

W 260: Standard photoelectric switch series for a broad range of applications

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



- universal voltage 12...24 V DC and 24...240 V AC with potential-free relay contact (SPDT) or, alternatively, adjustable time delay.

A variety of features make these sensors particularly operator-friendly. These include visible red transmitted light used as an alignment aid, or the simple and flexible connection system, glass/stainless steel fibre-optic cables for harsh operating conditions in confined environments. All of these benefits open up applications far beyond handling/warehousing systems, the packaging industry and wood working. All device variants have been granted UL and CSA approval.

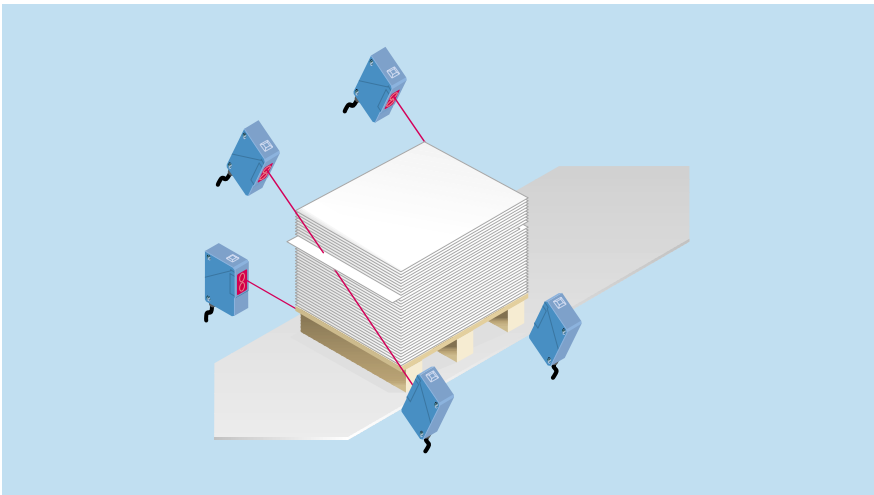
The W 260 series with its impressive scanning ranges and features has been specially designed for a wide variety of different applications. The sensors, through-beam photoelectric switches, energetic photoelectric proximity switches, and photoelectric reflex switches with background suppression are contained in robust plastic housings. Handling is simple and user-friendly. Two supply voltages are available:

- low voltage 10...30 V DC with PNP or NPN transistor switching output and test input and

One last highlight: the W 260 complies with EN 50081-1 (interference radiation). This makes it the perfect sensor solution for door and gate control systems in underground garages and for use in residential blocks or hotels.

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

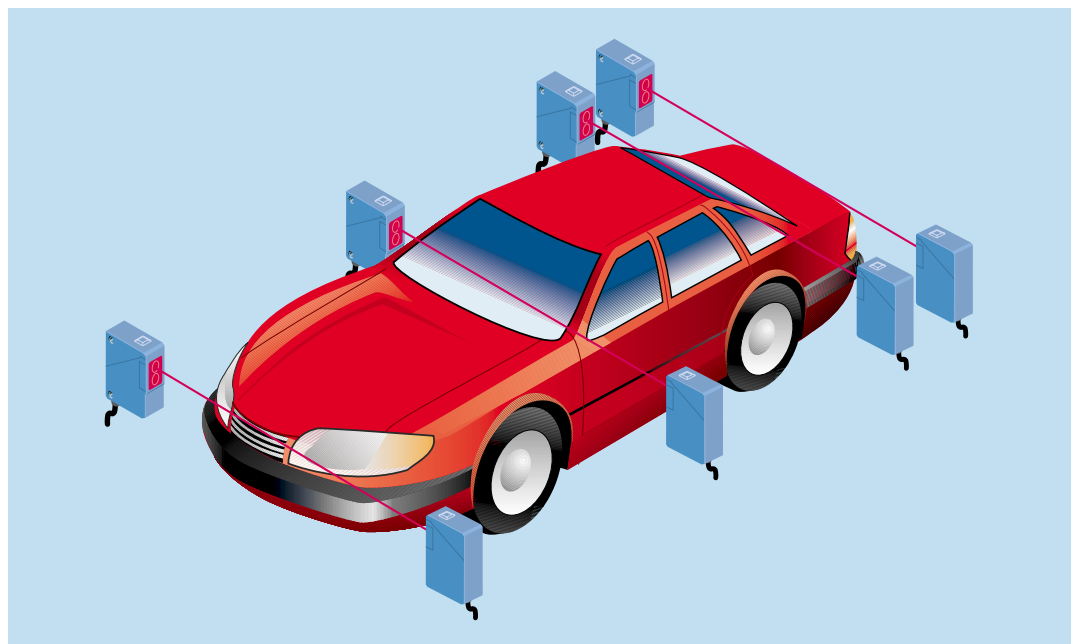
► WS/WE 260 through-beam photoelectric switches and WT 260 photoelectric proximity switches used for monitoring contours in palletisation systems to ensure that no problems are encountered during packaging.



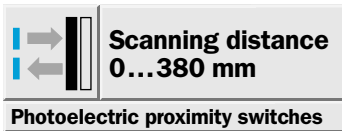
▼ A WT 260 photoelectric proximity switch controlling a commissioning system used in the wood-working industry.



▲ CE conformity to EN 50081-1 and, therefore, the right choice for residential and commercial applications: the WL 260 photoelectric reflex switch used to monitor the closing edges in automatic door and gate systems.

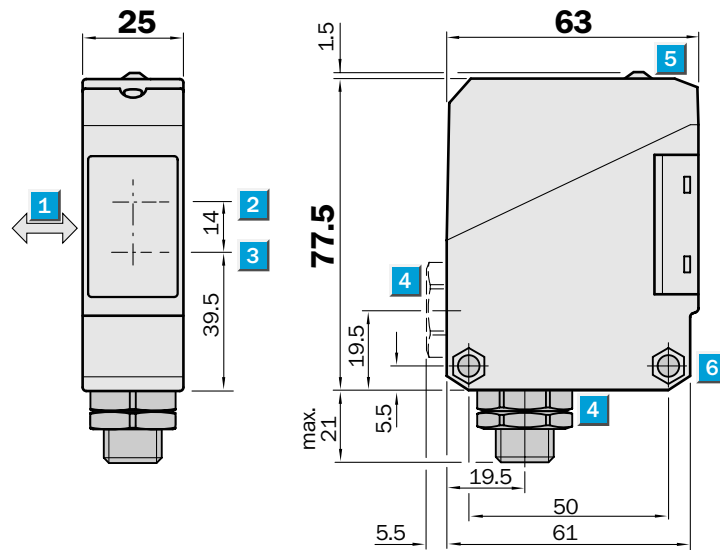


▲ WS/WE 260 through-beam photoelectric switches used for detecting the outline of vehicle bodies on assembly lines in the automotive industry.



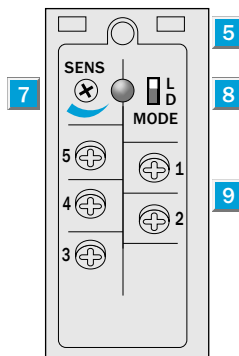
- Reliable detection of dark objects even against light backgrounds
- Scanning distance continuously adjustable
- Terminal chamber or M 12 plug, 4-pin or 5-pin
- Test input
- Pre-failure signalling output

Dimensional drawing



Adjustments possible

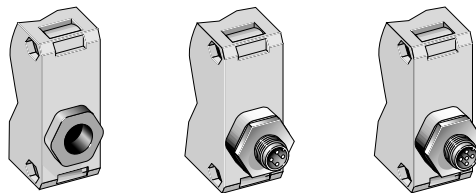
WT 260-P 260
WT 260-P 460
WT 260-P 560



- Standard direction of material being scanned
- Centre of optical axis, receiver
- Centre of optical axis, sender
- Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug bottom
- LED signal strength indicator, red
- Through hole $\varnothing$ 5.2 mm on both sides for M 5 hex nut
- Scanning distance adjustment
- Light-/dark-switching (L = light-switching, D = dark-switching)
- Terminals

Connection types

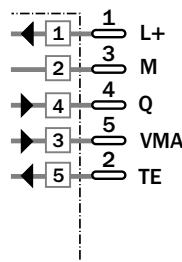
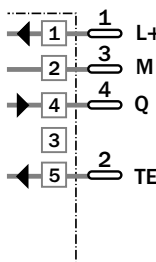
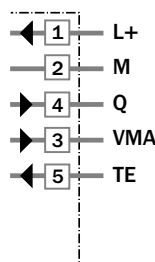
WT 260-P 260	WT 260-P 460	WT 260-P 560
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Terminals

4-pin, M 12

5-pin, M 12



Accessories	page
Cable receptacles M 12	496
Mounting brackets*	510

* included with delivery

Technical data		WT 260-	P 260	P 460	P 560							
Scanning distance	Max.: 0...380 mm, adjustable ¹⁾											
	Min.: 75...160 mm, adjustable ¹⁾											
	Adjustable, potentiometer 270°											
Light source²⁾, light type		LED, infrared light										
Light spot diameter	Approx. 17 mm at 300 mm											
Aperture angle sender	Approx. 1.5°											
Supply voltage V_s		10...30 V DC ³⁾										
Ripple ⁴⁾	$\leq 5 V_{SS}$											
Current consumption ⁵⁾	≤ 35 mA											
Switching outputs		PNP, open collector: Q										
Output current I_A max.	100 mA											
Light receiver, switching mode	Light-/dark-switching by sliding switch											
Response time ⁶⁾	≤ 2 ms											
Max. switching frequency ⁷⁾	250/s											
Pre-failure signalling output VMA ⁸⁾	100 mA, static											
Test input "TE" sender off		PNP: TE to + V_s										
Connection types		Terminal chamber										
		Plug M 12, 4-pin										
		Plug M 12, 5-pin										
VDE protection class⁹⁾		□										
Circuit protection¹⁰⁾		A, B, C, D										
Enclosure rating		IP 66										
Ambient temperature T_A		Operation - 25 °C...+ 55 °C										
		Storage - 40 °C...+ 70 °C										
Weight		Approx. 120 g										
Material		Housing: ABS; optics: PC										

