Photoelectric proximity switches, BGS

Photoelectric proximity switches, energetic

Photoelectric reflex switches

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

Through-beam photoelectric switches

Photoelectric switches with fibre-optic cable

Proximity mode

Photoelectric switches with fibre-optic cable

Through-beam mode

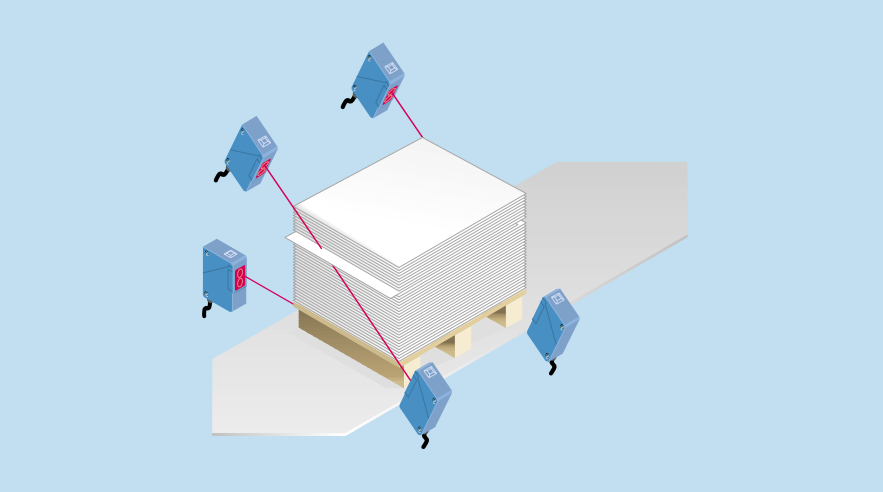
The W 260 series with its impressive scanning ranges and features has been specially designed for a wide variety of different applications. The sensors, through-beam photoelectric switches, energetic photoelectric proximity switches, and photoelectric reflex switches with background suppression are contained 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
- 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.

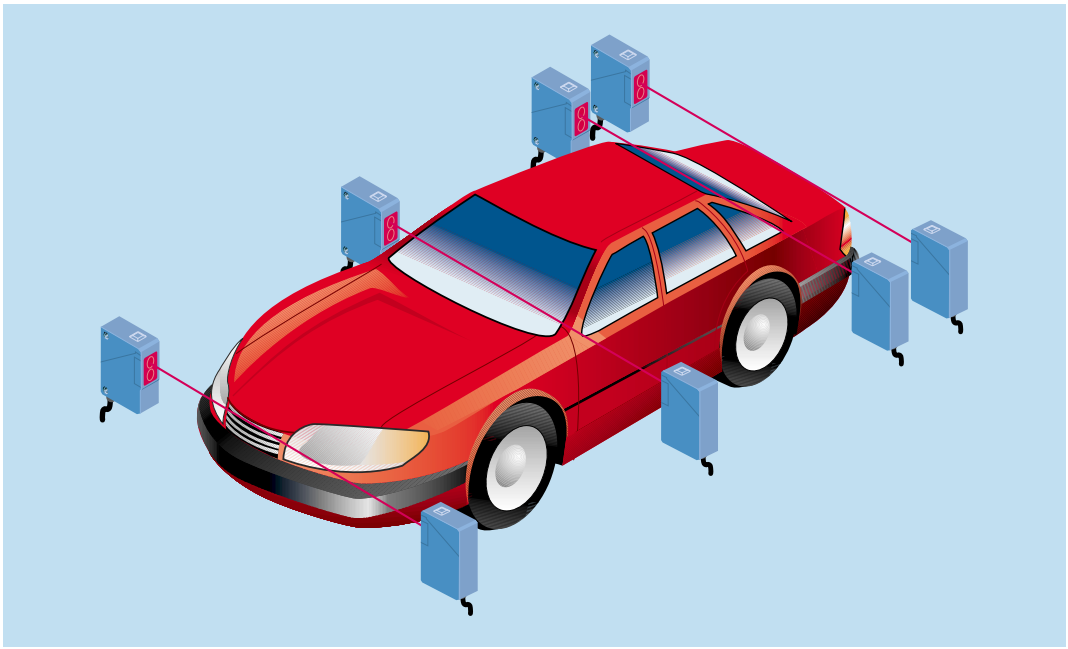
One last highlight: the W 260 complies with EN 50081-1 (interference radiation). This makes it the perfect sensor solution for door and gate control systems in underground garages and for use in residential blocks or hotels.

► 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.

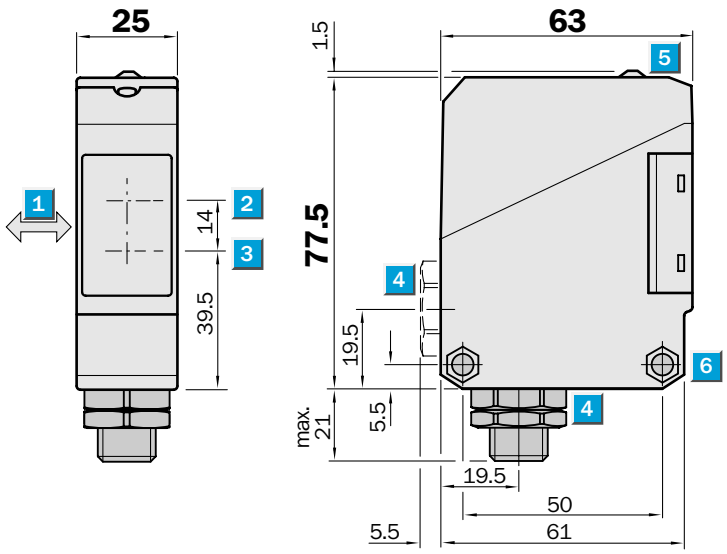
WT 260 Photoelectric proximity switches, background suppression, infrared light – DC

Scanning distance 0…380 mm

Photoelectric proximity switches

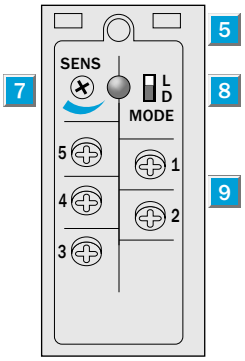
- Reliable detection of dark objects even against light backgrounds
- Scanning distance continuously adjustable
- Terminal chamber or M 12 plug, 4-pin or 5-pin
- Test input
- Pre-failure signalling output

Dimensional drawing



Adjustments possible

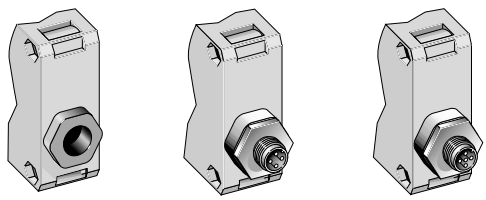
WT 260-P 260
WT 260-P 460
WT 260-P 560



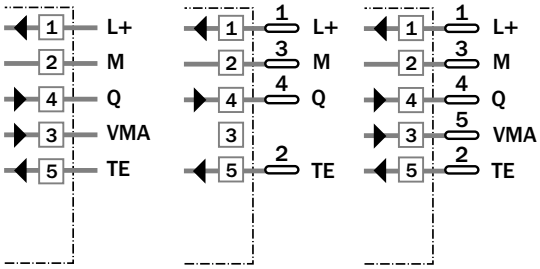
1 Standard direction of material being scanned
2 Centre of optical axis, receiver
3 Centre of optical axis, sender
4 Cable entry gland 1/2″ PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug bottom
5 LED signal strength indicator, red
6 Through hole ⌀ 5.2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

