




# W 150: Miniature photoelectric switch series with fully integrated electronics

	Photoelectric proximity switches, BGS
	Photoelectric proximity switches, energetic
	Photoelectric reflex switches



The optical systems of the W 150 series and their scanning ranges:

- WS/WE 150 through-beam photoelectric switch: 4 m, slotted masks available as accessories,
- WL 150 photoelectric reflex switch: 2 m (PL 80 A), with polarising filter,
- WL 150 photoelectric reflex switch with enhanced sensitivity: especially suitable for detecting transparent objects such as glass and film,
- WT 150 photoelectric proximity switch, energetic: scanning distance 200 mm (90 % remission), for standard scanning tasks. With background suppression: scanning distance 100 mm on white, adjustable; for reliable operation in applications with background interference.

 **Through-beam photoelectric switches**

**D**espite their miniature housing, the W 150 photoelectric switches have exactly the same system characteristics and features as standard photoelectric switches. They are especially characterised by their large scanning ranges. W 150 units are ideal for use at locations where installation space is limited.

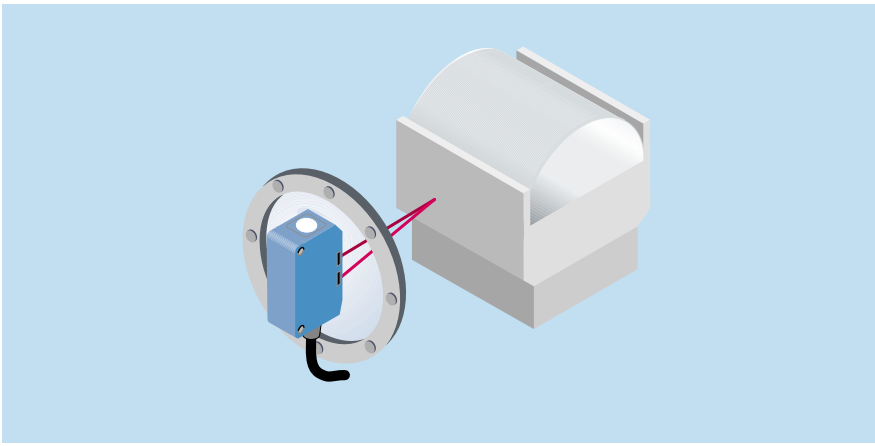
They are, therefore, particularly suitable for the following areas of application:

- electronic component and printed circuit board production,
- the packaging and printing industries,
- assembly and handling systems,
- the construction of special-purpose machines.

All electrical and mechanical values meet the standards for low-voltage devices: potentiometer for adjustment, IP 67,  $V_S = 10 \dots 30$  V DC, PNP or NPN switching output, M 8 plug or cable...

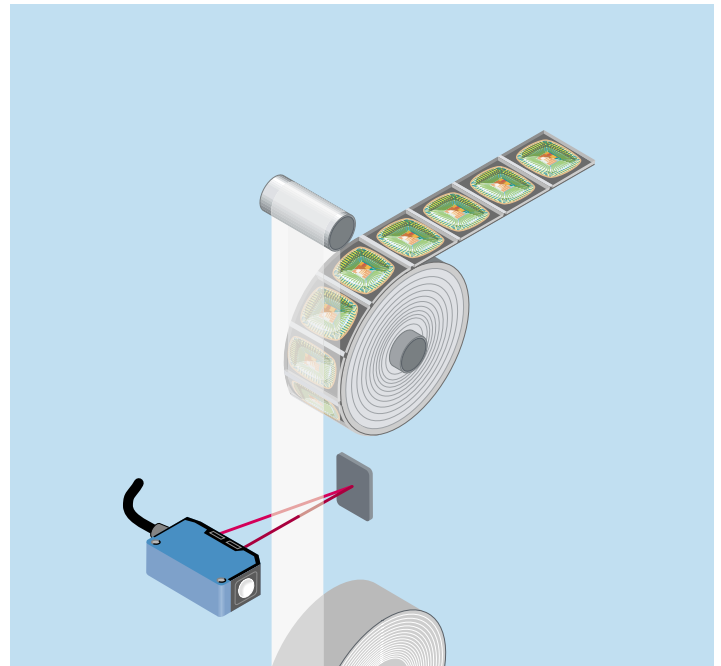
An added bonus: the visible red light of the sender LED facilitates handling.

▶ WT 150 photoelectric proximity switch with background suppression used to detect wafer cassettes in a clean room through a glass window.

