


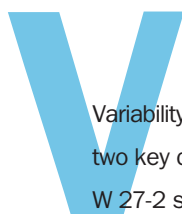
W 27-2: The photoelectric switch series with expanded possibilities



- 100...1,000 mm respectively, with background suppression,
- 100...800 mm for the photoelectric proximity switch with visible laser light and adjustable scanning range and background suppression,
- 14 metres for the WL 27-2 photoelectric reflex switch, and
- 35 metres for the WS/WE 27-2 through-beam photoelectric switch.

The variety of models and configurations available within this photoelectric series, means that the many different requirements of users can easily be satisfied:




- plug or connecting cable,
- supply voltage with 10...30 V DC/24...240 V UC,
- timer modules for ON- or OFF-delay or for ON- and OFF-delay, separate adjustable,
- with test input,
- pre-failure signalling output,
- front screen heating to prevent condensation under rapidly changing ambient temperatures,
- with laser types 
- AS-i technology
 - Standard sensors connectable with AS-i system components.
 - Intelligent sensors with integrated AS-i chip.




Variability and flexibility are the two key characteristics of the W 27-2 series of photoelectric switches. Thanks to their modular design, it is possible to offer a broad range of very different sensors.

Fully welded plastic housing made of ABS and impressive performance data are features common to all devices:

- the WT 27-2 photoelectric proximity switch with infrared or red light sender with adjustable scanning distances of 100...1,500 mm and

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

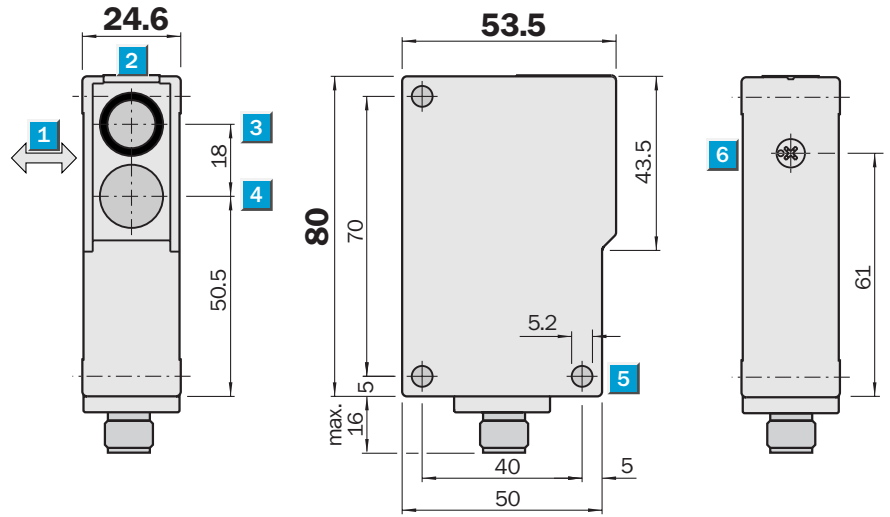



Scanning distance
 100...800 mm
 Photoelectric proximity switches

- Laser LED, red light
- Adjustable background suppression

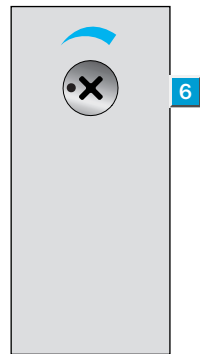


Dimensional drawing



Adjustments possible

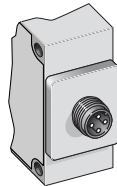
WT 27L-2F 430



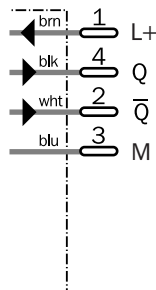
- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Optical axis, sender
- 4 Optic axis, receiver
- 5 Mounting hole \varnothing 5.2 mm
- 6 Sensitivity adjustment

Connection type

WT 27L-2F 430



4-pin, M 12



Accessories
Connectors
Mounting systems

Technical data		WT 27L-2	F 430										
Scanning distance	100...800 mm, adjustable												
Light source¹⁾, light type	LED laser, red light												
Light spot diameter	Approx. 2 mm at 400 mm												
Supply voltage V_S	10...30 V DC ²⁾												
Ripple ³⁾	$\leq 5 V_{PP}$												
Current consumption ⁴⁾	$\leq 35 \text{ mA}$												
Switching outputs	PNP, Q and \bar{Q}												
Output current I_A max.	100 mA												
Response time ⁵⁾	500 μs												
Max. switching frequency ⁶⁾	1000/s												
Connection type	Plug												
VDE protection class⁷⁾	<input type="checkbox"/>												
Laser class⁸⁾	2 (IEC 825/VDE 0837)												
Circuit protection⁹⁾	A, B, C												
Enclosure rating	IP 67												
Ambient temperature T_A	Operation $-10 \text{ }^\circ\text{C} \dots +45 \text{ }^\circ\text{C}$ Storage $-10 \text{ }^\circ\text{C} \dots +75 \text{ }^\circ\text{C}$												
Weight	Approx. 100 g												
Housing material	ABS												

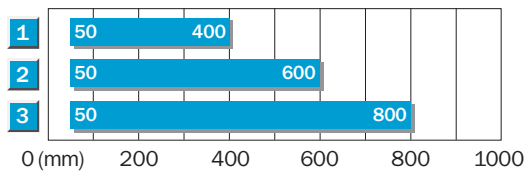
1) Average service life 50,000 h at $T_A = +25 \text{ }^\circ\text{C}$
 2) Limit values
 3) May not exceed or fall short of V_S tolerances

4) Without load
 5) Signal flight time with ohmic load
 6) With light/dark ratio 1:1
 7) Reference voltage 50 V DC

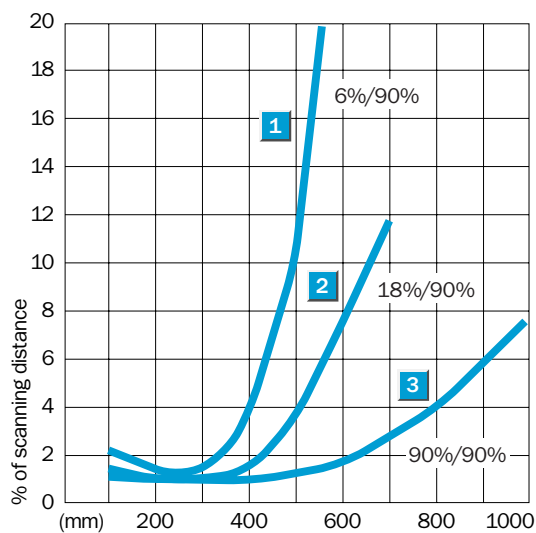
8) Low power. Eyes normally protected by averting reaction and eyelid closing reflex.

9) A = V_S connections reverse-polarity protected
 B = Output Q and \bar{Q} short-circuit protected
 C = Interference pulse suppression

Scanning distance



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



Order information

Type	Part no.
WT 27L-2F 430	1 016 019

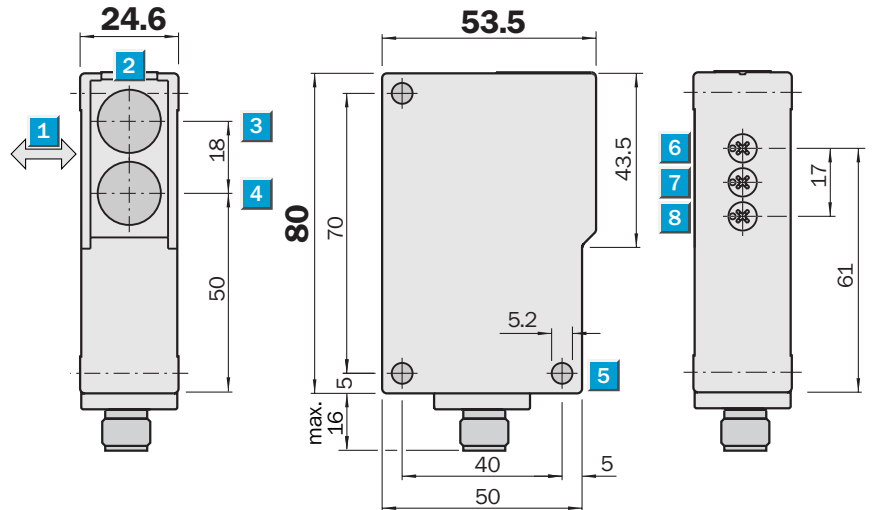
Scanning distance
100...1000 mm

Photoelectric proximity switches

- Red light
- Adjustable background suppression
- Selectable time delay

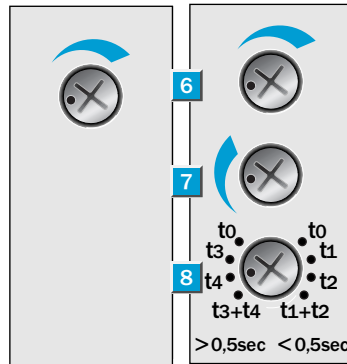


Dimensional drawing



Adjustments possible

WT 27-2F 430	WT 27-2P 630
WT 27-2F 431	WT 27-2N 630
WT 27-2F 730	



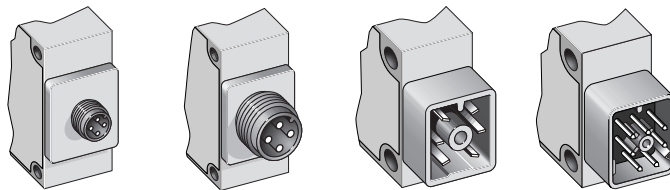
- Standard direction of the material being scanned
- LED signal strength indicator
- Optical axis, sender
- Optical axis, receiver
- Mounting hole ϕ 5.2 mm
- Sensitivity adjustment
- Time control
- Time delay selector switch

