

## W100

Miniature photoelectric switch series with large scanning ranges

The W100 is a complete photoelectric switch series in miniature housing and provides large scanning ranges at an economical price.

Convenient details simplify handling for assembly, operation startup and maintenance, for example:

- Sensitivity setting (optionally without),
- Light/dark switch (optionally without),
- Optionally connection cable or M8 plug, 3-pin,
- Easy mounting through integrated mounting hole M3.

The M8 plug model especially provides an extremely simple solution for the island technologies being used increasingly. This makes the W100 especially interesting for the industries: storage and conveyor technologies and packaging technologies.



### The W100 highlights:

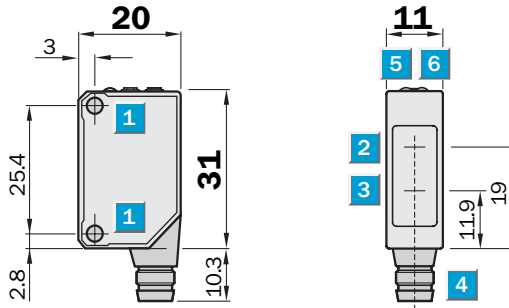
- Through-beam photoelectric switch: SR = 15 m;  
Accessories: Slotted masks,
- Photoelectric reflex switch with polarizing filter: SR = 6 m (PL80A),
- Energetic photoelectric proximity switch: SD = 900 mm; for standard scanning jobs,
- Photoelectric proximity switch with background blanking: SD = up to 140 mm.

**Scanning distance**  
4 ... 140 mm

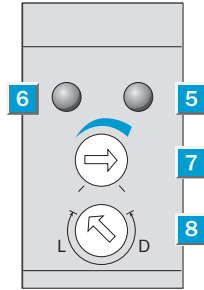
Photoelectric proximity switch

- Photoelectric proximity switch with background blanking
- Visible red light as alignment aid
- Switching point adjustable
- Easy mounting through integrated mounting hole M3

**Dimensional drawing**



**Adjustments possible**

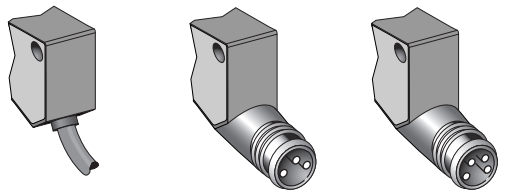


- 1 Mounting hole M3
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Connector
- 5 LED display orange: switching output active
- 6 LED display green: stable indicator
- 7 Scanning distance adjuster (270°)
- 8 Light/dark rotary switch:  
L = light-switching,  
D = dark-switching

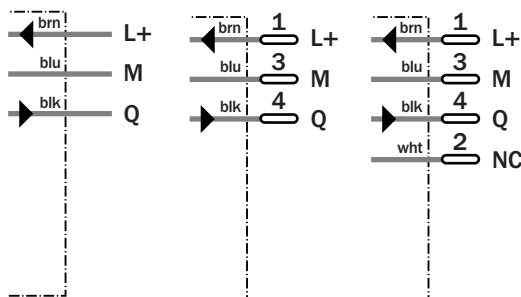


**Connection type**

WT100-N1419	WT100-N3419	WT100-N4419
WT100-P1419	WT100-P3419	WT100-P4419



3 x 0.18 mm<sup>2</sup>    M8, 3-pin    M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Mounting systems

Technical specifications		WT100-	N1419	N3419	N4419	P1419	P3419	P4419				
Scanning distance typ. max.	4 ... 140 mm <sup>1)</sup>											
Operating distance	10 ... 100 mm <sup>1)</sup>											
Adjustment of operating distance	Potentiometer											
Light source, light type	LED, red light, 680 nm <sup>2)</sup>											
Light spot diameter	Approx. 8 mm at 90 mm distance											
Supply voltage $V_s$	DC 10 ... 30 V <sup>3)</sup>											
Residual ripple	$\pm 10\%$ <sup>4)</sup>											
Power consumption	$\leq 30\text{ mA}$ <sup>5)</sup>											
Switching outputs	NPN: open collector: Q											
	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	$V_s - 1.8\text{ V}$ / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. $V_s / < 1.8\text{ V}$											
Switching mode	Light-/dark-switching via rotary switch											
Output current $I_a$ max	100 mA											
Response time	$\leq 0.5\text{ ms}$ <sup>6)</sup>											
Switching frequency	1,000 Hz <sup>7)</sup>											
Connection type	Cable, PVC, 2 m <sup>8)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	$\diamond$											
Circuit protection	$V_s$ connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
Enclosure rating	IP 65											
Ambient temperature operation	$-25\text{ }^\circ\text{C} \dots +55\text{ }^\circ\text{C}$											
Ambient temperature storage	$-40\text{ }^\circ\text{C} \dots +70\text{ }^\circ\text{C}$											
Weight	Approx. 53 g											
	Approx. 9 g											
Housing material	ABS, PC											

<sup>1)</sup> Object with 90 % remission (based on standard white to DIN 5033)

<sup>2)</sup> Average service life 100,000 h

at  $T_a = +25\text{ }^\circ\text{C}$

<sup>3)</sup> Limit values, reverse-polarity protected-operation in short-circuit protected

network max. 8 A

<sup>4)</sup> May not exceed or fall short of  $V_s$  tolerances

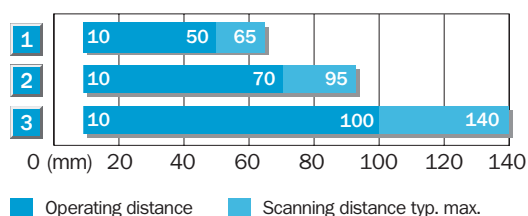
<sup>5)</sup> Without load

<sup>6)</sup> Signal transit time with resistive load

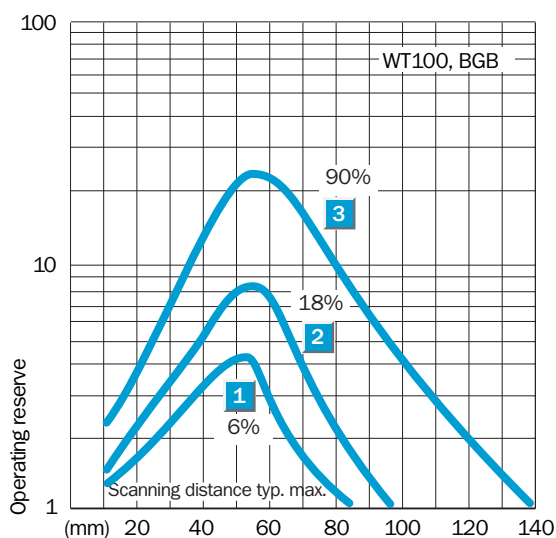
<sup>7)</sup> With light/dark ratio 1:1

<sup>8)</sup> Do not bend below  $0\text{ }^\circ\text{C}$

### Scanning distance and operating reserve



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



### Ordering information

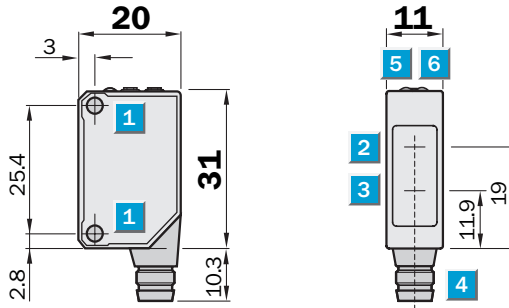
Type	Order no.
WT100-N1419	6026113
WT100-N3419	6026115
WT100-N4419	6028618
WT100-P1419	6026114
WT100-P3419	6026116
WT100-P4419	6028619

**Scanning distance**  
0 ... 900 mm

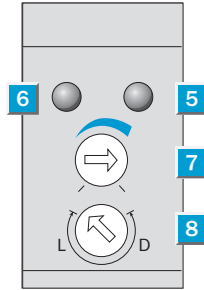
Photoelectric proximity switch

- Energetic photoelectric proximity switches for standard applications
- Visible red light as alignment aid
- Switching point adjustable
- Easy mounting through integrated mounting hole M3

**Dimensional drawing**



**Adjustments possible**

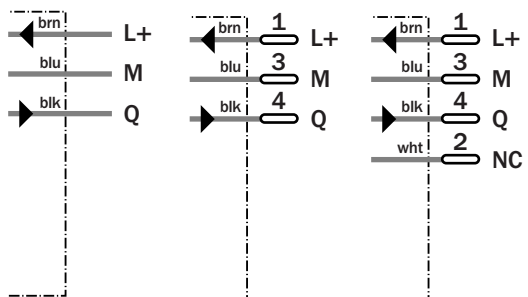
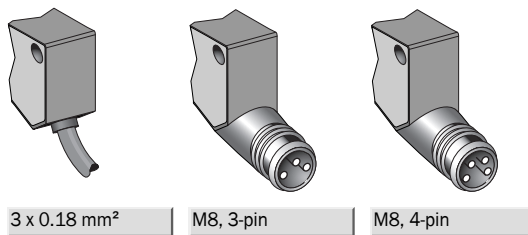


- 1 Mounting hole M3
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Connector
- 5 LED display orange: switching output active
- 6 LED display green: stable indicator
- 7 Scanning distance adjuster (270°)
- 8 Light/dark rotary switch:  
L = light-switching,  
D = dark-switching



**Connection type**

WT100-N1439	WT100-N3439	WT100-N4439
WT100-P1439	WT100-P3439	WT100-P4439



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Mounting systems

Technical specifications	WT100-	N1439	N3439	N4439	P1439	P3439	P4439				
Scanning distance typ. max.	0 ... 900 mm <sup>1)</sup>										
Operating distance	0 ... 700 mm <sup>1)</sup>										
Adjustment of operating distance	Potentiometer										
Light source, light type	LED, red light, 680 nm <sup>2)</sup>										
Light spot diameter	Approx. 55 mm at 400 mm distance										
Angle of dispersion	Approx. 6.8°										
Supply voltage $V_s$	DC 10 ... 30 V <sup>3)</sup>										
Residual ripple	± 10 % <sup>4)</sup>										
Power consumption	≤ 30 mA <sup>5)</sup>										
Switching outputs	NPN: open collector: Q										
	PNP: open collector: Q										
Signal voltage PNP HIGH / LOW	$V_s - 1.8 \text{ V}$ / approx. 0 V										
Signal voltage NPN HIGH / LOW	Approx. $V_s / < 1.8 \text{ V}$										
Switching mode	Light-/dark-switching via rotary switch										
Output current $I_a$ max	100 mA										
Response time	≤ 0.5 ms <sup>6)</sup>										
Switching frequency	1,000 Hz <sup>7)</sup>										
Connection type	Cable, PVC, 2 m <sup>8)</sup>										
	Connector, M8, 3-pin										
	Connector, M8, 4-pin										
VDE protection class	◆										
Circuit protection	$V_s$ connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected										
Enclosure rating	IP 65										
Ambient temperature operation	-25 °C ... +55 °C										
Ambient temperature storage	-40 °C ... +70 °C										
Weight	Approx. 53 g										
	Approx. 9 g										
Housing material	ABS, PC										

<sup>1)</sup> Object with 90 % remission (based on standard white to DIN 5033)

<sup>2)</sup> Average service life 100,000 h

at  $T_a = +25 \text{ °C}$

<sup>3)</sup> Limit values, reverse-polarity protected operation in short-circuit protected

network max 8 A

<sup>4)</sup> May not exceed or fall short of  $V_s$  tolerances

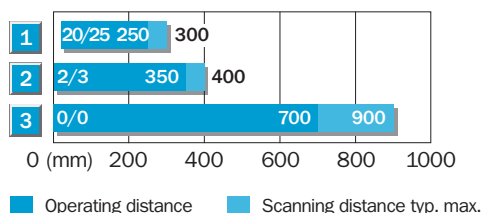
<sup>5)</sup> Without load

<sup>6)</sup> Signal transit time with resistive load

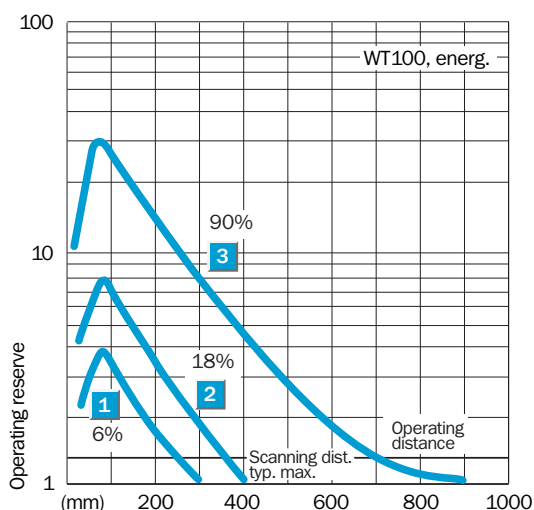
<sup>7)</sup> With light/dark ratio 1:1

<sup>8)</sup> Do not bend below 0 °C

### Scanning distance and operating reserve



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



### Ordering information

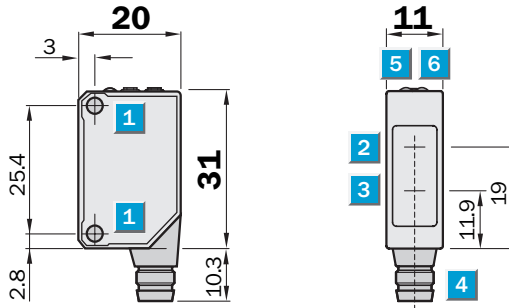
Type	Order no.
WT100-N1439	6026078
WT100-N3439	6026080
WT100-N4439	6028614
WT100-P1439	6026079
WT100-P3439	6026081
WT100-P4439	6028615

