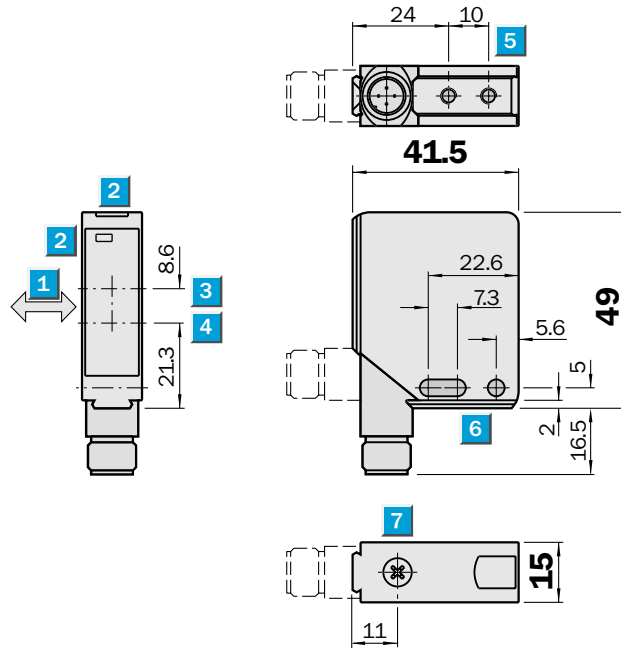
- 9) A = V_S connections reverse-polarity protected
- B = Output Q and \bar{Q} short-circuit protected
- C = Interference pulse suppression



Scanning distance
20...250 mm
Photoelectric proximity switches

- Red light
- Insensitive to ambient light sources
- M 12 plug rotatable by 90°, or 2 m cable
- Adjustable background suppression

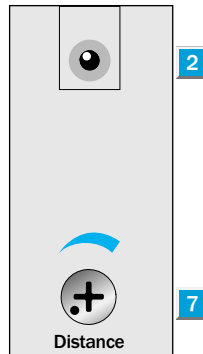
Dimensional drawing



Adjustments possible

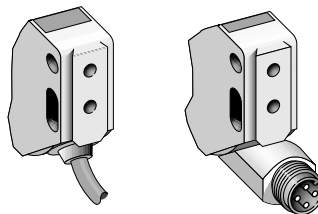
WT 12-2P 430	WT 12-2N 430
WT 12-2P 130	WT 12-2N 130

- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Receiver's optical axis
- 4 Transmitter's optical axis
- 5 M 4 threaded mounting hole – 4 mm deep
- 6 Mounting holes \varnothing 4.2 mm
- 7 Scanning distance adjustment

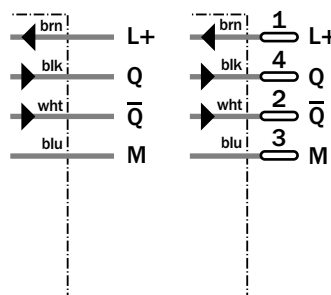


Connection types

WT 12-2P 130	WT 12-2N 430
WT 12-2N 130	WT 12-2P 430



4 x 0.25 mm ²	4-pin, M 12
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Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510

* 2 pieces included with delivery

Technical data		WT 12-2	P 430	P 130	N 430	N 130
Scanning distance	20...250 mm, adjustable					
Light source¹⁾, light type	LED, red light					
Light spot diameter	10 mm at 200 mm					
Supply voltage V_S	10...30 V DC ²⁾					
Ripple ³⁾	$\leq 5 V_{SS}$					
Current consumption ⁴⁾	≤ 30 mA					
	≤ 40 mA					
Switching outputs	PNP, Q and \bar{Q}					
	NPN, Q and \bar{Q}					
Output current I_A max.	≤ 100 mA					
Response time ⁵⁾	≤ 330 μ s					
Max. switching frequency ⁶⁾	1500 Hz					
Connection types	Cable ⁷⁾ , 2 m					
	4-pin, M 12 plug					
VDE protection class⁸⁾	<input type="checkbox"/>					
Circuit protection⁹⁾	A, B, C					
Enclosure rating	IP 67					
Ambient temperature T_A	Operation -40 °C...+60 °C					
	Storage -40 °C...+75 °C					
Weight	With plug: 120 g					
	With cable: 200 g					
Housing material	Zinc die-cast housing					

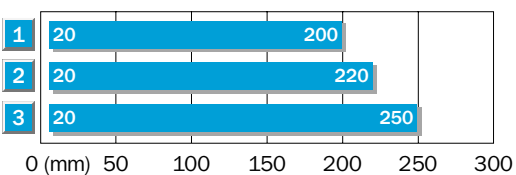
1) Average service life 100,000 h at $T_A = +25$ °C
 2) Limit values

3) May not exceed or fall short of V_S tolerances
 4) Without load
 5) Signal transit time with resistive load

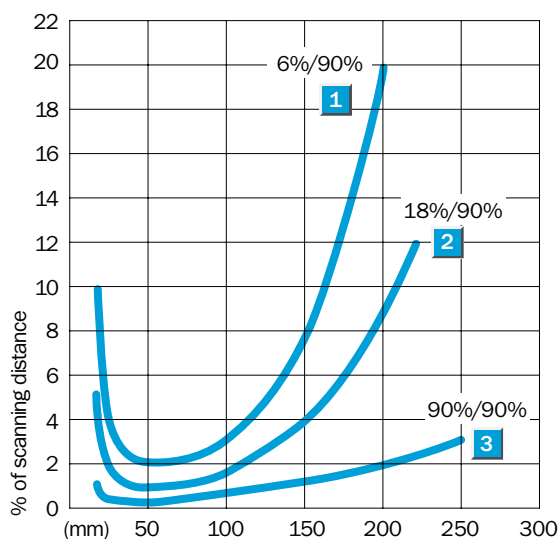
6) With light/dark ratio 1:1
 7) 2 m long, PVC, 5 mm ϕ ; do not bend below 0 °C
 8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity protected
 B = Output Q and \bar{Q} short-circuit protected
 C = Interference pulse suppression

Scanning distance




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



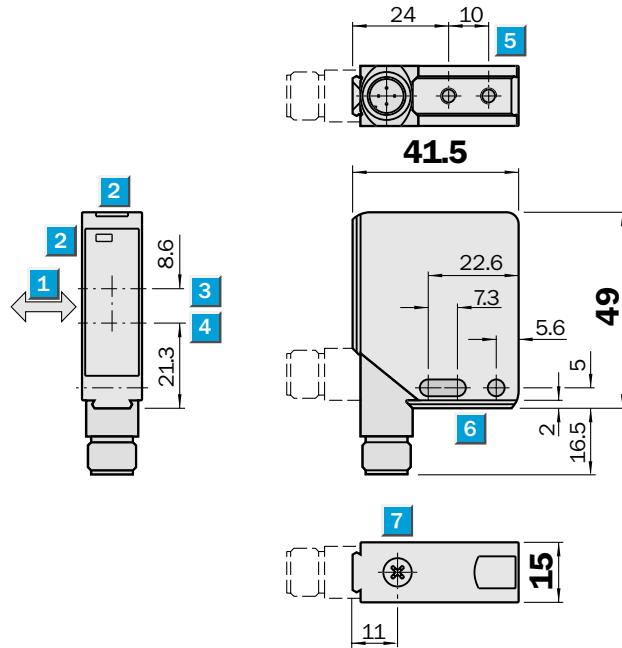
Order information

Type	Part no.
WT 12-2P 430	1 016 134
WT 12-2P 130	1 016 129
WT 12-2N 430	1 016 125
WT 12-2N 130	1 016 122