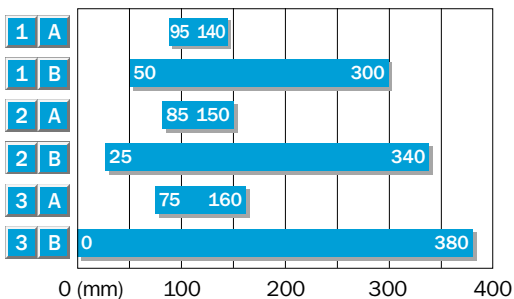
- 1) Object with 90 % remission (based on standard white DIN 5033)
 2) Average service life 100,000 h at $T_A = +25$ °C
 3) Limit values
 4) Must be within V_s tolerances

- 5) Without load
 6) With resistive load
 7) With light/dark ratio 1:1
 8) Operating reserve < 50 %
 9) Reference voltage 50 V DC

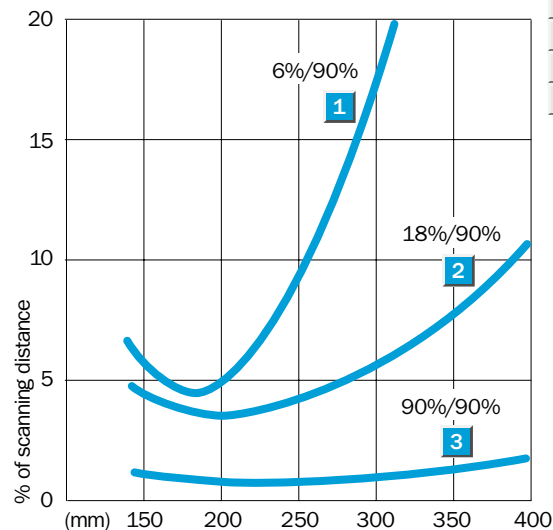
- 10) A = V_s connections reverse-polarity protected
 B = Inputs/outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

- 11) Black = 6 % remission
 Grey = 18 % remission
 White = 90 % remission

Scanning distance

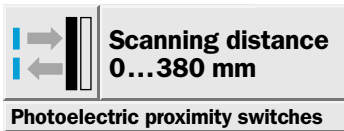


- 1 Scanning range on black¹¹⁾/background white
 2 Scanning range on grey¹¹⁾/background white
 3 Scanning range on white¹¹⁾/background white
 A Scanning distance control set to MIN
 B Scanning distance control set to MAX



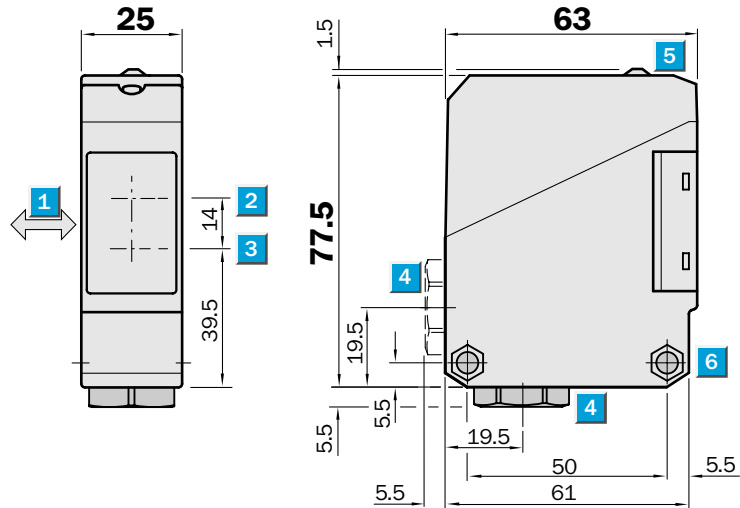
Order information

Type	Part no.
WT 260-P 260	6 009 471
WT 260-P 460	1 011 540
WT 260-P 560	1 011 541



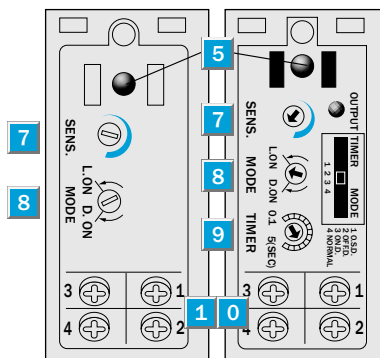
- Reliable detection of dark objects even against light backgrounds
- Scanning distance continuously adjustable
- Terminal chamber
- Universal current supply, relay output, SPST, timer optional

Dimensional drawing



Adjustments possible

WT 260-S 260 WT 260-R 260



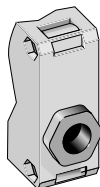
- Standard direction of material being scanned
- Centre of optical axis, receiver
- Centre of optical axis, sender
- Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- LED signal strength indicator, red
- Through hole $\varnothing$ 5.2 mm on both sides for M 5 hex nut
- Scanning distance adjustment
- Light/dark rotary switch (L.ON = light-switching, D.ON = dark-switching)
- Time range control
- Terminals
- Red LED status indicator; switching output active
- Time delay selector switch
O.S.D. = One Shot
OFF.D. = OFF delay
ON.D. = ON delay
Normal = No delay



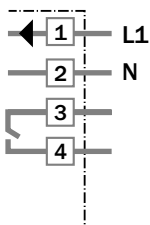
Connection type

WT 260-S 260

WT 260-R 260



Terminals

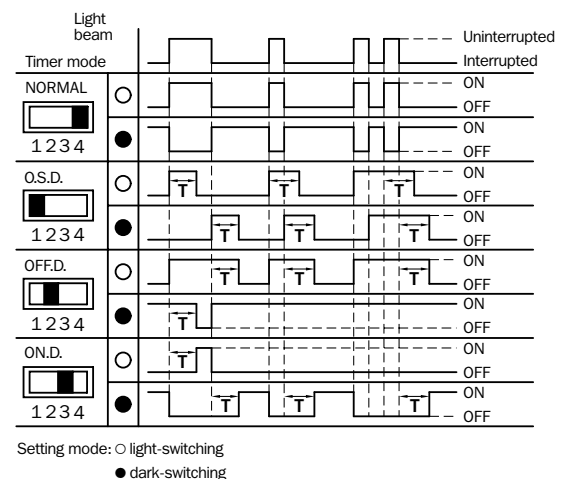


Accessories	page
Mounting brackets*	510

* included with delivery

Time delay

t = 0.1 – 5 s



Technical data		WT 260-	S 260	R 260									
Scanning distance	Max.: 0...380 mm, adjustable ¹⁾												
	Min.: 75...160 mm, adjustable ¹⁾												
	Adjustable, potentiometer 270°												
Light source²⁾, light type		LED, infrared light											
Light spot diameter		Approx. 17 mm at 300 mm											
Angle of dispersion, sender		Approx. 1.5°											
Supply voltage V_s³⁾		12...240 V DC											
		24...240 V AC											
Power consumption		≤ 5 VA											
Switching outputs		Relay, SPST, electrically isolated											
Switching current I _A max. ⁴⁾		3 A/240 V AC; 3 A/30 V DC											
Light receiver, switching mode		Light-/dark-switching by rotary switch											
Response time		≤ 20 ms											
Max. switching frequency ⁵⁾		25/s											
Time delay		With LED display: switching output active											
Switch position:	«1 O.S.D.»	«One shot»											
	«2 OFF.D.»	OFF delay											
	«3 ON.D.»	ON delay											
	«4 Normal»	No delay											
Delay		Adjustable, 0.1...5 s; potentiom. 270°											
Connection type		Terminal chamber											
VDE protection class⁶⁾		□											
Circuit protection⁷⁾		A, C											
Enclosure rating		IP 66											
Ambient temperature T_A		Operation -25 °C...+55 °C											
		Storage -40 °C...+70 °C											
Weight		Approx. 120 g											
Material		Housing: ABS; optics: PC											

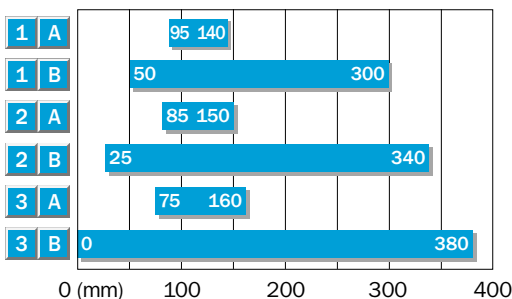
- 1) Object with 90 % remission (based on standard white DIN 5033)
 2) Average service life 100,000 h at T_A = +25 °C

- 3) ± 10 %
 4) Provide suitable spark suppression for inductive or capacitive loads
 5) With light/dark ratio 1:1

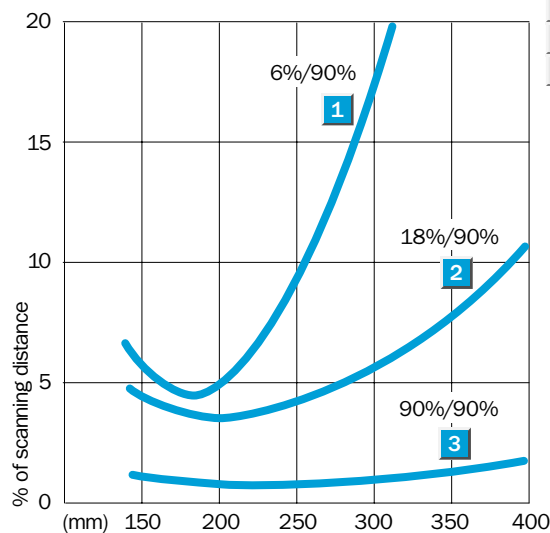
- 6) Reference voltage 250 V UC
 7) A = V_s connections reverse-polarity protected
 C = Interference suppression

- 8) Black = 6 % remission
 Grey = 18 % remission
 White = 90 % remission

Scanning distance



- 1 Scanning range on black⁸⁾/background white
 2 Scanning range on grey⁸⁾/background white
 3 Scanning range on white⁸⁾/background white
 A Scanning distance control set to MIN
 B Scanning distance control set to MAX