**Scanning range**  
0.01 ... 6 m

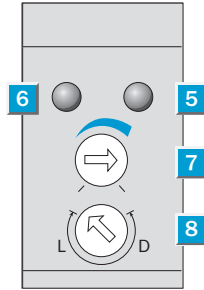
Photoelectric reflex switch

- Polarization filter and consequently reliable detection of objects with shiny surfaces
- Also suitable for "Diamond Grade" reflective tape
- Sensitivity adjustable
- Visible red light as alignment aid
- Easy mounting through integrated mounting hole M3

**Dimensional drawing**



**Adjustments possible**

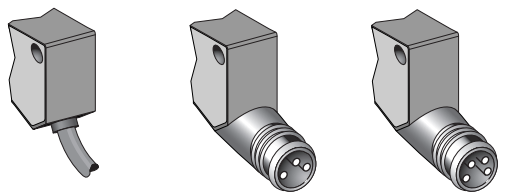


- 1 Mounting hole M3
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Connector
- 5 LED display orange: switching output active
- 6 LED display green: stable indicator
- 7 Sensitivity adjustment (270°)
- 8 Light/dark rotary switch:  
L = light-switching,  
D = dark-switching



**Connection type**

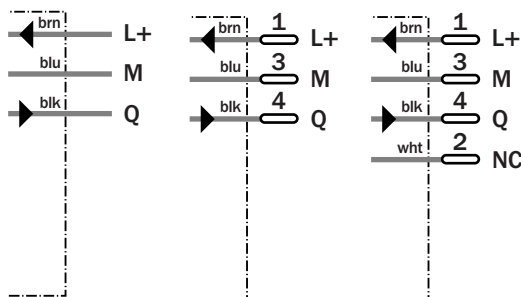
WL100-N1439	WL100-N3439	WL100-N4439
WL100-P1439	WL100-P3439	WL100-P4439



3 x 0.18 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Mounting systems
Reflectors

Technical specifications		WL100-	N1439	N3439	N4439	P1439	P3439	P4439				
<b>Scanning range typ. max.</b>	0.01 ... 6 m											
<b>Scanning range, recommended</b>	0.01 ... 5 m											
Relating to	Reflector PL80A											
Sensitivity adjustment	Potentiometer											
<b>Light source, light type</b>	LED, red light, 680 nm <sup>1)</sup>											
Light spot diameter	Approx. 250 mm at 3.5 m distance											
Angle of dispersion	Approx. 4 °											
Polarisation filter	✓											
<b>Supply voltage V<sub>s</sub></b>	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption	≤ 30 mA <sup>4)</sup>											
<b>Switching outputs</b>	NPN: open collector: Q											
	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Switching mode	Light-/dark-switching via rotary switch											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
<b>VDE protection class</b>	⊠											
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
<b>Enclosure rating</b>	IP 65											
<b>Ambient temperature operation</b>	-25 °C ... +55 °C											
<b>Ambient temperature storage</b>	-40 °C ... +70 °C											
<b>Weight</b>	Approx. 53 g											
	Approx. 9 g											
<b>Housing material</b>	ABS, PMMA											
<b>Included with delivery</b>	Reflector P250											

<sup>1)</sup> Average service life 100,000 h  
at T<sub>a</sub> = +25 °C

<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected  
network max. 8 A

<sup>3)</sup> May not exceed or fall short of

V<sub>s</sub> tolerances

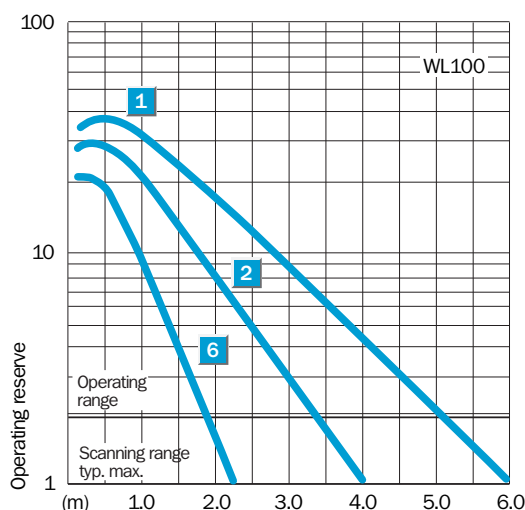
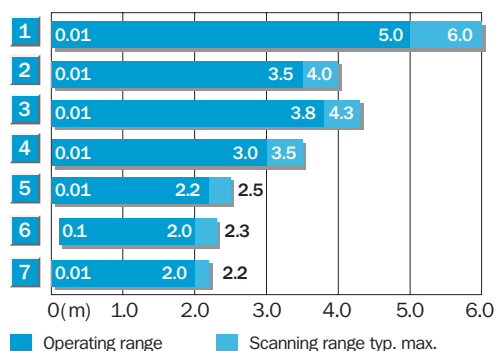
<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1

<sup>7)</sup> Do not bend below 0 °C

### Scanning range and operating reserve



Reflector type	Operating range
1 PL80A	0.01 ... 5.0 m
2 P250	0.01 ... 3.5 m
3 PL50A/PL40A	0.01 ... 3.8 m
4 PL30A/PL31A	0.01 ... 3.0 m
5 PL20A	0.01 ... 2.2 m
6 Reflective tape Diamond Grade	0.1 ... 2.0 m (100 x 100 mm <sup>2</sup> )
7 P45	0.01 ... 2.0 m

### Ordering information

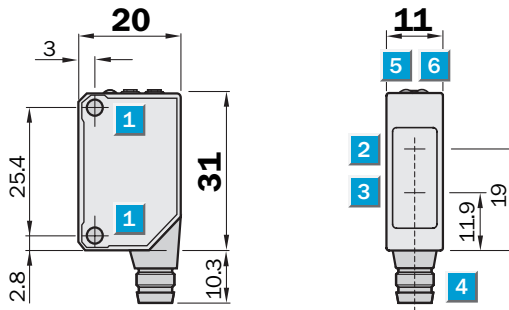
Type	Order no.
WL100-N1439	6026064
WL100-N3439	6026070
WL100-N4439	6028604
WL100-P1439	6026067
WL100-P3439	6026073
WL100-P4439	6028607

**Scanning distance**  
0 ... 1 m

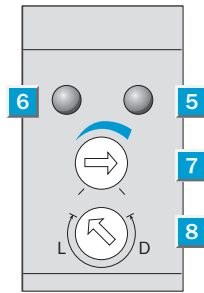
Photoelectric proximity switch

- 645 nm red light sender LED
- Extra bright, small and well-shaped light spot
- Extra long scanning distance
- Inclusive mounting bracket

**Dimensional drawing**



**Adjustments possible**

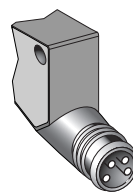
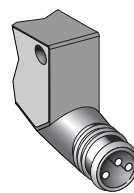
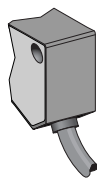


- 1 Mounting hole M3
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Connector
- 5 LED display orange: switching output active
- 6 LED display green: stable indicator
- 7 Scanning distance adjuster (270°)
- 8 Light/dark rotary switch:  
L = light-switching,  
D = dark-switching



**Connection type**

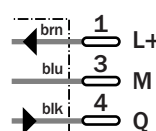
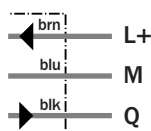
WT100-N1409	WT100-N3409	WT100-N4409
WT100-P1409	WT100-P3409	WT100-P4409



3 x 0.18 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



**Accessories**

- Connector, M8, 3-pin
- Connector, M8, 4-pin
- Mounting systems



Technical specifications		WT100-	N1409	N3409	N4409	P1409	P3409	P4409				
Scanning distance typ. max.	0 ... 1000 mm <sup>1)</sup>											
Operating distance	0 ... 750 mm <sup>1)</sup>											
Adjustment of operating distance	Potentiometer											
Light source, light type	LED, red light, 645 nm <sup>2)</sup>											
Light spot diameter	Approx. 50 mm at 750 mm distance											
Angle of dispersion	Approx. 4°											
Supply voltage V <sub>s</sub>	DC 10 ... 30 V <sup>3)</sup>											
Residual ripple	± 10 % <sup>4)</sup>											
Power consumption	≤ 30 mA <sup>5)</sup>											
Switching outputs	NPN: open collector: Q											
	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Switching mode	Light-/dark-switching via rotary switch											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>6)</sup>											
Switching frequency	1,000 Hz <sup>7)</sup>											
Connection type	Cable, PVC, 2 m <sup>8)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	◇											
Circuit protection	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
Enclosure rating	IP 67											
Ambient temperature operation	-25 °C ... +55 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Housing material	ABS, POM, PMMA											
Included with delivery	Bracket BEF-W100-A											

<sup>1)</sup> Object with 90 % remission (based on standard white to DIN 5033)

<sup>2)</sup> Average service life 100,000 h

at T<sub>a</sub> = +25 °C

<sup>3)</sup> Limit values, reverse-polarity protected operation in short-circuit protected

network max. 8 A

<sup>4)</sup> May not exceed or fall short of V<sub>s</sub> tolerances

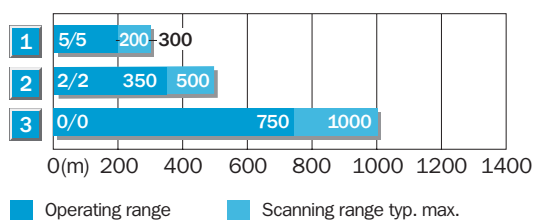
<sup>5)</sup> Without load

<sup>6)</sup> Signal transit time with resistive load

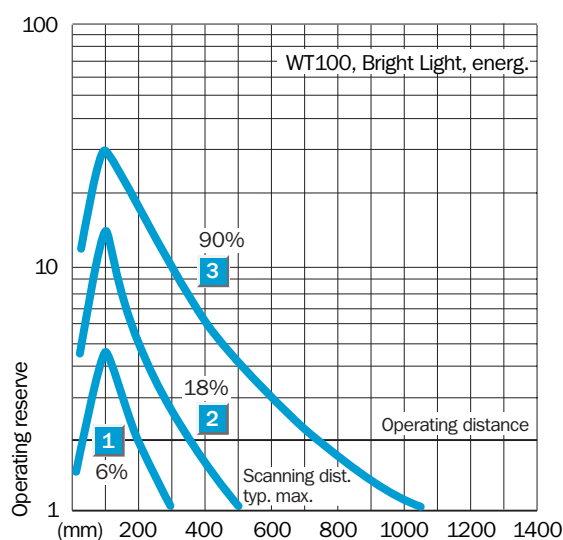
<sup>7)</sup> With light/dark ratio 1:1

<sup>8)</sup> Do not bend below 0 °C

### Scanning distance and operating reserve



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



### Ordering information

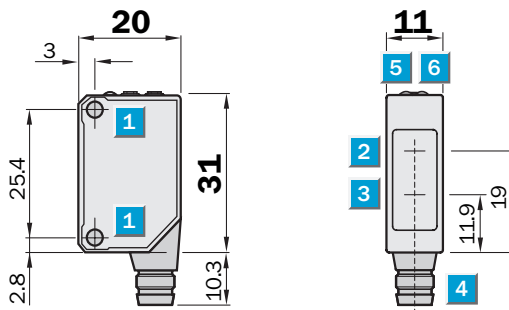
Type	Order no.
WT100-N1409	6036501
WT100-N3409	6036502
WT100-N4409	6036503
WT100-P1409	6036504
WT100-P3409	6036505
WT100-P4409	6036506

**Scanning distance**  
0 ... 1 m

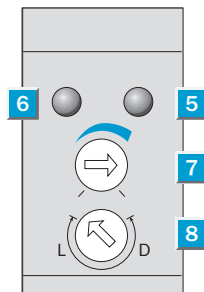
Photoelectric proximity switch

- 645 nm red light sender LED
- Extra bright, small and well-shaped light spot
- Extra long scanning distance

**Dimensional drawing**



**Adjustments possible**

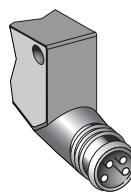
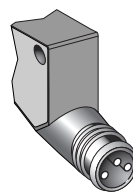
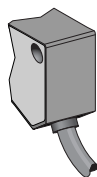


- 1 Mounting hole M3
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- 5 LED display orange: switching output active
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- 7 Scanning distance adjuster (270°)
- 8 Light/dark rotary switch:  
L = light-switching,  
D = dark-switching



**Connection type**

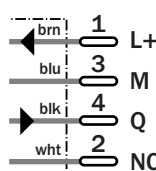
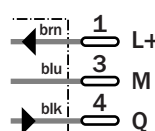
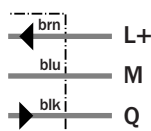
WT100-N1402	WT100-N3400	WT100-N4400
WT100-P1402	WT100-P3400	WT100-P4400



3 x 0.18 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



**Accessories**

- Connector, M8, 3-pin
- Connector, M8, 4-pin
- Mounting systems

Technical specifications		WT100-	N1402	N3400	N4400	P1402	P3400	P4400				
Scanning distance typ. max.	0 ... 1000 mm <sup>1)</sup>											
Operating distance	0 ... 750 mm <sup>1)</sup>											
Adjustment of operating distance	Potentiometer											
Light source, light type	LED, red light, 645 nm <sup>2)</sup>											
Light spot diameter	Approx. 50 mm at 750 mm distance											
Angle of dispersion	Approx. 4°											
Supply voltage V <sub>s</sub>	DC 10 ... 30 V <sup>3)</sup>											
Residual ripple	± 10 % <sup>4)</sup>											
Power consumption	≤ 30 mA <sup>5)</sup>											
Switching outputs	NPN: open collector: Q											
	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Switching mode	Light-/dark-switching via rotary switch											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>6)</sup>											
Switching frequency	1,000 Hz <sup>7)</sup>											
Connection type	Cable, PVC, 2 m <sup>8)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	⊠											
Circuit protection	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
Enclosure rating	IP 67											
Ambient temperature operation	-25 °C ... +55 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Housing material	ABS, POM, PMMA											