Scanning distance
20...250 mm
Photoelectric proximity switches

- Red light
- Insensitive to ambient light sources
- M 12 plug rotatable by 90°
- With integrated ASI chip
- Adjustable background suppression

Dimensional drawing



Adjustments possible

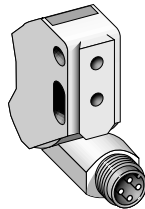
WT 12-2Z 430



- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Receiver's optical axis
- 4 Transmitter's optical axis
- 5 M 4 threaded mounting hole – 4 mm deep
- 6 Mounting holes \varnothing 4.2 mm
- 7 Scanning distance adjustment

Connection type

WT 12-2Z 430



4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510
ASI	574

* 2 pieces included with delivery

Technical data	WT 12-2	Z 430																		
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Scanning distance	20...250 mm, adjustable	
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Light source¹⁾, light type	LED, red light	
Light spot diameter	10 mm at 200 mm	
Supply voltage V_S	26.5...31.5 V DC ²⁾	
Current consumption ³⁾	≤ 35 mA	
Response time ⁴⁾	≤ 330 μs	
Max. switching frequency ⁵⁾	1500 Hz	

Connection type	4-pin, M 12 plug	
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VDE protection class⁶⁾	□	
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Circuit protection⁷⁾	A, B, C	
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Enclosure rating	IP 67	
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Ambient temperature T_A	Operation - 25 °C...+ 60 °C	
	Storage - 40 °C...+ 75 °C	

Weight	With plug: 120 g	
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Housing material	Zinc die-cast housing	
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1) Average service life 100,000 h at T_A = + 25 °C

2) Limit values

3) Without load

4) Signal transit time with resistive load

5) With light/dark ratio 1:1

6) Reference voltage 50 V DC

7) A = V_S connections reverse-polarity protected

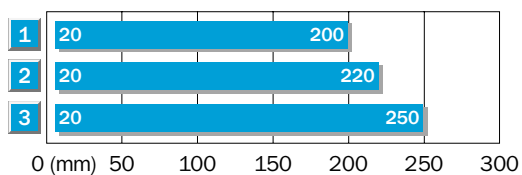
B = Output Q and \bar{Q} short-circuit protected

C = Interference pulse suppression

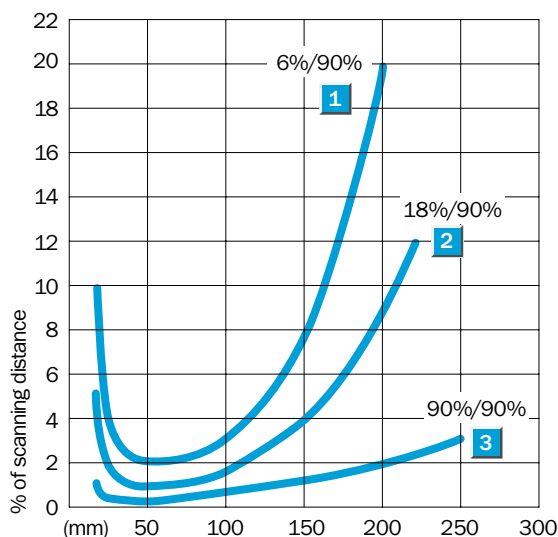
Assignment of data bits		(Host level)		Assignment of parameter bits		(Host level)	
D ₀	Switching state	0 No reflection	Input	P ₀ *	NC	0	Parameter
		1 Reflection				1	
D ₁	Alarm	0 active	Input	P ₁ *	Light/dark selector	0 Dark-switching	Parameter
		1 inactive				1 Light-switching	
D ₂	NC	0	Input	P ₂ *	NC	0	Parameter
		1				1	
D ₃ *	Test function	0 Sender ON	Output	P ₃ *	NC	0	Parameter
		1 Sender OFF				1	

* Default setting = 1

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



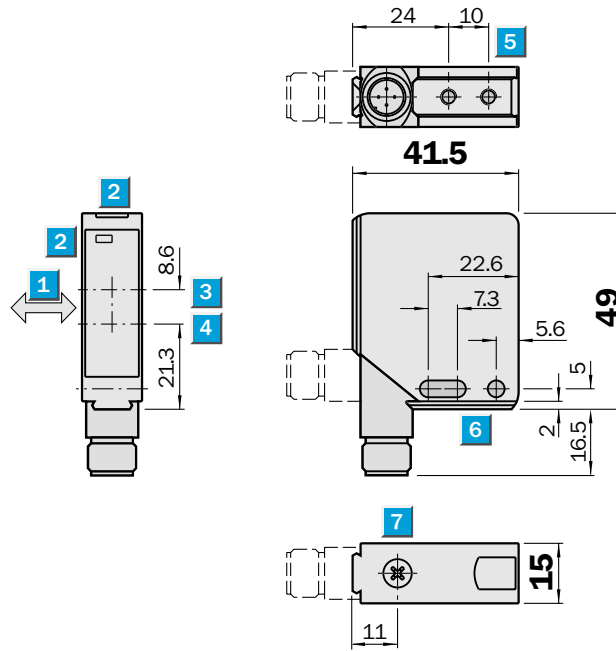
Type	Part no.
WT 12-2Z 430	1 016 136

Scanning distance
20...250 mm

Photoelectric proximity switches

- Infrared
- Insensitive to ambient light sources
- M 12 plug rotatable by 90°, or 2 m cable
- Adjustable background suppression

Dimensional drawing



Adjustments possible

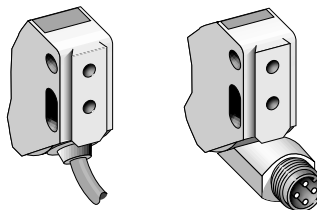
WT 12-2P 410	WT 12-2N 410
WT 12-2P 110	WT 12-2N 110

- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Receiver's optical axis
- 4 Transmitter's optical axis
- 5 M 4 threaded mounting hole – 4 mm deep
- 6 Mounting holes \varnothing 4.2 mm
- 7 Scanning distance adjustment

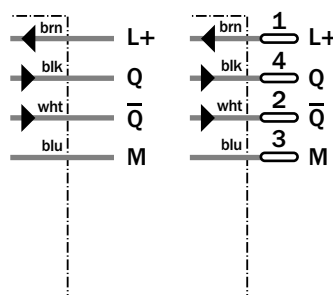


Connection types

WT 12-2P 110	WT 12-2P 410
WT 12-2N 110	WT 12-2N 410



4 x 0.25 mm² 4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510

* 2 pieces included with delivery

Technical data		WT 12-2	P 410	P 110	N 410	N 110
Scanning distance	20...250 mm, adjustable					
Light source¹⁾, light type	LED, infrared light					
Light spot diameter	10 mm at 200 mm					
Supply voltage V_S	10...30 V DC ²⁾					
Ripple ³⁾	$\leq 5 V_{SS}$					
Current consumption ⁴⁾	≤ 40 mA					
	≤ 50 mA					
Switching outputs	PNP, Q and \bar{Q}					
	NPN, Q and \bar{Q}					
Output current I_A max.	≤ 100 mA					
Response time ⁵⁾	≤ 330 μ s					
Max. switching frequency ⁶⁾	1500 Hz					
Connection types	Cable ⁷⁾ , 2 m					
	4-pin, M 12 plug					
VDE protection class⁸⁾	<input type="checkbox"/>					
Circuit protection⁹⁾	A, B, C					
Enclosure rating	IP 67					
Ambient temperature T_A	Operation -40 °C...+60 °C					
	Storage -40 °C...+75 °C					
Weight	With plug: 120 g					
	With cable: 200 g					
Housing material	Zinc die-cast housing					