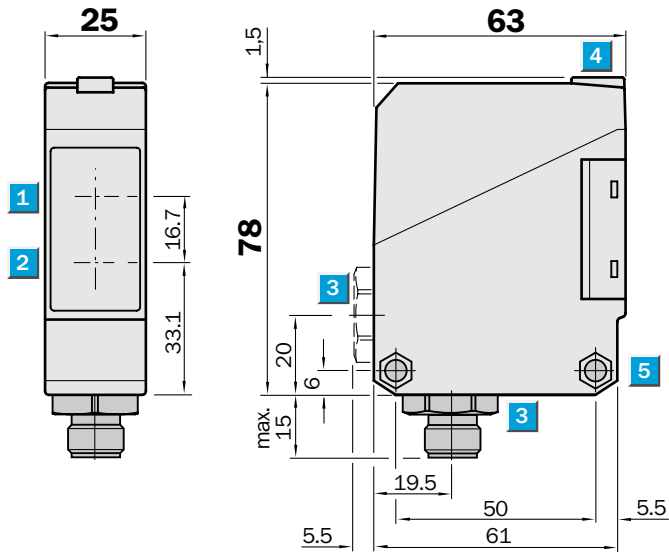
Order information

Type	Part no.
WT 260-S 260	6 009 473
WT 260-R 260	6 009 472

	Scanning distance 10...3200 mm
Photoelectric proximity switches	

- Adjustable sensitivity
- Terminal chamber or M 12, 4-pin plug
- Test input

Dimensional drawing

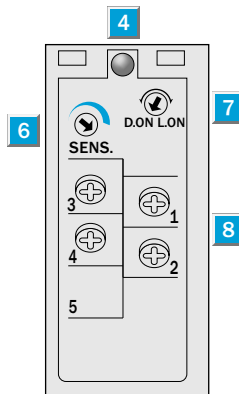


Adjustments possible

WT 260-F 280

WT 260-F 480

WT 260-E 280



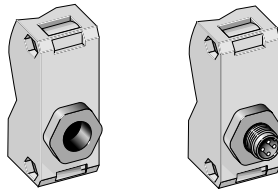
- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug, bottom
- 4 LED signal strength indicator, yellow, switching output active
- 5 Through hole Ø 5.2 mm on both sides for M 5 hex nut
- 6 Sensitivity adjustment
- 7 Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 8 Terminals

Connection types

WT 260-F 280

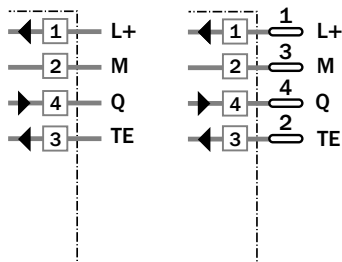
WT 260-F 480

WT 260-E 280



Terminals

4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets*	510

* included with delivery

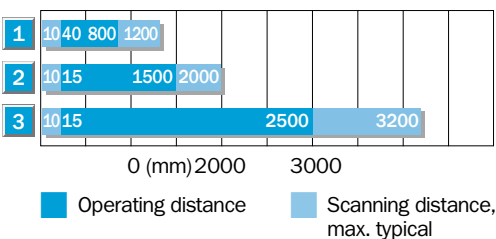
Technical data		WT 260-	F 280	F 480	E 280								
Scanning distance	0...3200 mm, adjustable ¹⁾												
Operating distance	15...2500 mm, adjustable ¹⁾												
Sensitivity	Adjustable, potentiometer 270°												
Light source²⁾, light type	LED, infrared light												
Light spot diameter	Approx. 80 mm at 2500 mm												
Angle of dispersion, sender	Approx. 1.8°												
Supply voltage V_s	10...30 V DC ³⁾												
Ripple⁴⁾	$\leq 5 V_{SS}$												
Current consumption⁵⁾	≤ 35 mA												
Switching outputs	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 time⁶⁾	≤ 5.0 ms												
Max. switching frequency⁷⁾	100/s												
Test input "TE" sender off	PNP: TE to + V_s												
	NPN: TE to 0 V												
Connection types	Terminal chamber												
	Plug M 12, 4-pin												
VDE protection class⁸⁾	□												
Circuit protection⁹⁾	A, B, C, D												
Enclosure rating	IP 67												
Ambient temperature T_A	Operation - 25 °C...+ 55 °C												
	Storage - 40 °C...+ 70 °C												
Weight	Approx. 120 g												
Material	Housing: ABS; optics: PC												

- 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

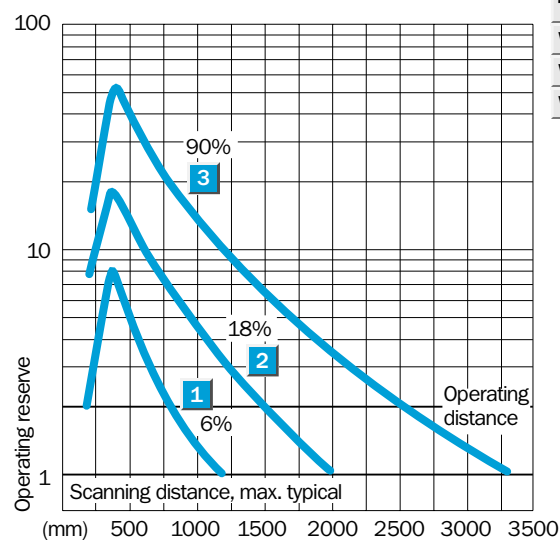
- 4) Must be within V_s tolerances
 5) Without load
 6) With resistive load
 7) With light/dark ratio 1:1
 8) Reference voltage 50 V DC

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

Scanning distance

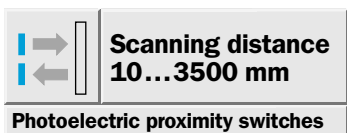


- 1 Scanning range on black, 6 % remission
 2 Scanning range on grey, 18 % remission
 3 Scanning range on white, 90 % remission



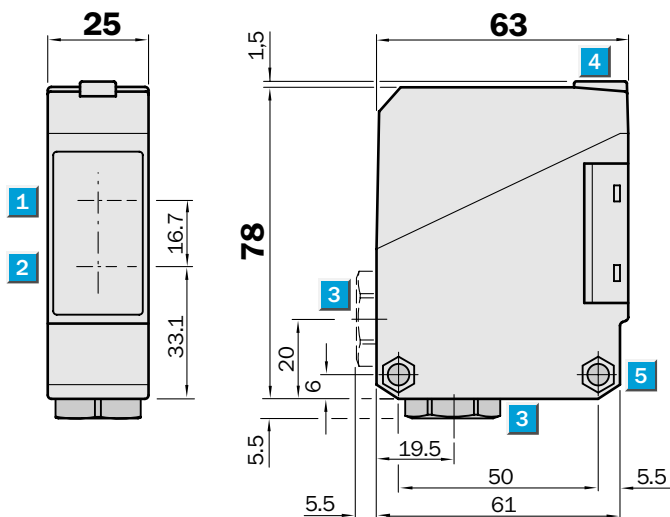
Order information

Type	Part no.
WT 260-F 280	6 020 982
WT 260-F 480	6 020 983
WT 260-E 280	6 020 984



- Adjustable sensitivity
- Terminal chamber
- Universal current supply, relay output, SPDT, timer optional, t_{ON} and t_{OFF} can be connected separately
- Enclosure rating IP 67
- CE noise radiation EN 50081-1 ("Residential standard")

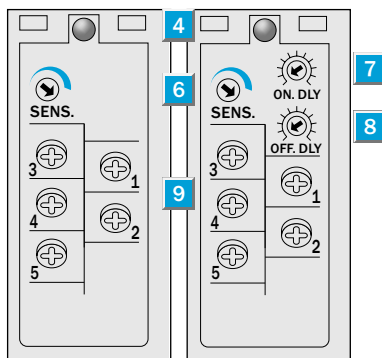
Dimensional drawing



Adjustments possible

WT 260-S 280

WT 260-R 280



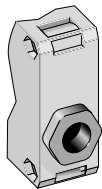
- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Cable entry gland 1/2" PF thread
for cable diameters from 6 to 10 mm
optionally at bottom or rear
- 4 LED signal strength indicator, red
- 5 Through hole $\varnothing$ 5.2 mm on both sides
for M 5 hex nut
- 6 Sensitivity adjustment
- 7 Time control ON-delay t_{ON}
- 8 Time control OFF-delay t_{OFF}
- 9 Terminals



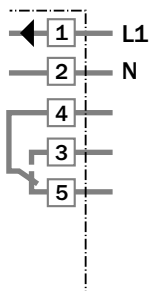
Connection type

WT 260-S 280

WT 260-R 280

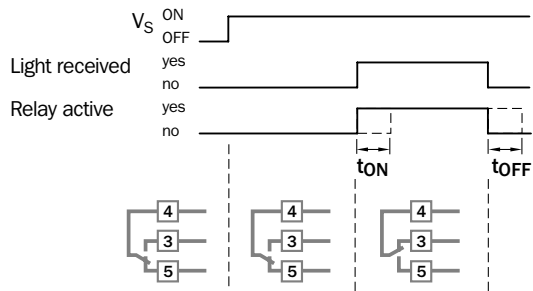


Terminals



Time delay

t = 0.1 – 10 s



Accessories

page

Mounting brackets*

* included with delivery

Technical data		WT 260-	S 280	R 280										
Scanning distance , max. typical	10...3500 mm, adjustable ¹⁾													
Operating distance	20...3000 mm, adjustable ¹⁾													
Sensitivity	Adjustable, potentiometer 270°													
Light source²⁾, light type	LED, infrared light													
Light spot diameter	Approx. 95 mm at 3000 mm													
Angle of dispersion, sender	Approx. 1.7°													
Supply voltage V_s³⁾	12...240 V DC													
	24...240 V AC													
Power consumption	≤ 5 VA													
Switching output	Relay, SPDT, electrically isolated													
Switching current I_{max}⁴⁾	3 A/240 V AC; 3 A/30 V DC													
Light receiver, switching mode	Light-switching													
Response time	≤ 20 ms													
Max. switching frequency⁵⁾	25/s													
Time delays														
ON delay t_{ON}	0.1...10 s, can be connected separately													
OFF delay t_{OFF}	0.1...10 s, can be connected separately													
Connection type	Terminal chamber													
CE noise radiation	Level EN 50081-1 ("Residential standard")													
VDE protection class⁶⁾	□													
Circuit protection⁷⁾	A, C													
Enclosure rating	IP 67													
Ambient temperature T_A	Operation - 25 °C...+ 55 °C													
	Storage - 40 °C...+ 70 °C													
Weight	Approx. 120 g													
Material	Housing: ABS; optics: PC													