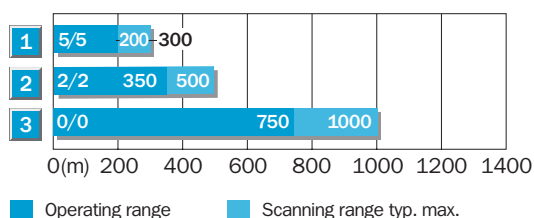
<sup>1)</sup> Object with 90 % remission (based on standard white to DIN 5033)  
<sup>2)</sup> Average service life 100,000 h

at T<sub>a</sub> = +25 °C  
<sup>3)</sup> Limit values, reverse-polarity protected operation in short-circuit protected

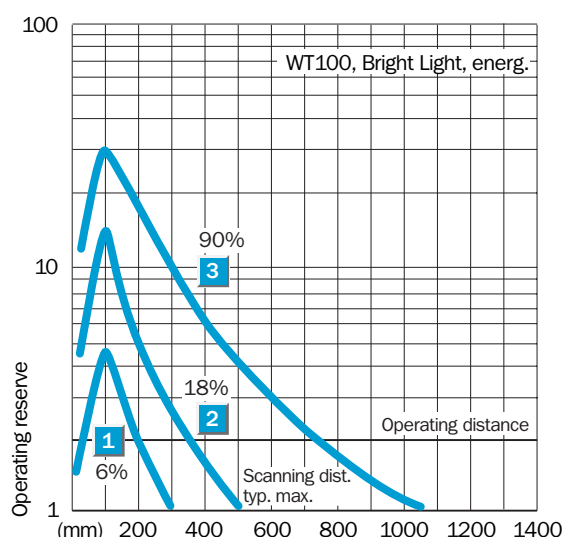
network max. 8 A  
<sup>4)</sup> May not exceed or fall short of V<sub>s</sub> tolerances

<sup>5)</sup> Without load  
<sup>6)</sup> Signal transit time with resistive load  
<sup>7)</sup> With light/dark ratio 1:1  
<sup>8)</sup> Do not bend below 0 °C

**Scanning distance and operating reserve**



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



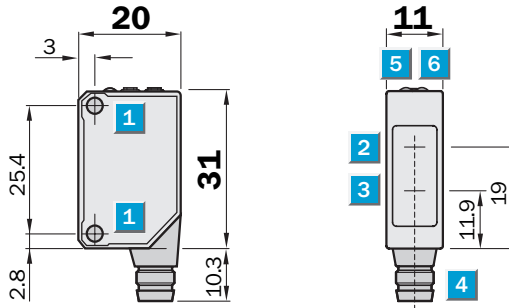
Ordering information	
Type	Order no.
WT100-N1402	6037850
WT100-N3400	6037851
WT100-N4400	6037852
WT100-P1402	6037853
WT100-P3400	6037854
WT100-P4400	6037855

**Scanning range**  
0.01 ... 6 m

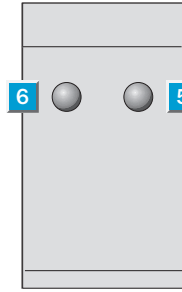
Photoelectric reflex switch

- Polarization filter and consequently reliable detection of objects with shiny surfaces
- Also suitable for "Diamond Grade" reflective tape
- Light- or dark-switching
- Visible red light as alignment aid
- Easy mounting through integrated mounting hole M3

**Dimensional drawing**



**Adjustments possible**

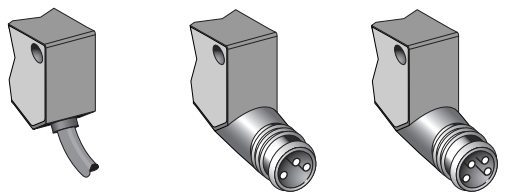


- 1 Mounting hole M3
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Connector
- 5 LED display orange: switching output active
- 6 LED display green: stable indicator

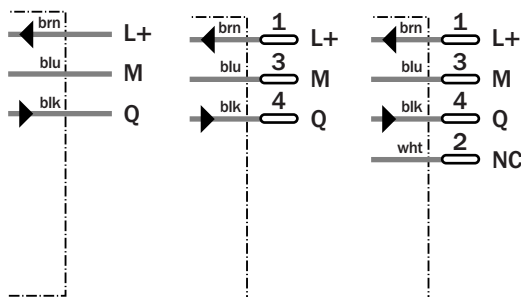


**Connection type**

WL100-P1239	WL100-P3239	WL100-P4239
WL100-P1339	WL100-P3339	WL100-P4339



3 x 0.18 mm<sup>2</sup>    M8, 3-pin    M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Mounting systems
Reflectors

Technical specifications		WL100-	P1239	P1339	P3239	P3339	P4239	P4339				
<b>Scanning range typ. max.</b>	0.01 ... 6 m											
<b>Scanning range, recommended</b>	0.01 ... 5 m											
Relating to	Reflector PL80A											
<b>Light source, light type</b>	LED, red light, 680 nm <sup>1)</sup>											
Light spot diameter	Approx. 250 mm at 3.5 m distance											
Angle of dispersion	Approx. 4°											
Polarisation filter	✓											
<b>Supply voltage V<sub>s</sub></b>	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption	≤ 30 mA <sup>4)</sup>											
<b>Switching outputs</b>	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Switching mode	Dark-switching											
	Light-switching											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
<b>VDE protection class</b>	◆											
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
<b>Enclosure rating</b>	IP 65											
<b>Ambient temperature operation</b>	-25 °C ... +55 °C											
<b>Ambient temperature storage</b>	-40 °C ... +70 °C											
<b>Weight</b>	Approx. 53 g											
	Approx. 9 g											
<b>Housing material</b>	ABS, PMMA											
<b>Included with delivery</b>	Reflector P250											

<sup>1)</sup> Average service life 100,000 h at T<sub>a</sub> = +25 °C

<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected network max. 8 A

<sup>3)</sup> May not exceed or fall short of

V<sub>s</sub> tolerances

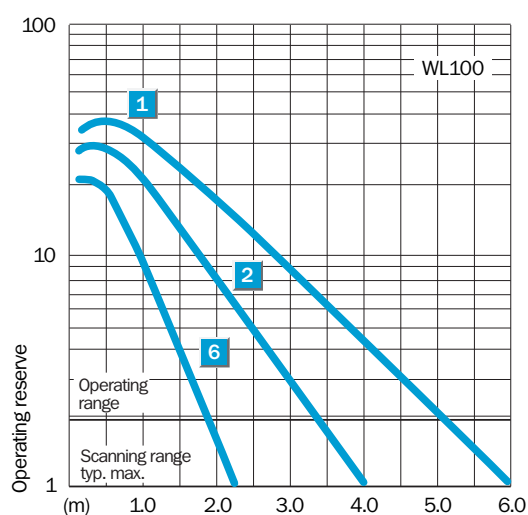
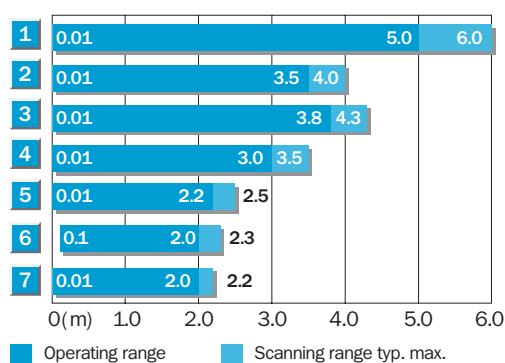
<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1

<sup>7)</sup> Do not bend below 0 °C

### Scanning range and operating reserve



Reflector type	Operating range
1	PL80A
2	P250
3	PL50A/PL40A
4	PL30A/PL31A
5	PL20A
6	Reflective tape Diamond Grade
7	P45

### Ordering information

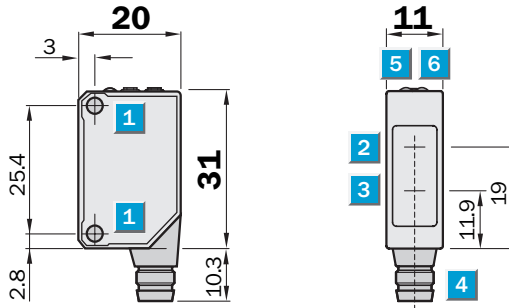
Type	Order no.
WL100-P1239	6026065
WL100-P1339	6026066
WL100-P3239	6026071
WL100-P3339	6026072
WL100-P4239	6028605
WL100-P4339	6028606

**Scanning range**  
0.01 ... 6 m

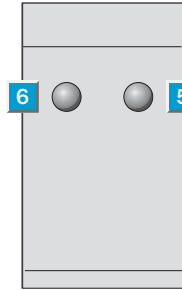
Photoelectric reflex switch

- Polarization filter and consequently reliable detection of objects with shiny surfaces
- Also suitable for "Diamond Grade" reflective tape
- Light- or dark-switching
- Visible red light as alignment aid
- Easy mounting through integrated mounting hole M3

**Dimensional drawing**



**Adjustments possible**

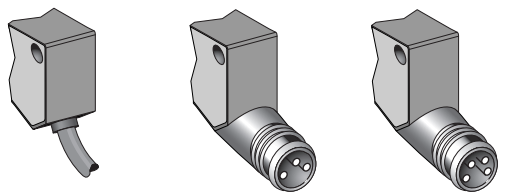


- 1 Mounting hole M3
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Connector
- 5 LED display orange: switching output active
- 6 LED display green: stable indicator



**Connection type**

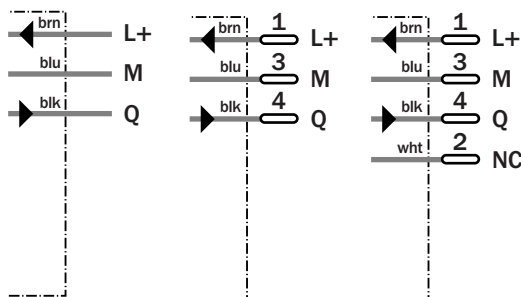
WL100-N1239	WL100-N3239	WL100-N4239
WL100-N1339	WL100-N3339	WL100-N4339



3 x 0.18 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Mounting systems
Reflectors

Technical specifications		WL100-	N1239	N1339	N3239	N3339	N4239	N4339				
<b>Scanning range typ. max.</b>	0.01 ... 6 m											
<b>Scanning range, recommended</b>	0.01 ... 5 m											
Relating to	Reflector PL80A											
<b>Light source, light type</b>	LED, visible red light <sup>1)</sup>											
Light spot diameter	Approx. 250 mm at 3.5 m distance											
Angle of dispersion	Approx. 4°											
Polarisation filter	✓											
<b>Supply voltage V<sub>s</sub></b>	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption	≤ 30 mA <sup>4)</sup>											
<b>Switching outputs</b>	NPN: open collector: Q											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Switching mode	Dark-switching											
	Light-switching											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
<b>VDE protection class</b>	◆											
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
<b>Enclosure rating</b>	IP 65											
<b>Ambient temperature operation</b>	-25 °C ... +55 °C											
<b>Ambient temperature storage</b>	-40 °C ... +70 °C											
<b>Weight</b>	Approx. 53 g											
	Approx. 9 g											
<b>Housing material</b>	ABS, PMMA											
<b>Included with delivery</b>	Reflector P250											

<sup>1)</sup> Average service life 100,000 h at T<sub>a</sub> = +25 °C

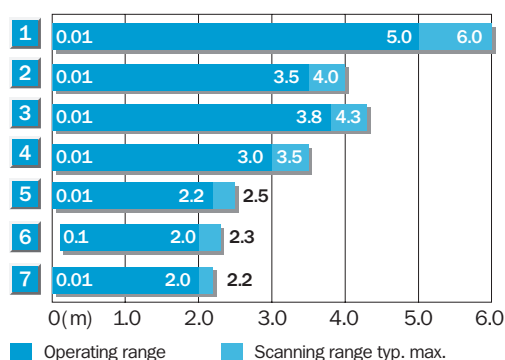
<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected network max. 8 A  
<sup>3)</sup> May not exceed or fall short of

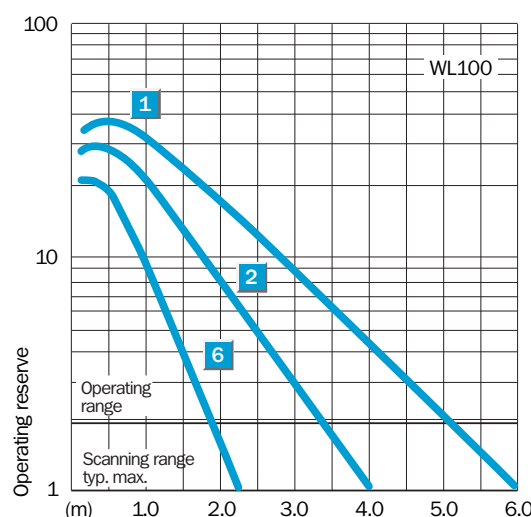
V<sub>s</sub> tolerances  
<sup>4)</sup> Without load  
<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1  
<sup>7)</sup> Do not bend below 0 °C