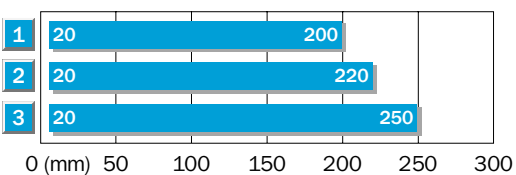
1) Average service life 100,000 h at $T_A = +25$ °C
 2) Limit values

3) May not exceed or fall short of V_S tolerances
 4) Without load
 5) Signal transit time with resistive load

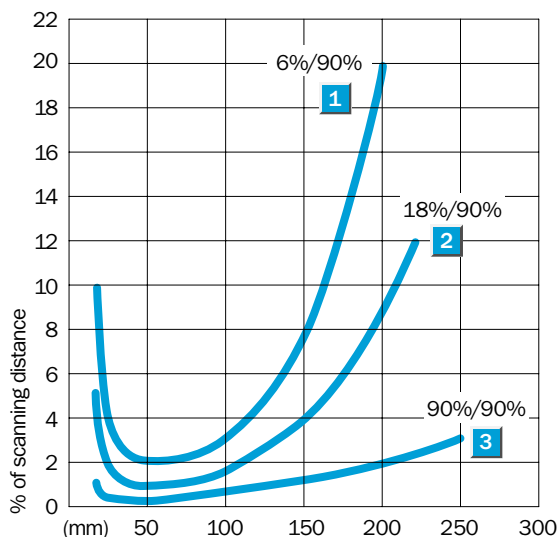
6) With light/dark ratio 1:1
 7) 2 m long, PVC, 5 mm ϕ ; do not bend below 0 °C
 8) Reference voltage 50 V DC; 250 V AC

9) A = V_S connections reverse-polarity protected
 B = Output Q and \bar{Q} short-circuit protected
 C = Interference pulse suppression

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

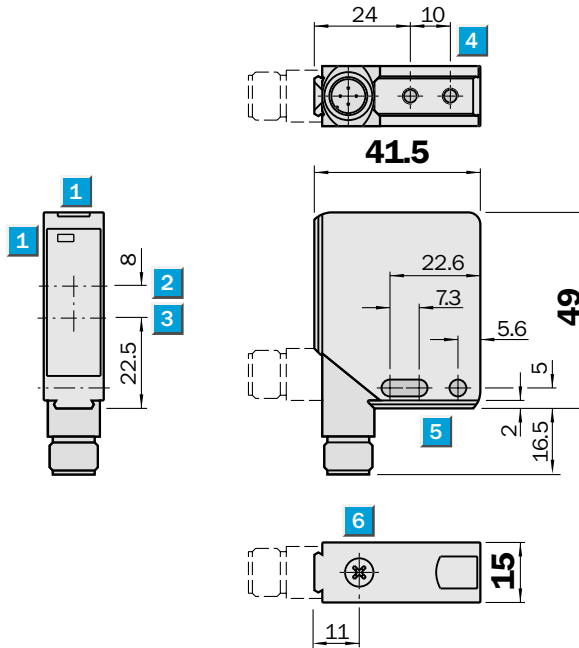
Type	Part no.
WT 12-2P 410	1 016 131
WT 12-2P 110	1 016 126
WT 12-2N 410	1 016 124
WT 12-2N 110	1 016 118


Scanning distance
80...800 mm

Photoelectric proximity switches

- Red light
- Insensitive to ambient light sources
- M 12 plug rotatable by 90°, or 2 m cable
- Energetic proximity switch, adjustable

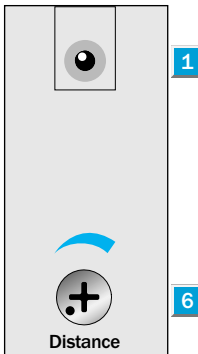
Dimensional drawing



Adjustments possible

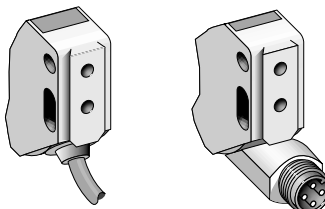
WT 12-2P 450	WT 12-2N 450
WT 12-2P 150	WT 12-2N 150

- 1 LED signal strength indicator
- 2 Receiver's optical axis
- 3 Transmitter's optical axis
- 4 M 4 threaded mounting hole – 4 mm deep
- 5 Mounting holes \varnothing 4.2 mm
- 6 Scanning distance adjustment

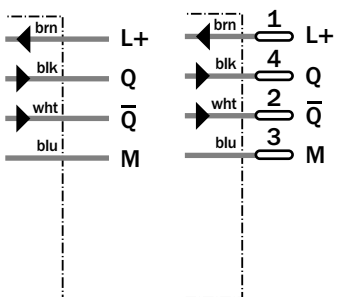


Connection types

WT 12-2P 150	WT 12-2P 450
WT 12-2N 150	WT 12-2N 450



4 x 0.25 mm ²	4-pin, M 12
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Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510

* 2 pieces included with delivery

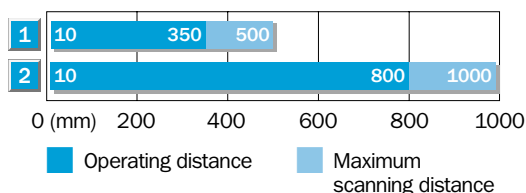
Technical data		WT 12-2	P 450	P 150	N 450	N 150
Scanning distance	80...800 mm, adjustable					
Light source¹⁾, light type	LED, red light					
Light spot diameter	30 mm at 600 mm					
Supply voltage V_S	10...30 V DC ²⁾					
Ripple ³⁾	$\leq 5 V_{SS}$					
Current consumption ⁴⁾	≤ 30 mA					
	≤ 40 mA					
Switching outputs	PNP, Q and \bar{Q}					
	NPN, Q and \bar{Q}					
Output current I_A max.	≤ 100 mA					
Response time ⁵⁾	≤ 330 μ s					
Max. switching frequency ⁶⁾	1500 Hz					
Connection types	Cable ⁷⁾ , 2 m					
	4-pin, M 12 plug					
VDE protection class⁸⁾	<input type="checkbox"/>					
Circuit protection⁹⁾	A, B, C					
Enclosure rating	IP 67					
Ambient temperature T_A	Operation -40 °C...+60 °C					
	Storage -40 °C...+75 °C					
Weight	With plug: 120 g					
	With cable: 200 g					
Housing material	Zinc die-cast housing					

- 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

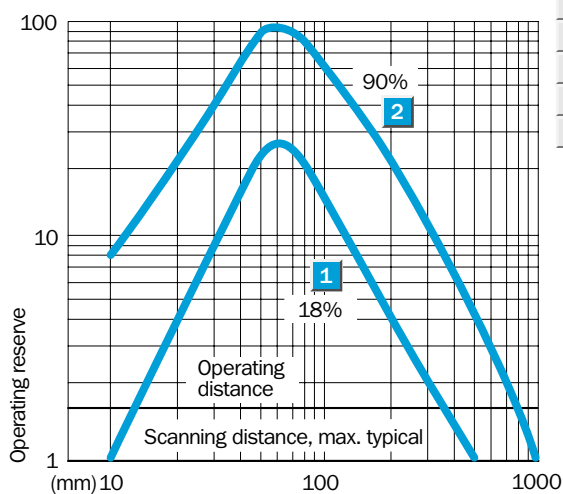
- 4) Without load
- 5) Signal transit time with resistive load
- 6) With light/dark ratio 1:1
- 7) Do not bend below 0 °C
- 8) Reference voltage 50 V DC

- 9) A = V_S connections reverse-polarity protected
- B = Output Q and \bar{Q} short-circuit protected
- C = Interference pulse suppression

Scanning distance




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



Order information

Type	Part no.
WT 12-2P 450	1 016 142
WT 12-2P 150	1 016 140
WT 12-2N 450	1 016 139
WT 12-2N 150	1 016 138