Switch-selectable time delay

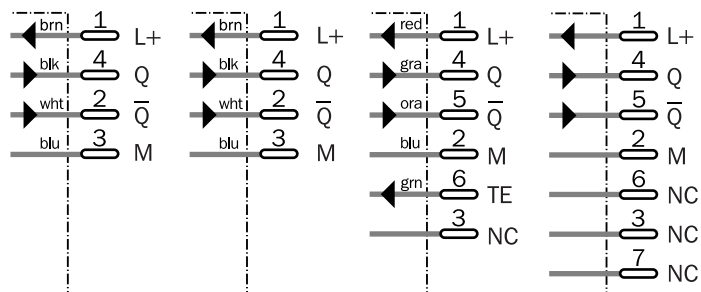
0.5 – 10 s	0.02 – 0.5 s
t_0 Without time delay	t_0 Without time delay
t_3 OFF-delay from trailing edge of object	t_1 OFF-delay from trailing edge of object
t_4 ON-delay from leading edge of object	t_2 ON-delay from leading edge of object
$t_3 + t_4$ OFF- and ON-delay	$t_1 + t_2$ OFF- and ON-delay

Connection type

WT 27-2F 430	WT 27-2F 431	WT 27-2P 630 WT 27-2N 630	WT 27-2F 730
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4-pin, M 12	4-pin, M 18	6-pin, Q6, DC	7-pin, Q7, DC
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Accessories

- Connectors
- Mounting systems



Technical data		WT 27-2	F 430	F 431	P 630	F 730	N 630					
Scanning distance	100...1000 mm, adjustable											
Light source¹⁾, light type	LED, red light											
Light spot diameter	Approx. 15 mm at 500 mm											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple ³⁾	$\leq 5 V_{PP}$											
Current consumption ⁴⁾	$\leq 25 \text{ mA}$											
Switching outputs	PNP, Q and \bar{Q} NPN, Q and \bar{Q}											
Output current I_A max.	100 mA											
Response time ⁵⁾	2 ms											
Max. switching frequency ⁶⁾	250/s											
Selectable delay ranges	0.5...10 s/0.02...0.5 s											
Test input "TE", sender OFF	PNP: Test input to 0 V NPN: Test input to V_S											
Connection types	Plug											
VDE protection class⁷⁾	<input type="checkbox"/>											
Circuit protection⁸⁾	A, B, C											
Enclosure rating	IP 67 IP 65											
Ambient temperature T_A	Operation $-40 \text{ }^\circ\text{C} \dots +60 \text{ }^\circ\text{C}$ Storage $-40 \text{ }^\circ\text{C} \dots +75 \text{ }^\circ\text{C}$											
Weight	Approx. 100 g											
Housing material	ABS											

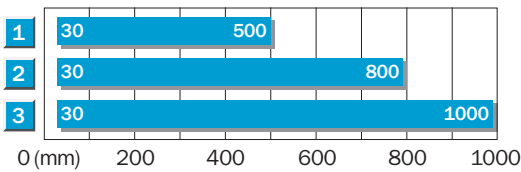
1) Average service life 100,000 h at $T_A = +25 \text{ }^\circ\text{C}$
2) Limit values

3) May not exceed or fall short of V_S tolerances
4) Without load

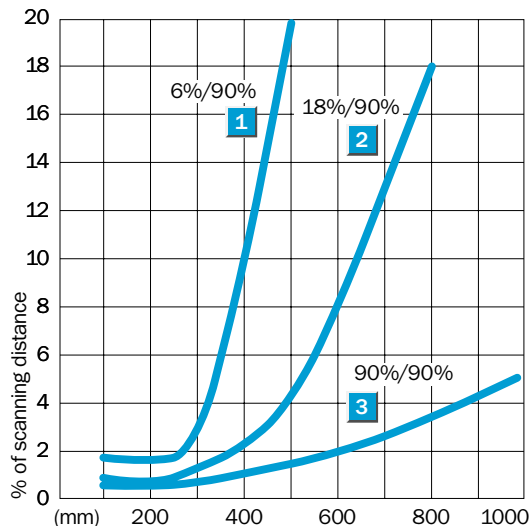
5) Signal transit time with resistive load
6) With light/dark ratio 1:1
7) Reference voltage 50 V DC

8) A = V_S connections reverse-polarity protected
B = Output Q and \bar{Q} short-circuit protected
C = Interference pulse suppression

Scanning distance



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



Order information

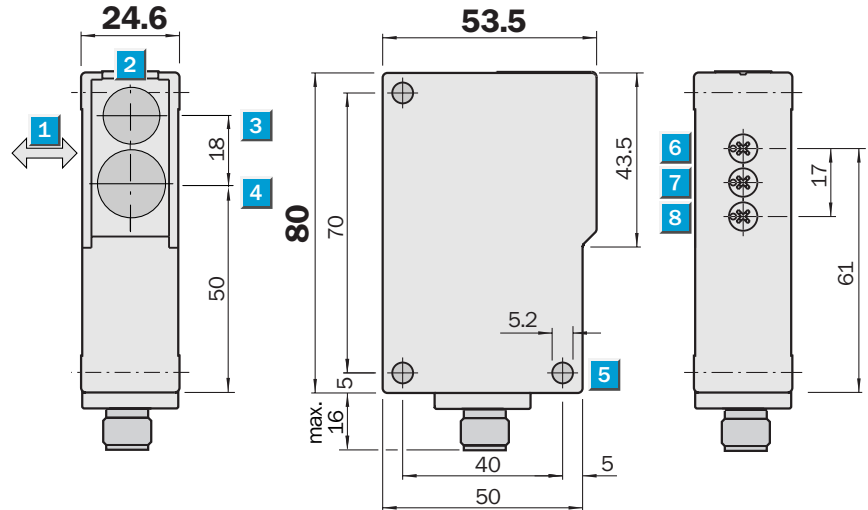
Type	Part no.
WT 27-2F 430	1 015 082
WT 27-2F 431	1 015 086
WT 27-2P 630	1 015 090
WT 27-2F 730	1 015 084
WT 27-2N 630	1 015 088

Scanning distance
 100...1000 mm
 Photoelectric proximity switches

- Red light
- Adjustable background suppression
- Selectable time delay

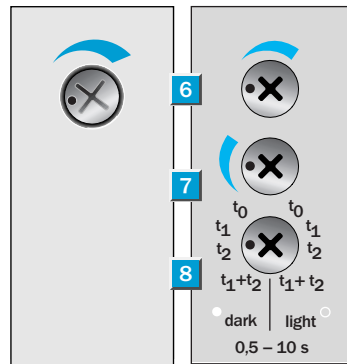


Dimensional drawing



Adjustments possible

WT 27-2S 132	WT 27-2R 630
WT 27-2S 730	



- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Optical axis, sender
- 4 Optical axis, receiver
- 5 Mounting hole \varnothing 5.2 mm
- 6 Sensitivity adjustment
- 7 Time control
- 8 Time delay selector switch
- Light-switching
- Dark-switching

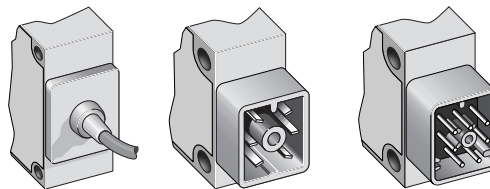
Switch-selectable time delay

0.5 – 10 s

- t_0 Without time delay
- t_1 OFF-delay from trailing edge of object
- t_2 ON-delay from leading edge of object
- $t_1 + t_2$ OFF- and ON-delay

Connection type

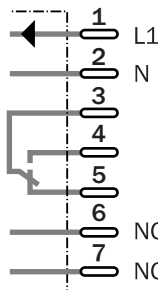
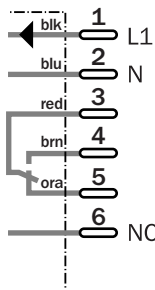
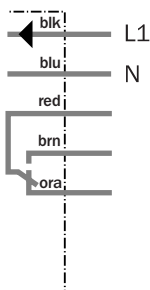
WT 27-2S 132	WT 27-2R 630	WT 27-2S 730
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5 x 0.25 mm²

6-pin, Q6, AC/UC

7-pin, Q7, AC/UC



Accessories

- Connectors
- Mounting systems



Technical data		WT 27-2	S 132	R 630 ⁷⁾	S 730						
Scanning distance	100...1000 mm, adjustable										
Light source¹⁾, light type	LED, red light										
Light spot diameter	Approx. 15 mm at 500 mm										
Supply voltage V_S	24...240 V UC (+ 10 %, - 20 %)										
Current consumption	< 2 VA										
Switching outputs	SPDT, isolated ²⁾										
Max. switching voltage	250 V AC / 120 V DC										
Max. switching current	4 A / 240 V AC or 24 V DC										
Max. switching capacity	AC 1000 VA / DC 100 W										
Response time	< 6 ms										
Max. switching frequency ³⁾	10/s										
Delay range	0.5...10 s										
Connection types	Cable ⁴⁾ , 2 m										
	Plug										
VDE protection class⁵⁾	□										
Circuit protection⁶⁾	A, C										
Enclosure rating	IP 67										
	IP 65										
Ambient temperature T_A	Operation - 40 °C...+ 60 °C										
	Storage - 40 °C...+ 75 °C										
Weight	Approx. 100 g										
Housing material	ABS										