Connection types

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



Terminals | 4-pin, M 12 | 5-pin, M 12



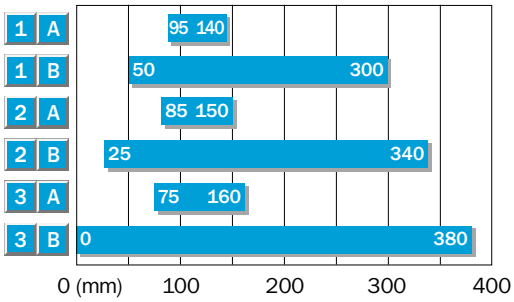
Accessories	page
Cable receptacles M 12	496
Mounting brackets*	510

* included with delivery

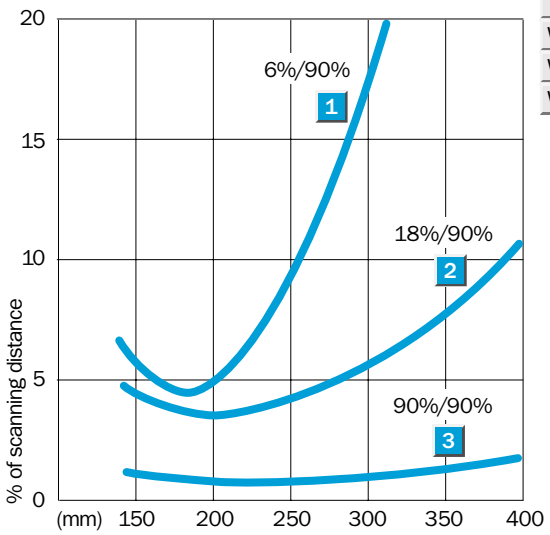
Technical data	WT 260-	P 260	P 460	P 560
Scanning distance	Max.: 0…380 mm, adjustable [1]	■	■	■
	Min.: 75…160 mm, adjustable [1]	■	■	■
Scanning distance	Adjustable, potentiometer 270°	■	■	■
Light source [2], **light type**	LED, infrared light	■	■	■
Light spot diameter	Approx. 17 mm at 300 mm	■	■	■
Aperture angle sender	Approx. 1.5°	■	■	■
Supply voltage V_S	10…30 V DC [3]	■	■	■
Ripple [4]	≤ 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 class [9]	⧈	■	■	■
Circuit protection [10]	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 black [11]/background white
2	Scanning range on grey [11]/background white
3	Scanning range on white [11]/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

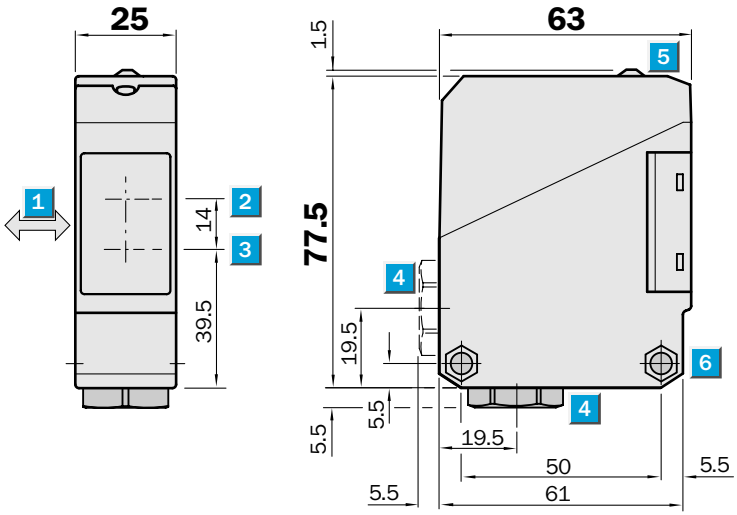
WT 260 Photoelectric proximity switches, background suppression, infrared light – UC

Scanning distance 0…380 mm

Photoelectric proximity switches

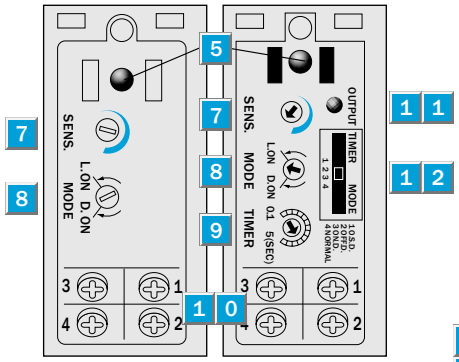
- Reliable detection of dark objects even against light backgrounds
- Scanning distance continuously adjustable
- Terminal chamber
- Universal current supply, relay output, SPST, timer optional

Dimensional drawing



Adjustments possible

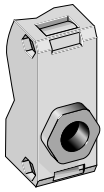
WT 260-S 260 | WT 260-R 260



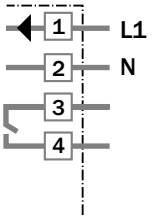
1 Standard direction of material being scanned
2 Centre of optical axis, receiver
3 Centre of optical axis, sender
4 Cable entry gland 1/2″ PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
5 LED signal strength indicator, red
6 Through hole ⌀ 5.2 mm on both sides for M 5 hex nut
7 Scanning distance adjustment
8 Light/dark rotary switch (L.ON = light-switching, D.ON = dark-switching)
9 Time range control
10 Terminals
11 Red LED status indicator; switching output active
12 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

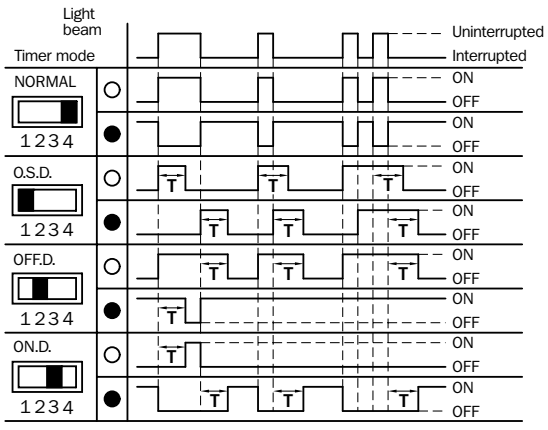


Terminals



Time delay

t = 0.1 – 5 s



Setting mode: ○ light-switching
● dark-switching

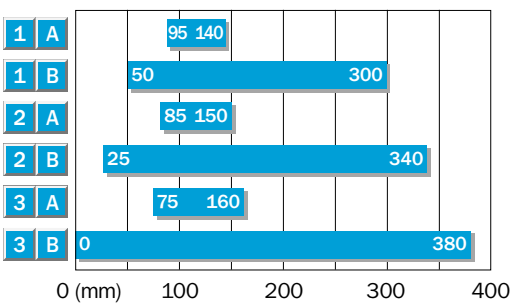
Accessories	page
Mounting brackets*	510

* included with delivery

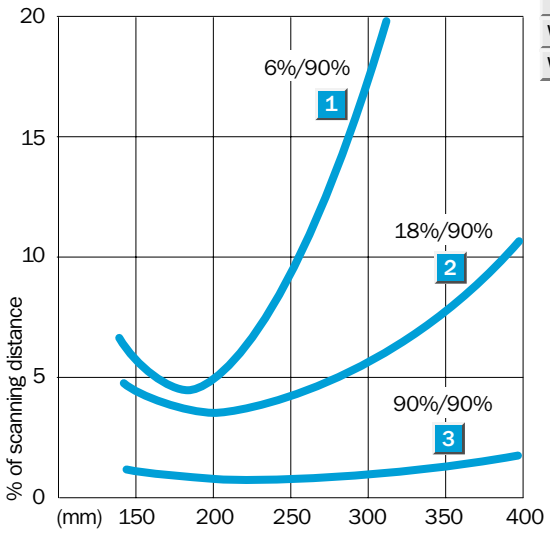
Technical data		WT 260-	S 260	R 260
Scanning distance		Max.: 0…380 mm, adjustable [1]		
		Min.: 75…160 mm, adjustable [1]		
Scanning distance		Adjustable, potentiometer 270°		
Light source [2], **light type**		LED, infrared light		
Light spot diameter		Approx. 17 mm at 300 mm		
Angle of dispersion, sender		Approx. 1.5°		
Supply voltage V_s [3]		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 class [6]		⧈		
Circuit protection [7]		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 black [8]/background white
2	Scanning range on grey [8]/background white
3	Scanning range on white [8]/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