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 or capacitive loads

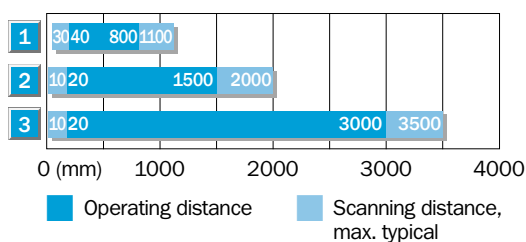
5) With light/dark ratio 1:1

6) Reference voltage 250 V UC

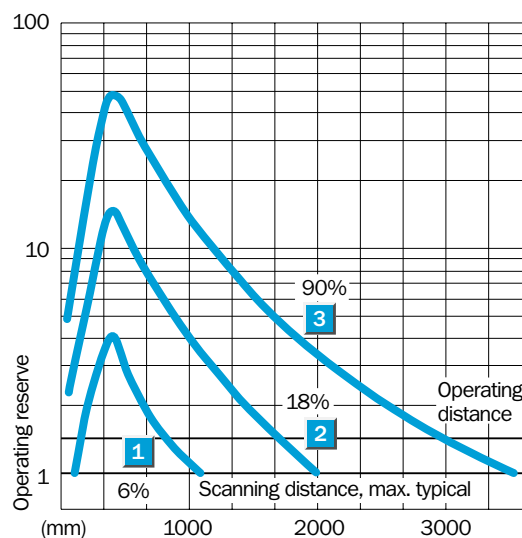
7) A = V_s connections reverse-polarity protected

C = Interference suppression

Scanning distance



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



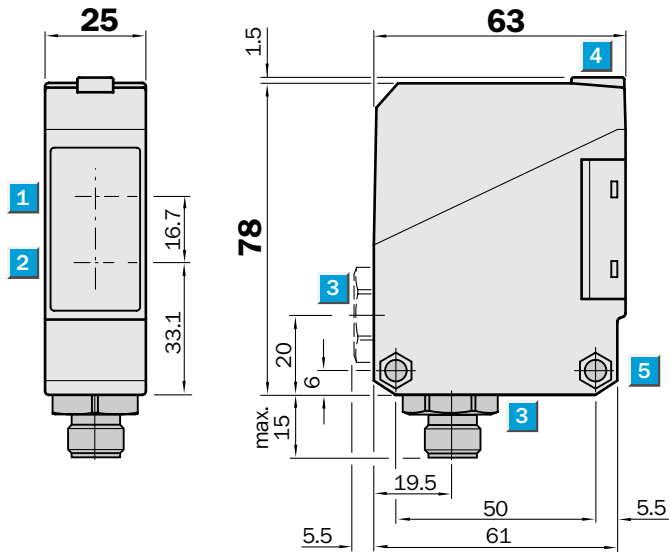
Order information

Type	Part no.
WT 260-S 280	6 020 771
WT 260-R 280	6 020 772

	Scanning distance 5...1500 mm
Photoelectric proximity switches	

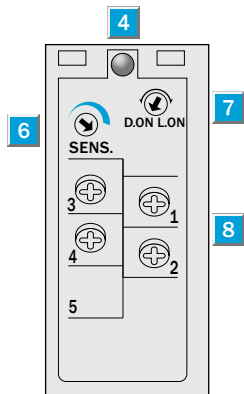
- Adjustable sensitivity
- Terminal chamber or M 12, 4-pin plug
- Test input

Dimensional drawing



Adjustments possible

WT 260-F 270
WT 260-F 470
WT 260-E 270

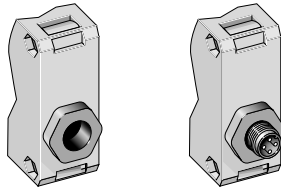


- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug, bottom
- 4 LED signal strength indicator, yellow, switching output active
- 5 Through hole Ø 5.2 mm on both sides for M 5 hex nut
- 6 Sensitivity adjustment
- 7 Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 8 Terminals

Connection types

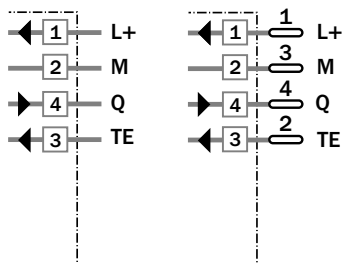
WT 260-F 270
WT 260-E 270

WT 260-F 470



Terminals

4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets*	510

* included with delivery



Technical data		WT 260-	F 270	F 470	E 270							
Scanning distance	5...1500 mm, adjustable ¹⁾											
Operating distance	5...1000 mm, adjustable ¹⁾											
Sensitivity	Adjustable, potentiometer 270°											
Light source²⁾, light type	LED, infrared light											
Light spot diameter	Approx. 45 mm at 1000 mm											
Angle of dispersion, sender	Approx. 2.5°											
Supply voltage V_s	10...30 V DC ³⁾											
Ripple⁴⁾	$\leq 5 V_{SS}$											
Current consumption⁵⁾	≤ 35 mA											
Switching outputs	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 time⁶⁾	≤ 1.5 ms											
Max. switching frequency⁷⁾	333/s											
Test input "TE" sender off	PNP: TE to + V_s											
	NPN: TE to 0 V											
Connection types	Terminal chamber											
	Plug M 12, 4-pin											
VDE protection class⁸⁾	□											
Circuit protection⁹⁾	A, B, C, D											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation - 25 °C...+ 55 °C											
	Storage - 40 °C...+ 70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; optics: PC											

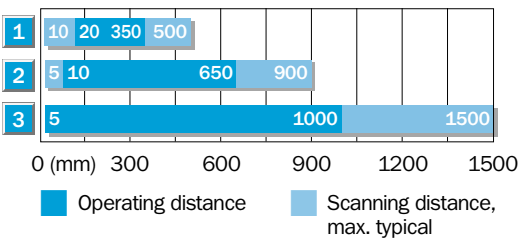
- 1) Object with 90 % remission (based on standard white DIN 5033)
 2) Average service life 100,000 h at $T_A = +25$ °C
 3) Limit values

- 4) Must be within V_s tolerances
 5) Without load
 6) With resistive load
 7) With light/dark ratio 1:1
 8) Reference voltage 50 V DC

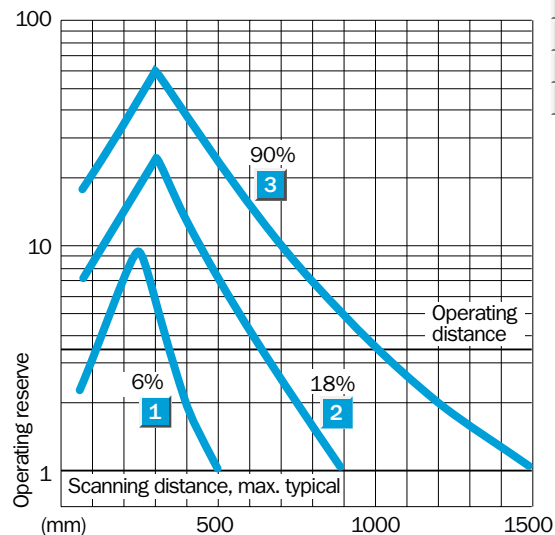
- 9) A = V_s connections reverse-polarity protected
 B = Inputs/outputs reverse-polarity protected

- C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance



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



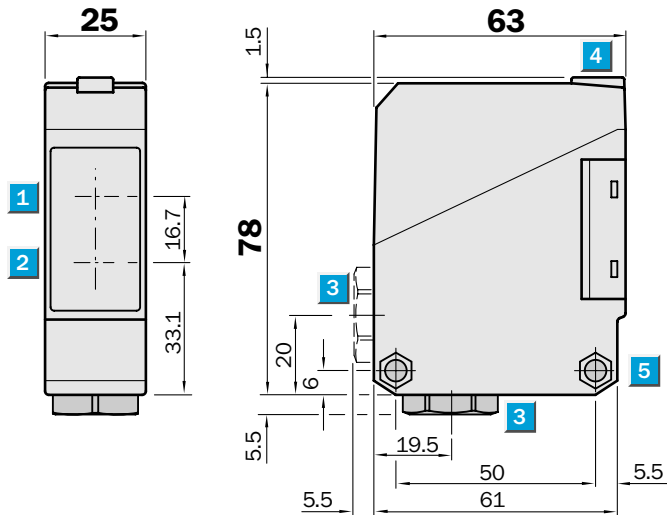
Order information

Type	Part no.
WT 260-F 270	6 020 979
WT 260-F 470	6 020 980
WT 260-E 270	6 020 981

	Scanning distance 5...1700 mm
Photoelectric proximity switches	

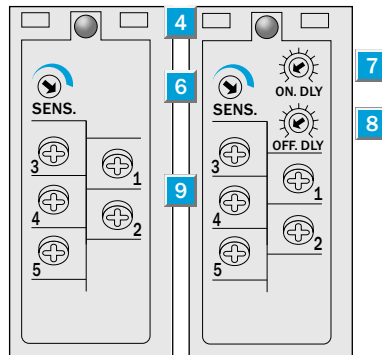
- Adjustable sensitivity
- Terminal chamber
- Universal current supply, Relay output, SPDT, timer optional, t_{ON} and t_{OFF} can be connected separately
- Enclosure rating IP 67
- CE noise radiation EN 50081-1 ("Residential standard")