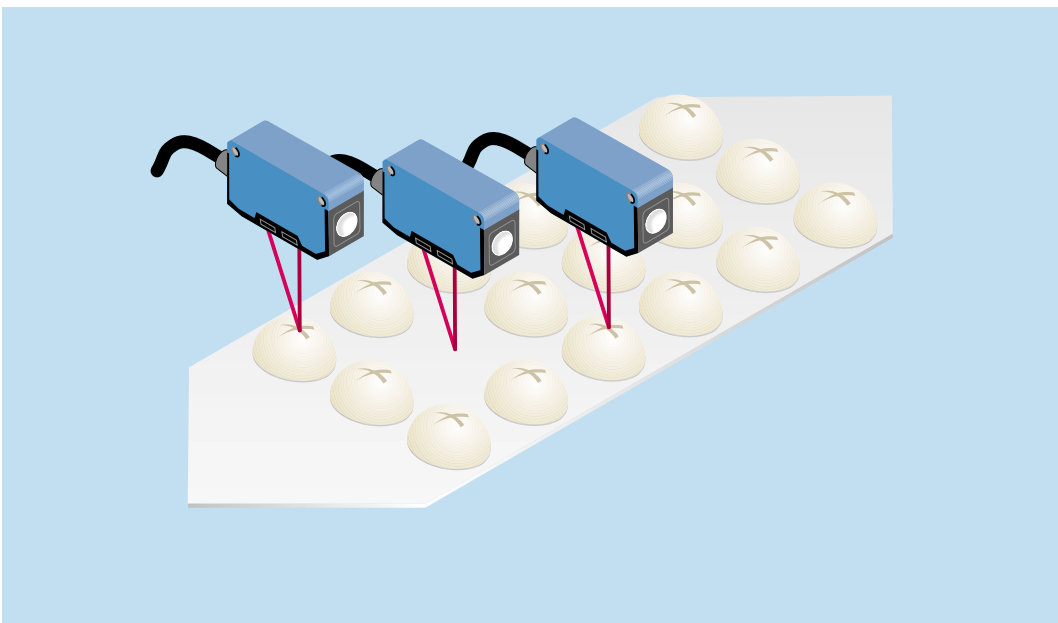


▼ Electronic components are coated with extremely thin transparent films during the production process. A WL 150 photoelectric reflex switch with decreased switching hysteresis is used for reliable detection of the film.

▶ Minimum space requirements – maximum power: WT 150 miniature photoelectric proximity switch used to check the presence of printed circuit boards in the automated production of electronic components.



▶ WT 150 photoelectric proximity switches with background suppression (BGS) used for the reliable detection of bread and confectionery on a conveyor belt – even if the distance between the scanned surface of the object being transported and the surface of the conveyor belt varies slightly.

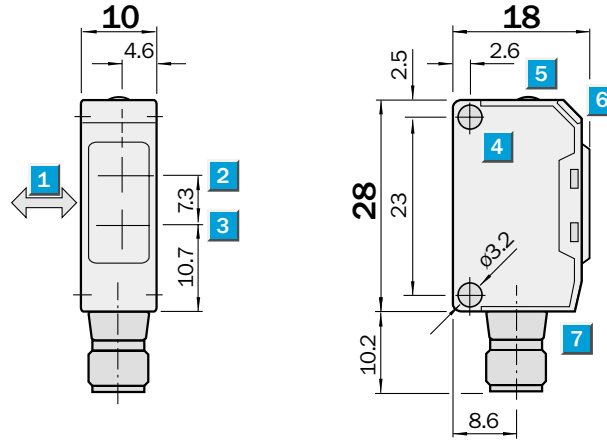


**Scanning distance**  
2...100 mm

Photoelectric proximity switches

- With background suppression for reliable detection of dark objects, even in front of light backgrounds
- Switching point is largely independent of colour and surface of object
- Scanning distance continuously variable, control using 5-turn adjustment screw

**Dimensional drawing**



**Adjustments possible**

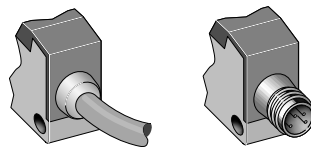
WT 150-P 162
WT 150-N 162
WT 150-P 460
WT 150-N 460

- 1** Standard direction of the material being scanned
- 2** Centre of optical axis, receiver
- 3** Centre of optical axis, sender
- 4** Mounting holes  $\varnothing$  3.2 mm
- 5** Scanning distance adjustment (5 rev.)
- 6** LED indicator, red light received  $\geq$  switching threshold
- 7** M 8 plug – 4-pin or cable

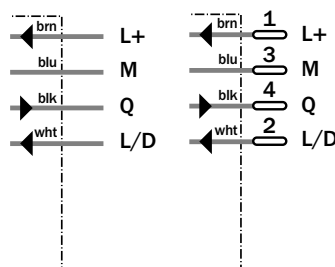


**Connection types**

WT 150-P 162	WT 150-P 460
WT 150-N 162	WT 150-N 460



4 x 0.18 mm <sup>2</sup>	4-pin, M 8
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Accessories	page
Cable receptacles	496
Mounting brackets Type A*	510

\* included with delivery

<b>Technical data</b>	WT 150-	P 162	P 460	N 162	N 460								
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<b>Scanning distance</b> , max. typical	2...100 mm <sup>1)</sup> , adjustable				
<b>Operating distance</b>					
Scanned object with 90% remission	Min. 2...6 mm to max. 10...100 mm				
Scanned object with 18% remission	Min. 2...6 mm to max. 10...80 mm				
Scanned object with 6% remission	Min. 3...6 mm to max. 10...60 mm				
Scanning distance, adjustable	Potentiometer, 5 revolutions				
Background suppression	in % of set scanning distance (see characteristic curve)				
<b>Light source<sup>2)</sup>, light type</b>					
	LED, visible red light				
Light spot diameter	approx. 4 mm at 40 mm				
Angle of dispersion of sender	approx. 5°				
<b>Supply voltage V<sub>S</sub></b>					
	10...30 V DC <sup>3)</sup>				
Ripple <sup>4)</sup>	± 10 %				
Current consumption <sup>5)</sup>	≤ 20 mA				
<b>Switching outputs</b>					
	PNP, open collector: Q				
	NPN, open collector: Q				
Max. output current I <sub>A</sub>	100 mA				
Switching mode <sup>6)</sup>	Dark-/light-switching via control cable L/D				
	+ V <sub>S</sub> = light-switching				
	0 V = dark-switching				
Response time <sup>7)</sup>	≤ 0.5 ms				
Max. switching frequency <sup>8)</sup>	1000/s				
<b>Connection types</b>					
cable	PVC, 2 m <sup>9)</sup> ; 4 x 0.18 mm <sup>2</sup> , ∅ 3.5 mm				
plug	M 8 – 4-pin				
<b>VDE protection class<sup>10)</sup></b>					
	□				
<b>Circuit protection<sup>11)</sup></b>					
	A, B, C, D				
<b>Enclosure rating</b>					
	IP 67				
<b>Ambient temperature T<sub>A</sub></b>					
	Operation – 25 °C...+ 55 °C				
	Storage – 40 °C...+ 75 °C				
<b>Weight</b>					
with cable 2 m	Approx. 44 g				
with plug M 8 – 4-pin	Approx. 7 g				
<b>Housing material</b>					
	Housing: ABS/optics: PC				

