


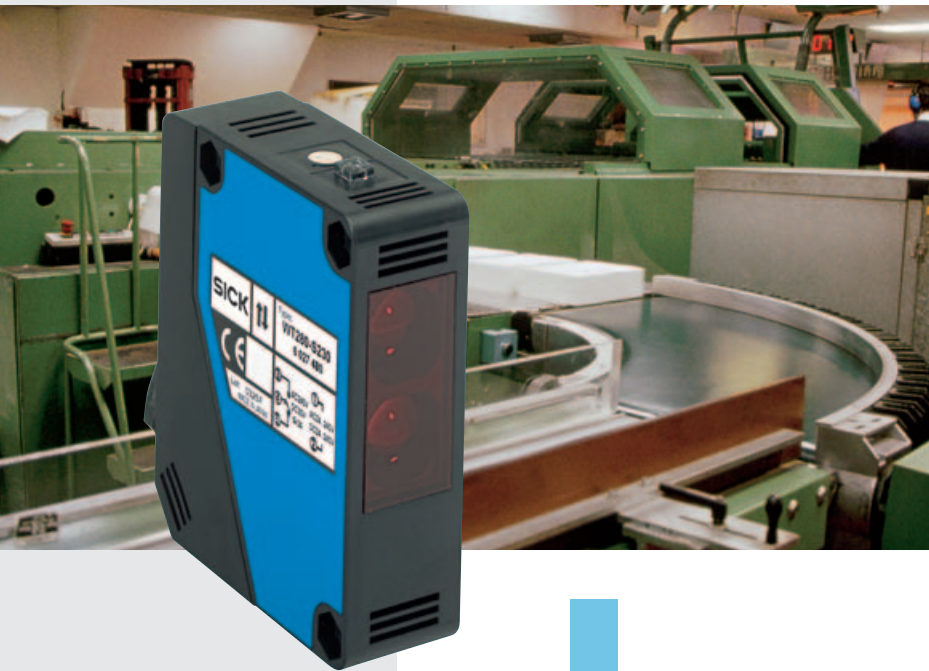


# W 280: Powerful sensors for standard applications

	Photoelectric proximity switches, energetic
	Photoelectric reflex switches
	Through-beam photoelectric switches



The devices with light-/dark switching offer application flexibility and reduce both the number of options and stockholding.

#### Overview of W 280

- 2 component system facilitates initial mounting and exchange,
- DC/AC devices comply with EN 61000-6-3 (interference emission in “domestic and commercial areas”),
- all complete and ready for use, as the mounting brackets and reflector (WL 280 only) are included in the supply.

In the W 280 series of photoelectric switches, three powerful device types cover the main areas of application for door/gate and access control, as well as storage and materials handling technology.

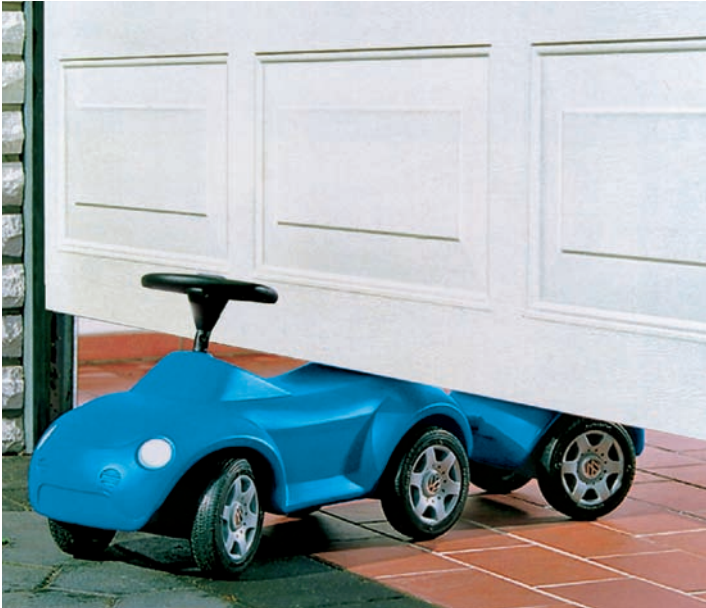
Within the three device types, both direct and universal voltage versions are available. For better alignment, all devices are equipped with visible red light. The clever detail: In the cable versions (DC and UC) the sensor can be fully separated from the back part, with the cable in the back part remaining undisturbed. The combined advantage is easy initial mounting and straightforward exchange.

#### Main industries:

- Door/gate and access control,
- Storage and materials handling,
- Mechanical engineering.



▲► More safety in door and gate areas with WL 280 and WS/WE 280 in domestic and commercial areas.



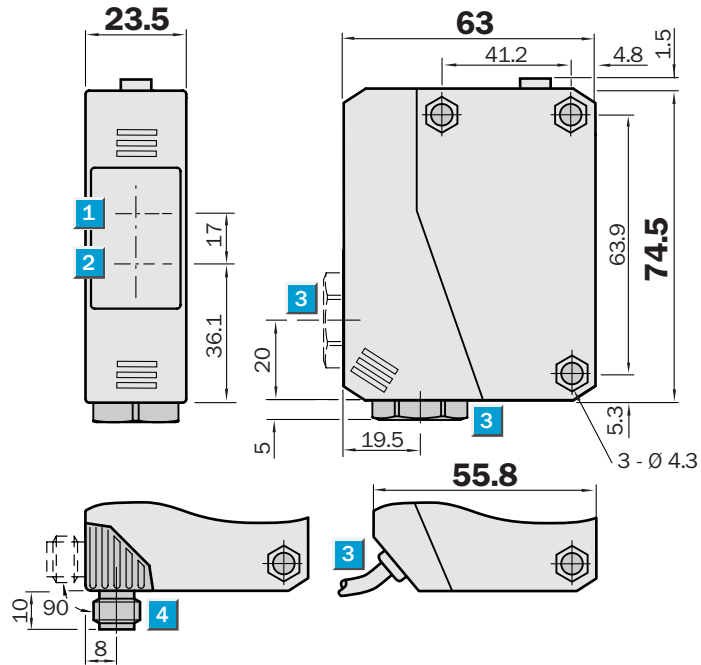
▲ 2 component system: The clever detail of the cable version, easy initial mounting and exchange.