Dimensional drawing

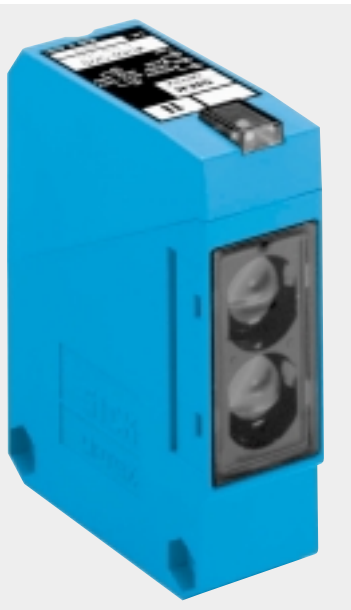


Adjustments possible

WT 260-S 270 WT 260-R 270



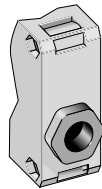
- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- 4 LED signal strength indicator, red
- 5 Through hole $\varnothing$ 5.2 mm on both sides for M 5 hex nut
- 6 Sensitivity adjustment
- 7 Time control ON-delay t_{ON}
- 8 Time control OFF-delay t_{OFF}
- 9 Terminals



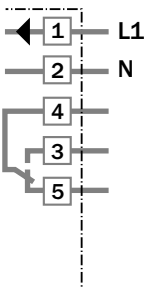
Connection type

WT 260-S 270

WT 260-R 270

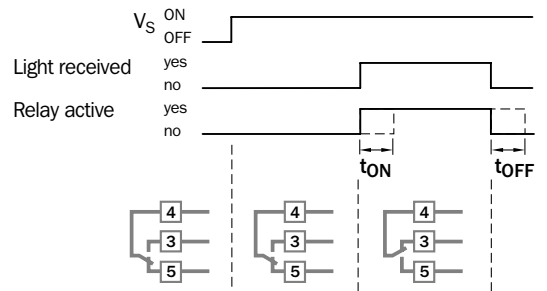


Terminals



Time delay

$t = 0.1 - 10 \text{ s}$



Accessories	page
Mounting brackets*	510

* included with delivery

Technical data		WT 260-	S 270	R 270										
Scanning distance , max. typical	5...1700 mm, adjustable ¹⁾													
Operating distance	5...1300 mm, adjustable ¹⁾													
Sensitivity	Adjustable, potentiometer 270°													
Light source²⁾, light type	LED, infrared light													
Light spot diameter	Approx. 60 mm at 1300 mm													
Angle of dispersion, sender	Approx. 1.8°													
Supply voltage V_s³⁾	12...240 V DC													
	24...240 V AC													
Power consumption	≤ 5 VA													
Switching output	Relay, SPDT, electrically isolated													
Switching current I_{max}⁴⁾	3 A/240 V AC; 3 A/30 V DC													
Light receiver, switching mode	Light-switching													
Response time	≤ 20 ms													
Max. switching frequency⁵⁾	25/s													
Time delays														
ON-delay t_{ON}	0.1...10 s, can be connected separately													
OFF-delay t_{OFF}	0.1...10 s, can be connected separately													
Connection type	Terminal chamber													
CE noise radiation	Level EN 50081-1 ("Residential standard")													
VDE protection class⁶⁾	□													
Circuit protection⁷⁾	A, C													
Enclosure rating	IP 67													
Ambient temperature T_A	Operation - 25 °C...+ 55 °C													
	Storage - 40 °C...+ 70 °C													
Weight	Approx. 120 g													
Material	Housing: ABS; optics: PC													

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 or capacitive loads

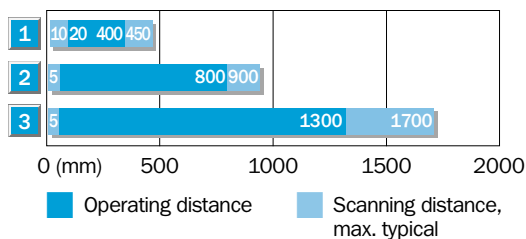
5) With light/dark ratio 1:1

6) Reference voltage 250 V UC

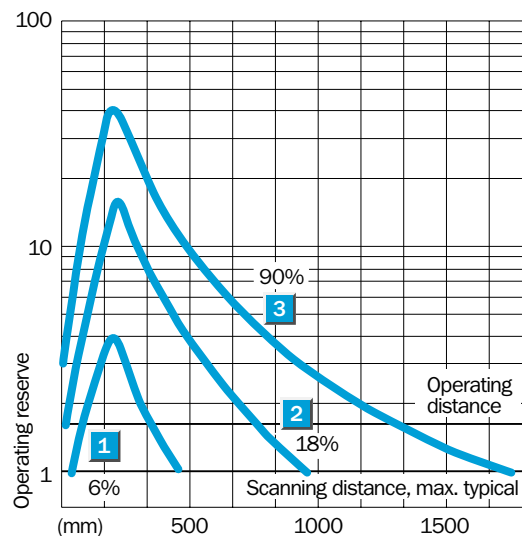
7) A = V_s connections reverse-polarity protected

C = Interference suppression

Scanning distance



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



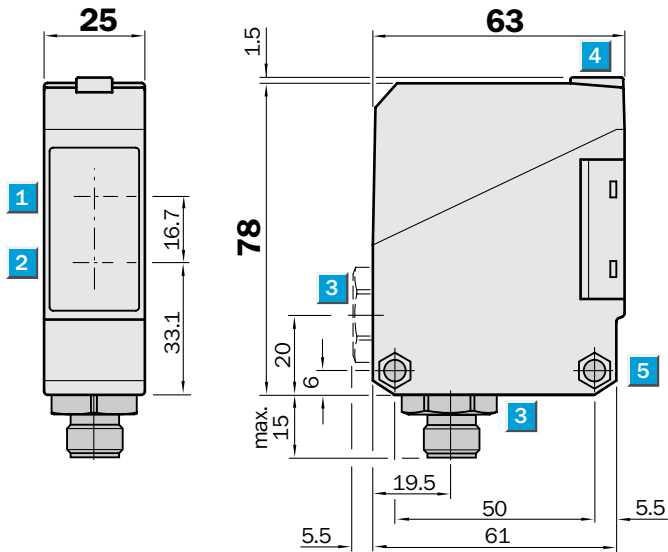
Order information

Type	Part no.
WT 260-S 270	6 020 769
WT 260-R 270	6 020 770

	Scanning range 0.01...14 m
Photoelectric reflex switches	

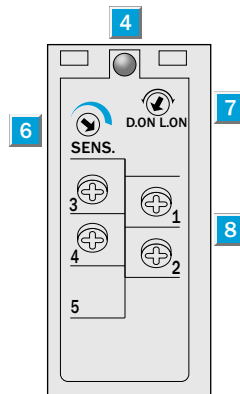
- Polarising filter providing reliable detection even of objects with reflective surfaces
- Adjustable sensitivity
- Terminal chamber or M 12, 4-pin plug
- Test input

Dimensional drawing



Adjustments possible

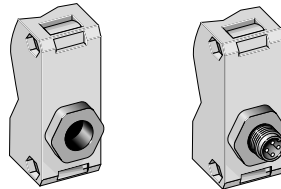
WL 260-F 270
WL 260-F 470
WL 260-E 270



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug, bottom
- 4 LED signal strength indicator, yellow, switching output active
- 5 Through hole Ø 5.2 mm on both sides for M 5 hex nut
- 6 Sensitivity adjustment
- 7 Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 8 Terminals

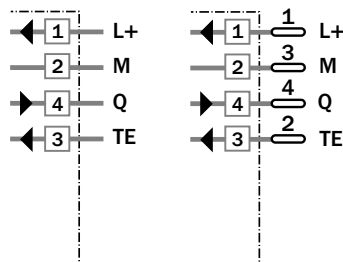
Connection types

WL 260-F 270	WL 260-F 470
WL 260-E 270	



Terminals

4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets*	510
Reflector P 250*	520

* included with delivery

Technical data		WL 260-	F 270	F 470	E 270							
Scanning range , max. typical/on refl.	0.01...14 m/ PL 80 A											
	max. typical/on refl. 0.01...9.5 m/ P 250 (included)											
Operating range	0.01...8 m/ P 250											
Sensitivity	Adjustable, potentiometer 270°											
Light source¹⁾, light type	LED, visible red light											
	with polarising filter											
Light spot diameter	Approx. 240 mm at 8 m											
Angle of dispersion, sender	Approx. 1.7°											
Supply voltage V_s	10...30 V DC ²⁾											
Ripple ³⁾	$\leq 5 V_{SS}$											
Current consumption ⁴⁾	≤ 35 mA											
Switching outputs	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 ⁵⁾	≤ 1.5 ms											
Max. switching frequency ⁶⁾	333/s											
Test input "TE" sender off	PNP: TE to + V_s											
	NPN: TE to 0 V											
Connection types	Terminal chamber											
	M 12 plug, 4-pin											
VDE protection class⁷⁾	□											
Circuit protection⁸⁾	A, B, C, D											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation - 25 °C...+ 55 °C											
	Storage - 40 °C...+ 70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; optics: PMMA											

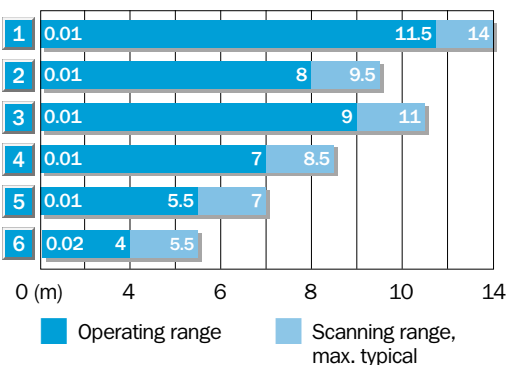
- 1) Average service life 100,000 h at $T_A = +25$ °C
 2) Limit values
 3) Must be within V_s tolerances
 4) Without load