- |   |   |   |  |
|---|---|---|--|
| 1) Object with 90 % remission (based on standard white to DIN 5033) | 5) Without load   | 9) Do not bend below 0 °C                                     | C = Interference pulse suppression   |
| 2) Average service life 100,000 h where T <sub>A</sub> = + 25 °C    | 6) Control cable open:<br>NPN: light-switching<br>PNP: dark-switching | 10) Reference voltage 50 V DC                                 | D = Outputs overcurrent and short-circuit protected                          |
| 3) Limit values   | 7) Signal transit time with resistive load                            | 11) A = V <sub>S</sub> connections reverse-polarity protected | 12) Black = 6 % remission<br>Grey = 18 % remission<br>White = 90 % remission |
| 4) May not exceed or fall short of V <sub>S</sub> tolerances        | 8) With light/dark ratio 1:1  | B = Inputs and outputs reverse-polarity protected             |  |

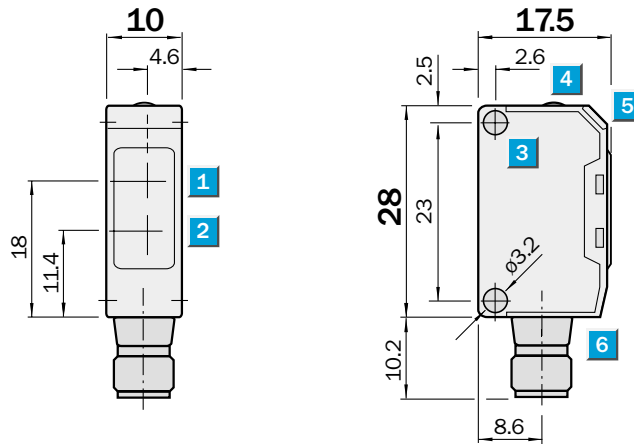
<b>Scanning distance</b>		<b>Order information</b>										
		<table border="1"> <thead> <tr> <th>Type</th> <th>Part no.</th> </tr> </thead> <tbody> <tr> <td>WT 150-P 162</td> <td>6 011 048</td> </tr> <tr> <td>WT 150-P 460</td> <td>6 011 050</td> </tr> <tr> <td>WT 150-N 162</td> <td>6 011 045</td> </tr> <tr> <td>WT 150-N 460</td> <td>6 011 047</td> </tr> </tbody> </table>	Type	Part no.	WT 150-P 162	6 011 048	WT 150-P 460	6 011 050	WT 150-N 162	6 011 045	WT 150-N 460	6 011 047
Type	Part no.											
WT 150-P 162	6 011 048											
WT 150-P 460	6 011 050											
WT 150-N 162	6 011 045											
WT 150-N 460	6 011 047											
<table border="1"> <tr> <td>1</td> <td>Scanning distance on black<sup>12)</sup>/white background</td> </tr> <tr> <td>2</td> <td>Scanning distance on grey<sup>12)</sup>/white background</td> </tr> <tr> <td>3</td> <td>Scanning distance on white<sup>12)</sup>/white background</td> </tr> <tr> <td>A</td> <td>Scanning distance control set to MIN</td> </tr> <tr> <td>B</td> <td>Scanning distance control set to MAX</td> </tr> </table>		1	Scanning distance on black <sup>12)</sup> /white background	2	Scanning distance on grey <sup>12)</sup> /white background	3	Scanning distance on white <sup>12)</sup> /white background	A	Scanning distance control set to MIN	B	Scanning distance control set to MAX	
1	Scanning distance on black <sup>12)</sup> /white background											
2	Scanning distance on grey <sup>12)</sup> /white background											
3	Scanning distance on white <sup>12)</sup> /white background											
A	Scanning distance control set to MIN											
B	Scanning distance control set to MAX											

**Scanning distance**  
**10...250 mm**

Photoelectric proximity switches

- Energetic photoelectric proximity switches
  - for standard applications
  - for simple contrast detection
- Switching point adjustable with sensitivity potentiometer

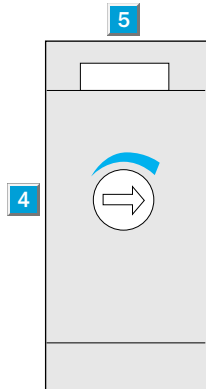
**Dimensional drawing**



**Adjustments possible**

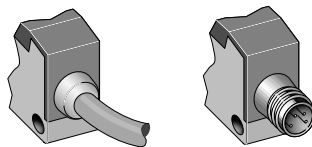
- WT 150-P 132
- WT 150-N 132
- WT 150-P 430
- WT 150-N 430

- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Mounting holes  $\varnothing$  3.2 m
- 4 Sensitivity adjustment 270°
- 5 LED indicator, red:  
Light received  $\geq$  switching threshold
- 6 M 8 plug - 4-pin or connecting cable