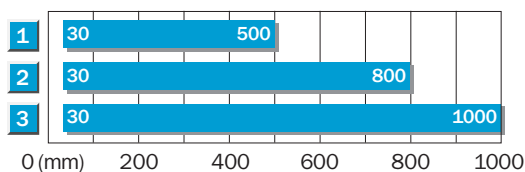
1) Average service life 100,000 h at T_A = + 25 °C
 2) Provide suitable spark suppression for inductive and capacitive loads

3) With light/dark ratio 1:1
 4) Do not bend below 0 °C
 5) Reference voltage 250 V AC

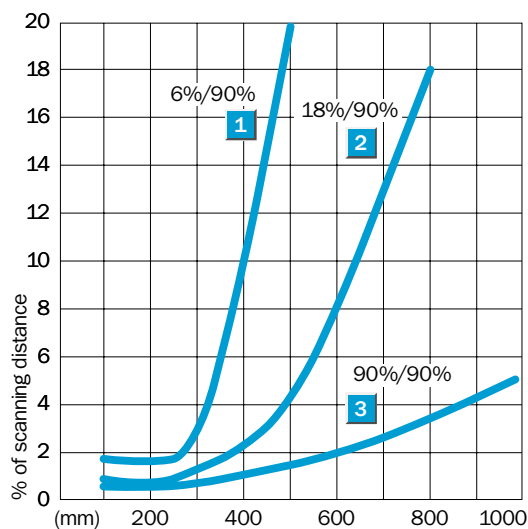
6) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

7) Relay contacts are separate from the power supply by basis insulation of 3 mm

Scanning distance




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



Order information

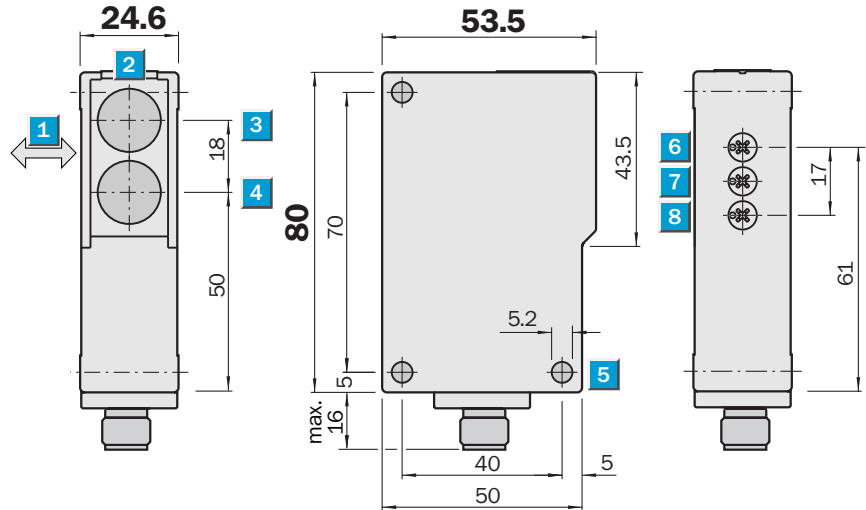
Type	Part no.
WT 27-2S 132	1 015 960
WT 27-2R 630	1 015 092
WT 27-2S 730	1 015 097


Scanning distance
 100...1500 mm
 Photoelectric proximity switches

- Infrared light
- Adjustable background suppression
- Front screen heating, optional
- Selectable time delay



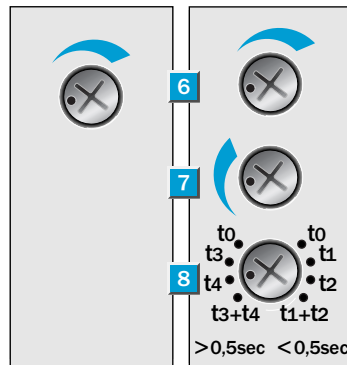
Dimensional drawing



Adjustments possible

WT 27-2F 112	WT 27-2P 410
WT 27-2F 410	WT 27-2P 610
WT 27-2F 440	WT 27-2N 410
WT 27-2F 411	WT 27-2N 610
WT 27-2F 710	

- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Optical axis, sender
- 4 Optical axis, receiver
- 5 Mounting hole \varnothing 5.2 mm
- 6 Sensitivity adjustment
- 7 Time control
- 8 Time delay selector switch

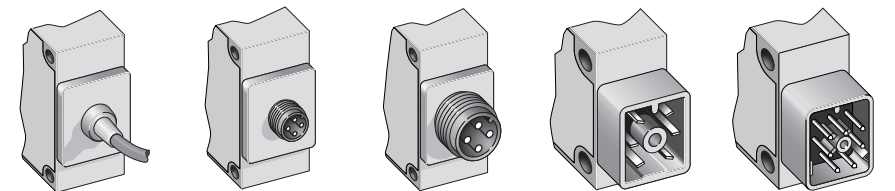


Switch-selectable time delay

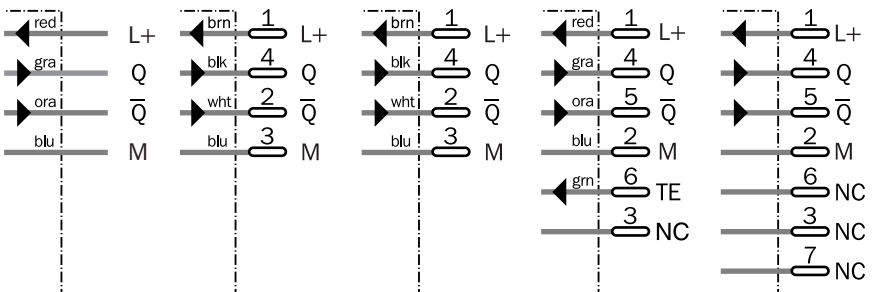
0.5 – 10 s	0.02 – 0.5 s
t_0 Without time delay	t_0 Without time delay
t_3 OFF-delay from trailing edge of object	t_1 OFF-delay from trailing edge of object
t_4 ON-delay from leading edge of object	t_2 ON-delay from leading edge of object
$t_3 + t_4$ OFF- and ON-delay	$t_1 + t_2$ OFF- and ON-delay

Connection type

WT 27-2F 112	WT 27-2F 410	WT 27-2F 411	WT 27-2P 610	WT 27-2F 710
	WT 27-2P 410		WT 27-2N 610	
	WT 27-2N 410			
	WT 27-2F 440			



4 x 0.25 mm ²	4-pin, M 12	4-pin, M 18	6-pin, Q6, DC	7-pin, Q7, DC
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Accessories

- Connectors
- Mounting systems

Technical data		WT 27-2	F 112	F 410	N 410	F 411	F 440	P 410	P 610	N 610	F 710
Scanning distance	100...1500 mm, adjustable										
Light source¹⁾, light type	LED, infrared light										
Light spot diameter	Approx. 25 mm at 800 mm										
Supply voltage V_S	10...30 V DC ²⁾										
Ripple ³⁾	$\leq 5 V_{PP}$										
Current consumption ⁴⁾	≤ 25 mA										
	≤ 35 mA, front screen heating										
Switching outputs	PNP, Q and \bar{Q}										
	NPN, Q and \bar{Q}										
Output current I_A max.	100 mA										
Response time ⁵⁾	2 ms										
Max. switching frequency ⁶⁾	250/s										
Selectable delay ranges	0.5...10 s/0.02...0.5 s										
Test input "TE", sender OFF	PNP : Test input to 0 V										
	NPN : Test input to V_S										
Connection types	Cable ⁷⁾ , 2 m										
	Plug										
VDE protection class⁸⁾	<input type="checkbox"/>										
Circuit protection⁹⁾	A, B, C										
Enclosure rating	IP 67										
	IP 65										
Ambient temperature T_A	Operation -40 °C...+60 °C										
	Storage -40 °C...+75 °C										
Weight	Approx. 100 g										
Front screen heating											
Housing material	ABS										

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

2) Limit values

3) May not exceed or fall short of V_S tolerances

4) Without load

5) Signal transit time with resistive load

6) With light/dark ratio 1:1

7) Do not bend below 0 °C

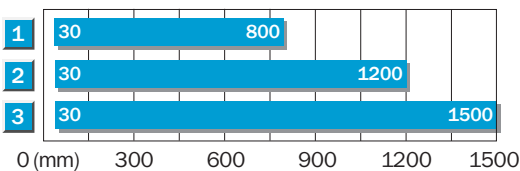
8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity protected