**Scanning distance**  
**10 ... 1700 mm**  
 Photoelectric proximity switches

- Red light
- Terminal chamber or cable connection
- flexible and ready for use with rotatable plug connector
- Light-/dark-switchable
- Mounting brackets (1.4301) included with delivery

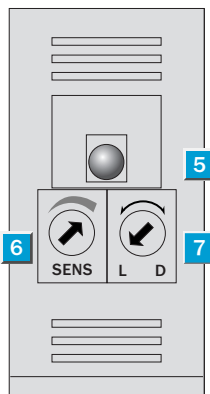


**Dimensional drawing**



**Adjustments possible**

All types

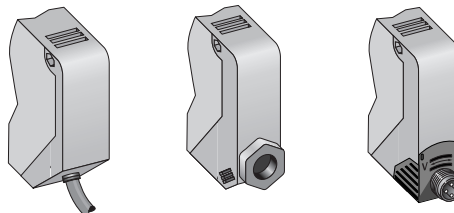


- 1 Centre of optical axis – receiver
- 2 Centre of optical axis – sender
- 3 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 3-core cable Ø 3.8 mm
- 4 Plug M12, 4-pin, rotatable by 90°
- 5 Signal strength indicator
- 6 Sensitivity adjustment
- 7 Light/dark rotary switch  
L = light-switching, D = dark-switching



**Connection type**

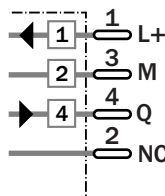
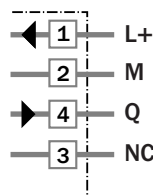
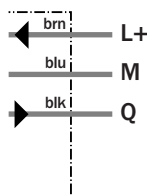
WT280-P132	WT280-P230	WT280-P430
WT280-N132	WT280-N230	WT280-N430



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

Terminals

4-pin, M12



**See chapter Accessories**

Cables and connectors

Mounting systems \*)

\*) Mounting brackets included with delivery

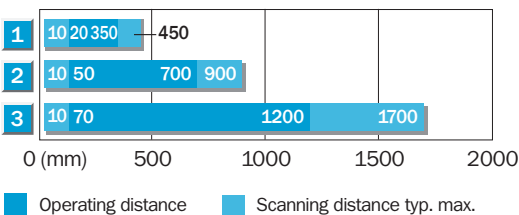
Technical data		WT 280-	P 132	P 230	P 430	N 132	N 230	N 430				
<b>Scanning distance</b> , max. typ.	10 mm ... 1700 mm, adjustable <sup>4)</sup>											
<b>Operating distance</b>	10 mm ... 1200 mm, adjustable <sup>4)</sup>											
<b>Light source <sup>2)</sup>, light type</b>	LED, red light											
Light spot diameter	Approx. 38 mm at 1.3 m											
Angle of dispersion, sender	Approx. 1°											
<b>Supply voltage <math>V_S</math></b>	10 ... 30 V DC <sup>3)</sup>											
Residual ripple <sup>4)</sup>	≤ 5 V <sub>pp</sub>											
Current consumption <sup>5)</sup>	≤ 30 mA											
<b>Switching outputs</b>	PNP, open collector: Q											
	NPN, open collector: Q											
Output current $I_A$ max.	100 mA											
Light receiver, switching mode	Light-/dark-switching by rotary switch											
Response time <sup>6)</sup>	≤ 0.5 ms											
Max. switching frequency <sup>7)</sup>	1000/s											
<b>Connection types</b>	Cable <sup>8)</sup> , 2 m											
	Terminal chamber											
	M12 plug, 4-pin											
<b>VDE protection class</b>	⊕ (to VDE 0106)											
<b>Circuit protection <sup>9)</sup></b>	A, B, C, D											
<b>Enclosure rating</b>	IP 66											
<b>Ambient temperature</b>	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
<b>Weight</b>	Approx. 150 g											
<b>Housing material</b>	Housing: ABS; optics: PMMA											

- 1) Object with 90 % remission (based on standard white DIN 5033)
- 2) Average service life 100,000 h at  $T_A = +25 °C$
- 3) Limit values, operation in short circuit protected network max. 8 A

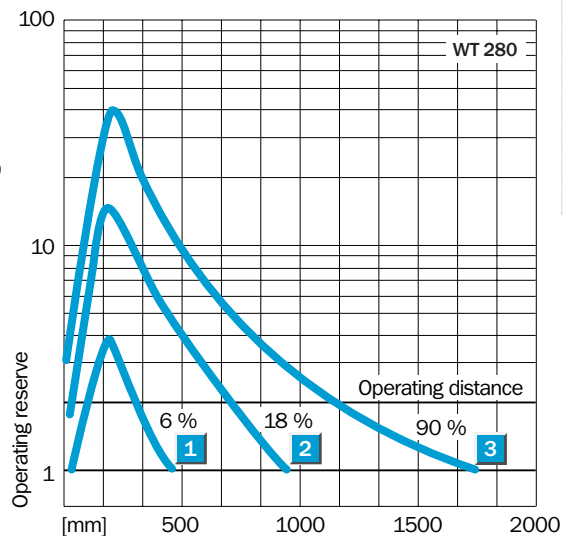
- 4) May not exceed or fall short of  $V_S$  tolerances
- 5) Without load
- 6) Signal transit time with resistive load
- 7) With light/dark ratio 1:1
- 8) Do not bend below 0 °C

- 9) A =  $V_S$  connections reverse-polarity protected
- B = Inputs/outputs reverse-polarity protected
- C = Interference pulse suppression
- D = Outputs overcurrent and short-circuit protected