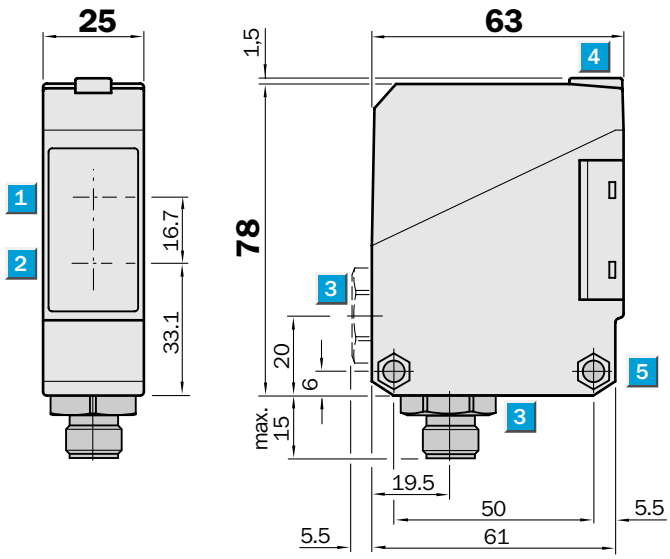
WT 260 Photoelectric proximity switches, energetic, infrared light – DC

Scanning distance 10…3200 mm

Photoelectric proximity switches

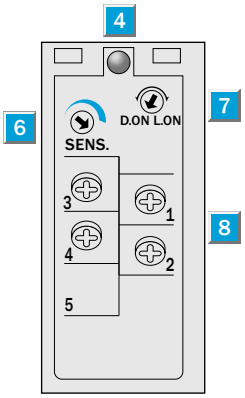
- Adjustable sensitivity
- Terminal chamber or M 12, 4-pin plug
- Test input

Dimensional drawing



Adjustments possible

WT 260-F 280
WT 260-F 480
WT 260-E 280

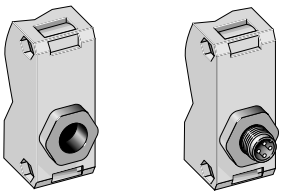


1 Centre of optical axis, receiver
2 Centre of optical axis, sender
3 Cable entry gland 1/2″ PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug, bottom
4 LED signal strength indicator, yellow, switching output active
5 Through hole Ø 5.2 mm on both sides 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

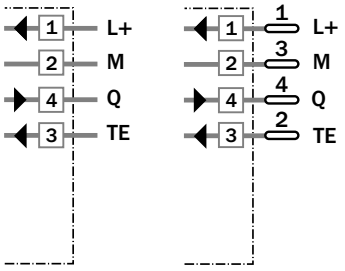
WT 260-F 280
WT 260-E 280

WT 260-F 480



Terminals

4-pin, M 12



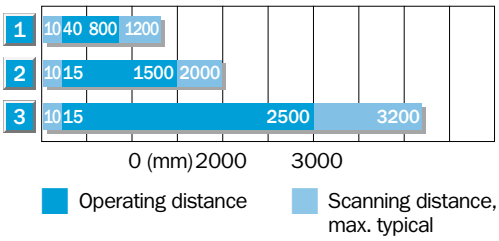
Accessories	page
Cable receptacles	496
Mounting brackets*	510

* included with delivery

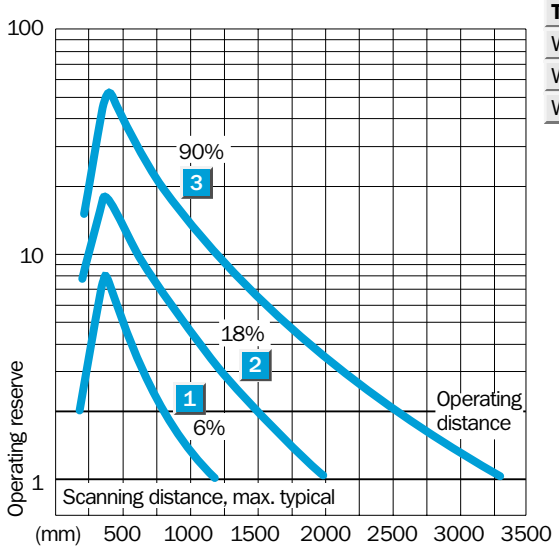
Technical data	WT 260-	F 280	F 480	E 280
Scanning distance	0…3200 mm, adjustable[1]	■	■	■
Operating distance	15…2500 mm, adjustable[1]	■	■	■
Sensitivity	Adjustable, potentimeter 270°	■	■	■
Light source[2], light type	LED, infrared light	■	■	■
Light spot diameter	Approx. 80 mm at 2500 mm	■	■	■
Angle of dispersion, sender	Approx. 1.8°	■	■	■
Supply voltage V_S	10…30 V DC[3]	■	■	■
Ripple[4]	≤ 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]	≤ 5.0 ms	■	■	■
Max. switching frequency[7]	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 class[8]	⧈	■	■	■
Circuit protection[9]	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

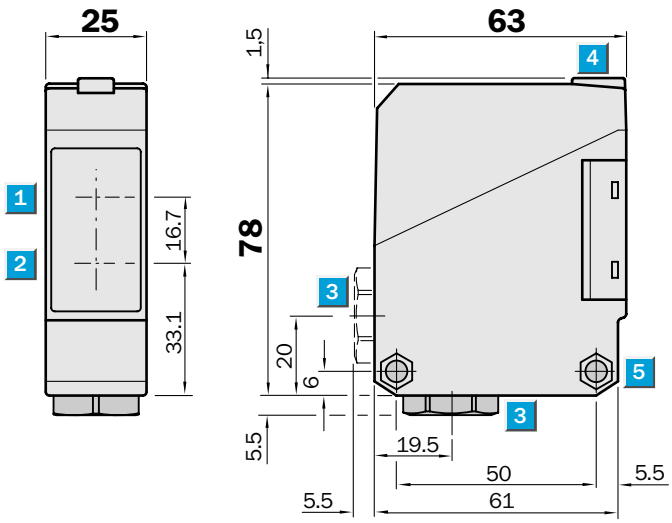
WT 260 Photoelectric proximity switches, energetic, infrared light – UC

Scanning distance 10…3500 mm

Photoelectric proximity switches

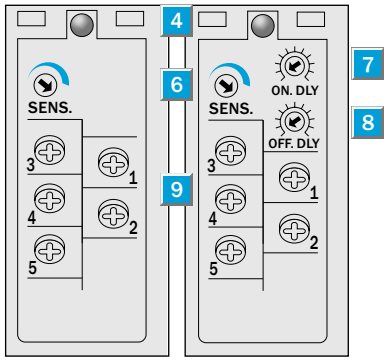
- Adjustable sensitivity
- Terminal chamber
- Universal current supply, relay output, SPDT, timer optional, t_{ON} and t_{OFF} can be connected separately
- Enclosure rating IP 67
- CE noise radiation EN 50081-1 (”Residential standard”)

Dimensional drawing



Adjustments possible

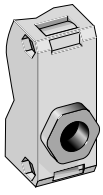
WT 260-S 280 | WT 260-R 280



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 ⌀ 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