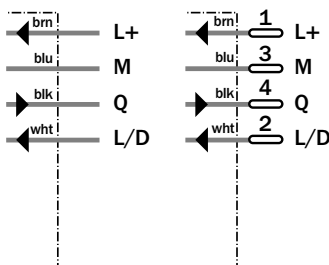


**Connection types**

WT 150-P 132	WT 150-P 430
WT 150-N 132	WT 150-N 430



4 x 0.18 mm <sup>2</sup>	4-pin, M 8
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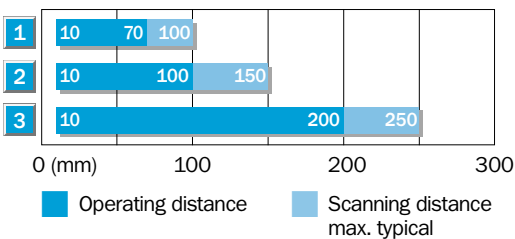
Accessories	page
Cable receptacles	496
Mounting brackets Type A*	510

\* included with delivery

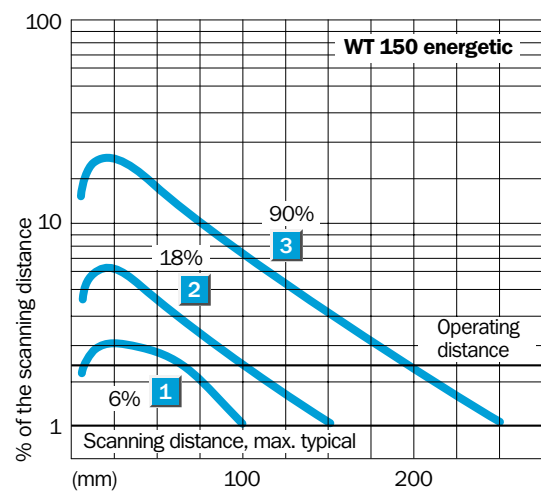
Technical data		WT 150-	P 132	P 430	N 132	N 430
Scanning distance, max. typical	10...250 mm <sup>1)</sup>					
Operating distance	10...200 mm <sup>1)</sup>					
Sensitivity, adjustable	Potentiometer, 270°					
<b>Light source<sup>2)</sup>, light type</b>	LED, red light					
Light spot diameter	Approx. 20 mm at 200 mm					
Angle of dispersion of sender	Approx. 6°					
<b>Supply voltage V<sub>S</sub></b>	10...30 V DC <sup>3)</sup>					
Ripple <sup>4)</sup>	± 10 %					
Current consumption <sup>5)</sup>	≤ 20 mA					
<b>Switching outputs</b>	PNP, open collector: Q NPN, open collector: Q					
Max. output current I <sub>A</sub>	100 mA					
Switching mode <sup>6)</sup>	Dark-/light-switching via control cable L/D + V <sub>S</sub> = light-switching 0 V = dark-switching					
Response time <sup>7)</sup>	≤ 0.5 ms					
Max. switching frequency <sup>8)</sup>	1000/s					
<b>Connection types</b>						
cable	PVC, 2 m <sup>9)</sup> ; 4 x 0.18 mm <sup>2</sup> , Ø 3.5 mm					
plug	M 8 – 4-pin					
<b>VDE protection class<sup>10)</sup></b>	□					
<b>Circuit protection<sup>11)</sup></b>	A, B, C, D					
<b>Enclosure rating</b>	IP 67					
<b>Ambient temperature T<sub>A</sub></b>	Operation – 25 °C...+ 55 °C Storage – 40 °C...+ 70 °C					
<b>Weight</b>	with cable 2 m: Approx. 44 g with plug M 8 – 4-pin: Approx. 7 g					
<b>Housing material</b>	Housing: ABS/optics: PC					

- |   |   |  |   |
|---|---|--|---|
| 1) Object with 90 % remission (based on standard white to DIN 5033) | 4) May not exceed or fall short of V <sub>S</sub> tolerances          | 7) Signal transit time with resistive load | 11) A = V <sub>S</sub> connections reverse-polarity protected |
| 2) Average service life 100,000 h where T <sub>A</sub> = + 25 °C    | 5) Without load   | 8) With light/dark ratio 1:1               | B = Inputs and outputs reverse-polarity protected             |
| 3) Limit values   | 6) Control cable open:<br>NPN: light-switching<br>PNP: dark-switching | 9) Do not bend below 0 °C                  | C = Interference pulse suppression                            |
|   |   | 10) Reference voltage 50 V DC              | D = Outputs overcurrent and short-circuit protected           |

**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**

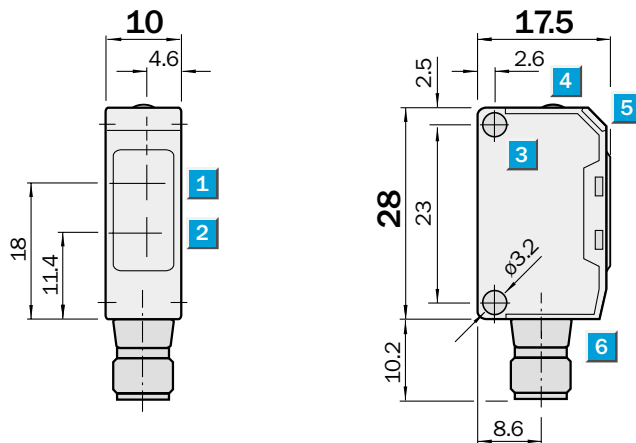
Type	Part no.
WT 150-P 132	6 011 042
WT 150-N 132	6 011 044
WT 150-P 430	6 011 039
WT 150-N 430	6 011 041