**Scanning range and operating reserve**



Reflector type	Operating range
1 PL80A	0.01 ... 5.0 m
2 P250	0.01 ... 3.5 m
3 PL50A/PL40A	0.01 ... 3.8 m
4 PL30A/PL31A	0.01 ... 3.0 m
5 PL20A	0.01 ... 2.2 m
6 Reflective tape Diamond Grade	0.1 ... 2.0 m (100 x 100 mm <sup>2</sup> )
7 P45	0.01 ... 2.0 m



Ordering information	
Type	Order no.
WL100-N1239	6026062
WL100-N1339	6026063
WL100-N3239	6026068
WL100-N3339	6026069
WL100-N4239	6028602
WL100-N4339	6028603

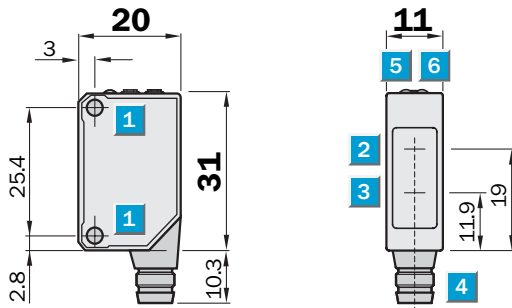
**Scanning range**  
0.1 ... 7.5 m

Photoelectric reflex switch

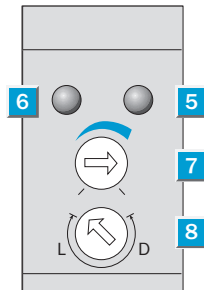
- 645 nm red light sender LED
- Extra bright, small and well-shaped light spot
- Extra long scanning range
- Extended blind zone for suppression of depolarised reflexes in close-up range
- Inclusive reflector and mounting bracket



**Dimensional drawing**



**Adjustments possible**

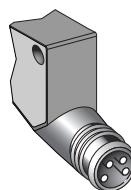
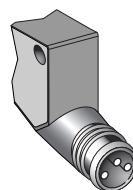
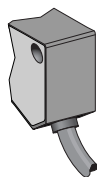


- 1 Mounting hole M3
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Connector
- 5 LED display orange: switching output active
- 6 LED display green: stable indicator
- 7 Sensitivity adjustment (270°)
- 8 Light/dark rotary switch:  
L = light-switching,  
D = dark-switching



**Connection type**

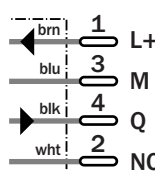
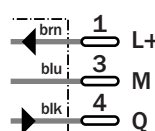
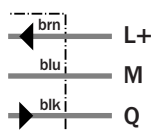
WL100-N1409	WL100-P3409	WL100-P4409
WL100-P1409	WL100-P3409	WL100-P4409



3 x 0.18 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



**Accessories**

- Connector, M8, 3-pin
- Connector, M8, 4-pin
- Mounting systems
- Reflectors



Technical specifications		WL100-	N1409	N3409	N4409	P1409	P3409	P4409				
<b>Scanning range typ. max.</b>	0.1 ... 7.5 m											
<b>Scanning range, recommended</b>	0.1 ... 6 m											
Relating to	Reflector PL80A											
Sensitivity adjustment	Potentiometer											
<b>Light source, light type</b>	LED, red light, 645 nm <sup>1)</sup>											
Light spot diameter	Approx. 150 mm at 4 m distance											
Angle of dispersion	Approx. 2°											
Polarisation filter	✓											
<b>Supply voltage V<sub>s</sub></b>	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption	≤ 30 mA <sup>4)</sup>											
<b>Switching outputs</b>	NPN: open collector: Q											
	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Switching mode	Light-/dark-switching via rotary switch											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
<b>VDE protection class</b>	⊠											
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
<b>Enclosure rating</b>	IP 67											
<b>Ambient temperature operation</b>	-25 °C ... +55 °C											
<b>Ambient temperature storage</b>	-40 °C ... +70 °C											
<b>Housing material</b>	ABS, POM, PMMA											
<b>Included with delivery</b>	Reflector P250											
	Bracket BEF-W100-A											

<sup>1)</sup> Average service life 100,000 h at T<sub>a</sub> = +25 °C

operation in short-circuit protected network max. 8 A

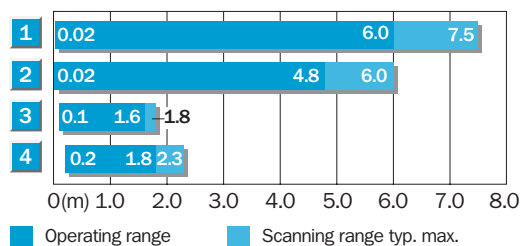
V<sub>s</sub> tolerances  
<sup>4)</sup> Without load  
<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1  
<sup>7)</sup> Do not bend below 0 °C

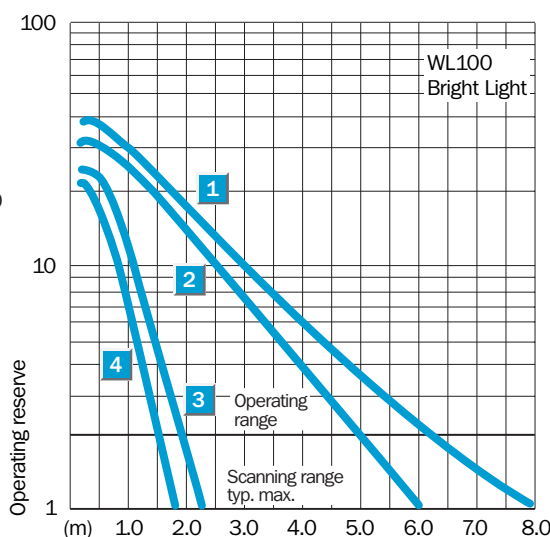
<sup>2)</sup> Limit values, reverse-polarity protected

<sup>3)</sup> May not exceed or fall short of

**Scanning range and operating reserve**



Reflector type	Operating range
1 PL80A	0.02 ... 6.0 m
2 P250	0.02 ... 4.8 m
3 P45	0.2 ... 1.8 m
4 Reflective tape Diamond Grade	0.1 ... 1.6 m (100 x 100 mm <sup>2</sup> )



Ordering information	
Type	Order no.
WL100-N1409	6036507
WL100-N3409	6036508
WL100-N4409	6036509
WL100-P1409	6036510
WL100-P3409	6036511
WL100-P4409	6036512

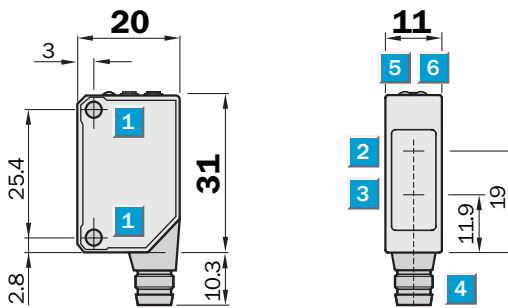
**Scanning range**  
0.1 ... 7.5 m

Photoelectric reflex switch

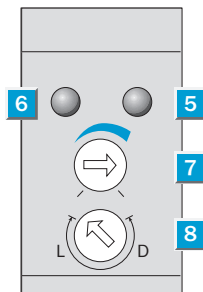
- 645 nm red light sender LED
- Extra bright, small and well-shaped light spot
- Extra long scanning range
- Extended blind zone for suppression of depolarised reflexes in close-up range



**Dimensional drawing**



**Adjustments possible**

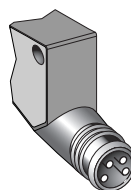
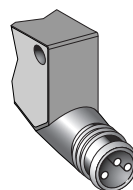
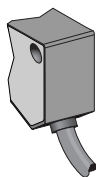


- 1** Mounting hole M3
- 2** Centre of optical axis, receiver
- 3** Centre of optical axis, sender
- 4** Connector
- 5** LED display orange: switching output active
- 6** LED display green: stable indicator
- 7** Sensitivity adjustment (270°)
- 8** Light/dark rotary switch:  
L = light-switching,  
D = dark-switching



**Connection type**

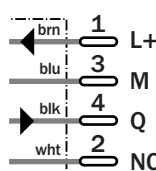
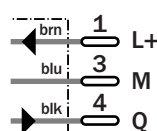
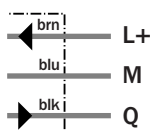
WL100-N1402	WL100-P3400	WL100-P4400
WL100-P1402	WL100-P3400	WL100-P4400



3 x 0.18 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



**Accessories**

- Connector, M8, 3-pin
- Connector, M8, 4-pin
- Mounting systems
- Reflectors

Technical specifications		WL100-	N1402	N3400	N4400	P1402	P3400	P4400				
Scanning range typ. max.	0.1 ... 7.5 m											
Scanning range, recommended	0.1 ... 6 m											
Relating to	Reflector PL80A											
Sensitivity adjustment	Potentiometer											
Light source, light type	LED, red light, 645 nm <sup>1)</sup>											
Light spot diameter	Approx. 150 mm at 4 m distance											
Angle of dispersion	Approx. 2°											
Polarisation filter	✓											
Supply voltage V <sub>s</sub>	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption	≤ 30 mA <sup>4)</sup>											
Switching outputs	NPN: open collector: Q PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Switching mode	Light-/dark-switching via rotary switch											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
Connection type	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	◆											
Circuit protection	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
Enclosure rating	IP 67											
Ambient temperature operation	-25 °C ... +55 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Housing material	ABS, POM, PMMA											

<sup>1)</sup> Average service life 100,000 h at T<sub>a</sub> = +25 °C

<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected network max. 8A

<sup>3)</sup> May not exceed or fall short of

V<sub>s</sub> tolerances

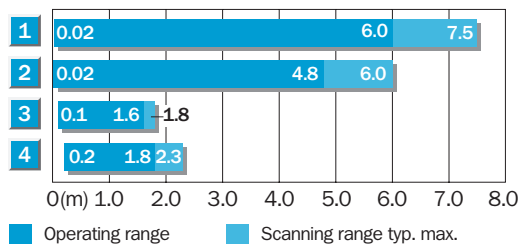
<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

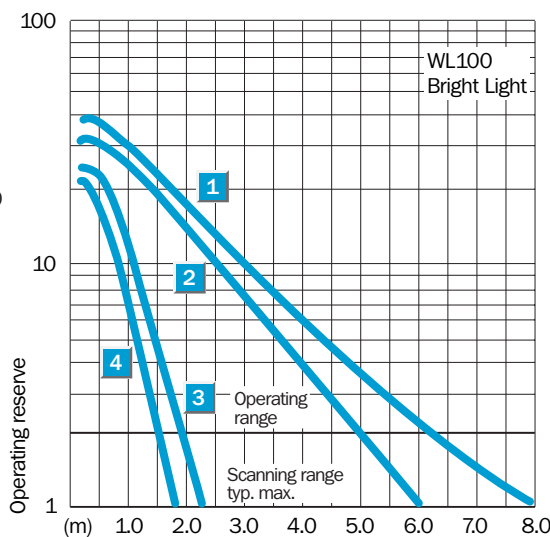
<sup>6)</sup> With light/dark ratio 1:1

<sup>7)</sup> Do not bend below 0 °C

Scanning range and operating reserve



Reflector type	Operating range
1 PL80A	0.02 ... 6.0 m
2 P250	0.02 ... 4.8 m
3 P45	0.2 ... 1.8 m
4 Reflective tape Diamond Grade	0.1 ... 1.6 m (100 x 100 mm <sup>2</sup> )



Ordering information

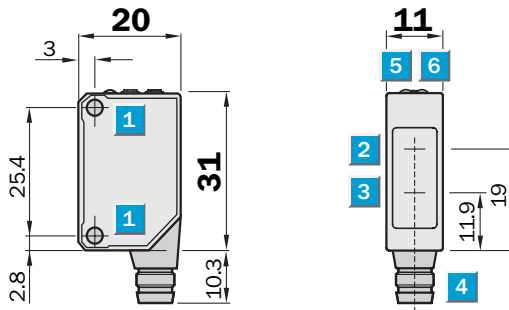
Type	Order no.
WL100-N1402	6037856
WL100-N3400	6037857
WL100-N4400	6037858
WL100-P1402	6037859
WL100-P3400	6037860
WL100-P4400	6037861

**Scanning range**  
0.01 ... 3 m

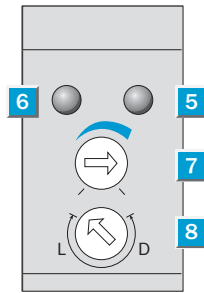
Photoelectric reflex switch

- Ideal for detection of glass or transparent objects
- Detection reliability, min. attenuation 20 %
- Also suitable for "Diamond Grade" reflective tape
- Sensitivity adjustable
- Visible red light as alignment aid
- Easy mounting through integrated mounting hole M3

**Dimensional drawing**



**Adjustments possible**

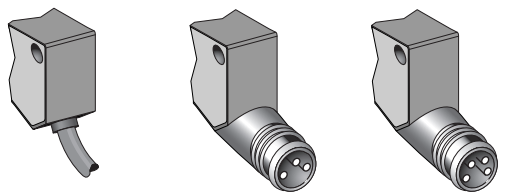


- 1 Mounting hole M3
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Connector
- 5 LED display orange: switching output active
- 6 LED display green: stable indicator
- 7 Sensitivity adjustment (270°)
- 8 Light/dark rotary switch:  
L = light-switching,  
D = dark-switching