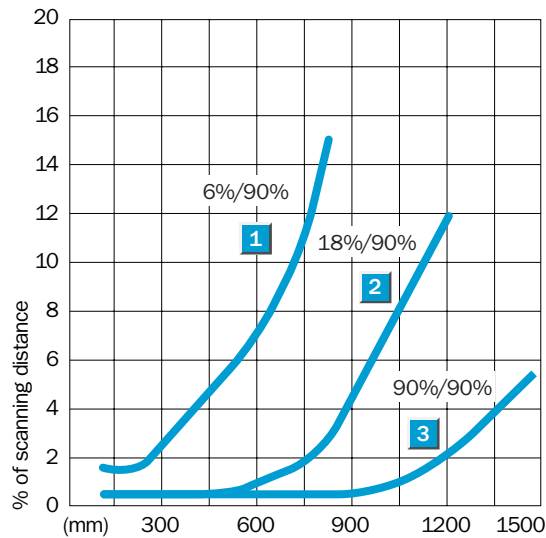
B = Output Q and \bar{Q} short-circuit protected

C = Interference pulse suppression

Scanning distance



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



Order information

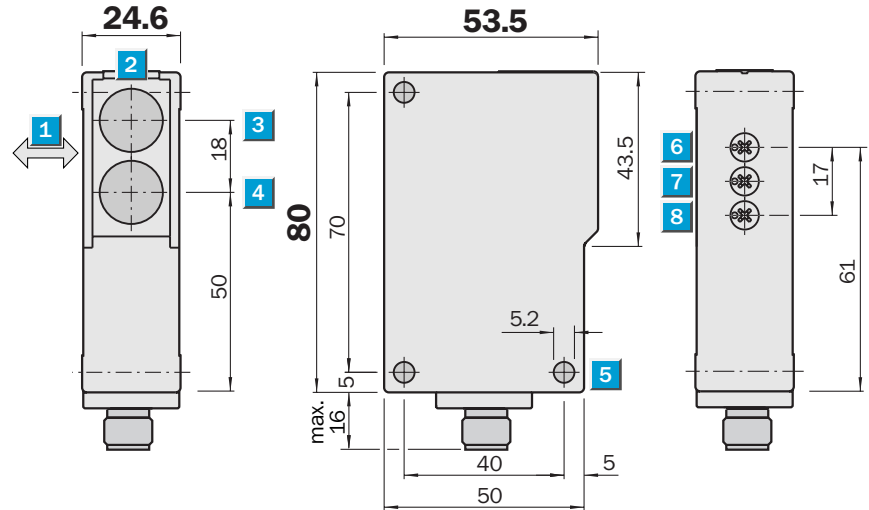
Type	Part no.
WT 27-2F 112	1 015 076
WT 27-2F 410	1 013 268
WT 27-2N 410	1 016 030
WT 27-2F 411	1 015 085
WT 27-2F 440	1 015 079
WT 27-2P 410	1 015 138
WT 27-2P 610	1 015 089
WT 27-2N 610	1 015 087
WT 27-2F 710	1 015 083

Scanning distance
 100...1500 mm
 Photoelectric proximity switches

- Infrared light
- Adjustable background suppression
- Selectable time delay

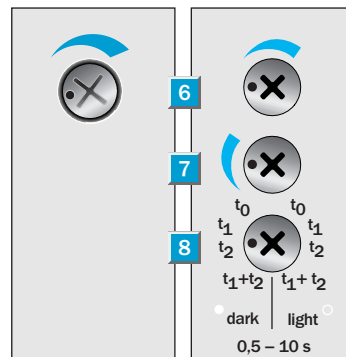


Dimensional drawing



Adjustments possible

WT 27-2S 112	WT 27-2R 610
WT 27-2S 710	



- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Optical axis, sender
- 4 Optical axis, receiver
- 5 Mounting hole \varnothing 5.2 mm
- 6 Sensitivity adjustment
- 7 Time control
- 8 Time delay selector switch
- Light-switching
- Dark-switching

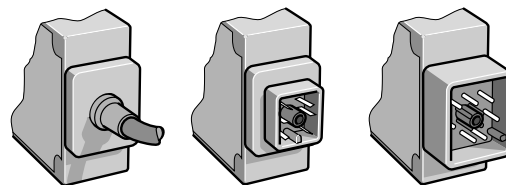
Switch-selectable time delay

0.5 – 10 s

- t_0 Without time delay
- t_1 OFF-delay from trailing edge of object
- t_2 ON-delay from leading edge of object
- $t_1 + t_2$ OFF- and ON-delay

Connection type

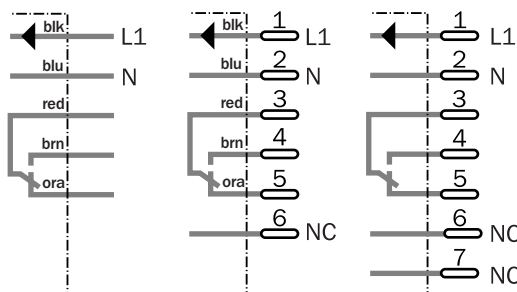
WT 27-2S 112	WT 27-2R 610	WT 27-2S 710
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5 x 0.25 mm²

6-pin, Q6, AC/UC

7-pin, Q7, AC/UC



Accessories

- Connectors
- Mounting systems



Technical data		WT 27-2	S 112	R 610 ⁷⁾	S 710						
Scanning distance	100...1500 mm, adjustable										
Light source¹⁾, light type	LED, infrared light										
Light spot diameter	Approx. 25 mm at 800 mm										
Supply voltage V_S	24...240 V UC (+ 10 %, - 20 %)										
Current consumption	< 2 VA										
Switching outputs	SPDT, isolated ²⁾										
Max. switching voltage	250 V AC / DC 120 V										
Max. switching current	4 A / 240 V AC or 24 V DC										
Max. switching capacity	AC 1000 VA / DC 100 W										
Response time	< 6 ms										
Max. switching frequency ³⁾	10/s										
Delay range	0.5...10 s										
Connection types	Cable ⁴⁾ , 2 m										
	Plug										
VDE protection class⁵⁾	□										
Circuit protection⁶⁾	A, C										
Enclosure rating	IP 67										
	IP 65										
Ambient temperature T_A	Operation - 40 °C...+ 60 °C										
	Storage - 40 °C...+ 75 °C										
Weight	Approx. 100 g										
Housing material	ABS										

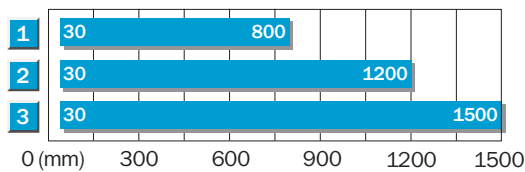
1) Average service life 100,000 h at T_A = +25 °C
 2) Provide suitable spark suppression for inductive and capacitive loads

3) With light/dark ratio 1:1
 4) Do not bend below 0 °C
 5) Reference voltage 250 V AC

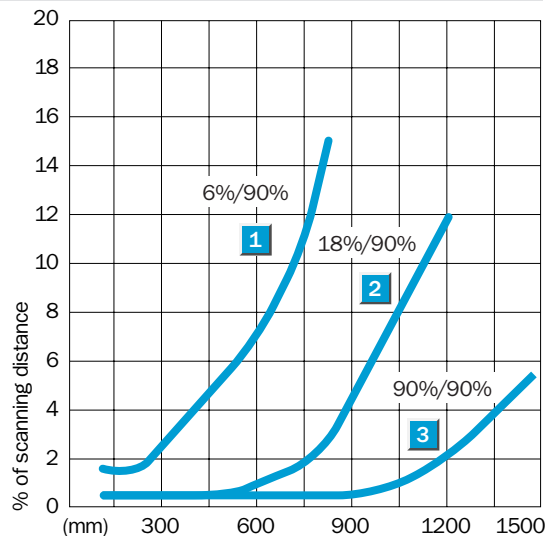
6) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

7) Relay contacts are separate from the power supply by basis insulation of 3 mm

Scanning distance



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



Order information

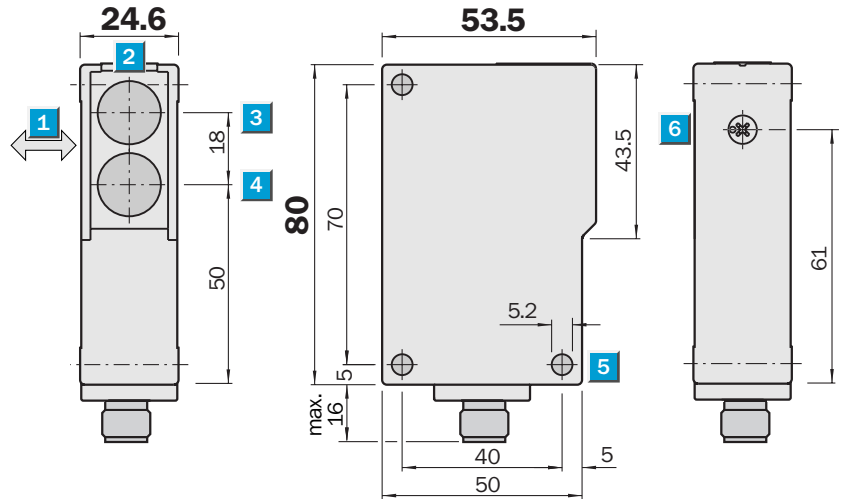
Type	Part no.
WT 27-2S 112	1 015 093
WT 27-2R 610	1 015 091
WT 27-2S 710	1 015 096