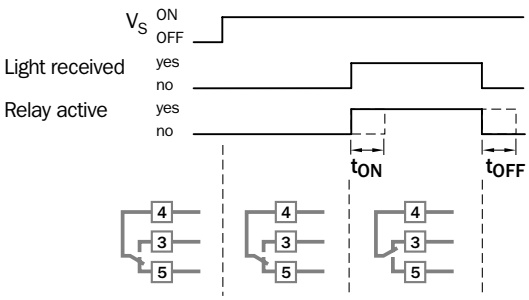
Connection type

WT 260-S 280
WT 260-R 280

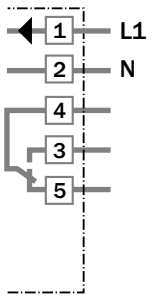


Time delay

t = 0.1 – 10 s



Terminals



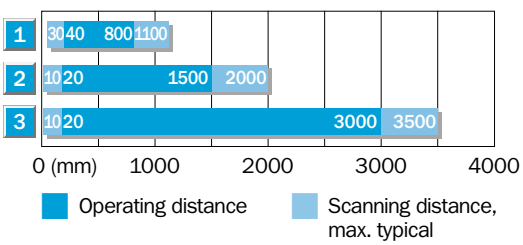
Accessories	page
Mounting brackets*	510

* included with delivery

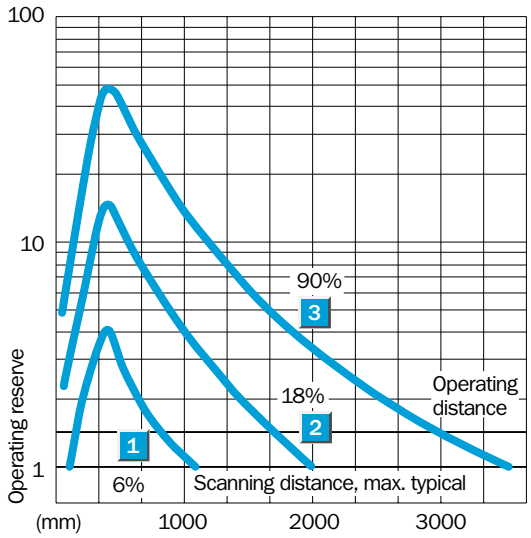
Technical data	WT 260-	S 280	R 280
Scanning distance, max. typical	10…3500 mm, adjustable [1]		
Operating distance	20…3000 mm, adjustable [1]		
Sensitivity	Adjustable, potentiometer 270°		
Light source [2], **light type**	LED, infrared light		
Light spot diameter	Approx. 95 mm at 3000 mm		
Angle of dispersion, sender	Approx. 1.7°		
Supply voltage V_S [3]	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 frequency [5]	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 [6]	⧈		
Circuit protection [7]	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

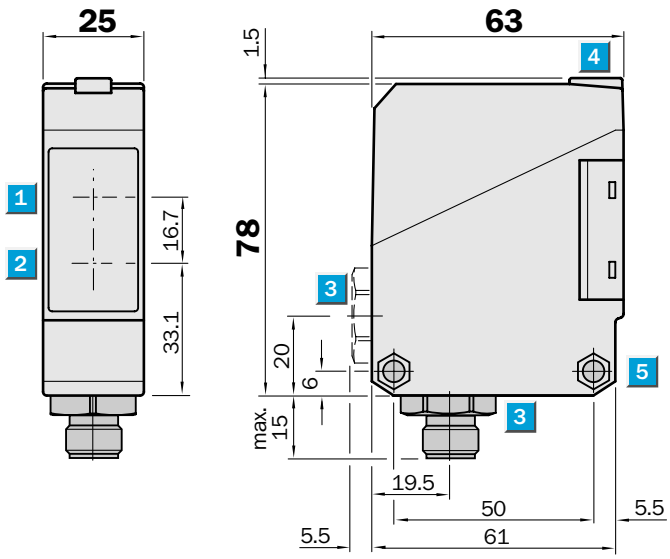
WT 260 Photoelectric proximity switches, energetic, red light – DC

Scanning distance 5…1500 mm

Photoelectric proximity switches

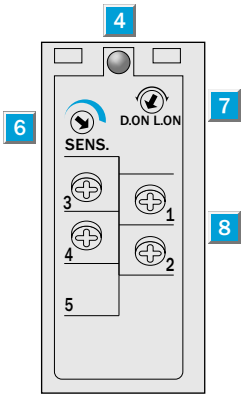
- Adjustable sensitivity
- Terminal chamber or M 12, 4-pin plug
- Test input

Dimensional drawing



Adjustments possible

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

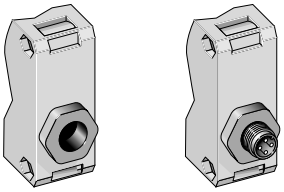


1 Centre of optical axis, receiver
2 Centre of optical axis, sender
3 Cable entry gland 1/2″ PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug, bottom
4 LED signal strength indicator, yellow, switching output active
5 Through hole Ø 5.2 mm on both sides 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

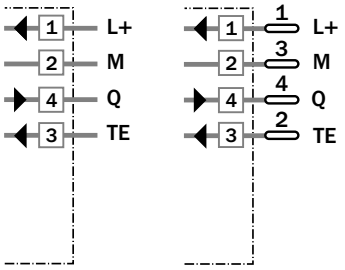
WT 260-F 270
WT 260-E 270

WT 260-F 470



Terminals

4-pin, M 12



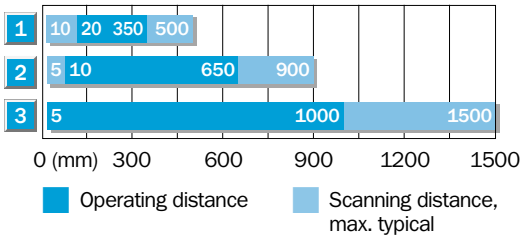
Accessories	page
Cable receptacles	496
Mounting brackets*	510

* included with delivery

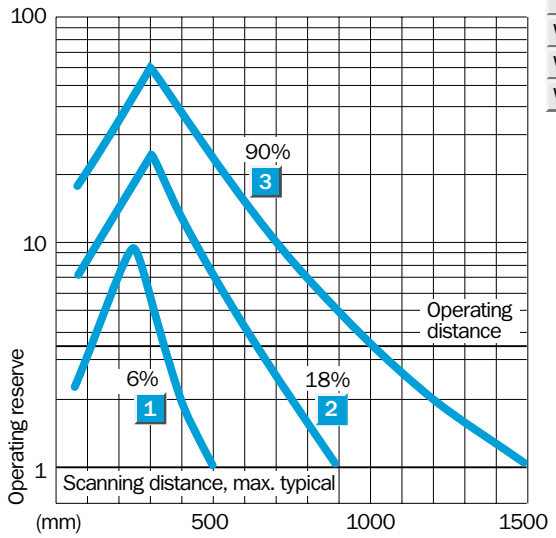
Technical data	WT 260-	F 270	F 470	E 270
Scanning distance	5…1500 mm, adjustable[1]	■	■	■
Operating distance	5…1000 mm, adjustable[1]	■	■	■
Sensitivity	Adjustable, potentimeter 270°	■	■	■
Light source[2], **light type**	LED, infrared light	■	■	■
Light spot diameter	Approx. 45 mm at 1000 mm	■	■	■
Angle of dispersion, sender	Approx. 2.5°	■	■	■
Supply voltage V_S	10…30 V DC[3]	■	■	■
Ripple[4]	≤ 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]	≤ 1.5 ms	■	■	■
Max. switching frequency[7]	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 class[8]	⧈	■	■	■
Circuit protection[9]	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

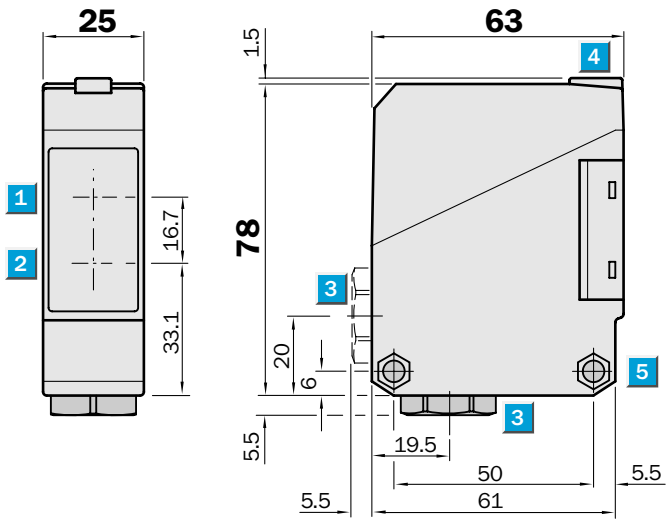
WT 260 Photoelectric proximity switches, energetic, red light – UC