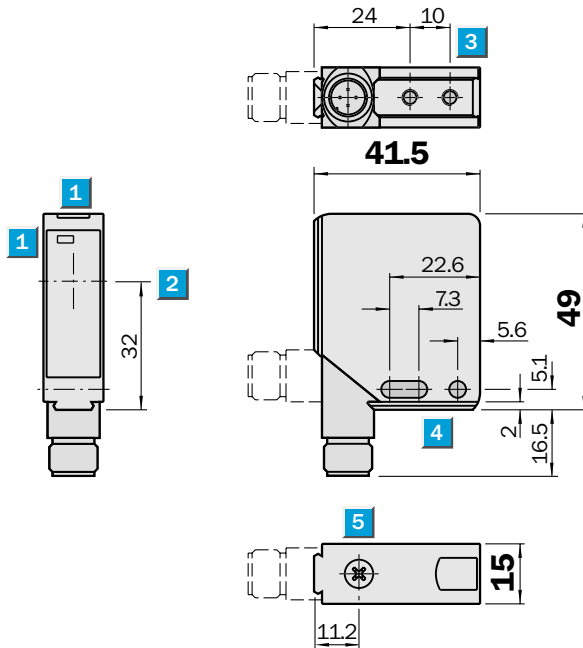

Scanning range
7 m

Photoelectric reflex switches

- Red light
- Insensitive to ambient light sources
- M 12 plug rotatable by 90°, or 2 m cable
- Adjustable sensitivity



Dimensional drawing



Adjustments possible

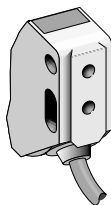
WL 12-2P 430	WL 12-2N 430
WL 12-2P 130	WL 12-2N 130
WL 12-2P 420	WL 12-2N 420
WL 12-2P 120	WL 12-2N 120

- 1** LED signal strength indicator
- 2** Centre of optical axis
- 3** M 4 threaded mounting hole – 4 mm deep
- 4** Mounting holes \varnothing 4.2 mm
- 5** Sensitivity adjustment

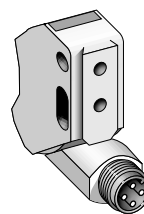
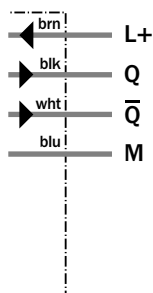


Connection types

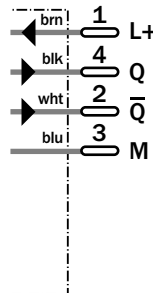
WL 12-2P 130	WL 12-2N 130	WL 12-2P 430	WL 12-2N 430
WL 12-2P 120	WL 12-2N 120	WL 12-2P 420	WL 12-2N 420



4 x 0.25 mm²



4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510
Reflectors	520

* 2 pieces included with delivery

Technical data	WL 12-2	P 430	P 130	P 420	P 120	N 430	N 130	N 420	N 120		
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Scanning range

max. typical/on reflector, $f = \infty$	7 m									
max. typical/on reflector, $f = 90$ mm	2 m									
Sensitivity	adjustable									
Light source¹⁾, light type	LED, red light									
Light spot diameter	80 mm at a distance of 3 m									
	2 mm at a distance of 90 mm									
Supply voltage V_S	10...30 V DC ²⁾									
Ripple ³⁾	$\leq 5 V_{SS}$									
Current consumption ⁴⁾	≤ 30 mA									
	≤ 40 mA									

Switching outputs

	PNP, Q and \bar{Q}									
	NPN, Q and \bar{Q}									
Output current I_A max.	≤ 100 mA									
Response time ⁵⁾	≤ 330 μ s									
Max. switching frequency ⁶⁾	1500 Hz									

Connection types

	Cable ⁷⁾ , 2 m									
	4-pin, M 12 plug									

VDE protection class⁸⁾

	<input type="checkbox"/>									
--	--------------------------	--	--	--	--	--	--	--	--	--

Circuit protection⁹⁾

	A, B, C									
--	---------	--	--	--	--	--	--	--	--	--

Enclosure rating

	IP 67									
--	-------	--	--	--	--	--	--	--	--	--

Ambient temperature T_A

	Operation -40 °C...+60 °C									
	Storage -40 °C...+75 °C									

Weight

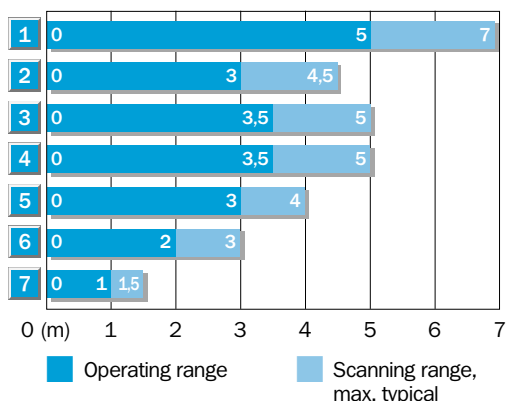
	With plug: 120 g									
	With cable: 200 g									

Polarising filter

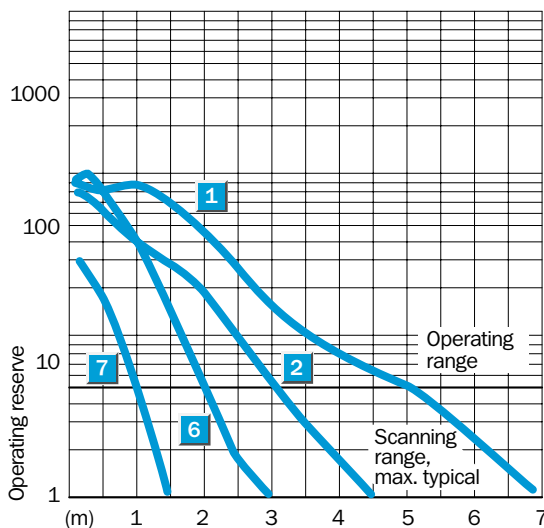
	Zinc die-cast housing									
--	-----------------------	--	--	--	--	--	--	--	--	--

- 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
- 9) A = V_S connections reverse-polarity protected
 B = Output Q and \bar{Q} short-circuit protected
 C = Interference pulse suppression

Operating 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...3.0 m
7	Reflective tape 0...1.0 m



Order information

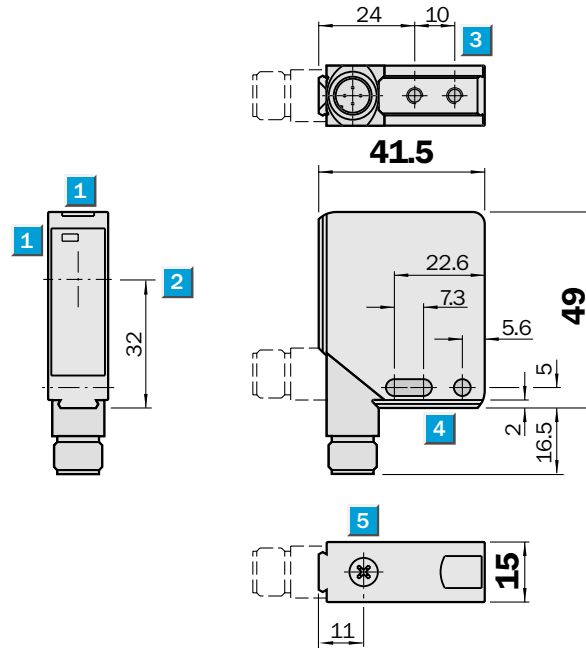
Type	Part no.
WL 12-2P 430	1 016 102
WL 12-2P 130	1 016 096
WL 12-2P 420	1 016 101
WL 12-2P 120	1 016 095
WL 12-2N 430	1 016 092
WL 12-2N 130	1 016 085
WL 12-2N 420	1 016 091
WL 12-2N 120	1 016 084