	Scanning distance 100...1000 mm
	Scanning distance 100...1500 mm
Photoelectric proximity switches	

- Red/infrared light
- Adjustable background suppression
- Front screen heating, optional (only for infrared type)
- Integrated AS-i chip



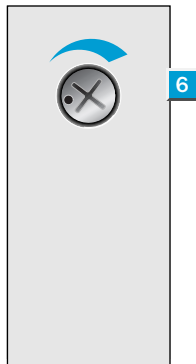
Dimensional drawing



Adjustments possible

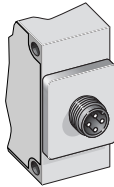
WT 27-2Z 230
WT 27-2Z 210
WT 27-2Z 240

- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Optical axis, sender
- 4 Optical axis, receiver
- 5 Mounting hole \varnothing 5.2 mm
- 6 Sensitivity adjustment

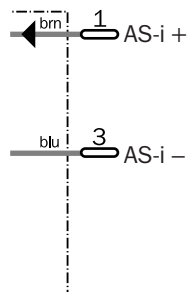


Connection type

WT 27-2Z 230
WT 27-2Z 210
WT 27-2Z 240



4-pin, M 12



Accessories
Connectors
Mounting systems
AS-i

Technical data		WT 27-2	Z 230	Z 210	Z 240						
Scanning distance	100...1000 mm, adjustable										
	100...1500 mm, adjustable										
Light source ¹⁾ , light type	LED, red light										
	LED, infrared light										
Light spot diameter	Approx. 15 mm at 500 mm										
	Approx. 25 mm at 800 mm										
Supply voltage V_S	26.5...31.6 V DC ²⁾										
Ripple ³⁾	$\leq 5 V_{PP}$										
Current consumption ⁴⁾	≤ 30 mA										
	≤ 40 mA, front screen heating										
Response time ⁵⁾	2 ms										
Max. switching frequency ⁶⁾	250/s										
Pre-failure signalling output Alarm											
Test input "TE"											
Connection type	Plug										
VDE protection class	<input type="checkbox"/>										
Circuit protection ⁷⁾	A, C										
Enclosure rating	IP 67										
AS-i profile	S 1.1										
Ambient temperature T_A	Operation -40 °C...+ 60 °C										
	Storage -40 °C...+ 75 °C										
Weight	Approx. 100 g										
Front screen heating											
Housing material	ABS										

1) Average service life 100,000 h at $T_A = +25$ °C
 2) Limit values
 3) May not exceed or fall short of V_S tolerances

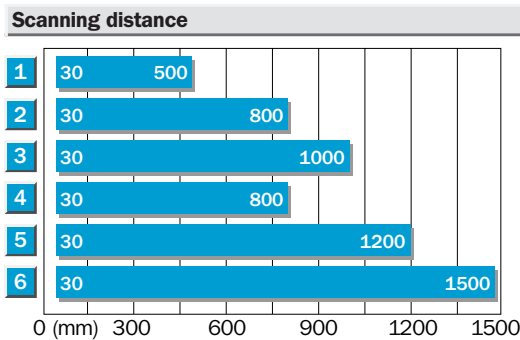
4) Without load
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1

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

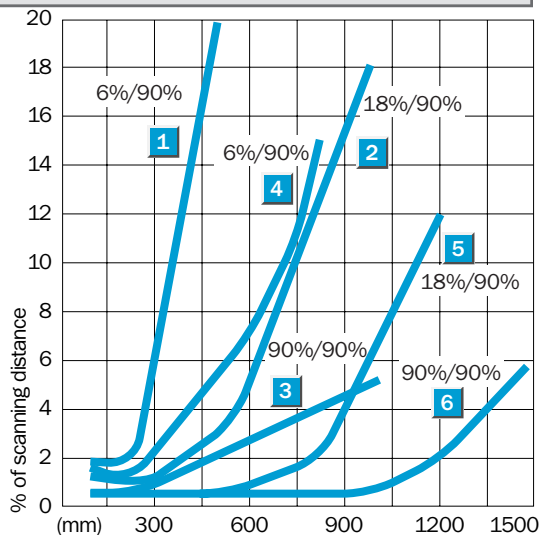
8) Black = 6% remission
 Grey = 18% remission
 White = 90% remission

Assignment of data bits				(Host level)	Assignment of parameter bits				(Host level)
D ₀	Switching state	0	Light is not received	Input	P ₀ *	NC	0	Parameter	
		1	Light is received				1		
D ₁	Alarm	0	Active	Input	P ₁ *	Light-/dark-switching	0	Parameter	
		1	Inactive				1		Light-switching
D ₂	NC	0		Input	P ₂ *	NC	0	Parameter	
		1					1		
D ₃	Test function	0	Sender ON	Output	P ₃ *	NC	0	Parameter	
		1	Sender OFF				1		

* Default setting = 1



1	Scanning distance on black ⁸⁾	red light
2	Scanning distance on grey ⁸⁾	red light
3	Scanning distance on white ⁸⁾	red light
4	Scanning distance on black ⁸⁾	infrared light
5	Scanning distance on grey ⁸⁾	infrared light
6	Scanning distance on white ⁸⁾	infrared light



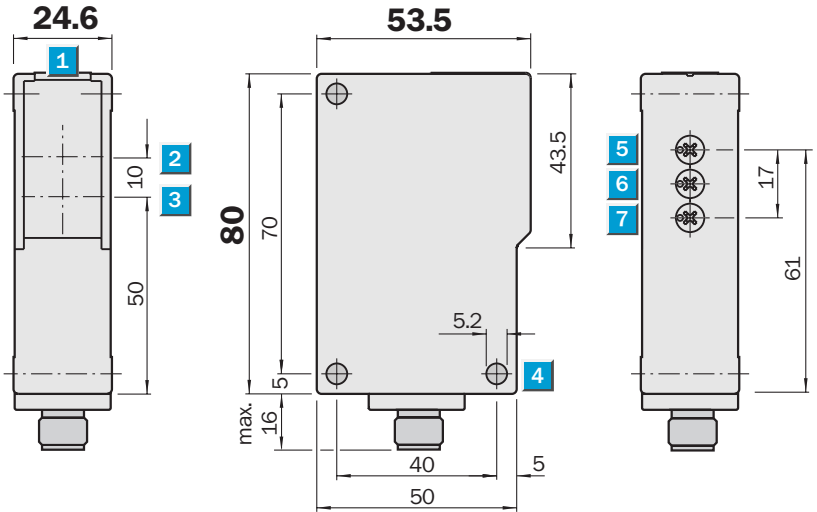
Order information	
Type	Part no.
WT 27-2Z 230	1 015 099
WT 27-2Z 210	1 015 098
WT 27-2Z 240	1 015 137

Scanning range
14 m
 Photoelectric reflex switches

- Red light
- Front screen heating, optional
- Selectable time delay

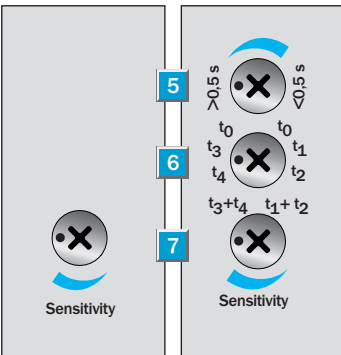


Dimensional drawing



Adjustments possible

WL 27-2F 132	WL 27-2P 630
WL 27-2F 440	WL 27-2N 630



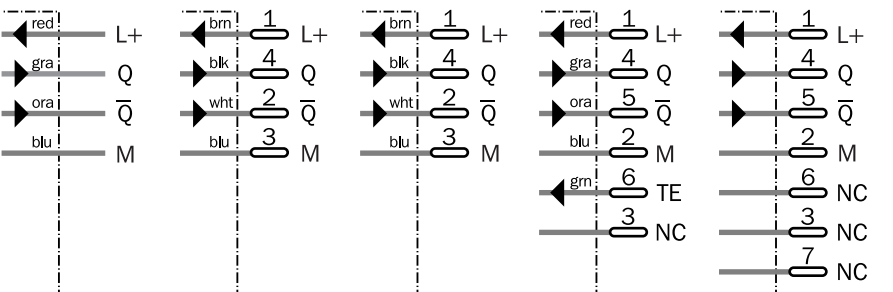
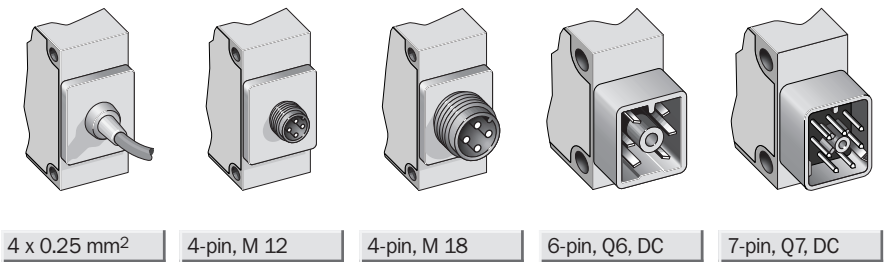
- 1 LED signal strength indicator
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 Time control
- 6 Time delay selector switch
- 7 Sensitivity adjustment