Scanning distance 5…1700 mm

Photoelectric proximity switches

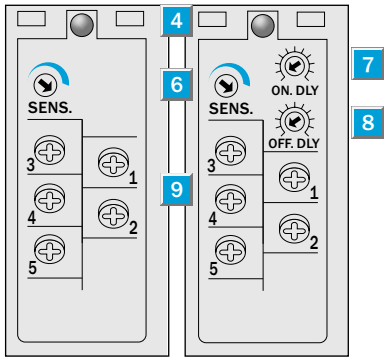
- Adjustable sensitivity
- Terminal chamber
- Universal current supply, Relay output, SPDT, timer optional, t_{ON} and t_{OFF} can be connected separately
- Enclosure rating IP 67
- CE noise radiation EN 50081-1 ("Residential standard")

Dimensional drawing



Adjustments possible

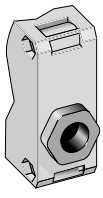
WT 260-S 270 | WT 260-R 270



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 ⌀ 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

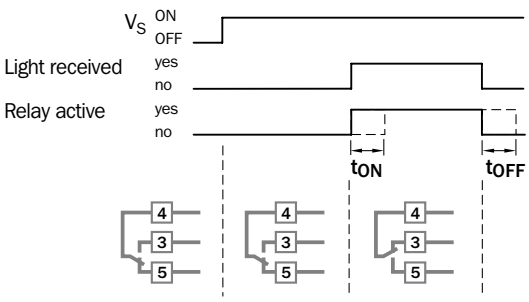
Connection type

WT 260-S 270
WT 260-R 270

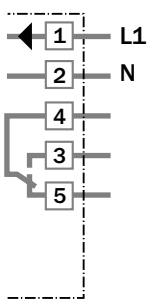


Time delay

t = 0.1 – 10 s



Terminals



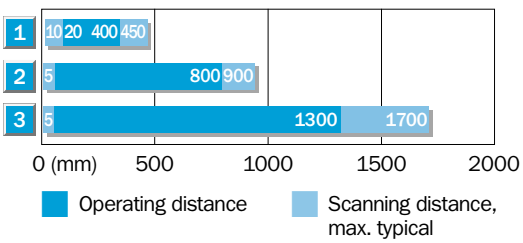
Accessories	page
Mounting brackets*	510

* included with delivery

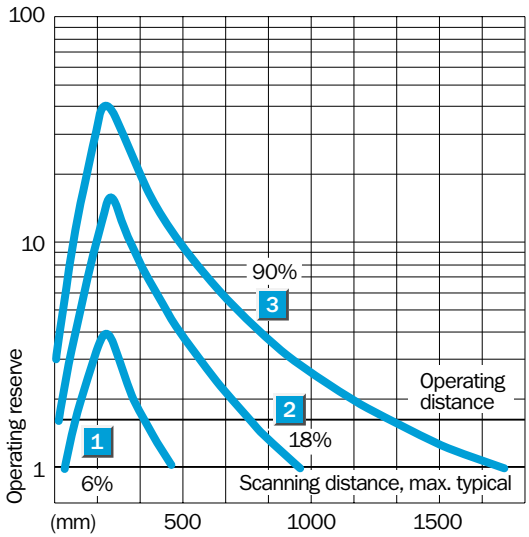
Technical data	WT 260-	S 270	R 270
Scanning distance, max. typical	5…1700 mm, adjustable [1]		
Operating distance	5…1300 mm, adjustable [1]		
Sensitivity	Adjustable, potentiometer 270°		
Light source [2], **light type**	LED, infrared light		
Light spot diameter	Approx. 60 mm at 1300 mm		
Angle of dispersion, sender	Approx. 1.8°		
Supply voltage V_S [3]	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 frequency [5]	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 [6]	⧈		
Circuit protection [7]	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

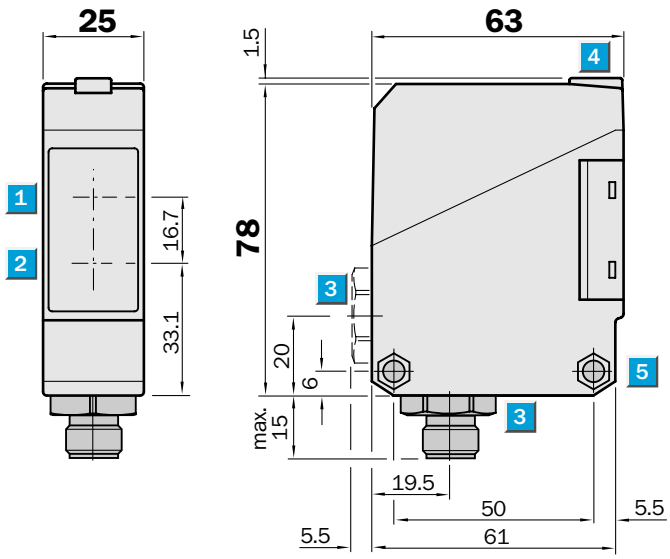
WL 260 Photoelectric reflex switches, red light – DC

Scanning range 0.01…14 m

Photoelectric reflex switches

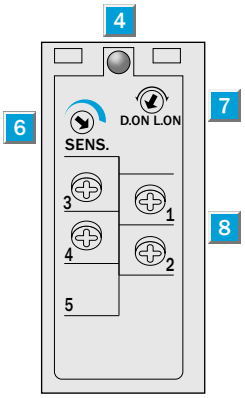
- Polarising filter providing reliable detection even of objects with reflective surfaces
- Adjustable sensitivity
- Terminal chamber or M 12, 4-pin plug
- Test input

Dimensional drawing



Adjustments possible

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

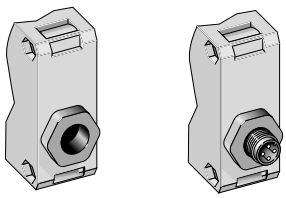


1 Centre of optical axis, receiver
2 Centre of optical axis, sender
3 Cable entry gland 1/2″ PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug, bottom
4 LED signal strength indicator, yellow, switching output active
5 Through hole Ø 5.2 mm on both sides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

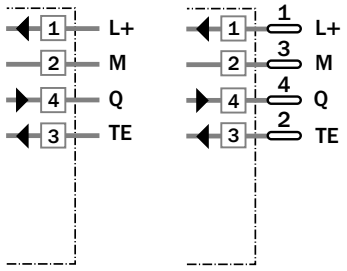
Connection types

WL 260-F 270
WL 260-E 270

WL 260-F 470



Terminals | 4-pin, M 12



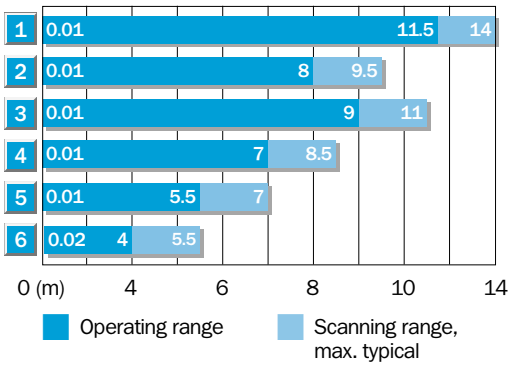
Accessories	page
Cable receptacles	496
Mounting brackets*	510
Reflector P 250*	520