**Scanning range**  
**0.005...2.4 m**

Photoelectric reflex switches

- Polarising filter which also permits reliable detection of objects with shiny surfaces
- Also suitable for "Diamond Grade" reflective tape
- Adjustable sensitivity

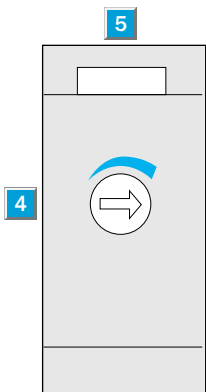
Dimensional drawing



Adjustments possible

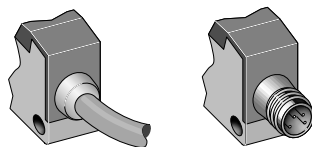
WL 150-P 132
WL 150-N 132
WL 150-P 430
WL 150-N 430

- 1** Centre of optical axis, receiver
- 2** Centre of optical axis, sender
- 3** Mounting hole  $\varnothing$  3.2 mm
- 4** Sensitivity adjustment 270°
- 5** LED indicator, red:  
Light received  $\geq$  switching threshold
- 6** M 8 plug – 4-pin or cable

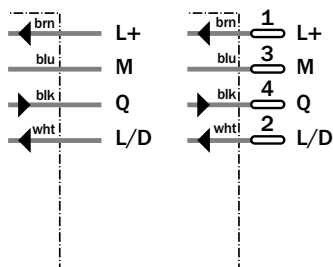


Connection types

WL 150-P 132	WL 150-P 430
WL 150-N 132	WL 150-N 430



4 x 0.18 mm <sup>2</sup>	4-pin, M 8
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Accessories	page
Cable receptacles	496
Mounting brackets Type A*	510
Reflectors**	520

\* included with delivery

\*\* reflector PL 20 A included with delivery



Technical data		WL 150-	P 132	P 430	N 132	N 430
<b>Scanning range</b> , max. typical/ on reflector	<b>0.005...2.4 m/PL 80 A</b> 0.005...1.0 m/PL 20 A (included)					
<b>Operating range</b>	<b>0.01...0.8 m/PL 20 A</b>					
Sensitivity, adjustable	Potentiometer 270°					
<b>Light source<sup>1)</sup>, light type</b>	LED, visible red light with polarising filter					
Light spot diameter	Approx. 150 mm at 1.5 m					
Angle of dispersion, sender	Approx. 6°					
<b>Supply voltage V<sub>S</sub></b>	10...30 V DC <sup>2)</sup>					
Ripple <sup>3)</sup>	± 10 %					
Current consumption <sup>4)</sup>	≤ 20 mA					
<b>Switching outputs</b>	PNP, open collector: Q NPN, open collector: Q					
Max. output current I <sub>A</sub>	100 mA					
Switching mode <sup>5)</sup>	Dark-/light-switching via control cable L/D + V <sub>S</sub> = light-switching 0 V = dark-switching					
Response time <sup>6)</sup>	≤ 0.5 ms					
Max. switching frequency <sup>7)</sup>	1000/s					
<b>Connection types</b>						
cable	PVC, 2 m <sup>8)</sup> ; 4 x 0.18 mm <sup>2</sup> , ∅ 3.5 mm					
plug	M 8 – 4-pin					
<b>VDE protection class<sup>9)</sup></b>	□					
<b>Circuit protection<sup>10)</sup></b>	A, B, C, D					
<b>Enclosure rating</b>	IP 67					
<b>Ambient temperature T<sub>A</sub></b>	Operation – 25 °C...+ 55 °C Storage – 40 °C...+ 75 °C					
<b>Weight</b> with cable (2 m)	Approx. 44 g					
with M 8 plug – 4-pin	Approx. 7 g					
<b>Housing material</b>	Housing: ABS/optics: PMMA					

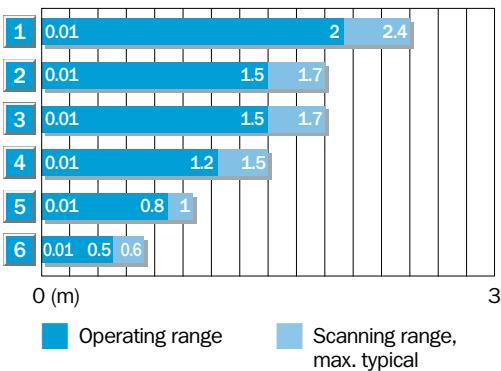
- 1) Average service life 100,000 h where T<sub>A</sub> = + 25 °C
- 2) Limit values
- 3) May not exceed or fall short of V<sub>S</sub> tolerances

- 4) Without load
- 5) Control cable open:  
NPN: light-switching  
PNP: dark-switching
- 6) Signal transit time with resistive load

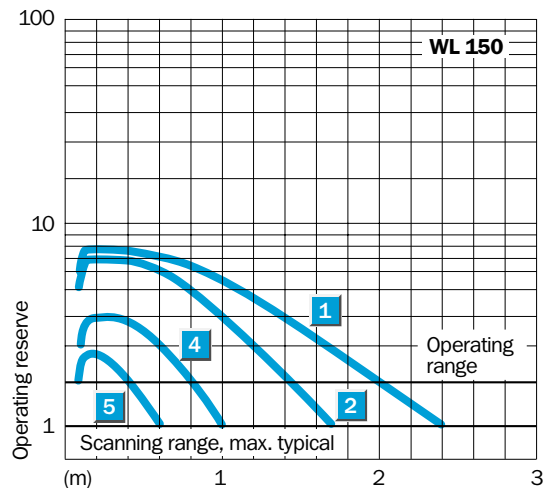
- 7) With light/dark ratio 1:1
- 8) Do not bend below 0 °C
- 9) Reference voltage 50 V DC