Scanning range
7 m

Photoelectric reflex switches

- Red light
- Insensitive to ambient light sources
- M 12 plug rotatable by 90°
- Integrated ASI chip

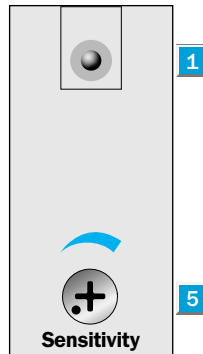
Dimensional drawing



Adjustments possible

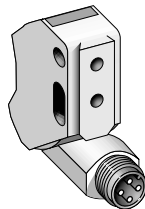
WL 12-2Z 430

- 1** LED signal strength indicator
- 2** Centre of optical axis
- 3** M 4 threaded mounting hole – 4 mm deep
- 4** Mounting holes \varnothing 4.2 mm
- 5** Sensitivity adjustment

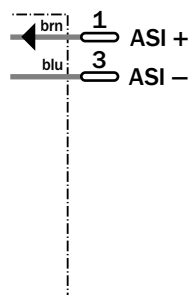


Connection type

WL 12-2Z 430



4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510
Reflectors	520
ASI	574

* 2 pieces included with delivery

Technical data	WL 12-2	Z 430													
-----------------------	---------	-------	--	--	--	--	--	--	--	--	--	--	--	--	--

Scanning range

max. typical/on reflector	7 m/PL 80 A	
Sensitivity	adjustable	
Light source¹⁾, light type	LED, red light	
Light spot diameter	80 mm at 3 m	
Supply voltage V_S	26.5...31.6 V DC ²⁾	
Ripple ³⁾	≤ 35 mA	
Response time ⁴⁾	≤ 330 μs	
Max. switching frequency ⁵⁾	1500 Hz	
Connection type	M 12 plug, 4-pin	
VDE protection class⁶⁾	□	
Circuit protection⁷⁾	A, C	
Enclosure rating	IP 67	
Ambient temperature T_A	Operation - 25 °C...+ 60 °C Storage - 40 °C...+ 75 °C	
Weight	With plug: 120 g	
Polarising filter		
Housing material	Zinc die-cast housing	

- 1) Average service life 100,000 h at T_A = + 25 °C
- 2) Limit values
- 3) Without load

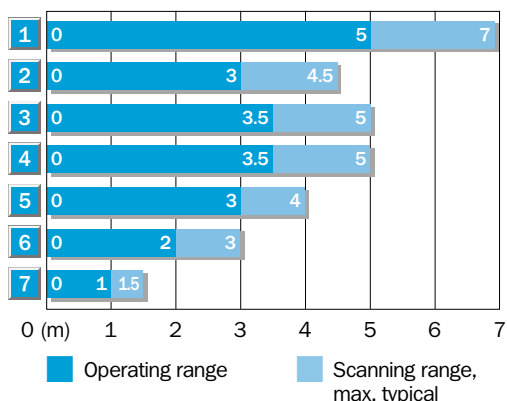
- 4) Signal transit time with resistive load
- 5) With light/dark ratio 1:1
- 6) Reference voltage 50 V DC

- 7) A = V_S connections reverse-polarity protected
- C = Interference pulse suppression

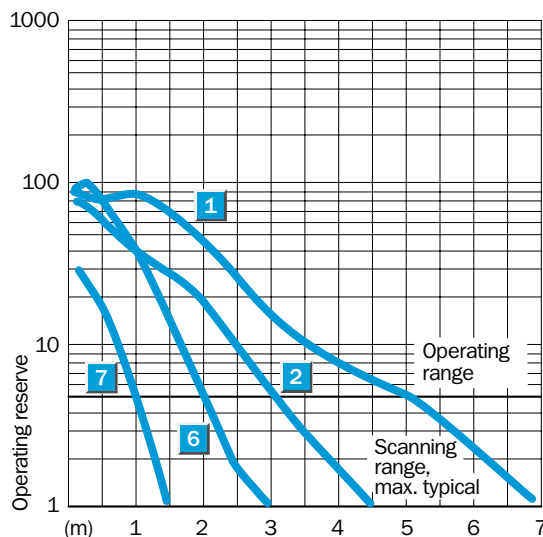
Assignment of data bits			(Host level)	Assignment of parameter bits			(Host level)
D ₀	Switching state	0 No reflection 1 Reflection	Input	P ₀ *	NC	0 1	Parameter
D ₁	Alarm	0 active 1 inactive	Input	P ₁ *	Light/dark selector	0 Dark-switching 1 Light-switching	Parameter
D ₂	NC	0 1	Input	P ₂ *	NC	0 1	Parameter
D ₃ *	Test function	0 Sender ON 1 Sender OFF	Output	P ₃ *	NC	0 1	Parameter

* Default setting = 1

Scanning range



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

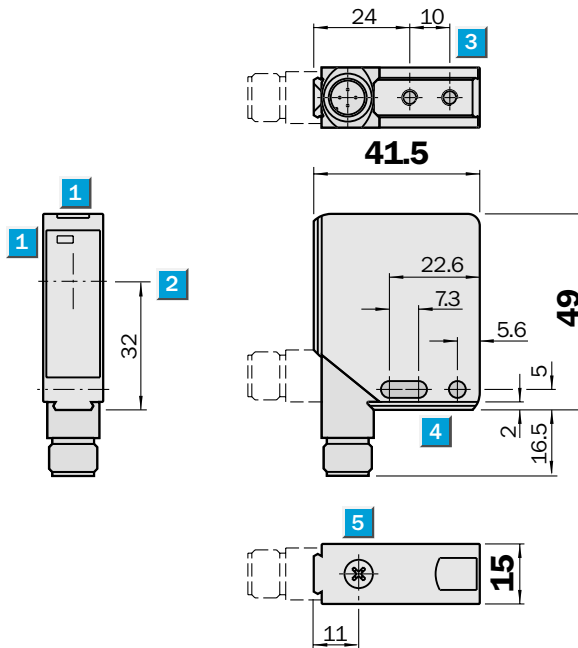
Type	Part no.
WL 12-2Z 430	1 016 108

Scanning range
2 m

Photoelectric reflex switches

- Red light
- Reliable detection of transparent objects
- Innovative microprocessor technology allows continuous adaptation of the switching threshold on contamination
- Operating range can be preselected via rotary switch or external cable

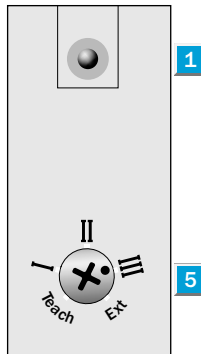
Dimensional drawing



Adjustments possible

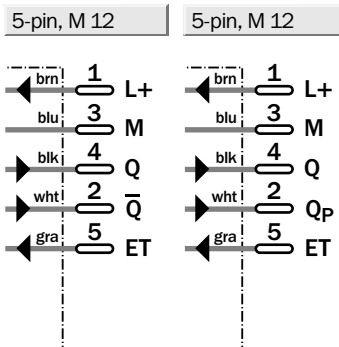
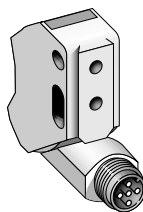
WL 12G-P 530	WL 12G-V 530
WL 12G-N 530	WL 12G-W 530

- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M 4 threaded mounting hole – 4 mm deep
- 4 Mounting holes \varnothing 4.2 mm
- 5 Function selector