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

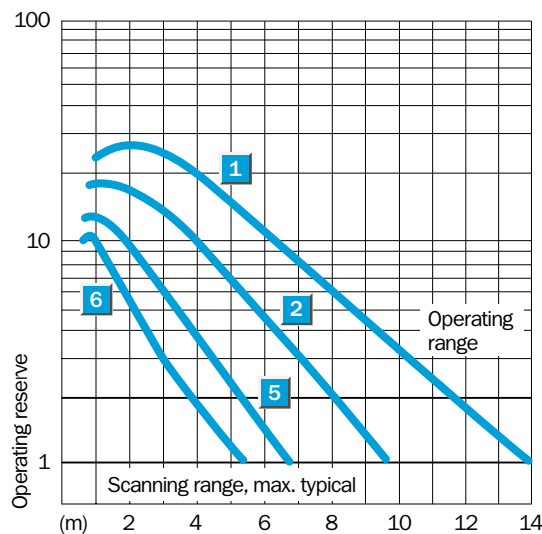
- 8) A = V_s connections reverse-polarity protected
 B = Inputs/outputs reverse-polarity protected

- C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.01...11.5 m
2 P 250	0.01...8.0 m
3 PL 50 A or PL 40 A	0.01...9.0 m
4 PL 30 A or PL 31 A	0.01...7.0 m
5 PL 20 A	0.01...5.5 m
6 Reflective tape «Diamond Grade»	0.02...4.0 m



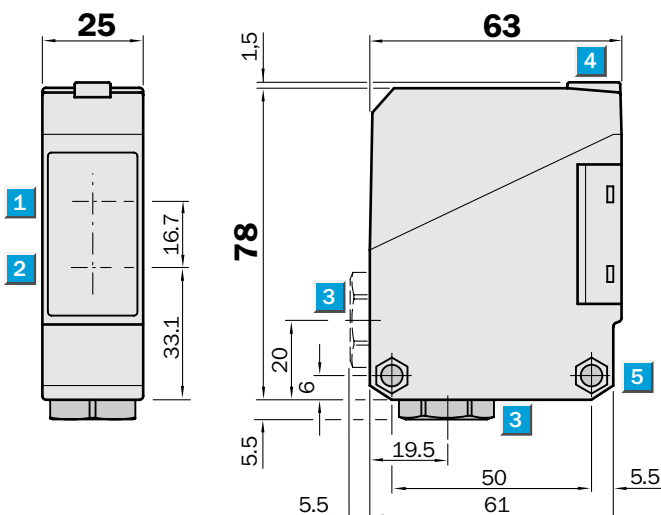
Order information

Type	Part no.
WL 260-F 270	6 020 976
WL 260-F 470	6 020 977
WL 260-E 270	6 020 978

	Scanning range 0.01...15 m
Photoelectric reflex switches	

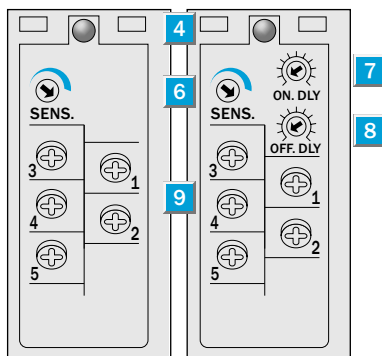
- Polarising filter providing reliable detection even of objects with reflective surfaces
- Terminal chamber
- Universal current supply, relay output, SPDT, timer optional, t_{ON} and t_{OFF} can be connected separately
- Enclosure rating IP 67
- CE noise radiation EN 50081-1 ("Residential standard")

Dimensional drawing



Adjustments possible

WL 260-S 270 WL 260-R 270



- 1 Centre of optical axis, receiver
- 2 Centre of optical axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- 4 LED signal strength indicator, red
- 5 Through hole Ø 5.2 mm on both sides for M 5 hex nut
- 6 Sensitivity adjustment
- 7 Time control ON-delay t_{ON}
- 8 Time control OFF-delay t_{OFF}
- 9 Terminals

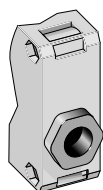
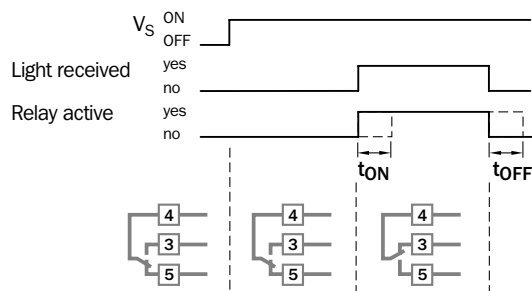
Connection type

WL 260-S 270

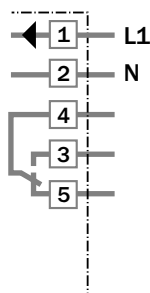
WL 260-R 270

Time delay

$t = 0.1 - 10 \text{ s}$



Terminals



Accessories	page
Mounting brackets*	510
Reflector P 250*	520

* included with delivery

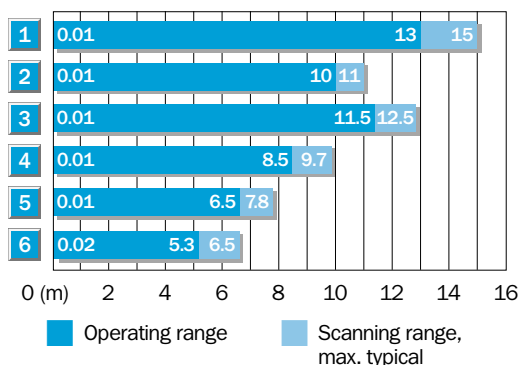
Technical data		WL 260-	S 270	R 270										
Scanning range , max. typical/on refl.	0.01...15 m/ PL 80 A													
	max. typical/on refl. 0.01...11 m/P 250 (included)													
Operating range	0.01...10 m/P 250													
Sensitivity	Adjustable, potentiometer 270°													
Light source¹⁾, light type		LED, visible red light												
		with polarising filter												
Light spot diameter	Approx. 300 mm at 10 m													
Angle of dispersion, sender	Approx. 1.7°													
Supply voltage V_s²⁾		12...240 V DC												
		24...240 V AC												
Power consumption	≤ 5 VA													
Switching output	Relay, SPDT, electrically isolated													
Switching current I_A max. ³⁾	3 A/240 V AC; 3 A/30 V DC													
Light receiver, switching mode	Light-switching													
Response time	≤ 20 ms													
Max. switching frequency ⁴⁾	25/s													
Time delays														
ON delay t_{ON}	0.1...10 s, can be connected separately													
OFF delay t_{OFF}	0.1...10 s, can be connected separately													
Connection type	Terminal chamber													
CE noise radiation	Level EN 50081-1													
		("Residential standard")												
VDE protection class⁵⁾	□													
Circuit protection⁶⁾	A, C													
Enclosure rating	IP 67													
Ambient temperature T_A		Operation - 25 °C...+ 55 °C												
		Storage - 40 °C...+ 70 °C												
Weight	Approx. 120 g													
Material	Housing: ABS; optics: PMMA													

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

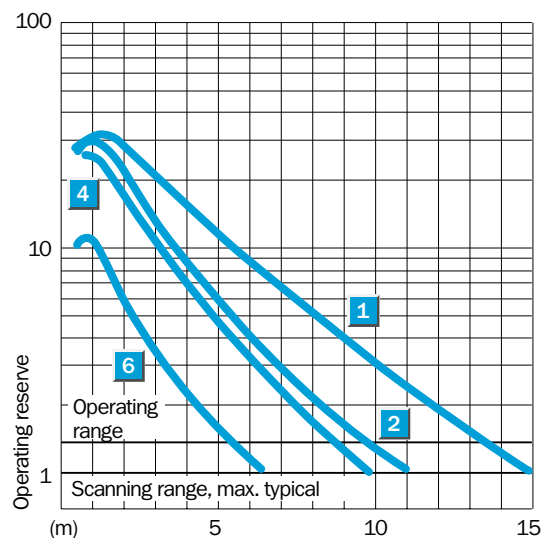
3) Provide suitable spark suppression for
inductive or capacitive loads
4) With light/dark ratio 1:1

5) Reference voltage 250 V UC
6) A = V_s connections reverse-polarity
protected
C = Interference 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 or PL 40 A	0.01...11.5 m
4 PL 30 A or PL 31 A	0.01...8.5 m
5 PL 20 A	0.01...6.5 m
6 Reflective tape «Diamond Grade»	0.01...5.3 m



Order information

Type	Part no.
WL 260-S 270	6 020 767
WL 260-R 270	6 020 768

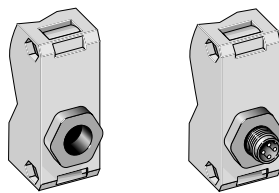
Through-beam photoelectric switches

-

[illegible]

- CE UL CSA

WS/WE 260-F 230	WS/WE 260-F 430
WS/WE 260-E 230	



The diagram illustrates the connection of a 4-bit parallel adder to a 4-bit parallel subtractor. The adder's inputs are L+, M, and Q. The subtractor's inputs are L+, M, Q, and NC. The adder's output is connected to the subtractor's input.