- 10) A = V<sub>S</sub> connections reverse-polarity protected
- B = Inputs and outputs reverse-polarity protected
- C = Interference pulse suppression
- D = Outputs overcurrent and short-circuit protected

**Scanning range and operating reserve**




Reflector type	Operating range
1 PL 80 A	0.01...2 m
2 P 250	0.01...1.5 m
3 PL 50 A or PL 40 A	0.01...1.5 m
4 PL 30 A or PL 31 A	0.01...1.2 m
5 PL 20 A	0.01...0.8 m
6 Reflect. tape «Diamond Grade»	0.01...0.5 m



**Order information**

Type	Part no.
WL 150-P 132	6 011 036
WL 150-P 430	6 011 038
WL 150-N 132	6 011 033
WL 150-N 430	6 011 035

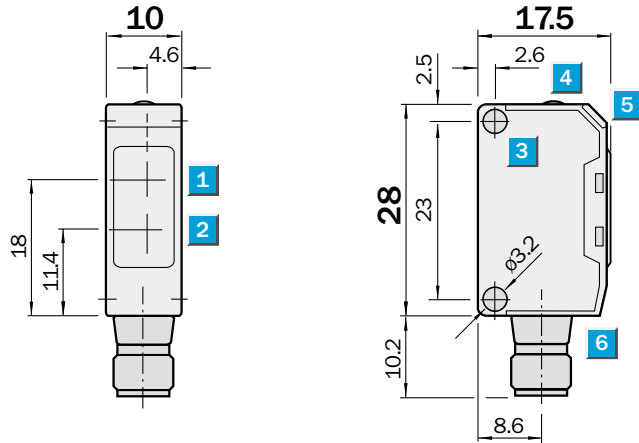



**Scanning range**  
**0.01...0.7 m**

Photoelectric reflex switches

- Ideal for detecting glass, transparent films or small parts
- Detection reliability:  
min. attenuation 20 %  
min. transmission variation 15 %
- Adjustable sensitivity

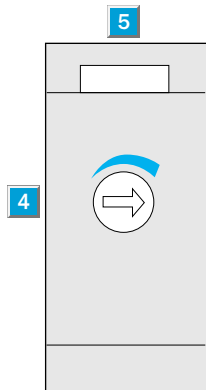
**Dimensional drawing**



**Adjustments possible**

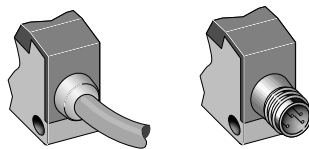
WL 150-P 122
WL 150-N 122
WL 150-P 420
WL 150-N 420

- 1** Centre of optical axis, receiver
- 2** Centre of optical axis, sender
- 3** Mounting hole  $\varnothing$  3.2 mm
- 4** Sensitivity adjustment 270°
- 5** LED indicator, red:  
Light received  $\geq$  switching threshold
- 6** M 8 plug – 4-pin or cable

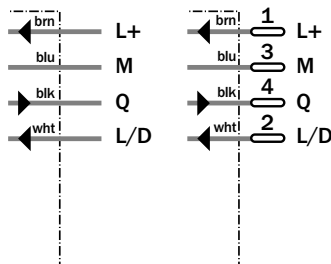


**Connection types**

WL 150-P 122	WL 150-P 420
WL 150-N 122	WL 150-N 420



4 x 0.18 mm<sup>2</sup>      4-pin, M 8



Accessories	page
Cable receptacles	496
Mounting brackets Type A*	510
Reflectors**	520

\* included with delivery

\*\* reflector PL 20 A included with delivery



Technical data		WL 150-	P 122	P 420	N 122	N 420
<b>Detection of transparent objects</b>						
Attenuation along light beam	min. 20 %					
Attenuation difference along light beam	min. 15 %					
Attenuation difference of object	min. 7.5 %					
Sensitivity, adjustable	Potentiometer, 270°					
<b>Scanning range, max. typical/</b>	<b>0.01... 0.70 m/PL 80 A</b>					
on reflector	0.01... 0.35 m/PL 20 A ( included)					
<b>Operating range</b>	<b>0.01... 0.60 m/PL 80 A</b>					
	0.01... 0.30 m/PL 20 A					
	Reflective tape: not suitable					
<b>Light source<sup>1)</sup>, light type</b>	LED, visible red light					
Light spot diameter	Approx. 40 mm at 0.3 mm					
Angle of dispersion of sender	Approx. 7.5°					
<b>Supply voltage V<sub>S</sub></b>	10... 30 V DC <sup>2)</sup>					
Ripple <sup>3)</sup>	± 10 %					
Current consumption <sup>4)</sup>	≤ 30 mA					
<b>Switching outputs</b>	PNP, open collector: Q					
	NPN, open collector: Q					
Max. output current I <sub>A</sub>	100 mA					
Switching mode <sup>5)</sup>	Dark-/light-switching via control cable L/D					
	+ V <sub>S</sub> = light-switching					
	0 V = dark-switching					
Response time <sup>6)</sup>	≤ 0.5 ms					
Max. switching frequency <sup>7)</sup>	1000/s					
<b>Connection types</b>						
cable	PVC, 2 m <sup>8)</sup> ; 4 x 0.18 mm <sup>2</sup> , ∅ 3.5 mm					
plug	M 8 – 4-pin					
<b>VDE protection class<sup>9)</sup></b>	□					
<b>Circuit protection<sup>10)</sup></b>	A, B, C, D					
<b>Enclosure rating</b>	IP 67					
<b>Ambient temperature T<sub>A</sub></b>	Operation – 25 °C...+ 55 °C					
	Storage – 40 °C...+ 75 °C					
<b>Poids</b> with cable 2 m	Approx. 44 g					
with plug M 8 – 4-pin	Approx. 7 g					
<b>Housing material</b>	Housing: ABS/optics: PC					