Connection types

WL 12G-P 530	WL 12G-V 530
WL 12G-N 530	WL 12G-W 530



Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510
Reflectors	520

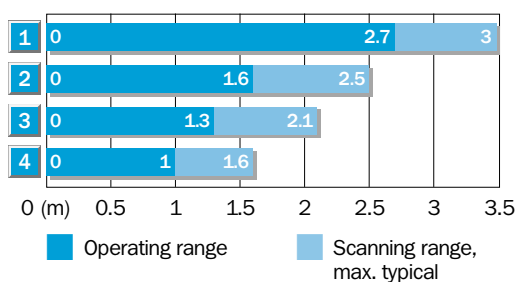
* 2 pieces included with delivery

Technical data		WL 12G-	P 530	N 530	V 530	W 530
Scanning range , max. typical/on refl.	2 m/PL 80 A					
Sensitivity	adjustable					
Light source¹⁾, light type	LED, red light					
Light spot size	Approx. 8 x 13 at 200 mm					
Supply voltage V_S	10...30 V DC ²⁾					
Ripple ³⁾	≤ 5 V _{SS}					
Current consumption ⁴⁾	≤ 65 mA					
Transistor switching outputs	PNP, Q and \bar{Q}					
	NPN, Q and \bar{Q}					
	PNP, Q and plausibility output					
	NPN, Q and plausibility output					
Output current I _A max.	100 mA					
Resp. time ⁵⁾ /max. switching freq. ⁶⁾	≤ 0.5 ms/1000 Hz					
Operating mode	Light-switching, Q active if light beam to reflector is unbroken					
Plausibility output Q_P						
Reliable detection	Approx. 0 V					
	Approx. + V _S					
incorrect setting or severe pollution	V _S - 2.9 V					
	Approx. 1.8 V					
Teach input ET						
Teach-in	≥ 10 V to + V _S					
Normal operation	< 2 V or open input					
Connection types	M 12 plug, 5-pin					
VDE protection class⁷⁾	□					
Circuit protection⁸⁾	A, B, C					
Enclosure rating	IP 67					
Ambient temperature T_A	Operation - 25 °C...+ 60 °C					
	Storage - 40 °C...+ 75 °C					
Weight	With plug: 120 g					
Polarising filter						
Housing material	Zinc die-cast housing					

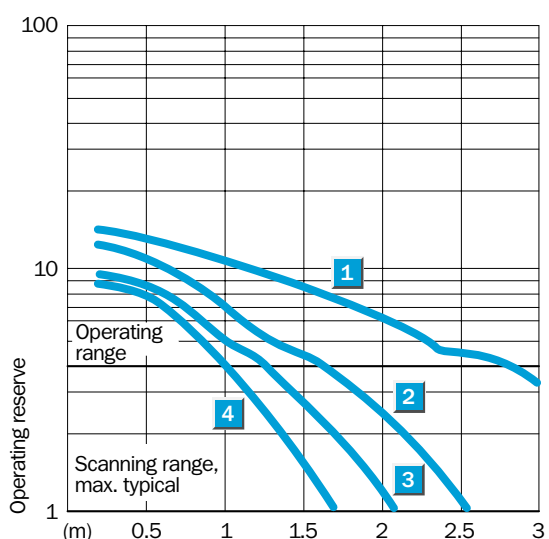
Operating range setting			Set via rotary switch on device or via ET cable (+V _S to ET)
Mode I : 50 ms⁹⁾	Mode II : 150 ms⁹⁾	Mode III : 250 ms⁹⁾	
Switches at signal attenuation > 10 %	Switches at signal attenuation > 18 %	Switches at signal attenuation > 40 %	
Clean PET bottles	Clear-glass bottles	Coloured glass or non-transparent objects	

- 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
- 8) A = V_S connections reverse-polarity protected
B = Output Q and \bar{Q} short-circuit protected
C = Interference pulse suppression
- 9) Pulse duration via ET (control cable), duration set via rotary switch approx. 2 s


Operating range and operating reserve **Order information**



Reflector type	Operating range
1 PL80 A	0...2.7 m
2 PL40 A	0...1.6 m
3 PL30 A	0...1.3 m
4 PL20 A	0...1.0 m



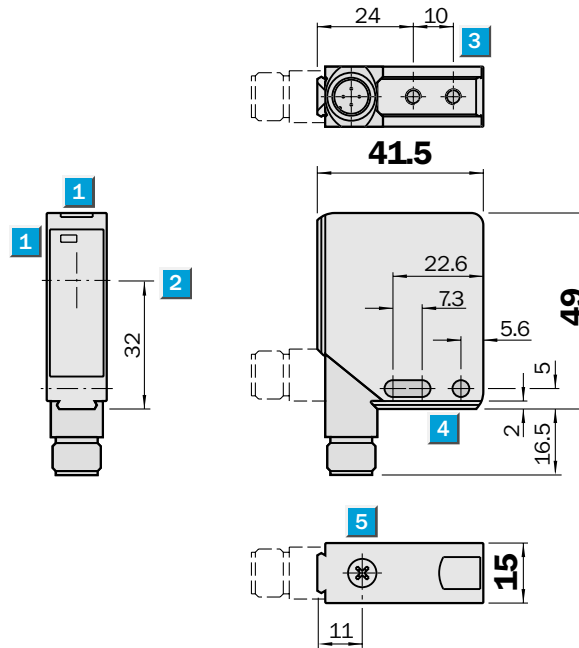
Type	Part no.
WL 12G-P 530	1 016 289
WL 12G-N 530	1 016 309
WL 12G-V 530	1 016 310
WL 12G-W 530	1 016 311

 **Scanning range**
4 m

Photoelectric reflex switches

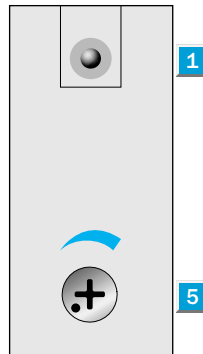
- Red light
- Insensitive to ambient light sources
- Detection of glass and transparent films
- Adjustable sensitivity

Dimensional drawing



Adjustments possible

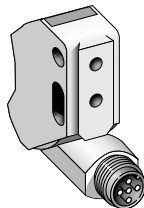
WL 12-2B 560



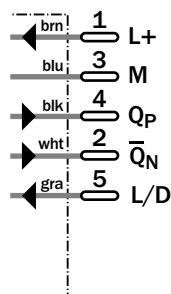
- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M 4 threaded mounting hole – 4 mm deep
- 4 Mounting holes \varnothing 4.2 mm
- 5 Sensitivity adjustment

Connection type

WL 12-2B 560



5-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510
Reflectors	520

* 2 pieces included with delivery

Technical data		WL 12-	2B560
Scanning range , max. typical/on refl.	4 m/PL 80 A		
Sensitivity	adjustable		
Light source¹⁾, light type	LED, red light		
Light spot diameter	30 mm at 1.5 m		
Supply voltage V_S	10...30 V DC ²⁾		
Ripple ³⁾	$\leq 5 V_{SS}$		
Current consumption ⁴⁾	≤ 30 mA		
Switching outputs	Transistor outputs Q_P and Q_N		
Output current I_A max.	100 mA		
Response time ⁵⁾	$\leq 330 \mu s$		
Max. switching frequency ⁶⁾	1500 Hz		
Operating mode	Light- or dark-switching		
Control cable L/D	0 V or open-circuited \leftrightarrow light-switching		
Control cable L/D	$V_S \leftrightarrow$ dark-switching		
Connection type	M 12 plug, 5-pin		
VDE protection class⁷⁾	<input type="checkbox"/>		
Circuit protection⁸⁾	A, B, C		
Enclosure rating	IP 67		
Ambient temperature T_A	Operation -40 °C...+60 °C Storage -40 °C...+75 °C		
Weight	With plug: 120 g		
Polarising filter			
Housing material	Zinc die-cast housing		