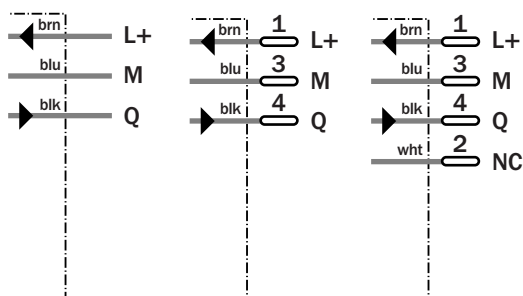


**Connection type**

WL100-N1429	WL100-N3429	WL100-N4429
WL100-P1429	WL100-P3429	WL100-P4429



3 x 0.18 mm<sup>2</sup>      M8, 3-pin      M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Mounting systems
Reflectors

Technical specifications		WL100-	N1429	N3429	N4429	P1429	P3429	P4429				
Detection of transparent objects	✓											
Attenuation along light beam	≥ 20 %											
Scanning range typ. max.	0.01 ... 3 m											
Scanning range, recommended	0.01 ... 2.6 m											
Relating to	Reflector PL80A											
Sensitivity adjustment	Potentiometer											
Light source, light type	LED, red light, 680 nm <sup>1)</sup>											
Light spot diameter	Approx. 200 mm at 2 m distance											
Angle of dispersion	Approx. 4°											
Supply voltage V <sub>s</sub>	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption	≤ 30 mA <sup>4)</sup>											
Switching outputs	NPN: open collector: Q PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Switching mode	Light-/dark-switching via rotary switch											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
Connection type	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	⊠											
Circuit protection	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
Enclosure rating	IP 65											
Ambient temperature operation	-25 °C ... +55 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Weight	Approx. 53 g											
	Approx. 9 g											
Housing material	ABS, PMMA											
Included with delivery	Reflector P250											

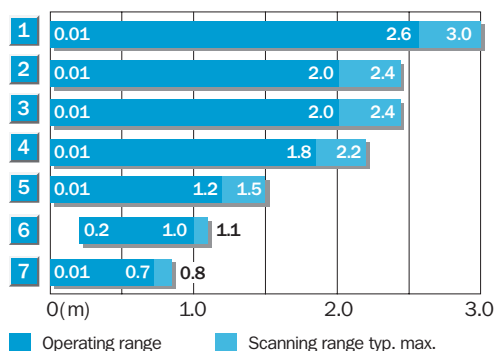
<sup>1)</sup> Average service life 100,000 h at T<sub>a</sub> = +25 °C

operation in short-circuit protected network max 8 A

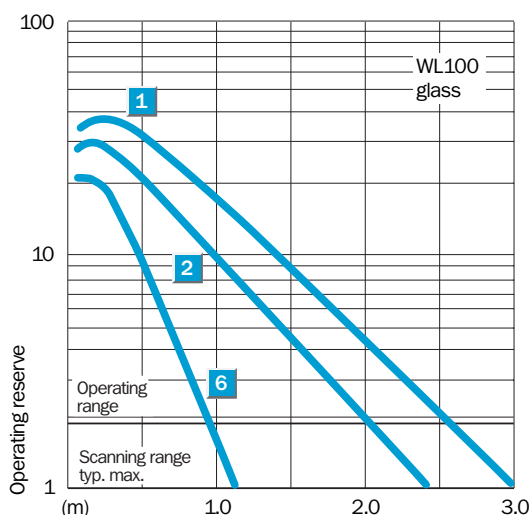
V<sub>s</sub> tolerances  
<sup>4)</sup> Without load  
<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1  
<sup>7)</sup> Do not bend below 0 °C

Scanning range and operating reserve



Reflector type	Operating range
1 PL80A	0.01 ... 2.6 m
2 P250	0.01 ... 2 m
3 PL50A/PL40A	0.01 ... 2 m
4 PL30A/PL31A	0.01 ... 1.8 m
5 PL20A	0.01 ... 1.2 m
6 Reflective tape Diamond Grade	0.2 ... 1.0 m (100 x 100 mm <sup>2</sup> )
7 P45	0.01 ... 0.7 m



Ordering information	
Type	Order no.
WL100-N1429	6027661
WL100-N3429	6027663
WL100-N4429	6028610
WL100-P1429	6027662
WL100-P3429	6027664
WL100-P4429	6028661

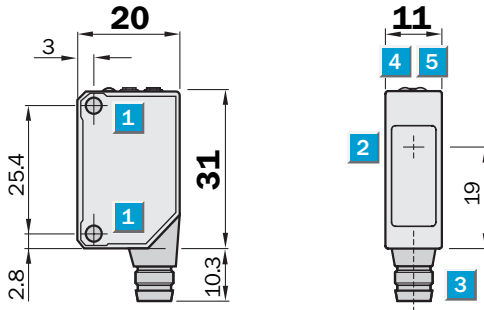
**Scanning range**  
0 ... 15 m

Through-beam photoelectric switch

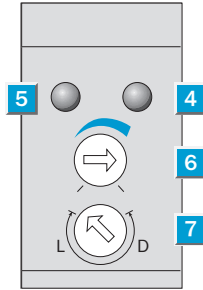
- Polarizing filter tip adapters as accessories
- Slotted masks as accessories for detecting small parts or for positioning jobs
- Sensitivity adjustable
- Visible red light as alignment aid
- Easy mounting through integrated mounting hole M3



**Dimensional drawing**



**Adjustments possible**



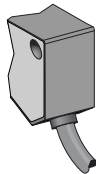
- 1 Mounting hole for M3
- 2 Centre of optical axis, sender WS100  
Centre of optical axis, receiver WE100
- 3 Connector
- 4 LED display orange: switching output active
- 5 LED display green: stable indicator
- 6 Sensitivity adjustment (270°, WE100)
- 7 Light/dark rotary switch:  
L = light-switching  
D = dark-switching (WE100)

**Connection type**

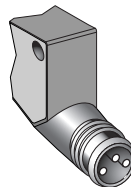
WS/WE100-N1439  
WS/WE100-P1439

WS/WE100-N3439  
WS/WE100-P3439

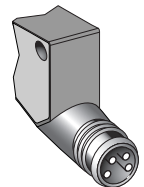
WS/WE100-N4439  
WS/WE100-P4439



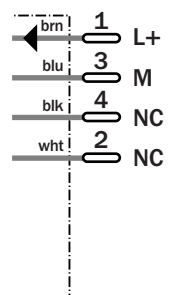
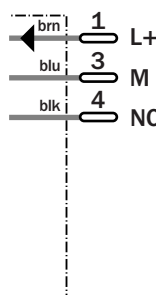
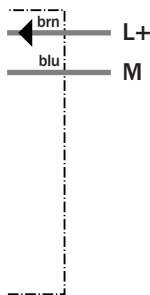
Sender 2 x 0.18 mm<sup>2</sup>



M8, 3-pin



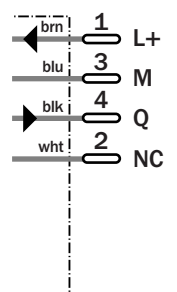
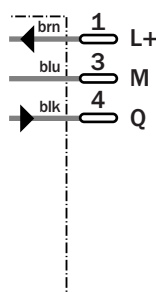
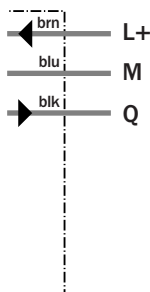
M8, 4-pin



Receiver 3 x 0.18 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



Accessories
Connector, M8, 3-pin
Connector, M8, 4-pin
Masks
Mounting systems
Polarisation filters

Technical specifications		WS/WE100-	N1439	N3439	N4439	P1439	P3439	P4439				
Scanning range typ. max.	0 ... 15 m											
Scanning range, recommended	0 ... 12 m											
Sensitivity adjustment	Potentiometer											
Light source, light type	LED, red light, 680 nm <sup>1)</sup>											
Light spot diameter	Approx. 1500 mm at 12 m distance											
Angle of dispersion	Approx. 7.2°											
Angle of reception	Approx. 15°											
Supply voltage V <sub>s</sub>	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption, sender	≤ 15 mA <sup>4)</sup>											
Power consumption, receiver	≤ 20 mA <sup>4)</sup>											
Switching outputs	NPN: open collector: Q PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Switching mode	Light-/dark-switching via rotary switch											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
Connection type	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	⊠											
Circuit protection	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected (receiver only) / Outputs overcurrent and short-circuit protected (receiver only)											
Enclosure rating	IP 65											
Ambient temperature operation	-25 °C ... +55 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Weight	Approx. 53 g											
	Approx. 9 g											
Housing material	ABS, PC											

<sup>1)</sup> Average service life 100,000 h at T<sub>a</sub> = +25 °C

<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected network max. 8 A

<sup>3)</sup> May not exceed or fall short of

V<sub>s</sub> tolerances

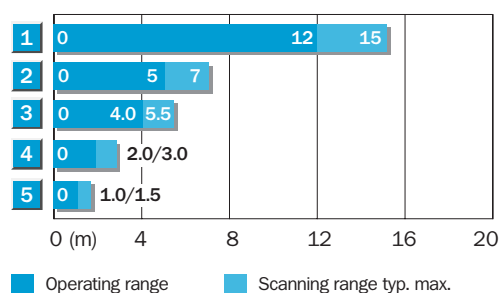
<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

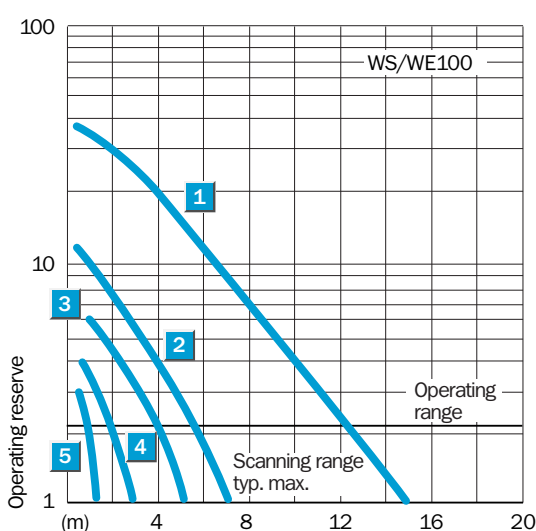
<sup>6)</sup> With light/dark ratio 1:1

<sup>7)</sup> Do not bend below 0 °C

**Scanning range and operating reserve**



Scanning range reduction when slotted masks are used	
1	Without masks/polarization filter
2	With polarization filter tip adapter
3	With slotted mask, width 2.0 mm
4	With slotted mask, width 1.0 mm
5	With slotted mask, width 0.5 mm



**Ordering information**

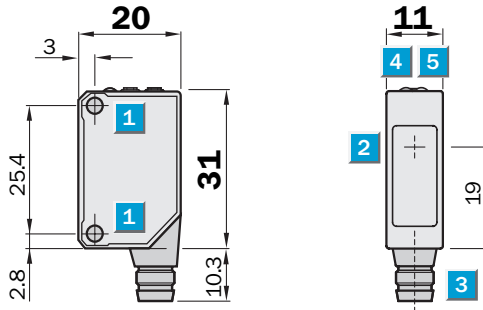
Type	Order no.
WS/WE100-N1439	6026040
WS/WE100-N3439	6026046
WS/WE100-N4439	6028592
WS/WE100-P1439	6026043
WS/WE100-P3439	6026049
WS/WE100-P4439	6028595

**Scanning range**  
0 ... 15 m

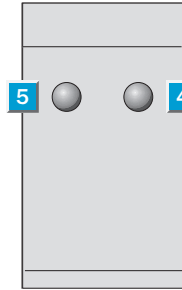
Through-beam photoelectric switch

- Polarizing filter tip adapters as accessories
- Slotted masks as accessories for detecting small parts or for positioning jobs
- Visible red light as alignment aid
- Easy mounting through integrated mounting hole M3

**Dimensional drawing**



**Adjustments possible**



- 1 Mounting hole for M3
- 2 Centre of optical axis, sender WS100  
Centre of optical axis, receiver WE100
- 3 Connector
- 4 LED display orange: switching output active
- 5 LED display green: stable indicator

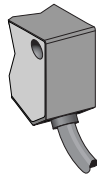


**Connection type**

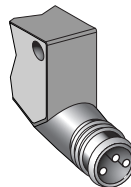
WS/WE100-P1239
WS/WE100-P1339

WS/WE100-P3239
WS/WE100-P3339

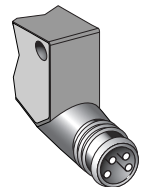
WS/WE100-P4239
WS/WS100-P4339



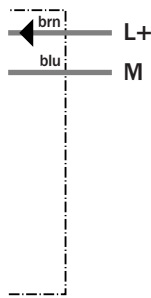
Sender 2 x 0.18 mm<sup>2</sup>



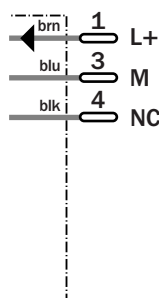
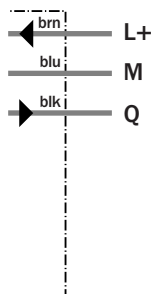
M8, 3-pin



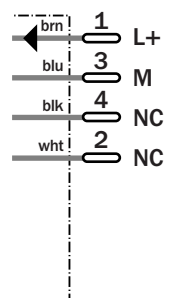
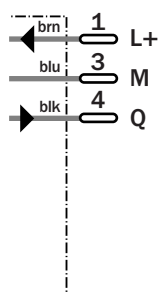
M8, 4-pin