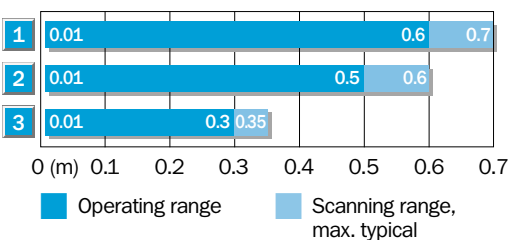
- 1) Average service life 100,000 h at T<sub>A</sub> = + 25 °C
- 2) Limit values
- 3) May not exceed or fall short of V<sub>S</sub> tolerances

- 4) Without load
- 5) Control cable open:  
NPN: light-switching  
PNP: dark-switching
- 6) Signal transit time with resistive load

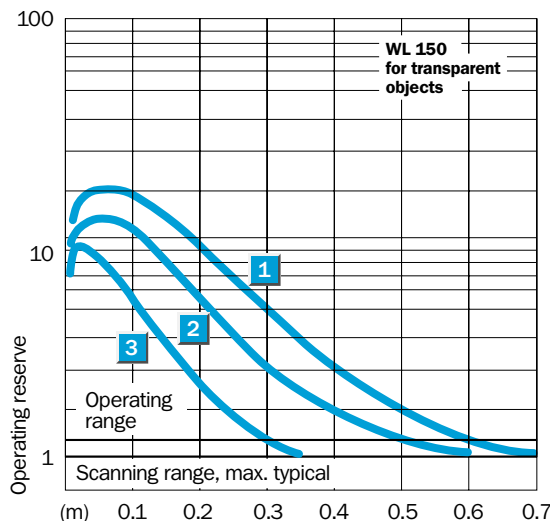
- 7) With light/dark ratio 1:1
- 8) Do not bend below 0 °C
- 9) Reference voltage 50 V DC

- 10) A = V<sub>S</sub> connections reverse-polarity protected
- B = Inputs and outputs reverse-polarity protected
- C = Interference impulse suppression
- D = Outputs overcurrent and short-circuit protected

**Scanning range and operating reserve**



Reflector type	Operating range
1 PL 80 A	0.01... 0.6 m
2 P 250	0.01... 0.5 m
3 PL 20 A	0.01... 0.3 m



**Order information**

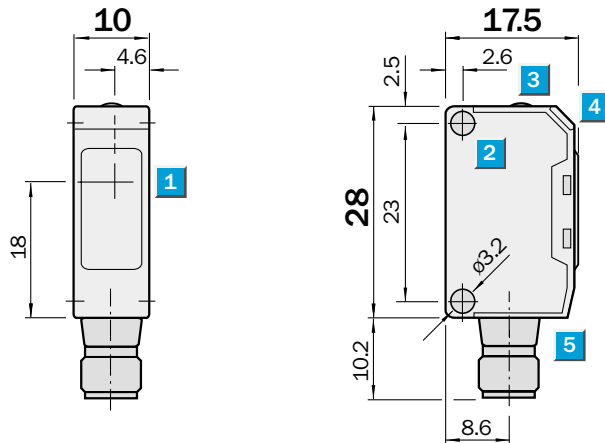
Type	Part no.
WL 150-P 122	6 020 686
WL 150-P 420	6 020 688
WL 150-N 122	6 020 683
WL 150-N 420	6 020 685

**Scanning range**  
4.4 m

Through-beam photoelectric switches

- Slotted masks 0.5 mm, 1 mm and 2 mm for detection of small parts or for positioning tasks
- Adjustable sensitivity
- Direct voltage supply 10...30 V DC

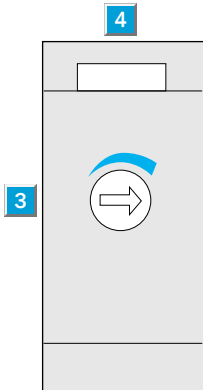
**Dimensional drawing**



**Adjustments possible**

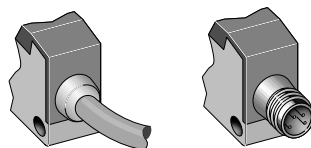
- WS/WE 150-P132
- WS/WE 150-N132
- WS/WE 150-P430
- WS/WE 150-N430

- 1 Centre of optical axis, sender (WS)  
Centre of optical axis, receiver (WE)
- 2 Mounting holes  $\varnothing$  3.2 mm
- 3 Sensitivity adjustment 270° (WE only)
- 4 LED indicator, red (WE only):  
Light received  $\geq$  switching threshold
- 5 M 8 plug – 4-pin or cable