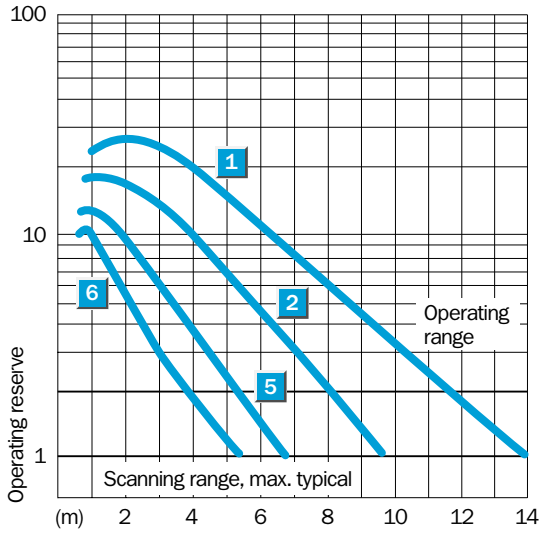
* included with delivery

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 source[1], **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]	≤ 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 class[7]	⧈			
Circuit protection[8]	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	0.01…9.0 m
	PL 40 A	
4	PL 30 A or	0.01…7.0 m
	PL 31 A	
5	PL 20 A	0.01…5.5 m
6	Reflective tape	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

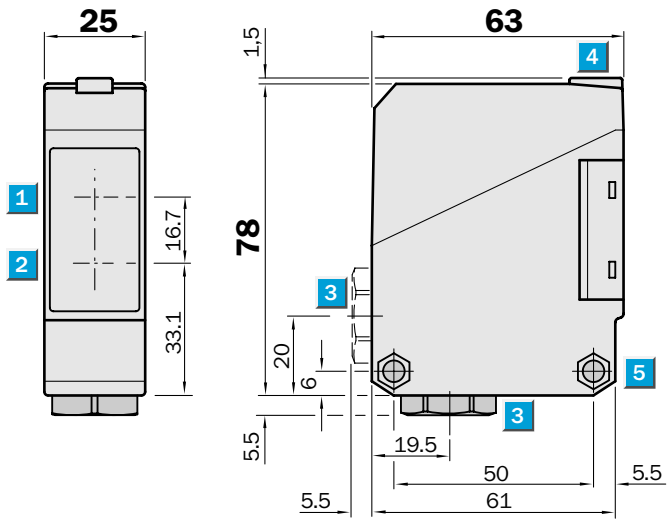
WL 260 Photoelectric reflex switches, red light – UC

Scanning range 0.01…15 m

Photoelectric reflex switches

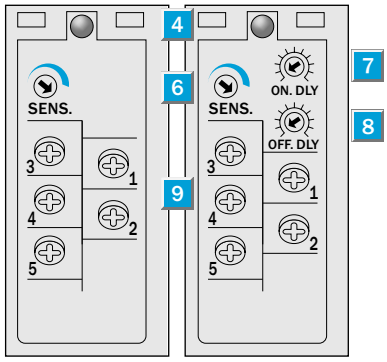
- Polarising filter providing reliable detection even of objects with reflective surfaces
- Terminal chamber
- Universal current supply, relay output, SPDT, timer optional, t_{ON} and t_{OFF} can be connected separately
- Enclosure rating IP 67
- CE noise radiation EN 50081-1 (”Residential standard”)

Dimensional drawing



Adjustments possible

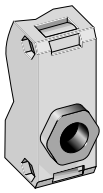
WL 260-S 270 | WL 260-R 270



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 ⌀ 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

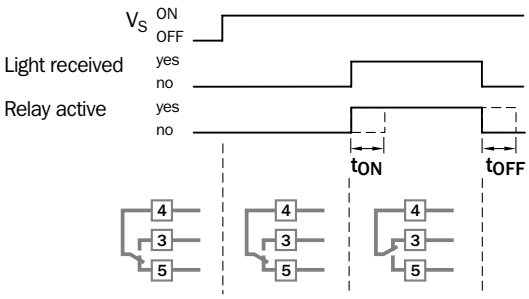
Connection type

WL 260-S 270
WL 260-R 270

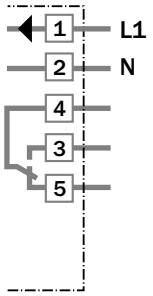


Time delay

t = 0.1 – 10 s



Terminals



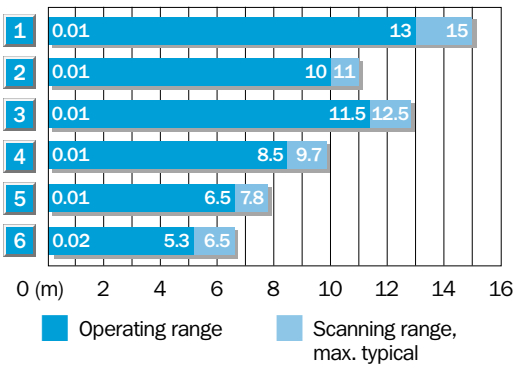
Accessories	page
Mounting brackets*	510
Reflector P 250*	520

* included with delivery

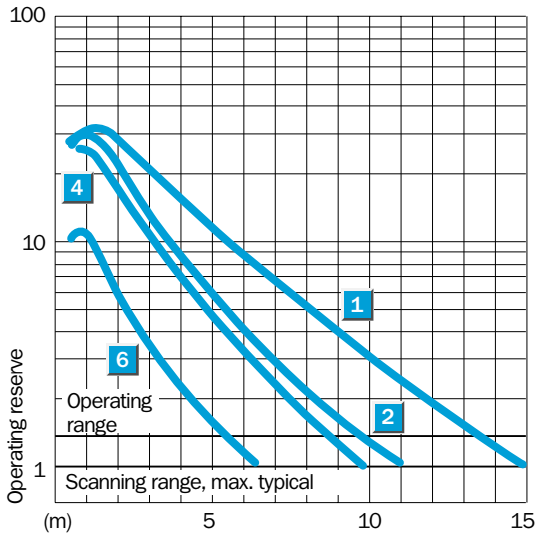
Technical data	WL 260-	S 270	R 270
Scanning range, max. typical/on refl.	0.01…15 m/PL 80 A		
max. typical/on refl.	0.01…11 m/P 250 (included)		
Operating range	0.01…10 m/P 250		
Sensitivity	Adjustable, potentiometer 270°		
Light source[1], **light type**	LED, visible red light		
	with polarising filter		
Light spot diameter	Approx. 300 mm at 10 m		
Angle of dispersion, sender	Approx. 1.7°		
Supply voltage V_S[2]	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 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: 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	0.01…11.5 m
	PL 40 A	
4	PL 30 A or	0.01…8.5 m
	PL 31 A	
5	PL 20 A	0.01…6.5 m



Order information

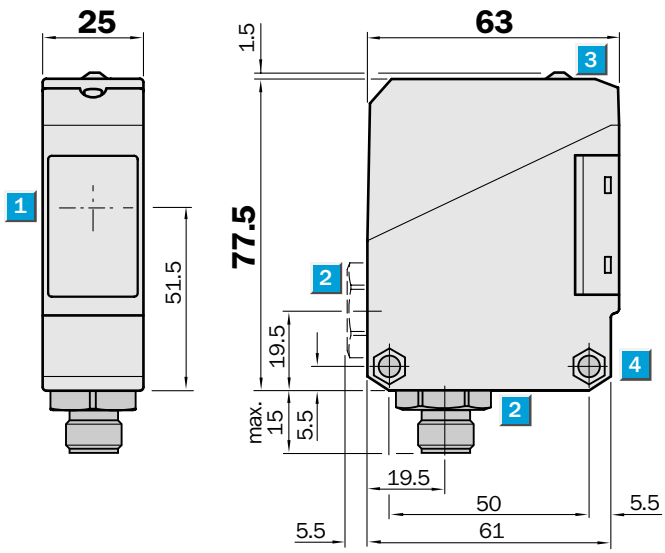
Type	Part no.
WL 260-S 270	6 020 767
WL 260-R 270	6 020 768