**Scanning distance**




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



**Order information**

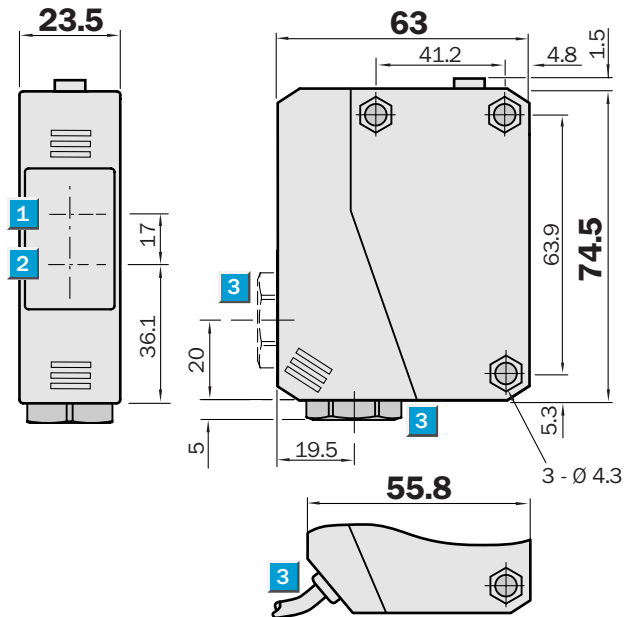
Type	Order no.
WT280-P132	6 028 278
WT280-P230	6 028 276
WT280-P430	6 028 280
WT280-N132	6 028 279
WT280-N230	6 028 277
WT280-N430	6 028 281


**Scanning distance**  
**10 ... 1700 mm**  
 Photoelectric proximity switches

- Red light
- Terminal chamber or cable connection
- Mounting brackets (1.4301) included with delivery
- CE generic emission standard EN 61000-6-3 (“Residential and Commercial Areas”)



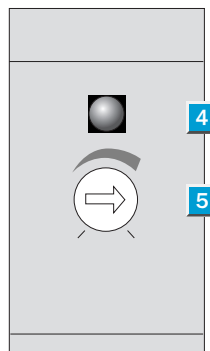
**Dimensional drawing**



**Adjustments possible**

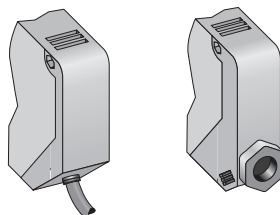
- WT280-S132
- WT280-S230

- 1 Centre of optical axis – receiver
- 2 Centre of optical axis – sender
- 3 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 5-core cable Ø 6.3 mm
- 4 Signal strength indicator
- 5 Sensitivity adjustment



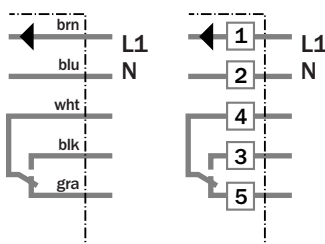
**Connection type**

- WT280-S132
- WT280-S230



5 x 0.76 mm<sup>2</sup>

Terminals



**See chapter Accessories**

- Cables and connectors
- Mounting systems \*)

\*) Mounting brackets included with delivery

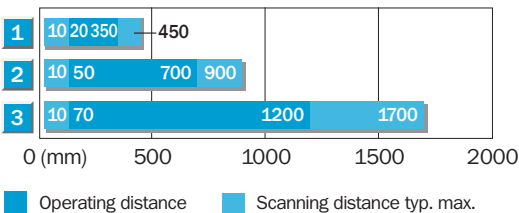
Technical data		WT 280-	S 132	S 230								
<b>Scanning distance</b> , max. typ.	10 mm ... 1700 mm, adjustable <sup>4)</sup>											
<b>Operating distance</b>	10 mm ... 1200 mm, adjustable <sup>4)</sup>											
<b>Light source <sup>2)</sup>, light type</b>	LED, red light											
Light spot diameter	Approx. 38 mm at 1.3 m											
Angle of dispersion, sender	Approx. 1°											
<b>Supply voltage <math>V_S</math> <sup>3)</sup></b>	24 ... 240 V DC/24 ... 240 V AC											
Current consumption	≤ 5 VA											
<b>Switching outputs</b>	Relay 1 x u, galv. separated <sup>4)</sup>											
Max. switching current	3 A/240 V AC; 3 A/30 V DC <sup>5)</sup>											
Light receiver	Light-switching											
Response time	≤ 20 ms											
Max. switching frequency <sup>6)</sup>	25/s											
<b>Connection types</b>	Cable <sup>7)</sup> , 2 m											
	Terminal chamber											
<b>VDE protection class <sup>8)</sup></b>	<input type="checkbox"/>											
<b>Circuit protection <sup>9)</sup></b>	A, C											
<b>Enclosure rating</b>	IP 66											
<b>Ambient temperature</b>	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
<b>Weight</b>	Approx. 150 g											
<b>Housing material</b>	Housing: ABS; optics: PMMA											

1) Object with 90 % remission (based on standard white DIN 5033)  
 2) Average service life 100,000 h at  $T_A = +25 °C$   
 3) ± 10 %

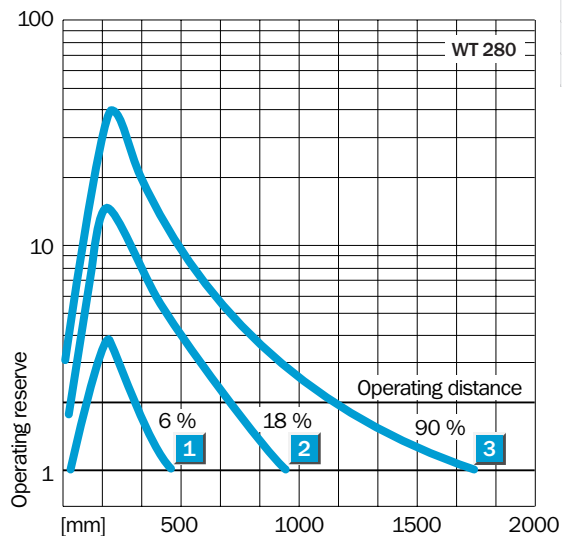
4) Provide suitable spark suppression for inductive and capacitive loads  
 5) Usage category to EN 60947-1, 15 AC, 13 DC  
 6) With light/dark ratio 1:1