**Connection types**

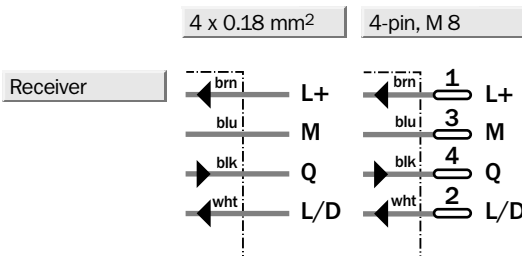
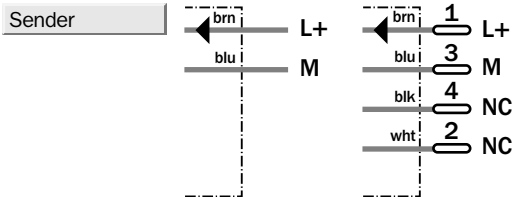
- WS/WE 150-P132    WS/WE 150-P430
- WS/WE 150-N132    WS/WE 150-N430



- 2 x 0.18 mm<sup>2</sup>    4-pin, M 8

Accessories	page
Cable receptacles	496
Mounting brackets Type A*	510
Slotted masks	556

\* included with delivery



Technical data		WS/WE 150-	P 132	P 430	N 132	N 430						
<b>Scanning range</b> , max. typical	4.4 m											
<b>Operating range</b>	4 m											
Operating range with mask,												
Aperture width 2.0 mm	2.0 m											
Aperture width 1.0 mm	1.0 m											
Aperture width 0.5 mm	0.5 m											
Sensitivity, adjustable	Potentiometer, 270°											
<b>Light source<sup>1)</sup>, light type</b>	LED, red light											
Light spot diameter	Approx. 400 mm at 4 mm											
Angle of dispersion of sender	Approx. 6°											
Angle of reception of receiver	Approx. 15°											
<b>Supply voltage V<sub>A</sub></b>	10...30 V DC <sup>2)</sup>											
Ripple <sup>3)</sup>	± 10 %											
Current consumption <sup>4)</sup> sender	≤ 15 mA											
receiver	≤ 20 mA											
<b>Switching outputs</b>	PNP, open collector: Q											
	NPN, open collector: Q											
Max. output current I <sub>A</sub>	100 mA											
Switching mode <sup>5)</sup>	Dark-/light-switching via control cable L/D											
	+ V <sub>S</sub> = light-switching											
	0 V = dark-switching											
Response time <sup>6)</sup>	≤ 0.5 ms											
Max. switching frequency <sup>7)</sup>	1000/s											
<b>Connection types</b> cable	PVC, 2 m <sup>8)</sup>											
sender WS	2 x 0.18 mm <sup>2</sup> , ∅ 3.5 mm											
receiver WE	4 x 0.18 mm <sup>2</sup> , ∅ 3.5 mm											
Plug	M 8 – 4-pin											
<b>VDE protection class<sup>9)</sup></b>	□											
<b>Circuit protection<sup>10)</sup></b>												
sender	A, B											
receiver	A, B, C, D											
<b>Enclosure rating</b>												
	IP 67											
<b>Ambient temperature T<sub>A</sub></b>												
	Operation – 25 °C...+ 55 °C											
	Storage – 40 °C...+ 70 °C											
<b>Weight</b>	with cable 2 m	Sender: appr. 44 g, receiver: appr. 44 g										
	with plug	Sender: appr. 7 g, receiver: appr. 7 g										
<b>Housing material</b>												
	Housing: ABS/optics: PC											

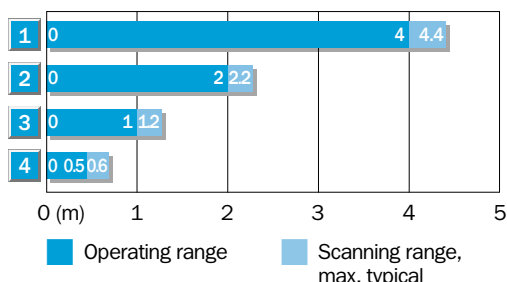
- 1) Average service life 100,000 h at T<sub>A</sub> = + 25 °C
- 2) Limit values
- 3) May not exceed or fall short of V<sub>S</sub> tolerances
- 4) Without load

- 5) Control cable open:  
NPN: light-switching  
PNP: dark-switching
- 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
- 10) A = V<sub>S</sub> connections reverse-polarity protected  
B = Inputs and outputs reverse-polarity protected

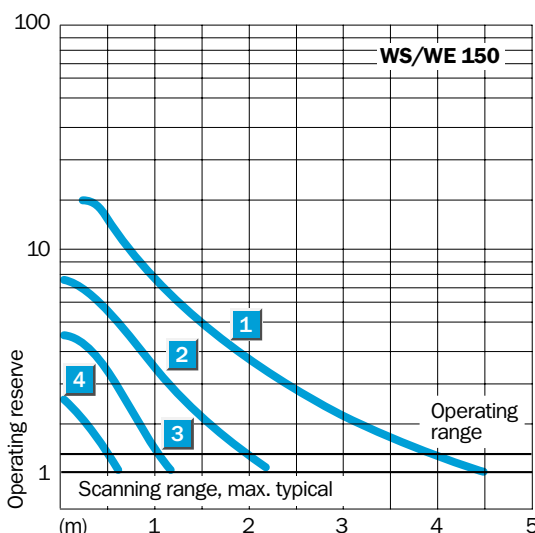
- C = Interference impulse suppression
- D = Outputs overcurrent and short-circuit protected
- 11) Part no. includes both sender and receiver!

**Scanning range and operating reserve**



**Reduction in scanning range with slotted masks**

1	Without slotted mask
2	Mask aperture width 2.0 mm
3	Mask aperture width 1.0 mm
4	Mask aperture width 0.5 mm



**Order information**

Type	Part no. <sup>11)</sup>
WS/WE 150-P132	6 011 030
WS/WE 150-P430	6 011 032
WS/WE 150-N132	6 011 027
WS/WE 150-N430	6 011 029