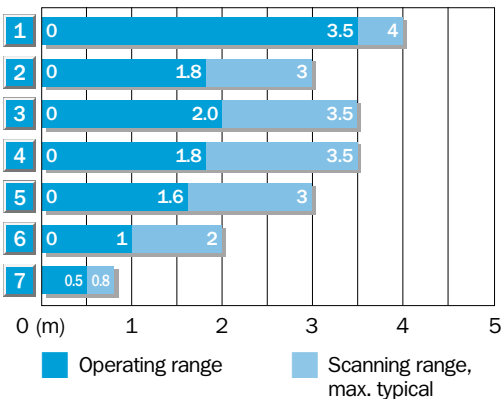
- 1) Average service life 100,000 h at $T_A = +25$ °C
- 2) Limit values

- 3) May not exceed or fall short of V_S tolerances
- 4) Without load

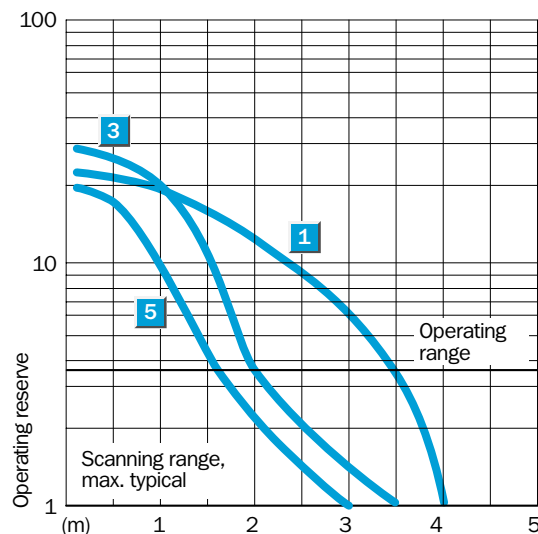
- 5) Signal transit time with resistive load
- 6) With light/dark ratio 1:1
- 7) Reference voltage 50 V DC

- 8) A = V_S connections reverse-polarity protected
- B = Output Q_P and Q_N short-circuit protected
- C = Interference pulse suppression

Operating range and operating reserve



Reflector type	Operating range
1 PL80 A	0...3.5 m
2 C 110	0...1.8 m
3 PL50 A	0...2.0 m
4 PL40 A	0...1.8 m
5 PL30 A	0...1.6 m
6 PL20 A	0...1.0 m
7 Reflective tape	0...0.5 m



Order information

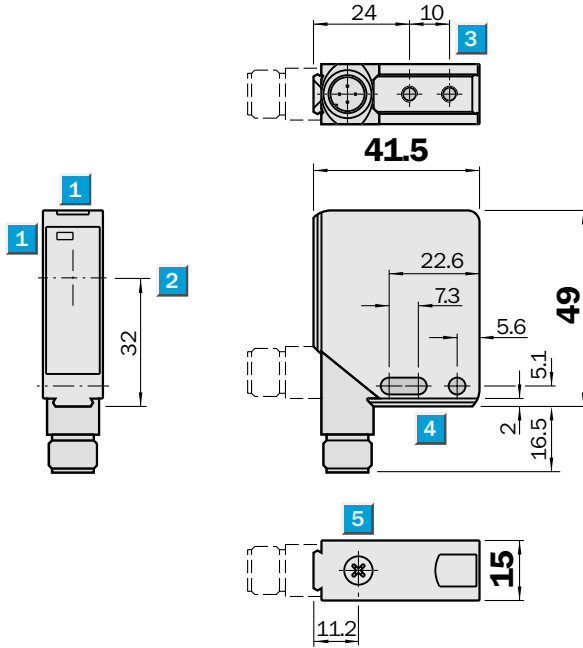
Type	Part no.
WL 12-2B 560	1 016 080

Scanning range
20 m

Through-beam photoelectric switches

- Red light
- Insensitive to ambient light sources
- M 12 plug rotatable by 90°, or 2 m cable
- Adjustable sensitivity

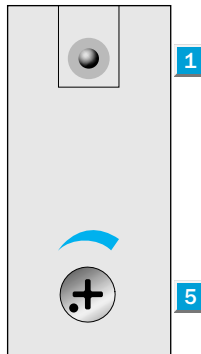
Dimensional drawing



Adjustments possible

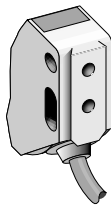
WS/WE 12-2P 430	WS/WE 12-2N 430
WS/WE 12-2P 130	WS/WE 12-2N 130

- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M 4 threaded mounting hole – 4 mm deep
- 4 Mounting holes \varnothing 4.2 mm
- 5 Sensitivity adjustments



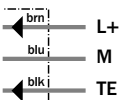
Connection types

WS/WE 12-2P 130	WS/WE 12-2P 430
WS/WE 12-2N 130	WS/WE 12-2N 430

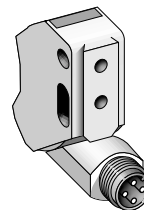
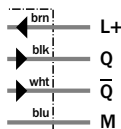


4 x 0.25 mm²

Sender

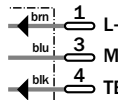


Receiver

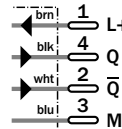


4-pin, M 12

Sender



Receiver



Accessories	page
Cable receptacles	496
Mounting brackets	510
Clamps*	510
Masks	556

* 2 pieces included with delivery

Technical data		WS/WE 12-2	P 430	P 130	N 430	N 130
Scanning range , max. typical	20 m					
Sensitivity	adjustable					
Scanning range with 2 mm mask	2 m					
Scanning range with 1.5 mm mask	1.5 m					
Scanning range with 1 mm mask	1 m					
Scanning range with 0.5 mm mask	0.5 mm					
Light source¹⁾, light type	LED, red light					
Light spot diameter	Approx. 500 mm at 15 m					
Angle of dispersion						
Supply voltage V_S	10...30 V DC ²⁾					
Ripple ³⁾	$\leq 5 V_{SS}$					
Current consumption ⁴⁾						
sender	≤ 30 mA					
receiver	≤ 15 mA					
receiver	≤ 25 mA					
Switching output	PNP, Q and \bar{Q} NPN, Q and \bar{Q}					
Output current I_A max.	100 mA					
Response time ⁵⁾	≤ 330 μ s					
Max. switching frequency ⁶⁾	1500 Hz					
Test input "TE" for light sender						
Sender OFF	TE to 0 V					
Connection types	M 12 plug, 4-pin Cable ⁷⁾ , 2 m					
VDE protection class⁸⁾	<input type="checkbox"/>					
Circuit protection⁹⁾	A, B, C					
Enclosure rating	IP 67					
Ambient temperature T_A	Operation -40 °C...+60 °C Storage -40 °C...+75 °C					
Weight	With plug: 120 g With cable: 200 g					
Housing material	Zinc die-cast housing					