7) Do not bend below 0 °C  
 8) Reference voltage 250 V UC  
 9) A =  $V_S$  connections reverse-polarity protected  
 C = Interference pulse suppression

**Scanning distance**




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



**Order information**

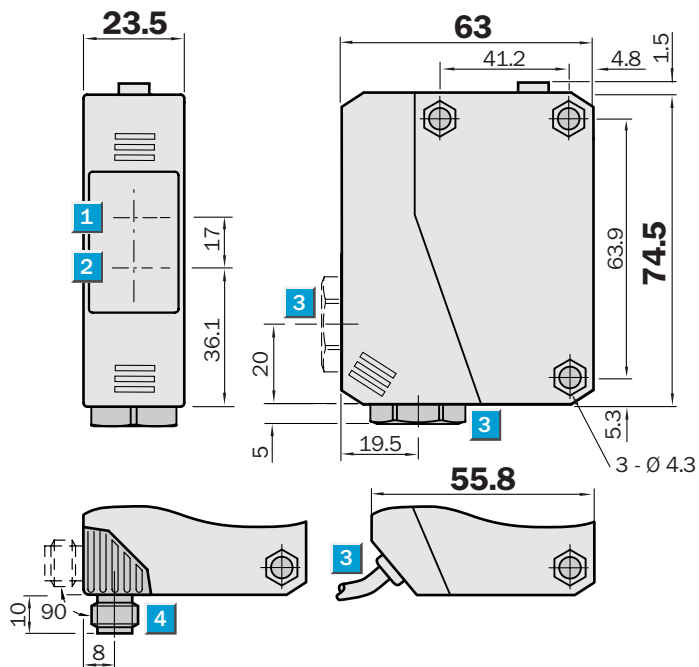
Type	Order no.
WT280-S132	6 027 482
WT280-S230	6 027 480


**Scanning range**  
**0.01 ... 15 m**  
 Photoelectric reflex switches

- Polarising filter
- Red light
- Flexible and ready for use with rotatable plug connector
- Light-/dark-switchable
- Reflector P 250 and mounting brackets (1.4301) included with delivery

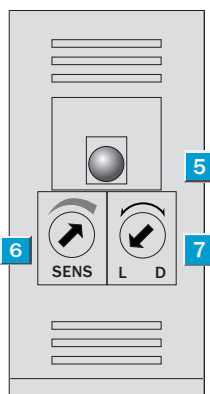


**Dimensional drawing**



**Adjustments possible**

All types

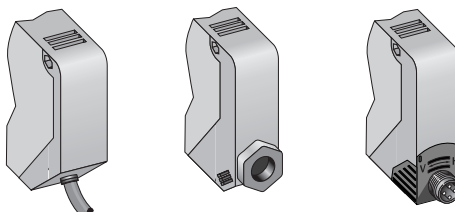


- 1 Centre of optical axis – receiver
- 2 Centre of optical axis – sender
- 3 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 3-core cable Ø 3.8 mm
- 4 Plug M12, 4-pin, rotatable by 90°
- 5 Signal strength indicator
- 6 Sensitivity adjustment
- 7 Light/dark rotary switch  
L = light-switching, D = dark-switching



**Connection type**

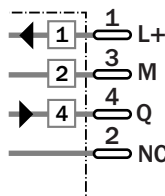
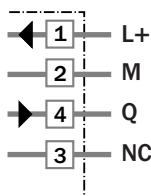
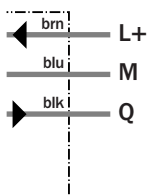
WL280-P132	WL280-P230	WL280-P430
WL280-N132	WL280-N230	WL280-N430



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

Terminals

4-pin, M12



**See chapter Accessories**

Cables and connectors

Mounting systems \*)

Reflectors \*\*)

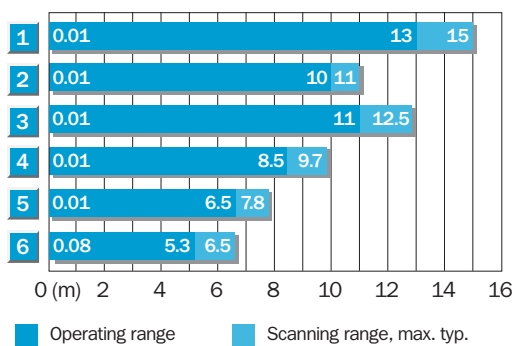
\*) Mounting brackets included with delivery

\*\*) Reflector P 250 included with delivery

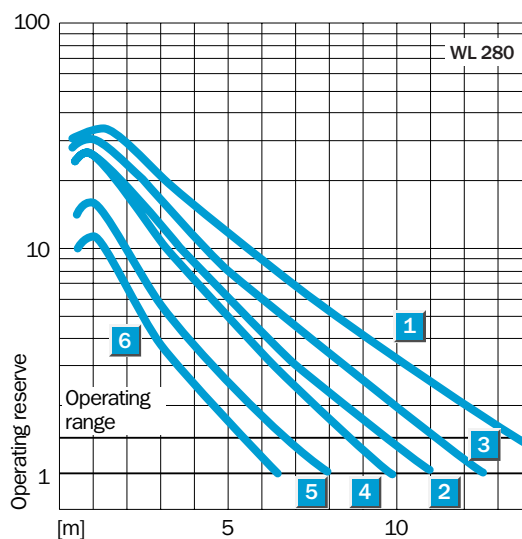
Technical data	WL 280-	P 132	P 230	P 430	N 132	N 230	N 430				
<b>Scanning range</b> , max. typ./on reflector	0.01 ... 15 m/PL 80 A										
<b>Scanning range</b> , max. typ./on reflector	0.01 ... 11 m/P 250										
<b>Operating range</b>	0.01 ... 10 m/P 250										
<b>Light source <sup>1)</sup>, light type</b>	LED, red light										
Light spot diameter	Approx. 280 mm at 10 m										
Angle of dispersion, sender	Approx. 1.6°										
<b>Supply voltage <math>V_S</math></b>	10 ... 30 V DC <sup>2)</sup>										
Residual ripple <sup>3)</sup>	$\leq 5 V_{pp}$										
Current consumption <sup>4)</sup>	$\leq 30$ mA										
<b>Switching outputs</b>	PNP, open collector: Q										
	NPN, open collector: Q										
Output current $I_A$ max.	100 mA										
Light receiver, switching mode	Light-/dark-switching by rotary switch										
Response time <sup>5)</sup>	$\leq 0.5$ ms										
Max. switching frequency <sup>6)</sup>	1000/s										
<b>Connection types</b>	Cable <sup>7)</sup> , 2 m										
	Terminal chamber										
	M12 plug, 4-pin										
<b>VDE protection class</b>	⊕ (to VDE 0106)										
<b>Circuit protection <sup>8)</sup></b>	A, B, C, D										
<b>Enclosure rating</b>	IP 66										
<b>Ambient temperature</b>	Operation $-25$ °C ... $+55$ °C										
	Storage $-40$ °C ... $+70$ °C										
<b>Weight</b>	Approx. 150 g										
<b>Housing material</b>	Housing: ABS; optics: PMMA										