Switch-selectable time delay

0.5 – 10 s	0.02 – 0.5 s
t_0 Without time delay	t_0 Without time delay
t_3 ON-delay from interruption light path	t_1 ON-delay from interruption light path
t_4 OFF-delay from reset of light path	t_2 OFF-delay from reset of light path
$t_3 + t_4$ ON- and OFF-delay	$t_1 + t_2$ ON- and OFF-delay

Connection types

WL 27-2F 132	WL 27-2F 430	WL 27-2F 431	WL 27-2P 630	WL 27-2F 730
	WL 27-2F 440		WL 27-2N 630	
	WL 27-2F 450			



Accessories

Connectors
Mounting systems
Reflectors

Technical data		WL 27-2	F 132	F 430	F 431	F 440	F 450	P 630	F 730	N 630		
Scanning range , max. typ./on reflector	14 m/PL 80 A											
	Adjustable sensitivity											
Light source¹⁾, light type	LED, red light											
Light spot diameter	Approx. 220 mm at 10 mm											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple ³⁾	≤ 5 V _{PP}											
Current consumption ⁴⁾	≤ 25 mA											
	≤ 35 mA, front screen heating											
Switching outputs	PNP, Q and \bar{Q}											
	NPN, Q and \bar{Q}											
Output current I _A max.	100 mA											
Response time ⁵⁾	≤ 500 μs											
Max. switching frequency ⁶⁾	1000/s											
Selectable delay ranges	0.5...10 s/0.02...0.5 s											
Test input "TE", sender OFF	PNP : Test input to 0 V											
	NPN : Test input to V _S											
Connection types	Cable ⁷⁾ , 2 m											
	Plug											
VDE protection class⁸⁾	□											
Circuit protection⁹⁾	A, B, C											
Enclosure rating	IP 67											
	IP 65											
Ambient temperature T_A	Operation -40 °C...+60 °C											
	Storage -40 °C...+75 °C											
Weight	Approx. 100 g											
Front screen heating												
Polarising filter												
Housing material	ABS											

1) Average service life 100,000 h at T_A = +25 °C

2) Limit values

3) May not exceed or fall short of V_S tolerances

4) Without load

5) Signal transit time with resistive load

6) With light/dark ratio 1:1

7) Do not bend below 0 °C

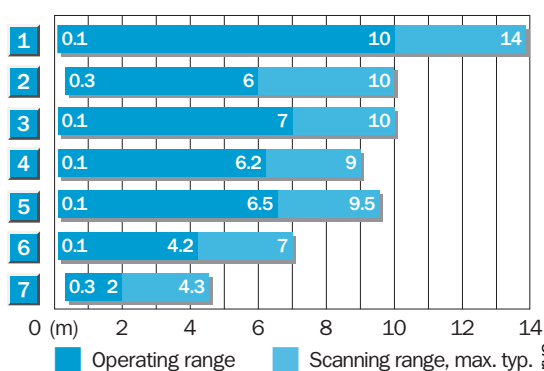
8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity protected

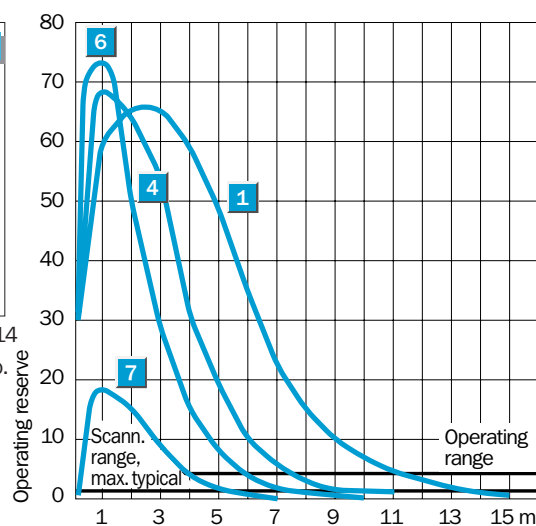
B = Output Q and \bar{Q} short-circuit protected

C = Interference pulse suppression

Operating range and operating reserve



Reflector type	Operating range
1 PL 80 A	0,1...10,0 m
2 C 110	0,3...6,0 m
3 PL 50 A	0,1...7,0 m
4 PL 40 A	0,1...6,2 m
5 PL 30 A	0,1...6,5 m
6 PL 20 A	0,1...4,2 m
7 Reflective tape "Diamond Grade"	0,3...2,0 m



Order information

Type	Part no.
WL 27-2F 132	1 015 100
WL 27-2F 430	1 013 269
WL 27-2F 431	1 015 106
WL 27-2F 440	1 015 101
WL 27-2F 450	1 015 102
WL 27-2P 630	1 015 108
WL 27-2F 730	1 015 104
WL 27-2N 630	1 015 107

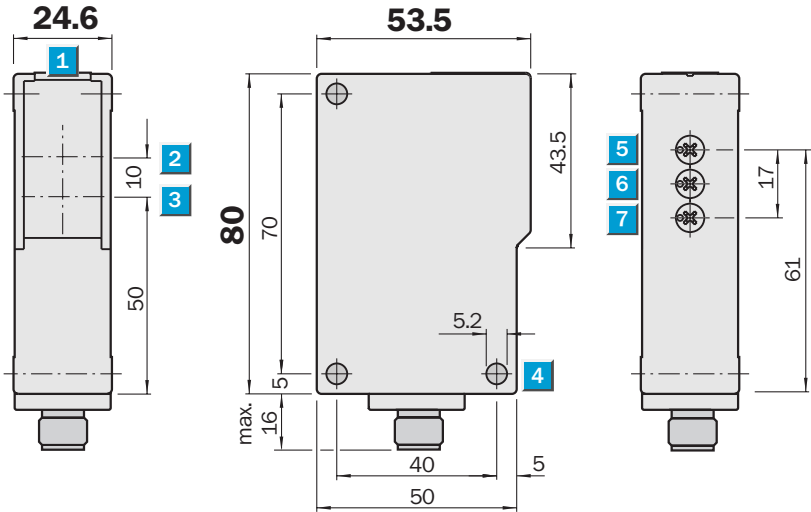
Scanning range
14 m

Photoelectric reflex switches

- Red light
- Selectable time delay

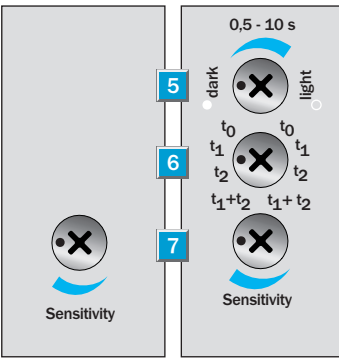


Dimensional drawing



Adjustments possible

WL 27-2S 132	WL 27-2R 630
WL 27-2S 730	



- 1 LED signal strength indicator
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 Time control
- 6 Time delay selector switch
- Light-switching
- Dark-switching
- 7 Sensitivity adjustment

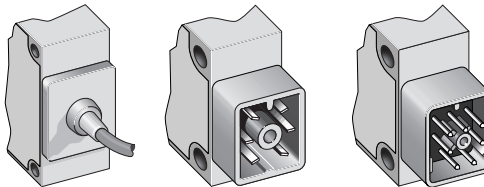
Switch-selectable time delay

0.5 – 10 s

- t_0 Without time delay
- t_1 ON-delay from interruption of light path
- t_2 OFF-delay from reset of light path
- $t_1 + t_2$ ON- and OFF-delay

Connection types

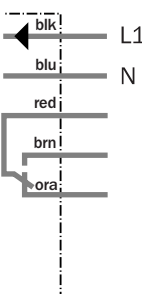
WL 27-2S 132	WL 27-2R 630	WL 27-2S 730
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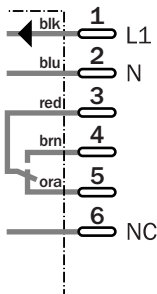
Accessories

- Connectors
- Mounting systems
- Reflectors

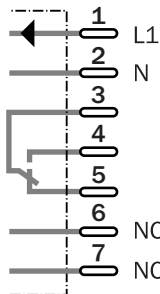
5 x 0.25 mm²



6-pin, Q6, AC/UC



7-pin, Q7, AC/UC



Technical data		WL 27-2	S 132	R 630 ⁷⁾	S 730						
Scanning range , max. typ./on reflector	14 m/PL 80 A										
	Adjustable sensitivity										
Light source¹⁾, light type	LED, red light										
Light spot diameter	Approx. 220 mm at 10 mm										
Supply voltage V_S	24...240 V UC (+ 10 %, - 20 %)										
Current consumption	< 2 VA										
Switching outputs	SPDT, isolated ²⁾										
Max. switching voltage	250 V AC / 120 V DC										
Max. switching current	4 A / 240 V AC or 24 V DC										
Max. switching capacity	AC 1000 VA / DC 100 W										
Response time	< 6 ms										
Max. switching frequency ³⁾	10/s										
Delay range	0.5...10 s										
Connection types	Cable ⁴⁾ , 2 m										
	Plug										
VDE protection class⁵⁾	□										
Circuit protection⁶⁾	A, C										
Enclosure rating	IP 67										
	IP 65										
Ambient temperature T_A	Operation - 40 °C...+ 60 °C										
	Storage - 40 °C...+ 75 °C										
Weight	Approx. 100 g										
Polarising filter											
Housing material	ABS										

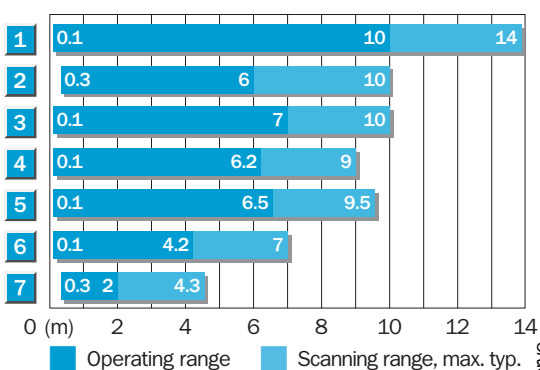
1) Average service life 100,000 h at T_A = + 25 °C
 2) Provide suitable spark suppression for inductive and capacitive loads.