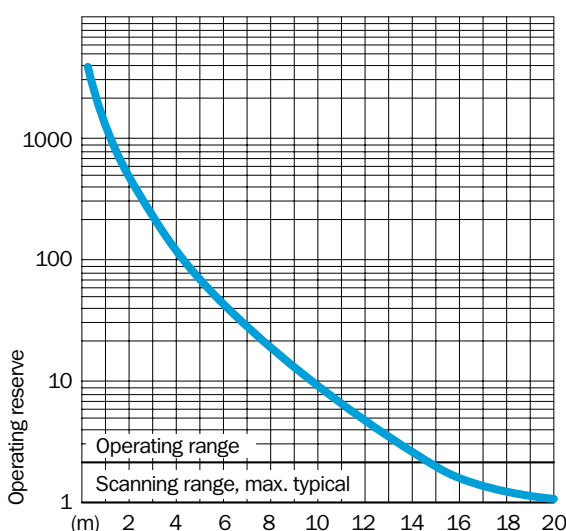
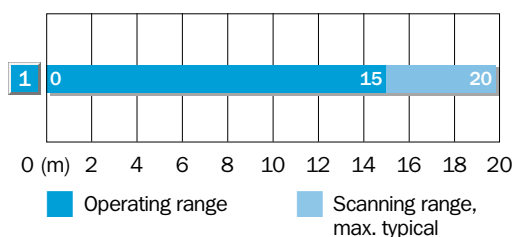
1) Average service life 100,000 h at $T_A = +25$ °C
2) Limit values

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 DC 50 V



9) A = V_S connections reverse-polarity protected
B = Output Q and \bar{Q} short-circuit protected
C = Interference pulse suppression

Scanning range



Order information

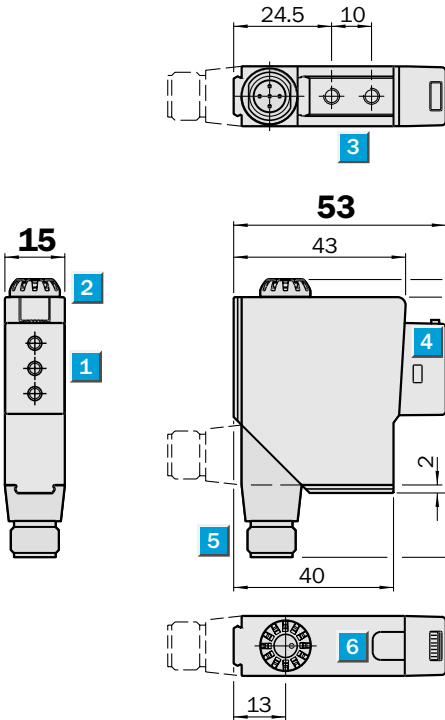
Type	Part no.
WS/WE 12-2P430	1 016 157
WS/WE 12-2P130	1 016 156
WS/WE 12-2N430	1 016 155
WS/WE 12-2N130	1 016 154

	Scanning range up to 550 mm
Through-beam systems	
	Scanning distance up to 50 mm
Proximity systems	

- Red, infrared or green light
- Plug-in fibre-optic cables
- Switch-selectable light-/dark-switching
- Adjustable sensitivity



Dimensional drawing

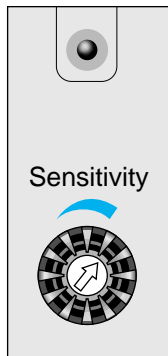


AD adapter* for		
Fibre-optic	Type	Part no.
LL 3-...	AD-LL-1M0	2 015 026
∅ (1.0 mm)		
LL 3-...	AD-LL-2M2	2 015 210
∅ (2.2 mm)		
LM/LT-...	AD-LL-GF	2 015 034
LH10-1000	AD-LL-HGA	2 015 033

* not included with delivery

Adjustments possible

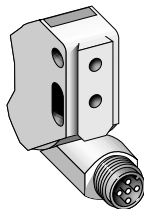
All types



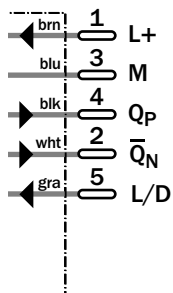
- 1 Connector for fibre-optic cable
- 2 Sensitivity control
- 3 M4 threaded mounting hole – 4 mm deep
- 4 Adapter
- 5 Plug not rotatable. Plug facing backwards on request
- 6 LED signal strength indicator

Connection type

All types



5-pin, M 12



Accessories	page
Cable receptacles	496
Clamps*	510
Mounting brackets	510
Fibre-optic cables	528

* 2 pieces included with delivery



Technical data		WLL 12-	B5181	B5281	B5381	B5481						
Scanning distance/ scanning range, max.	50/550 mm											
Fibre-optic cable	See Accessories on page 528											
Sensitivity	Adjustable											
Scanning distance¹⁾	10 mm ± 1 mm, fixed											
Background suppression												
Light source²⁾, light type	LED, red light ³⁾											
	Infrared light ⁴⁾											
	Green light ⁵⁾											
Supply voltage V_S	10...30 V DC ⁶⁾											
Ripple ⁷⁾	≤ 5 V _{SS}											
Current consumption ⁸⁾	≤ 35 mA											
Switching outputs	PNP: Q/NPN: Q											
Output current I _A max.	100 mA											
Switching cycles	1300/s											
Response time ⁹⁾	360 μs											
Max. switching frequency ¹⁰⁾	1300 Hz											
Control input L/D	Light-/dark-switching											
Connection type	Plug M 12, 5-pin											
	Plug facing downwards ¹¹⁾											
VDE protection class¹²⁾	□											
Circuit protection¹³⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation - 25 °C...+ 55 °C											
	Storage - 25 °C...+ 70 °C											
Weight	Approx. 130 g											
Housing material	Zinc die-cast housing											

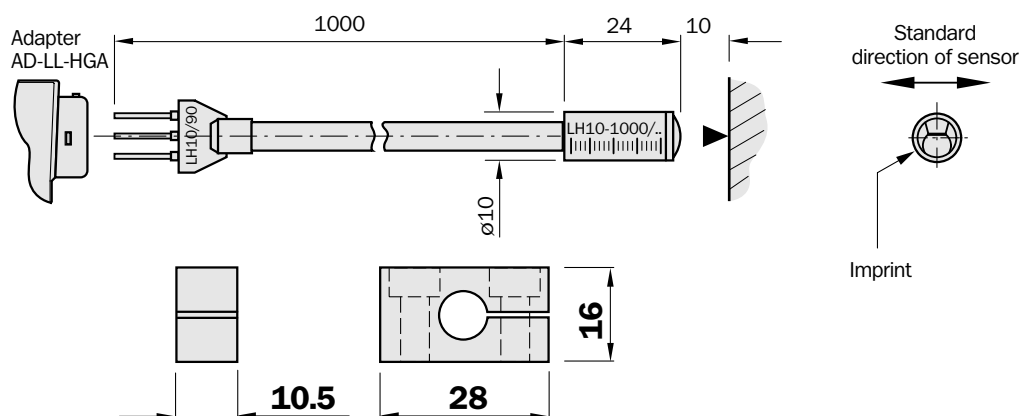
- 1) With LH 10-1000 fibre-optic cable
 2) Average service life 100,000 h at T_A = + 25 °C
 3) Preferably LL 3 fibre-optic cable
 4) Preferably LM/LT fibre-optic cable

- 5) Preferably contrast detection
 6) Limit values
 7) May not exceed or fall short of V_S tolerances
 8) Without load

- 9) Signal transit time with resistive load
 10) With light/dark ratio 1:1
 11) Plug facing backwards on request
 12) Reference voltage 50 V DC

- 13) A = V_S connections reverse-polarity protected
 B = Output Q and Q̄ short-circuit protected
 C = Interference pulse suppression

Proximity system with background suppression, WLL 12-B 5481 with LH 10-1000 fibre-optic cable



Order information

Type	Part no.
WLL 12-B 5181	1 011 677
WLL 12-B 5281	1 011 687
WLL 12-B 5381	1 011 688
WLL 12-B 5481	1 011 965
LH 10-1000	2 015 692
AD-LL-HGA	2 015 033
Bracket	4 028 164

Scanning distance:	10 mm (-1 mm), fixed
Light spot diameter:	approx. 2.5 x 3.5 mm
Switching hysteresis :	≤ 0.3 mm, based on standard white 90 % to standard black 6 %