- |  |   |   |   |
|--|---|---|---|
| 1) Average service life 100,000 h at $T_A = +25$ °C                    | 3) May not exceed or fall short of $V_S$ tolerances | 7) Do not bend below 0 °C                           | C = Interference pulse suppression                  |
| 2) Limit values, operation in short circuit protected network max. 8 A | 4) Without load                                     | 8) A = $V_S$ connections reverse-polarity protected | D = Outputs overcurrent and short-circuit protected |
|  | 5) Signal transit time with resistive load          | B = Inputs/outputs reverse-polarity protected       |   |
|  | 6) With light/dark ratio 1:1                        |   |   |

**Scanning range and operating reserve**



Reflector type	Operating range
1 PL 80 A	0.01 ... 13.0 m
2 P 250	0.01 ... 10.0 m
3 PL 50 A oder PL 40 A	0.01 ... 11.0 m
4 PL 30 A oder PL 31 A	0.01 ... 8.5 m
5 PL 20 A	0.01 ... 6.5 m
6 Reflective tape Diamond Grade	0.08 ... 5.3 m



**Order information**

Type	Order no.
WL280-P132	6 028 284
WL280-P230	6 028 282
WL280-P430	6 028 286
WL280-N132	6 028 285
WL280-N230	6 028 283
WL280-N430	6 028 287

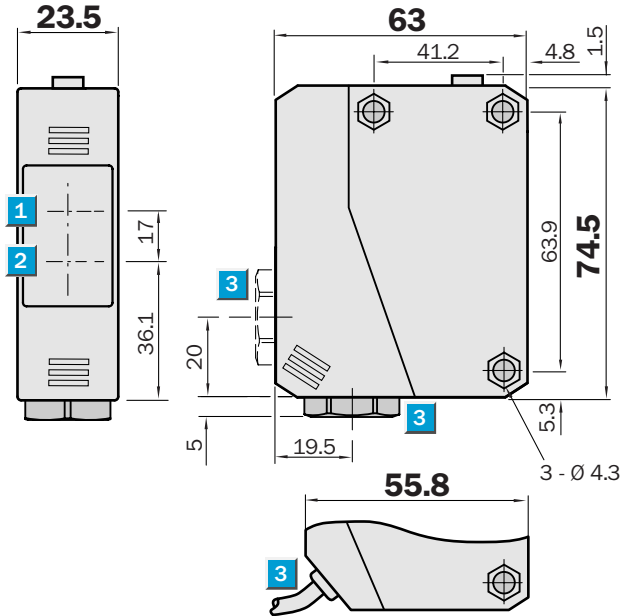


	<b>Scanning range</b> 0.01 ... 15 m
Photoelectric reflex switches	

- Polarising filter
- Red light
- Terminal chamber or cable connection
- Reflector P 250 and mounting brackets (1.4301) included with delivery
- CE generic emission standard EN 61000-6-3 (“Residential and Commercial Areas”)



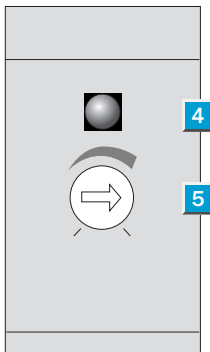
**Dimensional drawing**



**Adjustments possible**

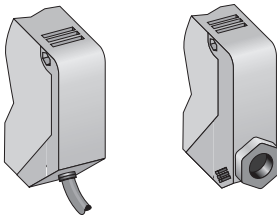
WL280-S132
WL280-S230

- 1 Centre of optical axis – receiver
- 2 Centre of optical axis – sender
- 3 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 5-core cable Ø 6.3 mm
- 4 Signal strength indicator
- 5 Sensitivity adjustment



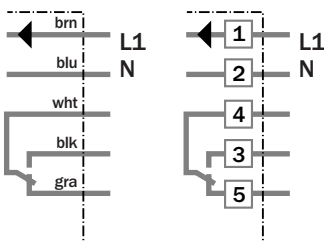
**Connection type**

WL280-S132	WL280-S230
------------	------------



5 x 0.76 mm<sup>2</sup>

Terminals



<b>See chapter Accessories</b>
Cables and connectors
Mounting systems *)
Reflectors **)

\*) Mounting brackets included with delivery  
 \*\*) Reflector P 250 included with delivery