Scanning range 30 m

Through-beam photoelectric switches

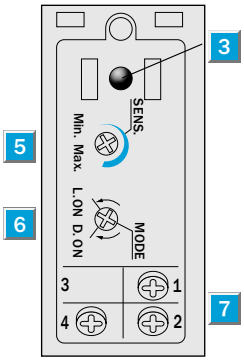
- Adjustable sensitivity
- Terminal chamber or M 12, 4-pin plug
- Test input

Dimensional drawing



Adjustments possible

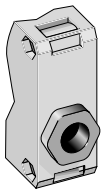
WS/WE 260-F 230
WS/WE 260-F 430
WS/WE 260-E 230

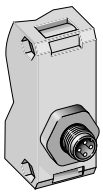


1 Centre of optical axis, sender/receiver
2 Cable entry gland 1/2" PF thread
for cable diameters from 6 to 10 mm
optionally at bottom or rear;
or M 12 equipment plug, bottom
3 LED signal strength indicator, red
4 Through hole ⌀ 5.2 mm on both sides
for M 5 hex nut
5 Sensitivity adjustment
6 Light/dark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

Connection types

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

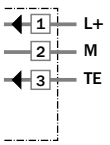


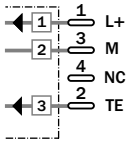


Terminals
WS 260-G 230

4-pin, M 12
WS 260-G 430

Sender

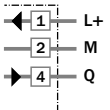


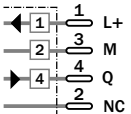


Receiver

WE 260-E 230
WE 260-F 230

WE 260-F 430





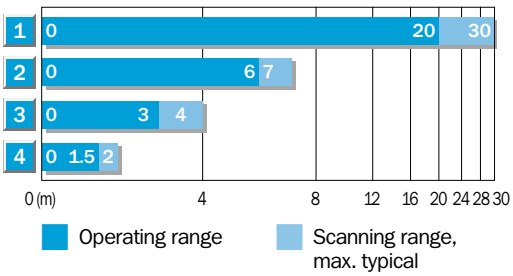
Accessories	page
Cable receptacles M 12	496
Mounting brackets*	510
Slotted masks	556

* included with delivery

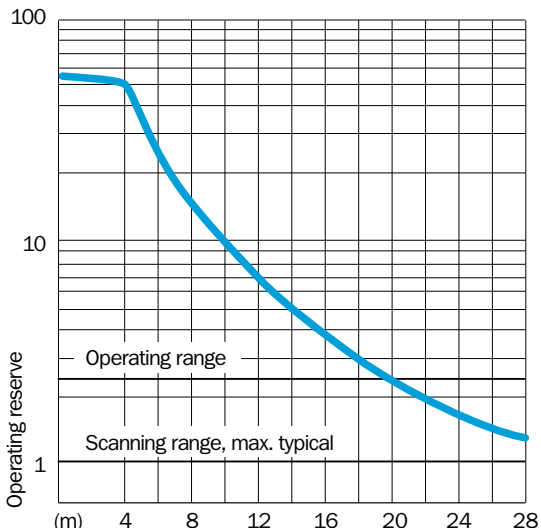
Technical data	WS/WE 260-	F 230	F 430	E 230
Scanning range, max. typical	30 m			
Operating range	20 m			
Sensitivity	Adjustable, potentiometer 270°			
Light source[1], **light type**	LED, infrared light			
Light spot diameter	Approx. 350 mm at 20 m			
Angle of dispersion, sender	Approx. 1°			
Angle of dispersion, receiver	Approx. 20°			
Supply voltage V_S	10…30 V DC[2]			
Ripple[3]	≤ 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 class[7]	⧈			
Circuit protection[8]				
sender	A, B			
receiver	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) Average service life 100000 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



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

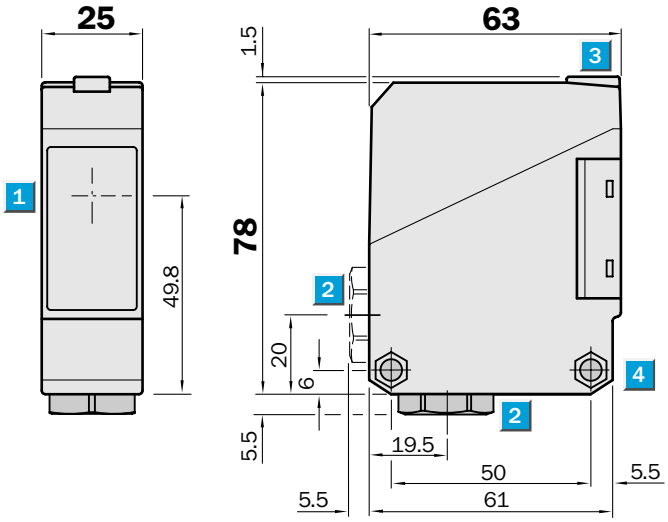
WS/WE 260 Through-beam photoelectric switches, red light – UC

Scanning range 45 m

Through-beam photoelectric switches

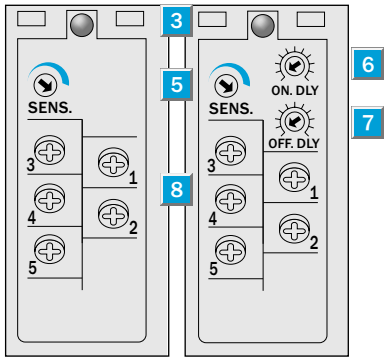
- Adjustable sensitivity
- Terminal chamber
- Universal current supply, relay output, SPDT, timer optional, t_{ON} and t_{OFF} can be connected separately
- Enclosure rating IP 67
- CE noise radiation EN 50081-1 (”Residential standard”)

Dimensional drawing



Adjustments possible

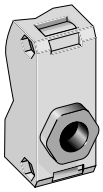
WS/WE 260-S 270 | WS/WE 260-R 270



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

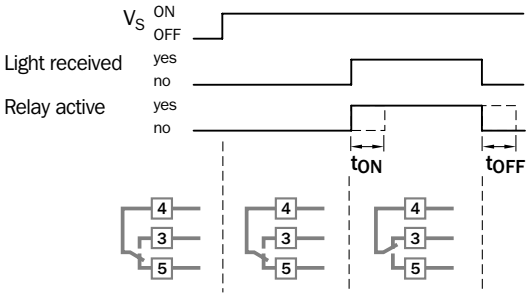
Connection type

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



Time delay

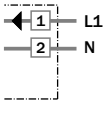
t = 0.1 – 10 s



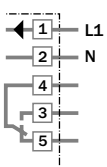
Accessories	page
Mounting brackets*	510

* included with delivery

Sender	Terminals
	WS 260-S 270



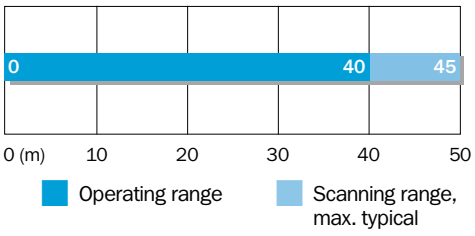
Receiver	WE 260-S 270
	WE 260-R 270

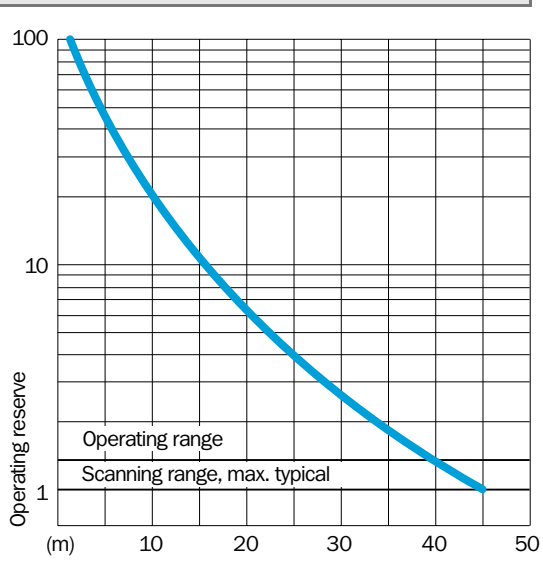


Technical data	WS/WE 260-	S 270	R 270
Scanning range, max. typical	45 m		
Operating range	40 m		
Sensitivity	Adjustable, potentiometer 270°		
Light source[1], **light type**	LED, visible red light		
Light spot diameter	Approx. 700 mm at 40 m		
Angle of dispersion, sender	Approx. 1°		
Angle of dispersion, 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 °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