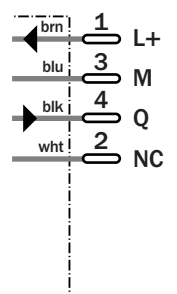
Receiver 3 x 0.18 mm<sup>2</sup>



M8, 3-pin



M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Masks
Mounting systems
Polarisation filters



Technical specifications		WS/WE100-	P1239	P1339	P3239	P3339	P4239	P4339				
<b>Scanning range typ. max.</b>	0 ... 15 m											
<b>Scanning range, recommended</b>	0 ... 12 m											
<b>Light source, light type</b>	LED, red light, 680 nm <sup>1)</sup>											
Light spot diameter	Approx. 1500 mm at 12 m distance											
Angle of dispersion	Approx. 7.2°											
Angle of reception	Approx. 15°											
<b>Supply voltage V<sub>s</sub></b>	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption, sender	≤ 15 mA <sup>4)</sup>											
Power consumption, receiver	≤ 20 mA <sup>4)</sup>											
<b>Switching outputs</b>	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Switching mode	Dark-switching											
	Light-switching											
Output current I <sub>a</sub> max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
<b>VDE protection class</b>	⊠											
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected (receiver only) / Outputs overcurrent and short-circuit protected (receiver only)											
<b>Enclosure rating</b>	IP 65											
<b>Ambient temperature operation</b>	-25 °C ... +55 °C											
<b>Ambient temperature storage</b>	-40 °C ... +70 °C											
<b>Weight</b>	Approx. 53 g											
	Approx. 9 g											
<b>Housing material</b>	ABS, PC											

<sup>1)</sup> Average service life 100,000 h at T<sub>a</sub> = +25 °C

<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected network max. 8 A

<sup>3)</sup> May not exceed or fall short of

V<sub>s</sub> tolerances

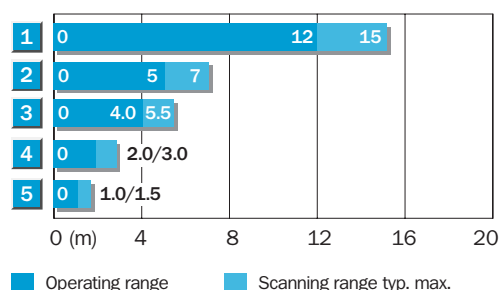
<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

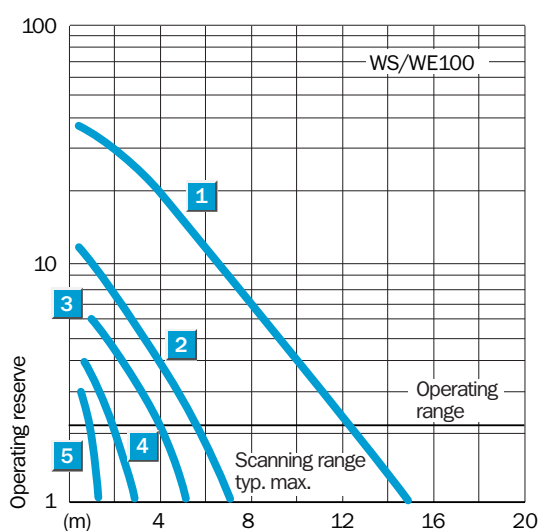
<sup>6)</sup> With light/dark ratio 1:1

<sup>7)</sup> Do not bend below 0 °C

**Scanning range and operating reserve**



Scanning range reduction when slotted masks are used	
1	Without masks/polarization filter
2	With polarization filter tip adapter
3	With slotted mask, width 2.0 mm
4	With slotted mask, width 1.0 mm
5	With slotted mask, width 0.5 mm



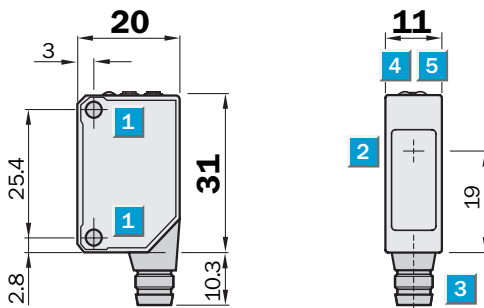
Ordering information	
Type	Order no.
WS/WE100-P1239	6026041
WS/WE100-P1339	6026042
WS/WE100-P3239	6026047
WS/WE100-P3339	6026048
WS/WE100-P4239	6028593
WS/WS100-P4339	6028594

**Scanning range**  
0 ... 15 m

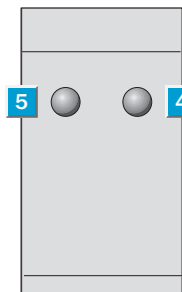
Through-beam photoelectric switch

- Polarizing filter tip adapters as accessories
- Slotted masks as accessories for detecting small parts or for positioning jobs
- Visible red light as alignment aid
- Easy mounting through integrated mounting hole M3

**Dimensional drawing**



**Adjustments possible**



- 1 Mounting hole for M3
- 2 Centre of optical axis, sender WS100  
Centre of optical axis, receiver WE100
- 3 Connector
- 4 LED display orange: switching output active
- 5 LED display green: stable indicator

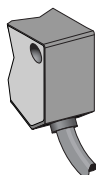


**Connection type**

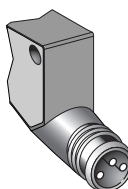
WS/WE100-N1239  
WS/WE100-N1339

WS/WE100-N3239  
WS/WE100-N3339

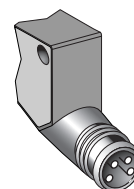
WS/WE100-N4239  
WS/WE100-N4339



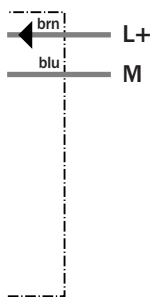
Sender 2 x 0.18 mm<sup>2</sup>



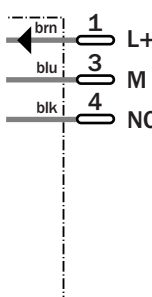
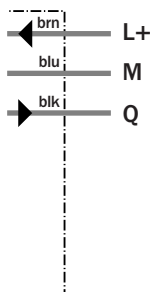
M8, 3-pin



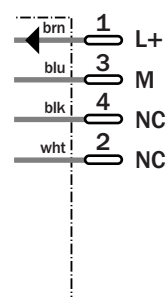
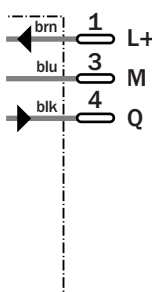
M8, 4-pin



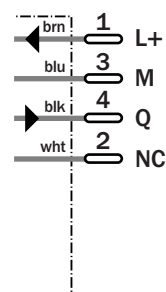
Receiver 3 x 0.18 mm<sup>2</sup>



M8, 3-pin



M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Masks
Mounting systems
Polarisation filters

Technical specifications		WS/WE100-	N1239	N1339	N3239	N3339	N4239	N4339				
Scanning range typ. max.	0 ... 15 m											
Scanning range, recommended	0 ... 12 m											
Light source, light type	LED, red light, 680 nm <sup>1)</sup>											
Light spot diameter	Approx. 1500 mm at 12 m distance											
Angle of dispersion	Approx. 7.2°											
Angle of reception	Approx. 15°											
Supply voltage $V_s$	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption, sender	≤ 15 mA <sup>4)</sup>											
Power consumption, receiver	≤ 20 mA <sup>4)</sup>											
Switching outputs	NPN: open collector: Q											
Signal voltage NPN HIGH / LOW	Approx. $V_s / < 1.8 V$											
Switching mode	Dark-switching											
	Light-switching											
Output current $I_a$ max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
Connection type	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	◆											
Circuit protection	$V_s$ connections reverse-polarity protected / In-/outputs short-circuit protected (receiver only) / Outputs overcurrent and short-circuit protected (receiver only)											
Enclosure rating	IP 65											
Ambient temperature operation	-25 °C ... +55 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Weight	Approx. 53 g											
	Approx. 9 g											
Housing material	ABS, PC											

<sup>1)</sup> Average service life 100,000 h at  $T_a = +25 °C$

<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected network max. 8 A

<sup>3)</sup> May not exceed or fall short of

$V_s$  tolerances

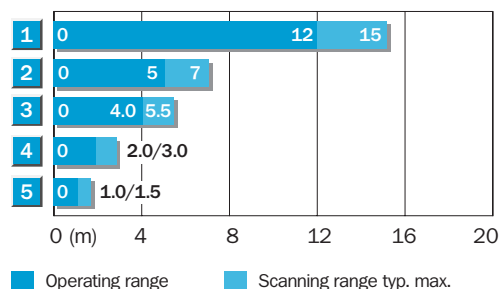
<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

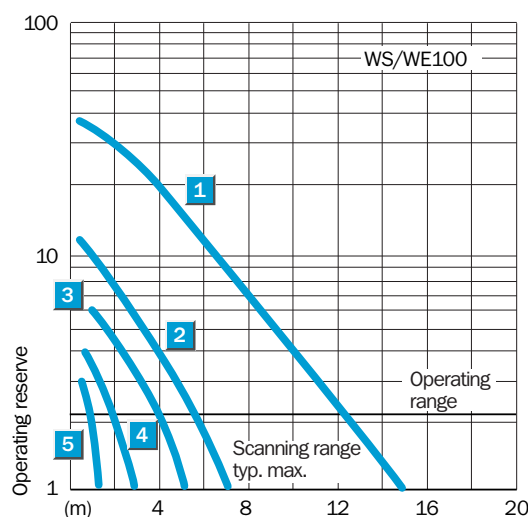
<sup>6)</sup> With light/dark ratio 1:1

<sup>7)</sup> Do not bend below 0 °C

### Scanning range and operating reserve



Scanning range reduction when slotted masks are used	
1	Without masks/polarization filter
2	With polarization filter tip adapter
3	With slotted mask, width 2.0 mm
4	With slotted mask, width 1.0 mm
5	With slotted mask, width 0.5 mm



### Ordering information

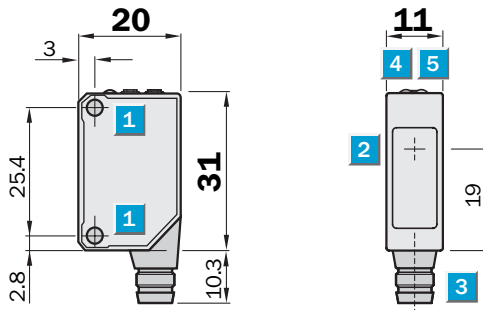
Type	Order no.
WS/WE100-N1239	6026038
WS/WE100-N1339	6026039
WS/WE100-N3239	6026044
WS/WE100-N3339	6026045
WS/WE100-N4239	6028590
WS/WE100-N4339	6028591

**Scanning range**  
0 ... 30 m

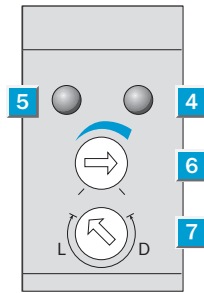
Through-beam photoelectric switch

- 645 nm red light sender LED
- Extra bright, small and well-shaped light spot
- Extra long scanning range
- Inclusive mounting brackets

**Dimensional drawing**



**Adjustments possible**



- 1 Mounting hole for M3
- 2 Centre of optical axis, sender WS100  
Centre of optical axis, receiver WE100
- 3 Connector
- 4 LED display orange: switching output active
- 5 LED display green: stable indicator
- 6 Sensitivity adjustment (270°, WE100)
- 7 Light/dark rotary switch:  
L = light-switching  
D = dark-switching (WE100)

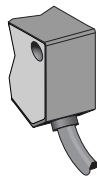


**Connection type**

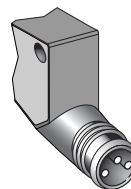
WS/WE100-N1409  
WS/WE100-P1409

WS/WE100-N3409  
WS/WE100-P3409

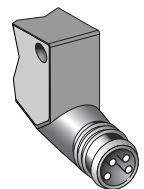
WS/WE100-N4409  
WS/WE100-P4409



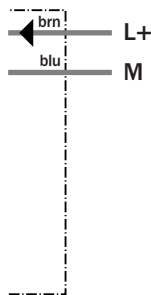
Sender 2 x 0.18 mm<sup>2</sup>



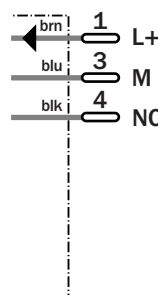
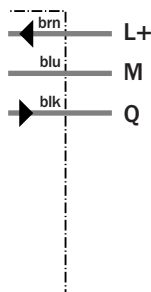
M8, 3-pin



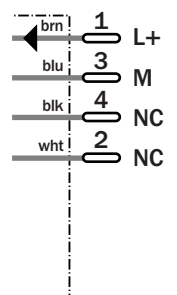
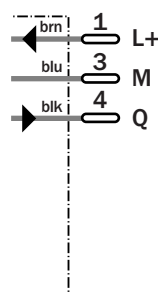
M8, 4-pin



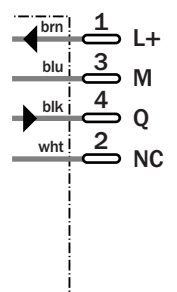
Receiver 3 x 0.18 mm<sup>2</sup>



M8, 3-pin



M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Masks
Mounting systems
Polarisation filters