Technical data		WL 280-	S 132	S 230							
<b>Scanning range</b> , max. typ./on reflector	0.01 ... 15 m/PL 80 A										
<b>Scanning range</b> , max. typ./on reflector	0.01 ... 11 m/P 250										
<b>Operating range</b>	0.01 ... 10 m/P 250										
<b>Light source <sup>1)</sup>, light type</b>	LED, red light										
Light spot diameter	Approx. 280 mm at 10 m										
Angle of dispersion, sender	Approx. 1.6°										
<b>Supply voltage <math>V_S</math> <sup>2)</sup></b>	24 ... 240 V DC/24 ... 240 V AC										
Current consumption	≤ 5 VA										
<b>Switching outputs</b>	Relay 1 x u, galv. separated <sup>3)</sup>										
Max. switching current	3 A/240 V AC; 3 A/30 V DC <sup>4)</sup>										
Light receiver	Light-switching										
Response time	≤ 20 ms										
Max. switching frequency <sup>5)</sup>	25/s										
<b>Connection type</b>	Cable <sup>6)</sup> , 2 m										
	Terminal chamber										
<b>VDE protection class <sup>7)</sup></b>	<input type="checkbox"/>										
<b>Circuit protection <sup>8)</sup></b>	A, C										
<b>Enclosure rating</b>	IP 66										
<b>Ambient temperature</b>	Operation -25 °C ... +55 °C										
	Storage -40 °C ... +70 °C										
<b>Weight</b>	Approx. 150 g										
<b>Housing material</b>	Housing: ABS; optics: PMMA										

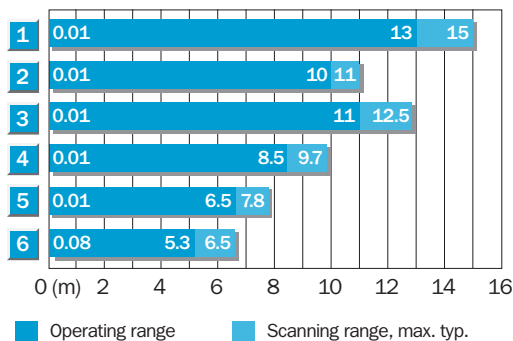
1) Average service life 100,000 h at  $T_A = +25 °C$   
 2) ± 10 %

3) Provide suitable spark suppression for inductive and capacitive loads  
 4) Usage category to EN 60947-1, 15 AC, 13 DC

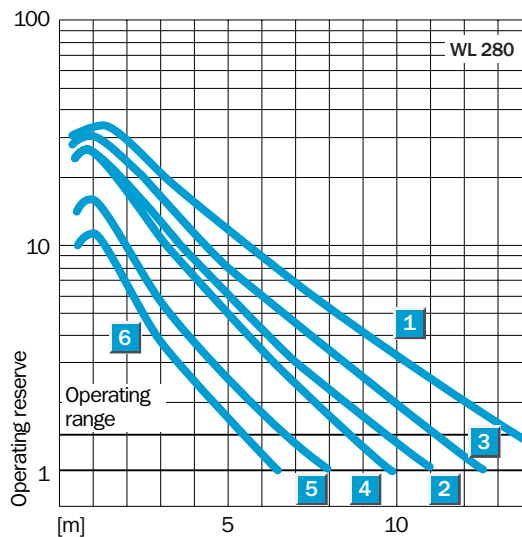
5) With light/dark ratio 1:1  
 6) Do not bend below 0 °C  
 7) Reference voltage 250 V UC

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

**Scanning range and operating reserve**



Reflector type	Operating range
1 PL 80 A	0.01 ... 13.0 m
2 P 250	0.01 ... 10.0 m
3 PL 50 A oder PL 40 A	0.01 ... 11.0 m
4 PL 30 A oder PL 31 A	0.01 ... 8.5 m
5 PL 20 A	0.01 ... 6.5 m
6 Reflective tape Diamond Grade	0.08 ... 5.3 m



**Order information**

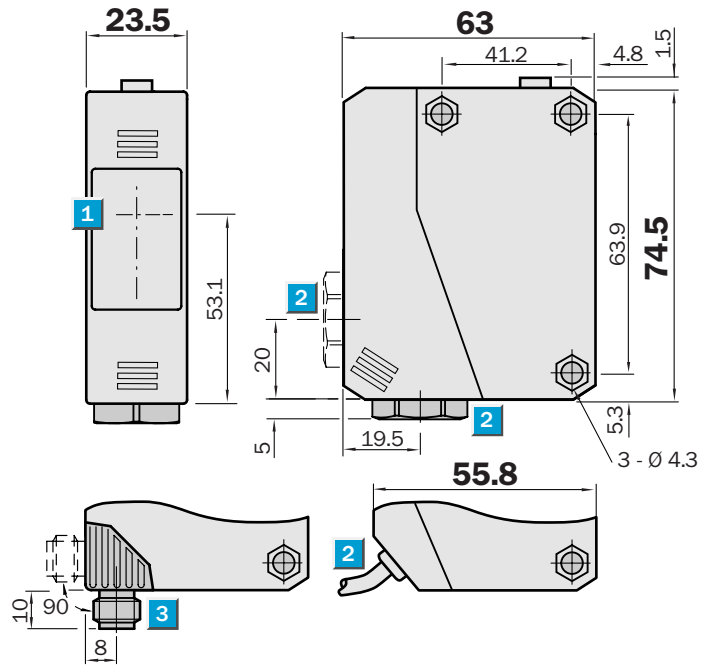
Type	Order no.
WL280-S132	6 027 486
WL280-S230	6 027 484

**Scanning range**  
0 ... 45 m

Through-beam photoelectric switches

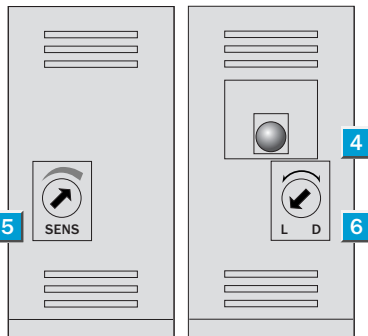
- Red light
- Terminal chamber or cable connection
- Flexible and ready for use with rotatable plug connector
- Light-/dark-switchable
- Mounting brackets (1.4301) included with delivery