WLL 260 Photoelectric switches for fibre-optic cable, red light – DC

Scanning range max. 800 mm

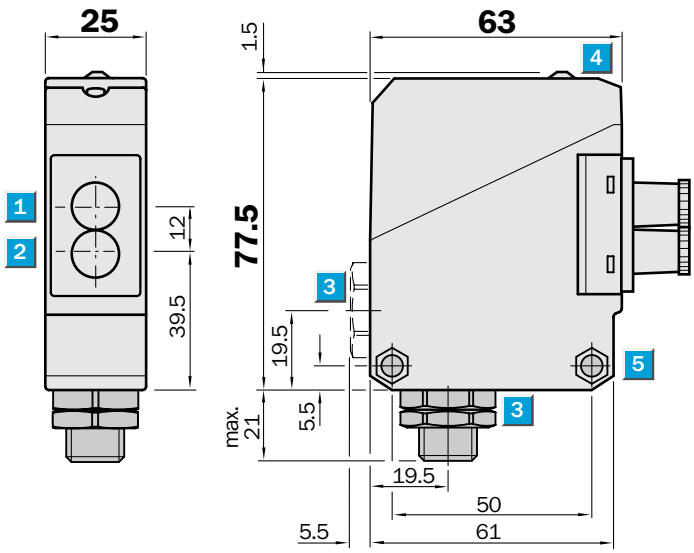
Through-beam systems

Scanning distance max. 65 (110) mm

Proximity systems

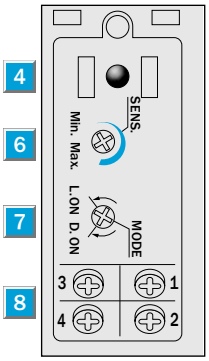
- Wide range of fibre-optic cables for through-beam and proximity applications
- Easy adaption of fibre-optic cable using cap nut
- Adjustable sensitivity
- Terminal chamber, at bottom or rear or M 12 plug, 4-pin
- Test input

Dimensional drawing



Adjustments possible

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

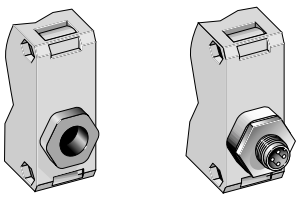


1 Centre of optical axis, receiver
2 Centre of optical axis, sender
3 Cable entry gland 1/2″ PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M 12 equipment plug, bottom
4 LED signal strength indicator, red
5 Through hole ⌀ 5.2 mm on both sides for M 5 hex nut
6 Sensitivity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

Connection types

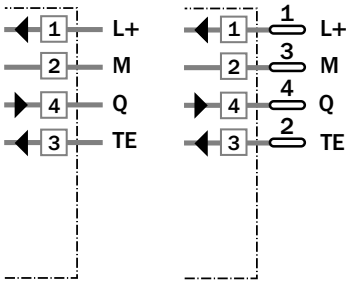
WLL 260-E 240
WLL 260-F 240

WLL 260-F 440



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 source[2]**, 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]	≤ 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 class[8]	⧈	■	■	■
Circuit protection[9]	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

WLL 260 Photoelectric switches for fibre-optic cable, red light – UC

Scanning range max. 800 mm

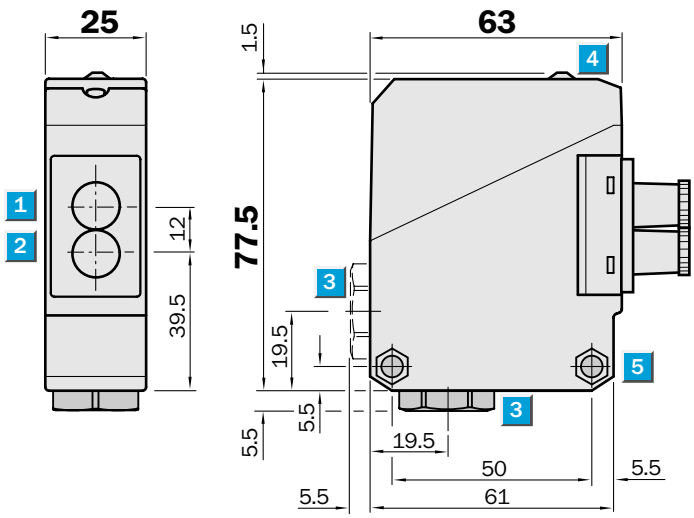
Through-beam systems

Scanning distance max. 65 (110) mm

Proximity systems

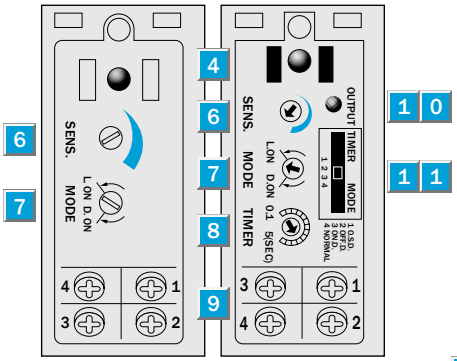
- Wide range of fibre-optic cables for through-beam and proximity applications
- Easy adaption of fibre-optic cable using cap nut
- Adjustable sensitivity
- Terminal chamber, at bottom or rear
- Universal current supply, relay output, SPST, timer optional

Dimensional drawing



Adjustments possible

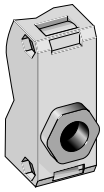
WLL 260-S 240 | WLL 260-R 240



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 ⌀ 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
10 Red LED status indicator, switching output active
11 Time delay selector switch
O.S.D. = One Shot
OFF.D. = OFF delay
ON.D. = ON delay
Normal = No delay

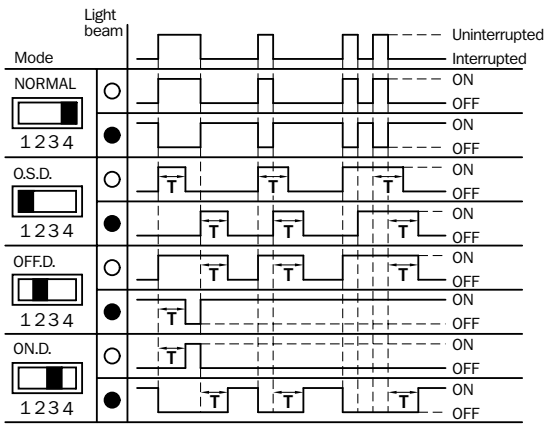
Connection type

WLL 260-S 240
WLL 260-R 240



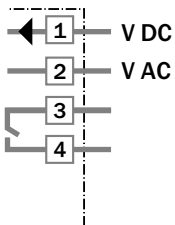
Time delay

t = 0.1 – 5 s



Switching mode: ○ light-switching
● dark-switching

Terminals



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 source[2]**, light type**	LED, visible red light		
Light spot diameter	Depends on scanning range		
Aperture fibre-optic cable	Approx. 65°		
Supply voltage V_S[3]	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 class[6]	⧈		
Circuit protection[7]	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