3) With light/dark ratio 1:1
 4) Do not bend below 0 °C
 5) Reference voltage 250 V AC

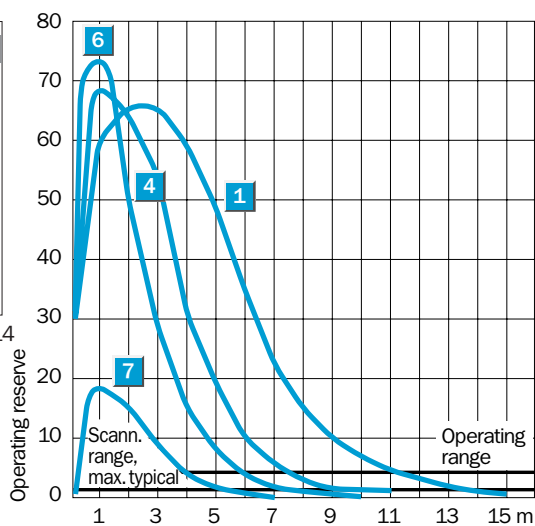
6) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

7) Relay contacts are separate from the power supply by basis insulation of 3 mm

Operating range and operating reserve




Reflector type	Operating range
1 PL 80 A	0,1...10,0 m
2 C 110	0,3...6,0 m
3 PL 50 A	0,1...7,0 m
4 PL 40 A	0,1...6,2 m
5 PL 30 A	0,1...6,5 m
6 PL 20 A	0,1...4,2 m
7 Reflective tape "Diamond Grade"	0,3...2,0 m



Order information

Type	Part no.
WL 27-2-S 132	1 015 110
WL 27-2-R 630	1 015 109
WL 27-2-S 730	1 015 111

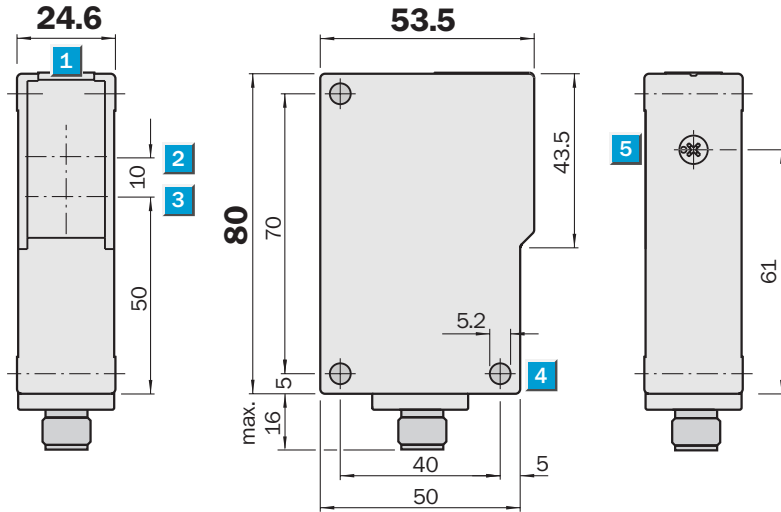

Scanning range
14 m

Photoelectric reflex switches

- Visible red light
- Front screen heating, optional
- With integrated AS-i chip



Dimensional drawing

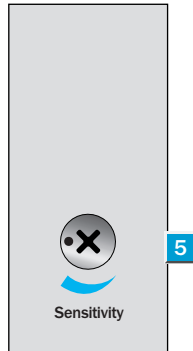


Adjustments possible

WL 27-2Z 230

WL 27-2Z 240

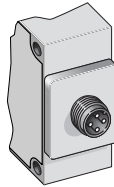
- 1 LED signal strength indicator
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 Sensitivity adjustment



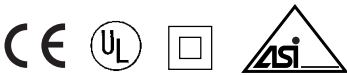
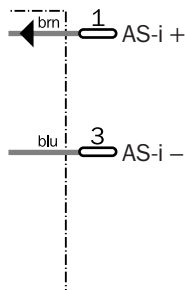
Connection types

WL 27-2Z 230

WL 27-2Z 240



4-pin, M 12



Accessories

Connectors

Mounting systems

Reflectors

AS-i

Technical data		WL 27-2	Z 230	Z 240									
Scanning range , max. typ./on reflector	14 m/PL 80 A												
Light source¹⁾, light type	LED, red light												
Light spot diameter	220 mm at a distance of 10 mm												
Supply voltage V_S	DC 26.5...31.6 V ²⁾												
Ripple ³⁾	$\leq 5 V_{PP}$												
Current consumption ⁴⁾	≤ 30 mA												
	≤ 40 mA, front screen heating												
Response time ⁵⁾	500 μ s												
Max. switching frequency ⁶⁾	1000/s												
Pre-failure signalling output Alarm													
Test input "TE"													
Connection type	Plug												
VDE protection class	\square												
Circuit protection⁷⁾	A, C												
Enclosure rating	IP 67												
AS-i profile	S 1.1												
Ambient temperature T_A	Operation -40 °C...+60 °C												
	Storage -40 °C...+75 °C												
Weight	Approx. 100 g												
Front screen heating													
Polarising filter													
Housing material	ABS												

1) Average service life 100,000 h at $T_A = +25$ °C
 2) Limit values

3) May not exceed or fall short of V_S tolerances
 4) Without load

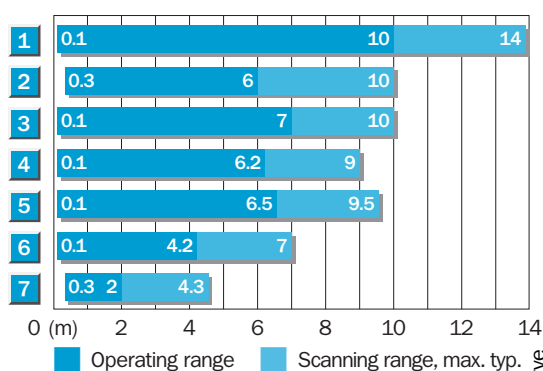
5) Signal transit time with resistive load
 6) With light/dark ratio 1:1

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

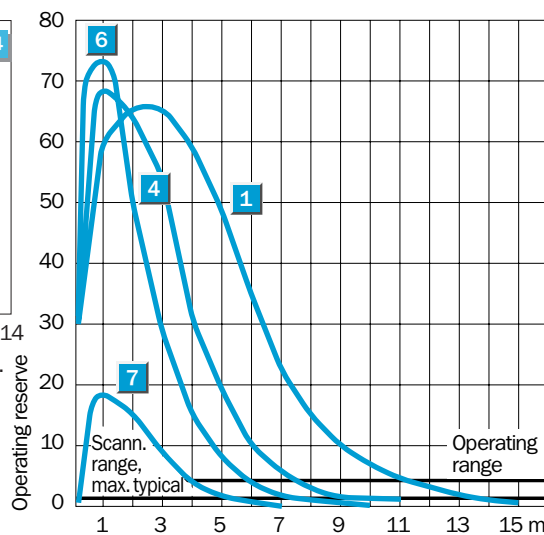
Assignment of data bits (Host level)				Assignment of parameter bits (Host level)			
D ₀	Switching state	0 Light is not received	Input	P ₀ *	NC	0	Parameter
	Mode: light-switching	1 Light is received				1	
D ₁	Alarm	0 Active	Input	P ₁ *	Light-/dark-switching	0 Dark-switching	Parameter
		1 Inactive				1 Light-switching	
D ₂	NC	0	Input	P ₂ *	NC	0	Parameter
		1				1	
D ₃	Test function	0 Sender ON	Output	P ₃ *	NC	0	Parameter
		1 Sender OFF				1	

* Default setting = 1

Operating range and operating reserve



Reflector type	Operating range
1 PL 80 A	0,1...10,0 m
2 C 110	0,3...6,0 m
3 PL 50 A	0,1...7,0 m
4 PL 40 A	0,1...6,2 m
5 PL 30 A	0,1...6,5 m
6 PL 20 A	0,1...4,2 m
7 Reflective tape "Diamond Grade"	0,3...2,0 m