**Dimensional drawing**



**Adjustments possible**

WS280-D132	WE280-P132	WE280-N132
WS280-D230	WE280-P230	WE280-N230
WS280-D430	WE280-P430	WE280-N430

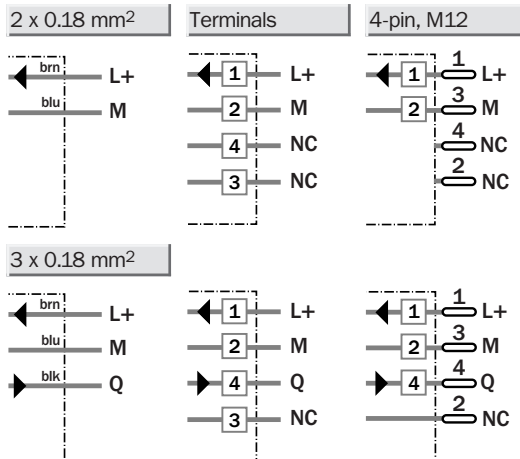
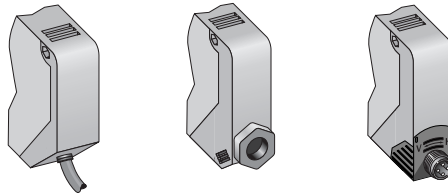


- 1 Optical axis – sender and receiver
- 2 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 3-core cable Ø 3.8 mm
- 3 Plug M12, 4-pin, rotatable by 90°
- 4 Signal strength indicator
- 5 Sensitivity adjustment
- 6 Light/dark rotary switch  
L = light-switching,  
D = dark-switching



**Connection type**

WS/WE280-P132	WS/WE280-P230	WS/WE280-P430
WS/WE280-N132	WS/WE280-N230	WS/WE280-N430



**See chapter Accessories**  
Cables and connectors  
Mounting systems \*)

\*) Mounting brackets included with delivery

Technical data		WS/WE 280-	P 132	P 230	P 430	N 132	N 230	N 430				
<b>Scanning range, max. typ.</b>	0 ... 45 m											
<b>Operating range</b>	0 ... 40 m											
<b>Light source <sup>1)</sup>, light type</b>	LED, red light											
Light spot diameter	Approx. 1 m at 40 m											
Angle of dispersion, sender	Approx. 1.4°											
Angle of reception, receiver	Approx. 6°											
<b>Supply voltage <math>V_S</math></b>	10 ... 30 V DC <sup>2)</sup>											
Residual ripple <sup>3)</sup>	≤ 5 V <sub>pp</sub>											
Current consumption <sup>4)</sup> sender	≤ 35 mA											
receiver	≤ 35 mA											
<b>Switching outputs</b>	PNP, open collector: Q											
	NPN, open collector: Q											
Output current $I_A$ max.	100 mA											
Light receiver, switching mode	Light-/dark-switching by rotary switch											
Response time <sup>5)</sup>	≤ 0.5 ms											
Max. switching frequency <sup>6)</sup>	1000/s											
<b>Connection types</b>	Cable <sup>7)</sup> , 2 m											
	Terminal chamber											
	M12 plug, 4-pin											
<b>VDE protection class</b>	⊕ (to VDE 0106)											
<b>Circuit protection <sup>8)</sup></b>	A, B, C, D											
<b>Enclosure rating</b>	IP 66											
<b>Ambient temperature</b>	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
<b>Weight</b>	Approx. 150 g											
<b>Housing material</b>	Housing: ABS; optics: PMMA											

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

<sup>2)</sup> Limit values, 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

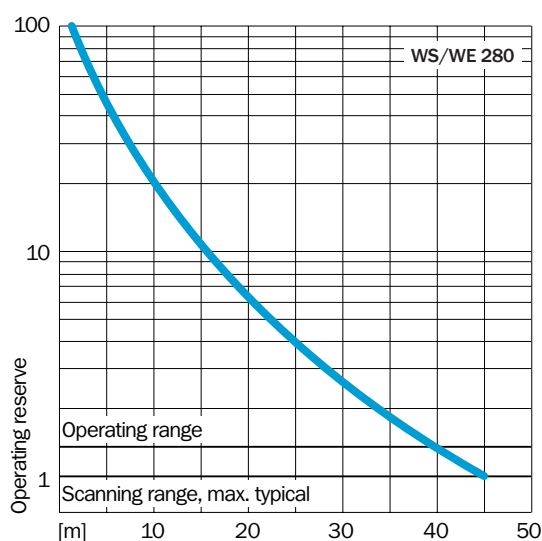
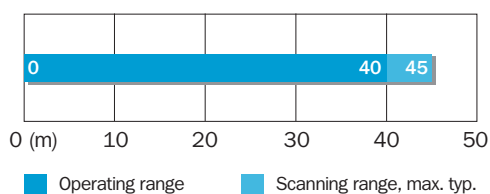
<sup>8)</sup> A =  $V_S$  connections reverse-polarity protected

B = Inputs/outputs reverse-polarity protected

C = Interference pulse suppression

D = Outputs overcurrent and short-circuit protected

**Operating range and operating reserve**



**Order information**

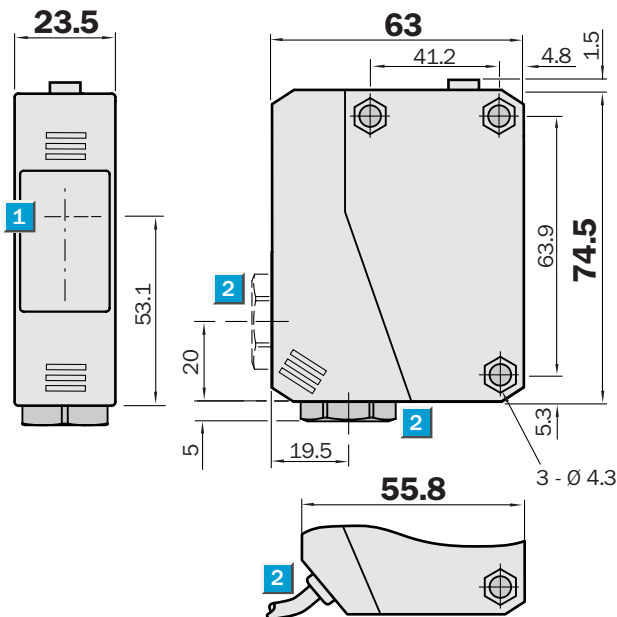
Type	Order no.
WS/WE280-P132	6 028 290
WS/WE280-P230	6 028 288
WS/WE280-P430	6 028 293
WS/WE280-N132	6 028 292
WS/WE280-N230	6 028 289
WS/WE280-N430	6 028 294