SenderReceiver

Technical data		WS/WE 260-	F 230	F 430	E 230								
Scanning range , max. typical	30 m												
Operating range	20 m												
Sensitivity	Adjustable, potentiometer 270°												
Light source¹⁾, light type	LED, infrared light												
Light spot diameter	Approx. 350 mm at 20 m												
Angle of dispersion, sender	Approx. 1°												
Angle of dispersion, receiver	Approx. 20°												
Supply voltage V_S	10...30 V DC ²⁾												
Ripple ³⁾	$\leq 5 V_{SS}$												
Current consumption ⁴⁾													
sender	≤ 20 mA												
receiver	≤ 35 mA												
Switching outputs	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 ⁵⁾	≤ 1 ms												
Max. switching frequency ⁶⁾	500/s												
Test input "TE" sender off	PNP, NPN: TE to 0 V												
Connection types	Terminal chamber												
	M 12 plug, 4 pin												
VDE protection class⁷⁾	□												
Circuit protection⁸⁾													
sender	A, B												
receiver	A, B, C, D												
Enclosure rating	IP 66												
Ambient temperature T_A	Operation $-25\text{ °C} \dots +55\text{ °C}$												
	Storage $-40\text{ °C} \dots +70\text{ °C}$												
Weight	Approx. 120 g												
Material	Housing: ABS; optics: PC												

1) Average service life 100 000 h
at $T_A = +25\text{ °C}$

2) Limit values

3) Must be within V_S tolerances

4) Without load

5) With resistive load

6) With light/dark ratio 1:1

7) Reference voltage 50 V DC

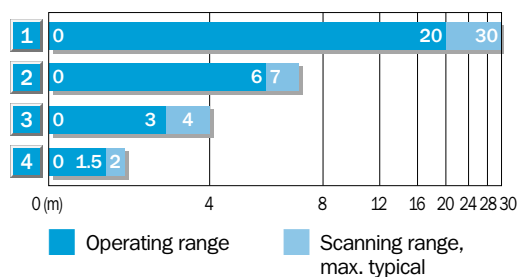
8) A = V_S connections reverse-polarity
protected

B = Inputs/outputs reverse-polarity
protected

C = Interference suppression

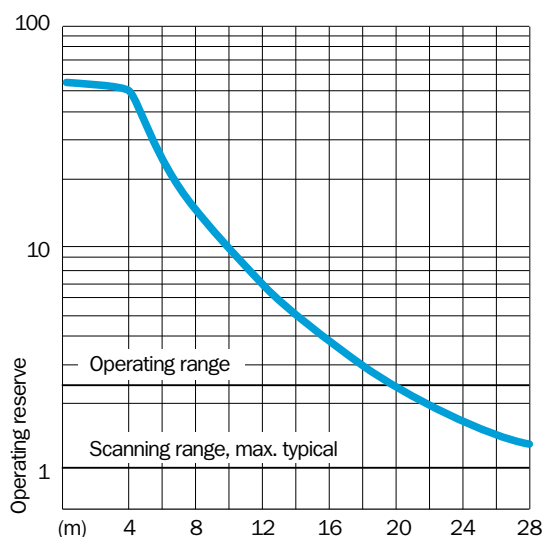
D = Outputs overcurrent and short-
circuit protected

Scanning range and operating reserve



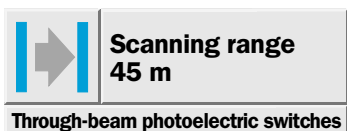
Scanning range reduction when using slotted masks

1	Without slotted mask
2	Slot width 5 mm
3	Slot width 2 mm
4	Slot width 1 mm



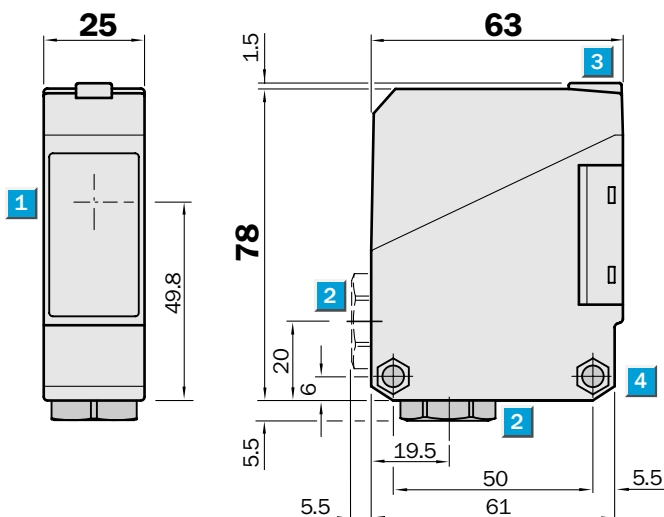
Order information

Type	Part no.
WS/WE 260-F 230	6 020 052
WS/WE 260-E 230	6 020 051
WS/WE 260-F 430	6 020 053



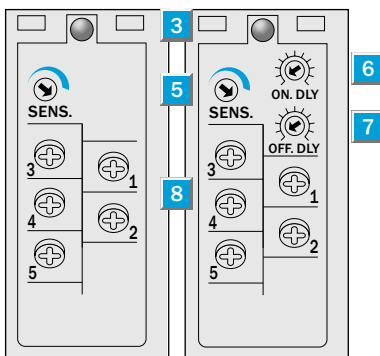
- Adjustable sensitivity
- Terminal chamber
- Universal current supply, relay output, SPDT, timer optional, t_{ON} and t_{OFF} can be connected separately
- Enclosure rating IP 67
- CE noise radiation EN 50081-1 ("Residential standard")

Dimensional drawing



Adjustments possible

WS/WE 260-S 270 WS/WE 260-R 270



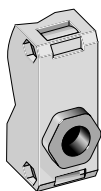
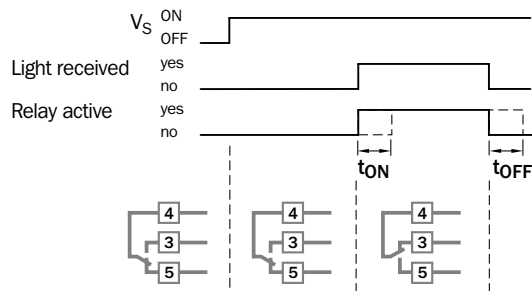
- Centre of optical axis, sender and receiver
- Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- LED signal strength indicator, red
- Through hole $\varnothing$ 5.2 mm on both sides for M 5 hex nut
- Sensitivity adjustment
- Time control ON-delay t_{ON}
- Time control OFF-delay t_{OFF}
- Terminals

Connection type

WS/WE 260-S 270

WS/WE 260-R 270

Time delay

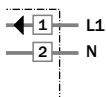
 $t = 0.1 - 10 \text{ s}$


Terminals

WS 260-S 270

WE 260-S 270

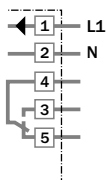
WE 260-R 270



Receiver

WE 260-S 270

WE 260-R 270



Accessories	page
Mounting brackets*	510

* included with delivery

Technical data		WS/WE 260-	S 270	R 270										
Scanning range , max. typical	45 m													
Operating range	40 m													
Sensitivity	Adjustable, potentiometer 270°													
Light source ¹⁾ , light type	LED, visible red light													
Light spot diameter	Approx. 700 mm at 40 m													
Angle of dispersion, sender	Approx. 1°													
Angle of dispersion, receiver	Approx. 20°													
Supply voltage V_s ²⁾	12...240 V DC													
	24...240 V AC													
Power consumption														
Sender	≤ 4 VA													
Receiver	≤ 5 VA													
Switching output	Relay, SPDT, electrically isolated													
Switching current I_A max. ³⁾	3 A/240 V AC; 3 A/30 V DC													
Light receiver, switching mode	Light-switching													
Response time	≤ 20 ms													
Max. switching frequency ⁴⁾	25/s													
Time delays														
ON-delay t_{ON}	0.1...10 s, can be connected separately													
OFF-delay t_{OFF}	0.1...10 s, can be connected separately													
Connection type	Terminal chamber													
CE noise radiation	Level EN 50081-1 ("Residential standard")													
VDE protection class ⁵⁾	□													
Circuit protection ⁶⁾	A, C													
Enclosure rating	IP 67													
Ambient temperature T_A	Operation - 25 °C...+ 55 °C													
	Storage - 40 °C...+ 70 °C													
Weight	Approx. 120 g													
Material	Housing: ABS; optics: PC													

1) Average service life 100,000 h
at $T_A = +25\text{ °C}$

2) ± 10 %

3) Provide suitable spark suppression for
inductive or capacitive loads

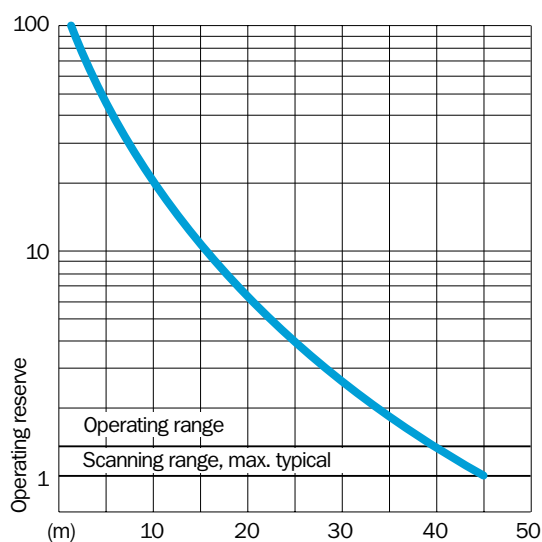
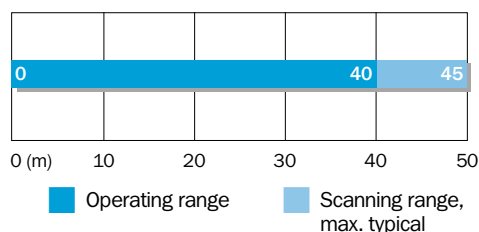
4) With light/dark ratio 1:1

5) Reference voltage 250 V UC

6) A = V_s connections reverse-polarity
protected

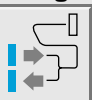
C = Interference suppression

Scanning range and operating reserve



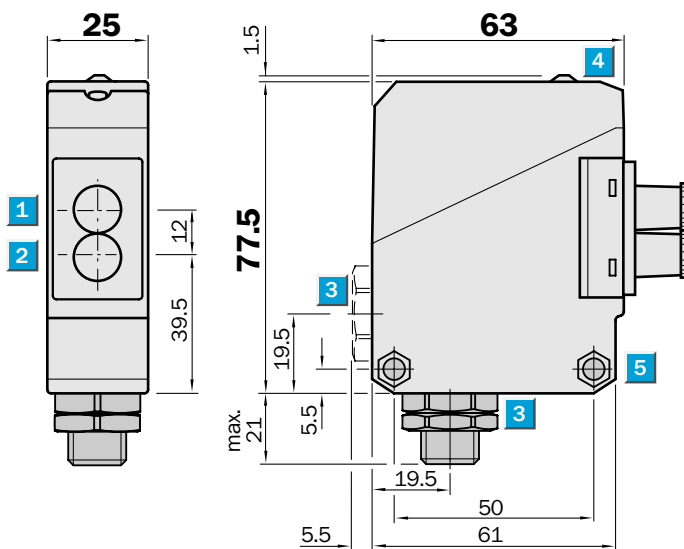
Order information

Type	Part no.
WS/WE 260-S 270	6 020 773
WS/WE 260-R 270	6 020 774

	Scanning range max. 800 mm
Through-beam systems	
	Scanning distance max. 65 (110) mm
Proximity systems	