Technical specifications		WS/WE100-	N1409	N3409	N4409	P1409	P3409	P4409				
Scanning range typ. max.	0 ... 30 m											
Scanning range, recommended	0 ... 20 m											
Sensitivity adjustment	Potentiometer											
Light source, light type	LED, red light, 645 nm <sup>1)</sup>											
Light spot diameter	Approx. 800 mm at 20 m distance											
Angle of dispersion	Approx. 2°											
Angle of reception	Approx. 15°											
Supply voltage $V_s$	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption, sender	≤ 15 mA <sup>4)</sup>											
Power consumption, receiver	≤ 20 mA <sup>4)</sup>											
Switching outputs	NPN: open collector: Q											
	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	$V_s - 1.8 \text{ V}$ / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. $V_s / < 1.8 \text{ V}$											
Switching mode	Light-/dark-switching via rotary switch											
Output current $I_a$ max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
Connection type	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	◆											
Circuit protection	$V_s$ connections reverse-polarity protected / In-/outputs short-circuit protected (receiver only) / Outputs overcurrent and short-circuit protected (receiver only)											
Enclosure rating	IP 67											
Ambient temperature operation	-25 °C ... +55 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Housing material	ABS, POM, PMMA											
Included with delivery	Bracket BEF-W100-A											

<sup>1)</sup> Average service life 100,000 h at  $T_a = +25 \text{ °C}$

<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected network max. 8 A

<sup>3)</sup> May not exceed or fall short of

$V_s$  tolerances

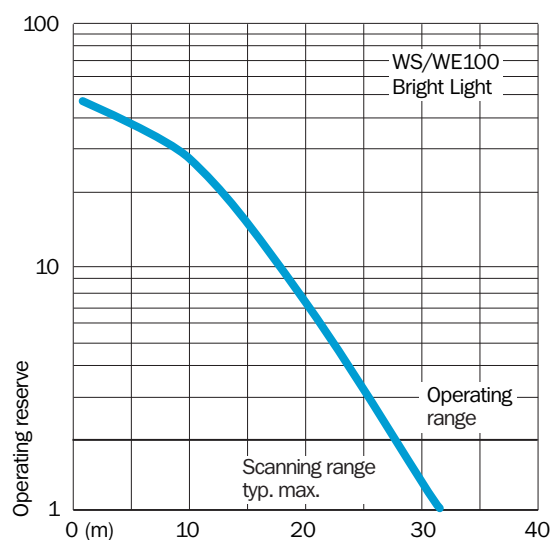
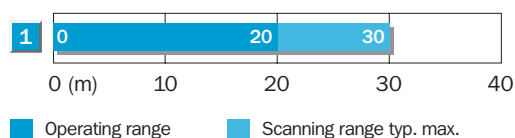
<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1

<sup>7)</sup> Do not bend below 0 °C

### Scanning range and operating reserve



### Ordering information

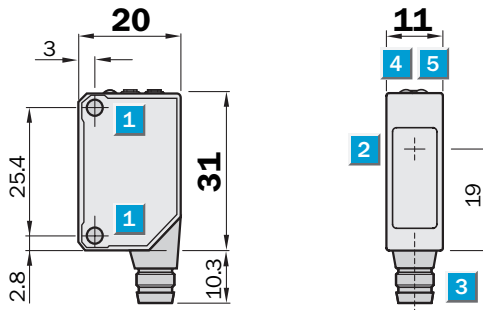
Type	Order no.
WS/WE100-N1409	6036513
WS/WE100-N3409	6036514
WS/WE100-N4409	6036515
WS/WE100-P1409	6036516
WS/WE100-P3409	6036517
WS/WE100-P4409	6036518

**Scanning range**  
0 ... 30 m

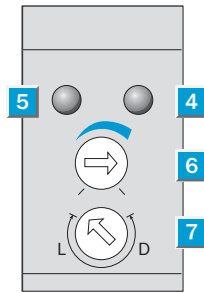
Through-beam photoelectric switch

- 645 nm red light sender LED
- Extra bright, small and well-shaped light spot
- Extra long scanning range

### Dimensional drawing



### Adjustments possible



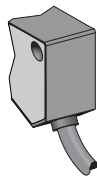
- 1 Mounting hole for M3
- 2 Centre of optical axis, sender WS100  
Centre of optical axis, receiver WE100
- 3 Connector
- 4 LED display orange: switching output active
- 5 LED display green: stable indicator
- 6 Sensitivity adjustment (270°, WE100)
- 7 Light/dark rotary switch:  
L = light-switching  
D = dark-switching (WE100)

### Connection type

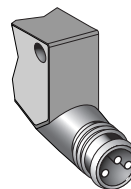
WS/WE100-N1402  
WS/WE100-P1402

WS/WE100-N3400  
WS/WE100-P3400

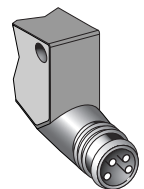
WS/WE100-N4400  
WS/WE100-P4400



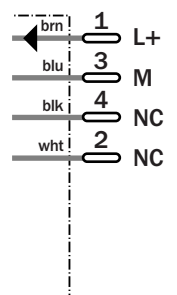
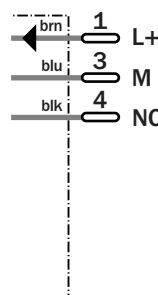
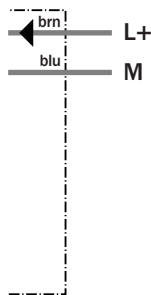
Sender 2 x 0.18 mm<sup>2</sup>



M8, 3-pin



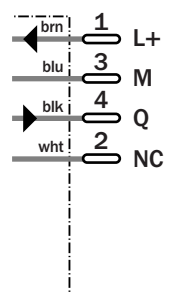
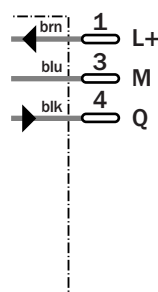
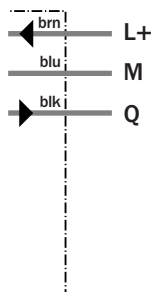
M8, 4-pin



Receiver 3 x 0.18 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



### Accessories

- Connector, M8, 3-pin
- Connector, M8, 4-pin
- Masks
- Mounting systems
- Polarisation filters

Technical specifications		WS/WE100-	N1402	N3400	N4400	P1402	P3400	P4400				
Scanning range typ. max.	0 ... 30 m											
Scanning range, recommended	0 ... 20 m											
Sensitivity adjustment	Potentiometer											
Light source, light type	LED, red light, 645 nm <sup>1)</sup>											
Light spot diameter	Approx. 800 mm at 20 m distance											
Angle of dispersion	Approx. 2°											
Angle of reception	Approx. 15°											
Supply voltage $V_s$	DC 10 ... 30 V <sup>2)</sup>											
Residual ripple	± 10 % <sup>3)</sup>											
Power consumption, sender	≤ 15 mA <sup>4)</sup>											
Power consumption, receiver	≤ 20 mA <sup>4)</sup>											
Switching outputs	NPN: open collector: Q											
	PNP: open collector: Q											
Signal voltage PNP HIGH / LOW	$V_s - 1.8 \text{ V}$ / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. $V_s / < 1.8 \text{ V}$											
Switching mode	Light-/dark-switching via rotary switch											
Output current $I_a$ max	100 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
Connection type	Cable, PVC, 2 m <sup>7)</sup>											
	Connector, M8, 3-pin											
	Connector, M8, 4-pin											
VDE protection class	◆											
Circuit protection	$V_s$ connections reverse-polarity protected / In-/outputs short-circuit protected (receiver only) / Outputs overcurrent and short-circuit protected (receiver only)											
Enclosure rating	IP 67											
Ambient temperature operation	-25 °C ... +55 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Housing material	ABS, POM, PMMA											

<sup>1)</sup> Average service life 100,000 h at  $T_a = +25 \text{ °C}$

<sup>2)</sup> Limit values, reverse-polarity protected

operation in short-circuit protected network max. 8 A

<sup>3)</sup> May not exceed or fall short of

$V_s$  tolerances

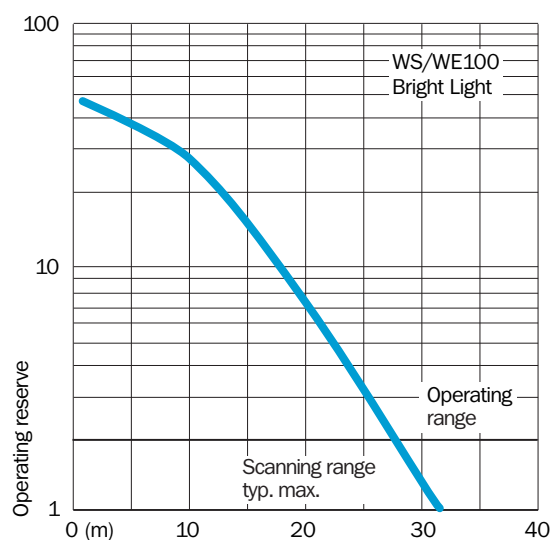
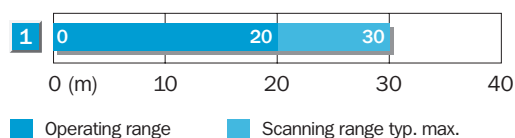
<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1

<sup>7)</sup> Do not bend below 0 °C

### Scanning range and operating reserve



### Ordering information

Type	Order no.
WS/WE100-N1402	6037862
WS/WE100-N3400	6037863
WS/WE100-N4400	6037864
WS/WE100-P1402	6037865
WS/WE100-P3400	6037866
WS/WE100-P4400	6037867

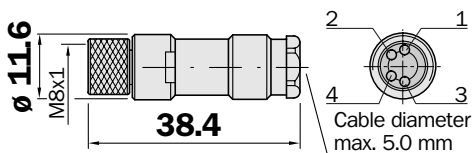
Dimensional drawings and order information

Connectors

SENSICK screw-in system M8, 3- or 4-pin, enclosure rating IP 67

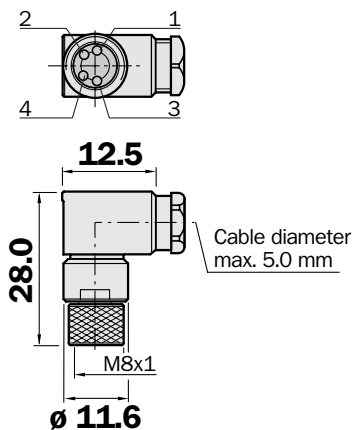
Female connector M8, 3- or 4-pin, straight

Type	Order no.	Contacts
DOS-0803-G	7902077	3
DOS-0804-G	6009974	4



Female connector M8, 3- or 4-pin, right angle

Type	Order no.	Contacts
DOS-0803-W	7902078	3
DOS-0804-W	6009975	4



Female connector M8, 3- or 4-pin, straight

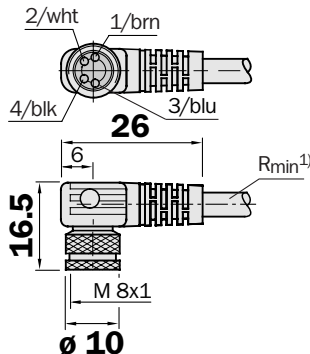
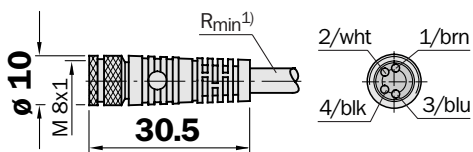
3 x 0.34 mm<sup>2</sup> or 4 x 0.25 mm<sup>2</sup>, sheath PVC

Type	Order no.	Contacts	Cable length
DOL-0803-G02M	6010785	3	2 m
DOL-0803-G05M	6022009	3	5 m
DOL-0803-G10M	6022011	3	10 m
DOL-0804-G02M	6009870	4	2 m
DOL-0804-G05M	6009872	4	5 m
DOL-0804-G10M	6010754	4	10 m

Female connector M8, 3- or 4-pin, right angle

3 x 0.34 mm<sup>2</sup> or 4 x 0.25 mm<sup>2</sup>, sheath PVC

Type	Order no.	Contacts	Cable length
DOL-0803-W02M	6008489	3	2 m
DOL-0803-W05M	6022010	3	5 m
DOL-0803-W10M	6022012	3	10 m
DOL-0804-W02M	6009871	4	2 m
DOL-0804-W05M	6009873	4	5 m
DOL-0804-W10M	6010755	4	10 m



<sup>1)</sup> Minimum bend radius in dynamic use  
 $R_{min} = 20 \times \text{cable diameter}$



Dimensional drawings and order information

Connectors

SENSICK screw-in system M8, 3- or 4-pin, enclosure rating IP 67

Female connector M8, 3- or 4-pin, straight

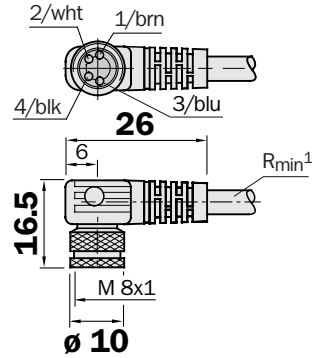
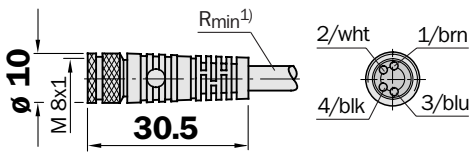
3/4 x 0.34 mm<sup>2</sup>, sheath PUR halogen free

Type	Order no.	Contacts	Cable length
DOL-0803-G02MC	6025888	3	2 m
DOL-0803-G05MC	6025889	3	5 m
DOL-0803-G10MC	6025890	3	10 m
DOL-0804-G02MC	6025894	4	2 m
DOL-0804-G05MC	6025895	4	5 m
DOL-0804-G10MC	6025896	4	10 m