**Scanning range**  
0 ... 45 m

Through-beam photoelectric switches

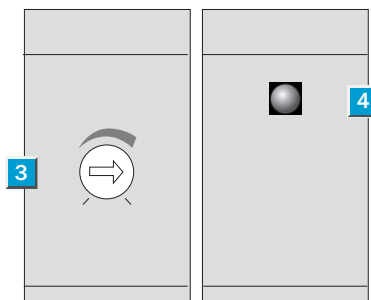
- Red light
- Terminal chamber or cable connection
- Mounting brackets (1.4301) included with delivery
- CE generic emission standard EN 61000-6-3 (“Residential and Commercial Areas”)

**Dimensional drawing**



**Adjustments possible**

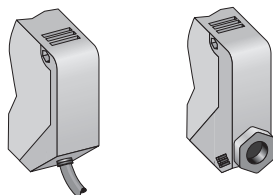
WS280-U132	WE280-S132
WS280-U230	WE280-S230



- 1 Optical axis – sender and receiver
- 2 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 5-core cable Ø 6.3 mm
- 3 Sensitivity adjustment
- 4 Signal strength indicator

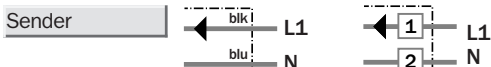
**Connection type**

WS/WE280-S132	WS/WE280-S230
---------------	---------------

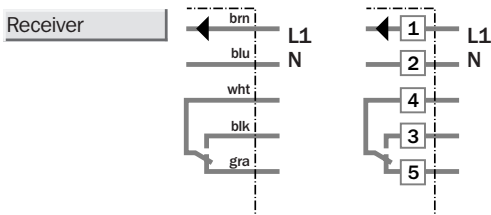


2 x 0.76 mm<sup>2</sup>

Terminals



5 x 0.76 mm<sup>2</sup>



**See chapter Accessories**

- Cables and connectors
- Mounting systems \*)

\*) Mounting brackets included with delivery

Technical data		WS/WE 280-	S 132	S 230								
<b>Scanning range, max. typ.</b>		0 ... 45 m										
<b>Operating range</b>		0 ... 40 m										
<b>Light source <sup>1)</sup>, light type</b>		LED, red light										
Light spot diameter		Approx. 1 m at 40 m										
Angle of dispersion, sender		Approx. 1.4°										
Angle of reception, receiver		Approx. 6°										
<b>Supply voltage V<sub>S</sub> <sup>2)</sup></b>		24 ... 240 V DC/24 ... 240 V AC										
Current consumption	sender	≤ 3.5 VA										
	receiver	≤ 3.5 VA										
<b>Switching outputs</b>		Relay 1 x u, galv. separated <sup>3)</sup>										
Max. switching current		3 A/240 V AC; 3 A/30 V DC <sup>4)</sup>										
Light receiver		Light-switching										
Response time		≤ 20 ms										
Max. switching frequency <sup>5)</sup>		25/s										
<b>Connection types</b>		Cable <sup>6)</sup> , 2 m										
		Terminal chamber										
<b>VDE protection class <sup>7)</sup></b>		<input type="checkbox"/>										
<b>Circuit protection <sup>8)</sup></b>		A, C										
<b>Enclosure rating</b>		IP 66										
<b>Ambient temperature</b>		Operation -25 °C ... +55 °C										
		Storage -40 °C ... +70 °C										
<b>Weight</b>		Approx. 150 g										
<b>Housing material</b>		Housing: ABS; optics: PMMA										

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

<sup>2)</sup> ± 10 %

<sup>3)</sup> Provide suitable spark suppression for inductive and capacitive loads

<sup>4)</sup> Usage category to EN 60947-1, 15 AC, 13 DC

<sup>5)</sup> With light/dark ratio 1:1

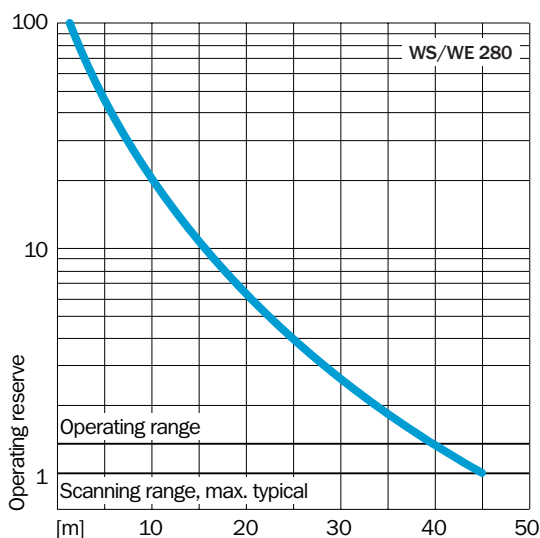
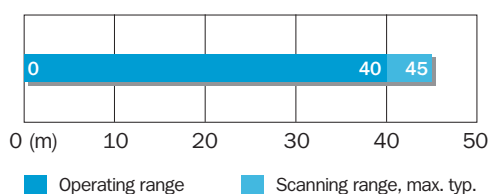
<sup>6)</sup> Do not bend below 0 °C

<sup>7)</sup> Reference voltage 250 V UC

<sup>8)</sup> A = V<sub>S</sub> connections reverse-polarity protected

C = Interference pulse suppression

**Operating range and operating reserve**



**Order information**

Type	Order no.
WS/WE280-S132	6 027 490
WS/WE280-S230	6 027 488