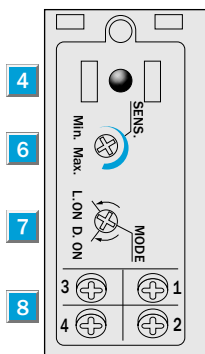
- Wide range of fibre-optic cables for through-beam and proximity applications
- Easy adaption of fibre-optic cable using cap nut
- Adjustable sensitivity
- Terminal chamber, at bottom or rear or M 12 plug, 4-pin
- Test input

Dimensional drawing



Adjustments possible

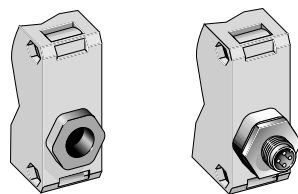
WLL 260-F 240
WLL 260-F 440
WLL 260-E 240



- Centre of optical axis, receiver
- Centre of optical axis, sender
- Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug, bottom
- LED signal strength indicator, red
- Through hole $\varnothing$ 5.2 mm on both sides for M 5 hex nut
- Sensitivity adjustment
- Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- Terminals

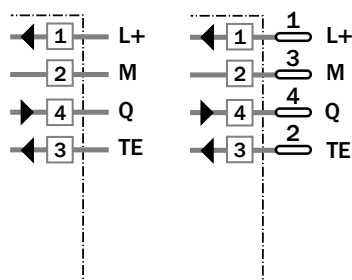
Connection types

WLL 260-E 240	WLL 260-F 440
WLL 260-F 240	



Terminals

4-pin, M 12



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

* included with delivery

Technical data		WLL 260-	F 240	F 440	E 240							
Suitable fibre-optic cables	Fibre-optic cable series LIS/LBS											
	see page 552											
Scanning distance/ranges	Depends on the fibre-optic cable used											
Through-beam system												
Scanning distance, max. typical ¹⁾	0...65 mm											
	0...110 mm w. special fibre-optic cable											
Scanning range ¹⁾	0...50 mm											
	0...90 mm w. special fibre-optic cable											
Proximity system												
Scanning range, max. typical	0...800 mm											
Operating range	0...700 mm											
Sensitivity	Adjustable, potentiometer 270°											
Light source²⁾, light type												
LED, visible red light												
Light spot diameter	Depends on scanning range											
Aperture fibre-optic cable	Approx. 65°											
Supply voltage V_S												
10...30 V DC ³⁾												
Ripple ⁴⁾	$\leq 5 V_{SS}$											
Current consumption ⁵⁾	≤ 35 mA											
Switching outputs												
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 ⁶⁾	≤ 0.7 ms											
Max. switching frequency ⁷⁾	700/s											
Test input "TE" sender off												
PNP: TE to $+V_S$												
	NPN: TE to 0 V											
Connection types												
Terminal chamber												
	Plug M 12, 4-pin											
VDE protection class⁸⁾												
$\square$												
Circuit protection⁹⁾												
A, B, C, D												
Enclosure rating												
IP 66												
Ambient temperature T_A												
Operation - 25 °C...+ 55 °C												
	Storage - 40 °C...+ 70 °C											
Weight												
Approx. 120 g												
Material												
Housing: ABS												

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

4) Must be within V_S tolerances

5) Without load

6) With resistive load

7) With light/dark ratio 1:1

8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity protected

B = Inputs/outputs reverse-polarity protected

C = Interference suppression

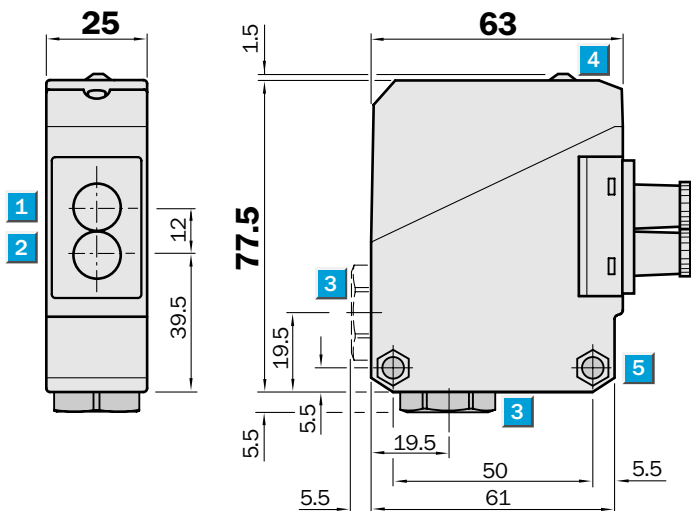
D = Outputs overcurrent and short-circuit protected

Order information

Type	Part no.
WLL 260-F 240	6 020 064
WLL 260-F 440	6 020 065
WLL 260-E 240	6 020 063

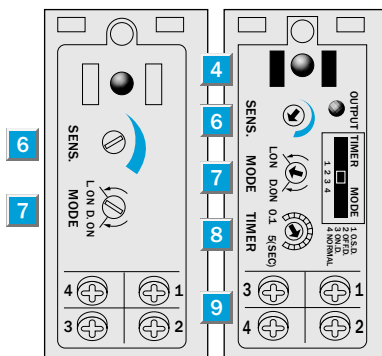
	Scanning range max. 800 mm
Through-beam systems	
	Scanning distance max. 65 (110) mm
Proximity systems	

- Wide range of fibre-optic cables for through-beam and proximity applications
- Easy adaption of fibre-optic cable using cap nut
- Adjustable sensitivity
- Terminal chamber, at bottom or rear
- Universal current supply, relay output, SPST, timer optional



Adjustments possible

WLL 260-S 240	WLL 260-R 240
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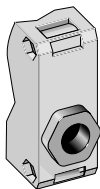


- 1 Centre of optical axis, receiver
 - 2 Centre of optical axis, sender
 - 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
 - 4 LED signal strength indicator, red
 - 5 Through hole $\varnothing$ 5.2 mm on both sides for M 5 hex nut
 - 6 Sensitivity adjustment
 - 7 Light/dark rotary switch
L.ON = light-switching,
D.ON = dark-switching
 - 8 Time range control
 - 9 Terminals
 - 0 Red LED status indicator, switching output active
-
- 1 Time delay selector switch
O.S.D. = One Shot
OFF.D. = OFF delay
ON.D. = ON delay
Normal = No delay

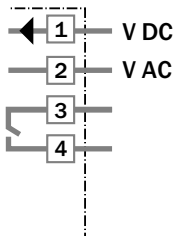


Connection type

WLL 260-S 240
WLL 260-R 240

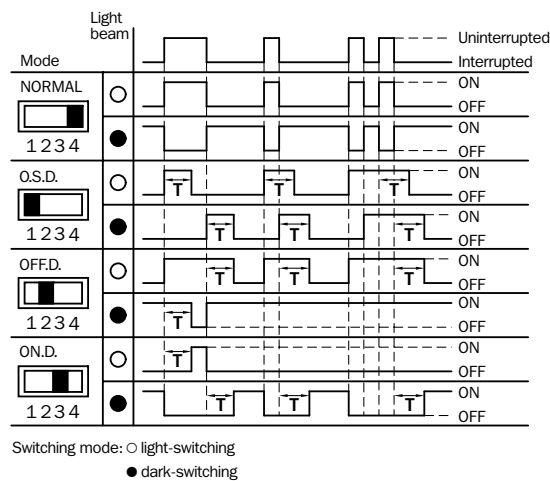


Terminals



Time delay

t = 0.1 – 5 s



Accessories	page
Mounting brackets*	510
Fibre-optic cable	528

* included with delivery

Technical data		WLL 260-	S 240	R 440										
Suitable fibre-optic cable	Fibre-optic cable series LIS/LBS													
	see page 552													
Scanning distance/ranges	Depends on the fibre-optic cable used													
Through-beam system														
Scanning distance, max. typical ¹⁾	0...65 mm													
	0...110 mm w. special fibre-optic cable													
Scanning range ¹⁾	0...50 mm													
	0...90 mm w. special fibre-optic cable													
Proximity system														
Scanning range, max. typical	0...800 mm													
Operating range	0...700 mm													
Sensitivity	Adjustable, potentiometer 270°													
Light source²⁾, light type														
Light spot diameter	Depends on scanning range													
Aperture fibre-optic cable	Approx. 65°													
Supply voltage V_s³⁾														
	12...240 V DC													
	24...240 V AC													
Power consumption	≤ 5 VA													
Switching output														
	Relay, SPST, electrically isolated													
Switching current I_A max. ⁴⁾	3 A/240 V AC; 3 A/30 V DC													
Light receiver, switching mode	Light-/dark-switching by rotary switch													
Response time	≤ 20 ms													
Max. switching frequency ⁵⁾	25/s													
Time delays														
	With indicator LED: switching output active													
Switch position: «1 O.S.D.»	1: «One shot»													
«2 OFF.D.»	OFF delay t_{OFF}													
«3 ON.D.»	ON delay t_{ON}													
«4 Normal»	No delay													
Time range														
	Adjustable, 0.1...5 s;													
	potentiometer 270°													
Connection type														
	Terminal chamber													
VDE protection class⁶⁾														
	□													
Circuit protection⁷⁾														
	A, C													
Enclosure rating														
	IP 66													
Ambient temperature T_A														
	Operation -25 °C...+55 °C													
	Storage -40 °C...+70 °C													
Weight														
	Approx. 120 g													
Material														
	Housing: ABS													

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 or capacitive loads

5) With light/dark ratio 1:1

6) Reference voltage 50 V DC

7) A = V_s connections reverse-polarity protected

C = Interference suppression

Order information

Type	Part no.
WLL 260-S 240	6 009 504
WLL 260-R 240	6 009 503