Female connector M8, 3- or 4-pin, right angle

3/4 x 0.34 mm<sup>2</sup>, sheath PUR halogen free

Type	Order no.	Contacts	Cable length
DOL-0803-W02MC	6025891	3	2 m
DOL-0803-W05MC	6025892	3	5 m
DOL-0803-W10MC	6025893	3	10 m
DOL-0804-W02MC	6025897	4	2 m
DOL-0804-W05MC	6025898	4	5 m
DOL-0804-W10MC	6025899	4	10 m



<sup>1)</sup> Minimum bend radius in dynamic use  
R<sub>min</sub> = 20 x cable diameter

Masks/polarizing filter

Slotted masks for WS/WE100 <sup>\*)</sup>

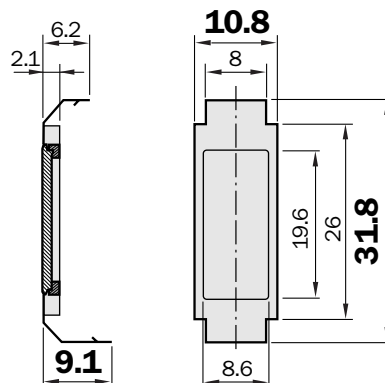
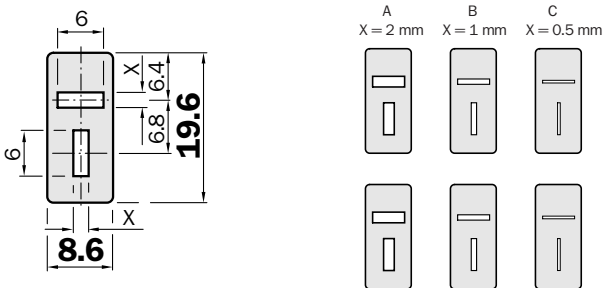
Slot width X: 0.5 mm/1.0 mm/2.0 mm

Type	Order no.
BL-100-10	5314182

Polarizing filter for WS/WE100

Type	Order no.	Model
BL-100-POLF	5314702	4 pieces, each 2x for X and Y polarizing

<sup>\*)</sup> Two pieces each



3 pairs with slot widths A, B and C are supplied with equipment.  
Mounting by self-adhesive back.  
Stick mask on red optics body of WS100 and WE100.  
For detecting smaller objects or increasing the switching accuracy.  
Changed operating ranges:

- A) Slot width 2.0 mm: SR = 4.0 m
- B) Slot width 1.0 mm: SR = 2.0 m
- C) Slot width 0.5 mm: SR = 1.0 m

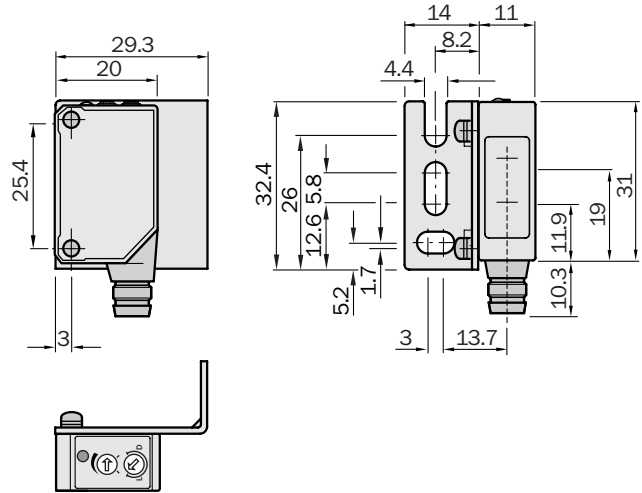
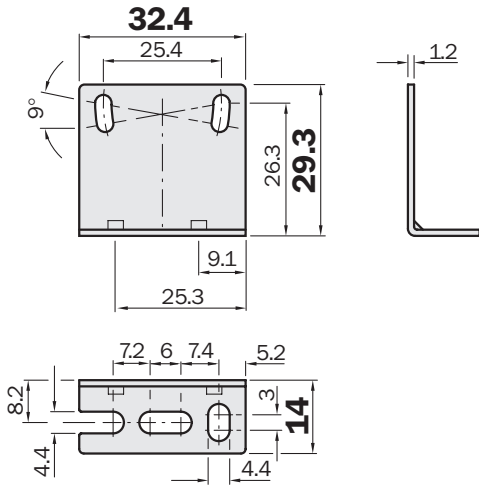
Dimensional drawings and order information

Mounting systems

Mounting bracket, horizontal for W100 \*)

Type	Order no.
BEF-W100-A	5311520

Mounting

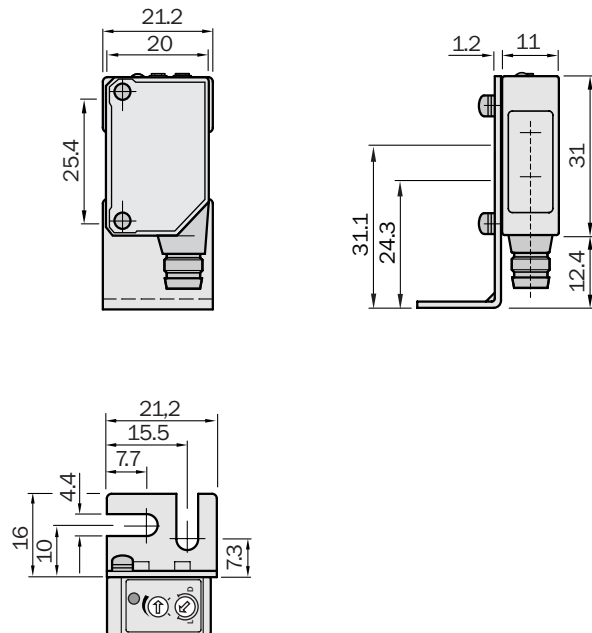
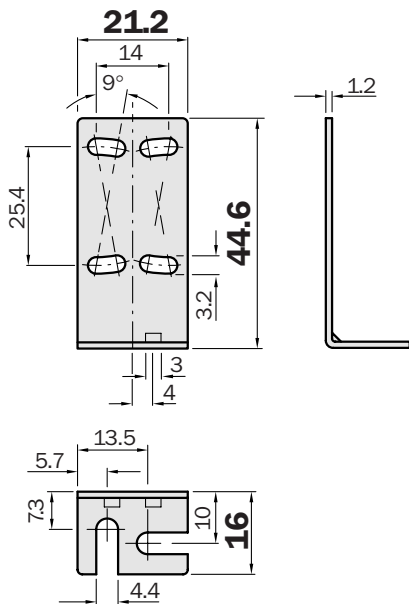


\*) Included with delivery W100 standard types

Mounting bracket, vertical for W100

Type	Order no.
BEF-W100-B	5311521

Mounting

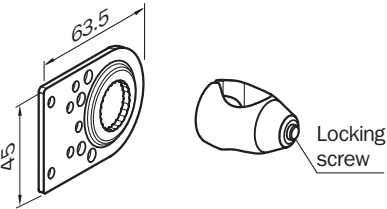


Dimensional drawings and order information

Mounting systems

Mounting plate for universal bar clamp

Type	Order no.	Mounting plate
BEF-KHS-L01	2023057	L

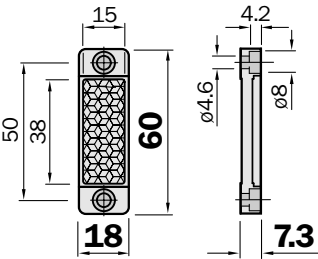


L

Reflectors, plastic design for temperatures up to 65 °C

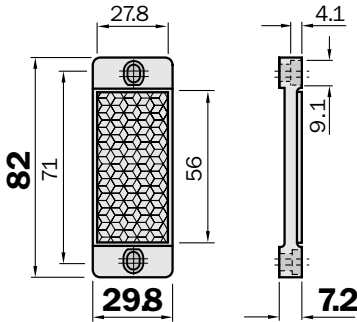
Reflector 20 x 40 mm

Type	Order no.
PL20A	1012719



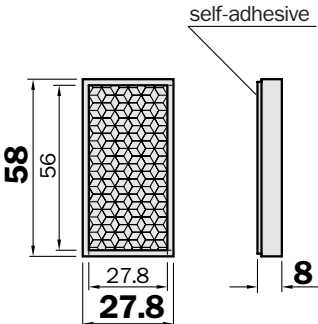
Reflector 30 x 50 mm

Type	Order no.
PL30A	1002314



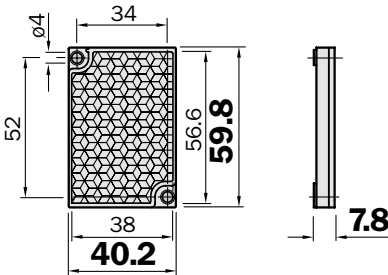
Reflector 30 x 50 mm

Type	Order no.
PL31A	1002315



Reflector 40 x 60 mm

Type	Order no.
PL40A	1012720

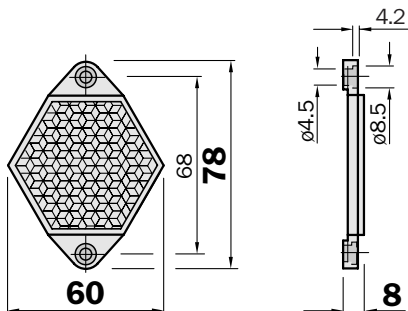


Dimensional drawings and order information

Reflectors, plastic design for temperatures up to 65 °C

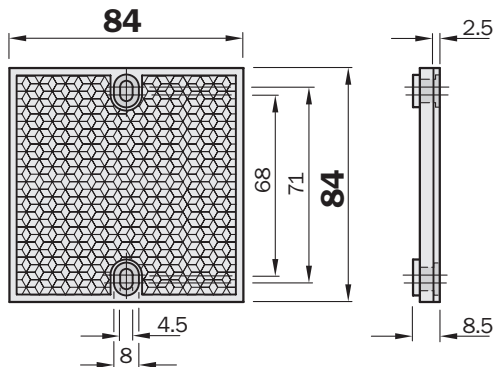
Reflector 6-sided, width across flats 52 mm, screwable

Type	Order no.
PL50A	1000132



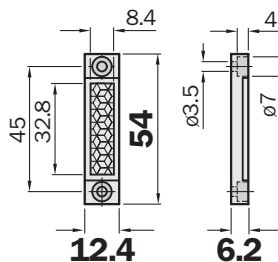
Reflector 80 x 80 mm

Type	Order no.
PL80A	1003865



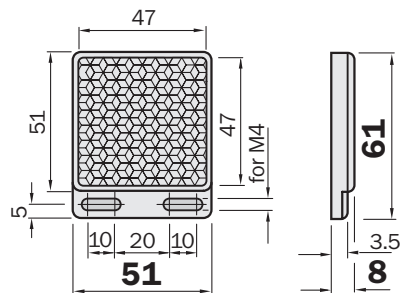
Reflector 32,8 x 8,4 mm, screwable

Typ	Order no.
P45	5308002



Reflector 47 x 47 mm\*)

Typ	Order no.
P250	5304812

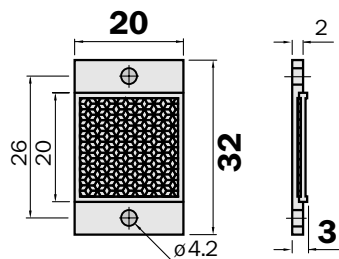


\*) Included with delivery WL100 standard types

Micro triple reflectors, plastic design, angular, for temperatures up to 65 °C

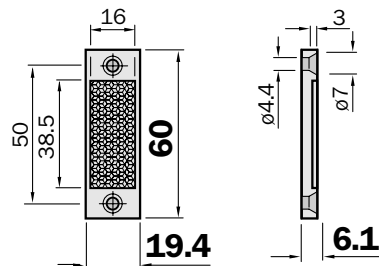
Micro triple reflector 20 x 20 mm, screwable

Type	Order no.
PL10F	5311210



Micro triple reflector 20 x 40 mm, screwable

Type	Order no.
PL20F	5308844

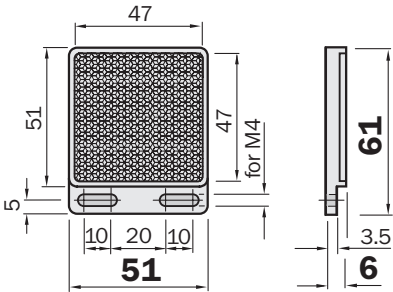


**Dimensional drawings and order information**

**Micro triple reflectors, plastic design, angular, for temperatures up to 65 °C**

**Micro triple reflector 47 x 47 mm**

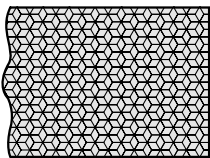
Type	Order no.
P250F	5308843



**Self-adhesive reflective tape for photoelectric switches with polarisation filter**

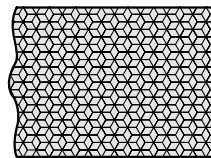
**Reflective tape "Diamond Grade"**

Cut to size	
Type	Order no.
REF-DG-K	4019634



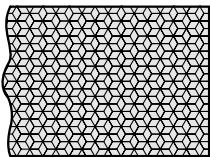
**Reflective tape, self-adhesive, length of roll 22.8 m**

Type	Order no.	Width
REF-PLUS-R25	5319929	25 mm
REF-PLUS-R50	5319981	50 mm



**Reflective tape, self-adhesive, cut to size**

Type	Order no.	Width
REF-PLUS-R25-K	4051184	25 mm
REF-PLUS-R50	4051185	50 mm



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