Order information

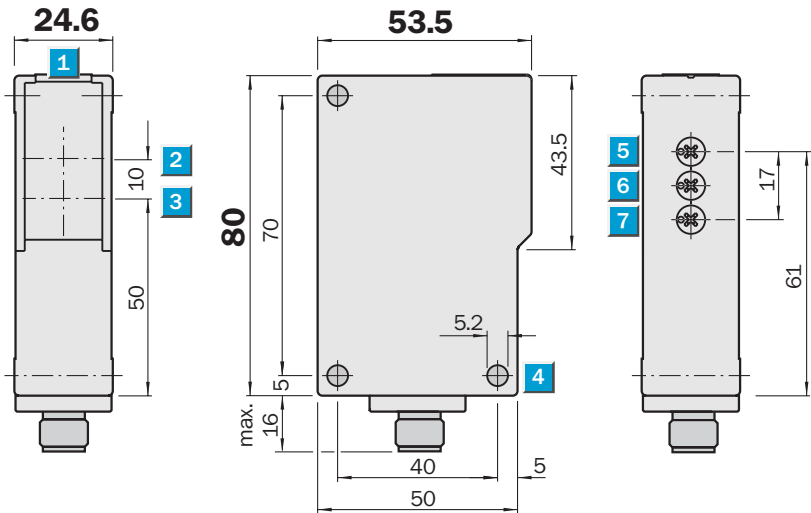
Type	Part no.
WL 27-2Z 230	1 015 112
WL 27-2Z 240	1 015 136

Scanning range
35 m

Through-beam photoelectric switches

- Visible red light
- Front screen heating, optional
- Selectable time delay

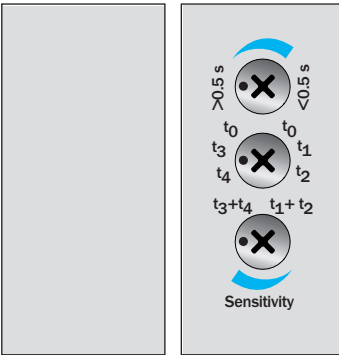
Dimensional drawing



Adjustments possible

WS/WE 27-2F 430	WS/WE 27-2P 630
WS/WE 27-2F 431	WS/WE 27-2N 630
WS/WE 27-2F 450	
WS/WE 27-2F 730	

- 1 LED signal strength indicator
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 Time control
- 6 Time delay selector switch
- 7 Sensitivity adjustment

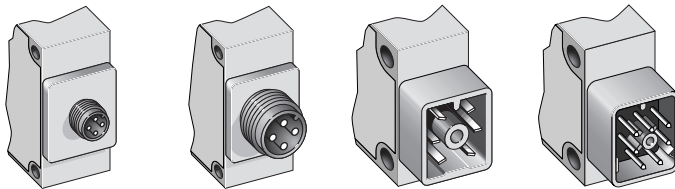


5 Switch-selectable time delay

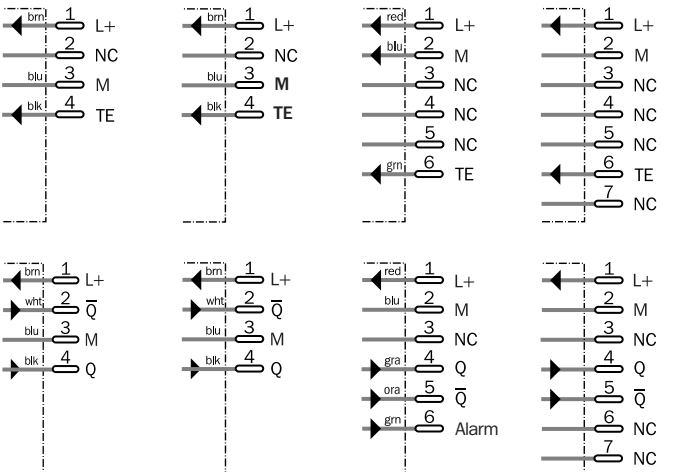
0.5 – 10 s	0.02 – 0.5 s
6 t_0 Without time delay	t_0 Without time delay
6 t_3 ON-delay from interruption of light path	t_1 ON-delay from interruption of light path
7 t_4 OFF-delay from reset of light path	t_2 OFF-delay from reset of light path
$t_3 + t_4$ ON- and OFF-delay	$t_1 + t_2$ ON- and OFF-delay

Connection types

WS/WE 27-2F 430	WS/WE 27-2F 431	WS/WE 27-2P 630	WS/WE 27-2F 730
WS/WE 27-2F 450		WS/WE 27-2N 630	



4-pin, M 12 4-pin, M 18 6-pin, Q6, DC 7-pin, Q7, DC



Accessories

Connectors
Mounting systems



Technical data		WS/WE 27-2	F 430	F 431	F 450	P 630	N 630	F 730				
Scanning range , max. typical	0...35 m											
	Adjustable sensitivity											
Light source¹⁾, light type	LED, red light											
Light spot diameter	Approx. 1200 mm at 25 mm											
Angle of dispersion	3°											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple ³⁾	$\leq 5 V_{PP}$											
Current consumption ⁴⁾	≤ 25 mA											
	≤ 35 mA, sender without heating											
	≤ 45 mA, sender with heating											
	≤ 25 mA, receiver without heating											
	≤ 35 mA, receiver with heating											
Switching outputs	PNP, Q and \bar{Q}											
	NPN, Q and \bar{Q}											
Output current I_A max.	100 mA											
Response time ⁵⁾	$\leq 500 \mu s$											
Max. switching frequency ⁶⁾	1000/s											
Selectable delay ranges	0.5...10 s/0.02...0.5 s											
Pre-failure signalling output	Alarm ⁷⁾											
Test input "TE" , sender OFF	PNP : Test input to 0 V											
	NPN : Test input to V_S											
Connection types	Plug											
VDE protection class⁸⁾	<input type="checkbox"/>											
Circuit protection⁹⁾	A, B, C											
Enclosure rating	IP 65											
	IP 67											
Ambient temperature T_A	Operation $-40 \text{ }^\circ\text{C} \dots +60 \text{ }^\circ\text{C}$											
	Storage $-40 \text{ }^\circ\text{C} \dots +75 \text{ }^\circ\text{C}$											
Weight	Approx. 100 g											
Front screen heating												
Housing material	ABS											

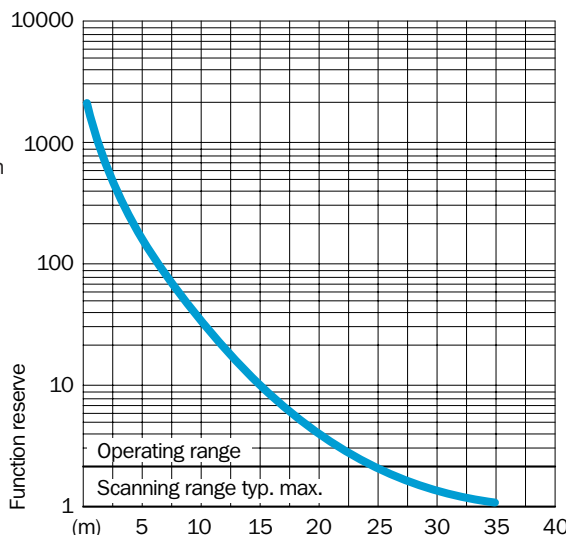
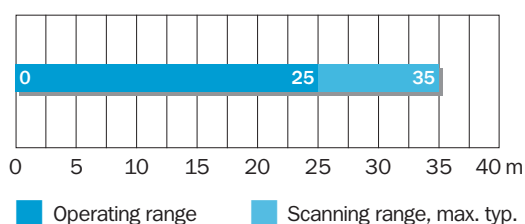
1) Average service life 100,000 h at $T_A = +25 \text{ }^\circ\text{C}$
 2) Limit values

3) May not exceed or fall short of V_S tolerances
 4) Without load
 5) Signal transit time with resistive load

6) With light/dark ratio 1:1
 7) NPN: Signal reserve > 50 % HIGH
 PNP: Signal reserve > 50 % LOW
 8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity protected
 B = Output Q and \bar{Q} short-circuit protected
 C = Interference pulse suppression

Operating range and operating reserve



Order information

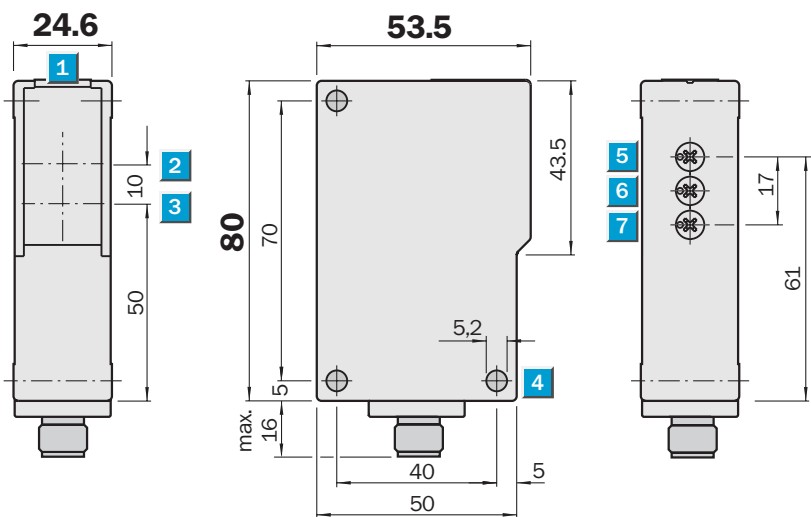
Type	Part no.
WS/WE 27-2F430	1 015 121
WS/WE 27-2F431	1 015 126
WS/WE 27-2F450	1 015 127
WS/WE 27-2P630	1 015 123
WS/WE 27-2N630	1 015 122
WS/WE 27-2F 730	1 015 124

Scanning range
35 m

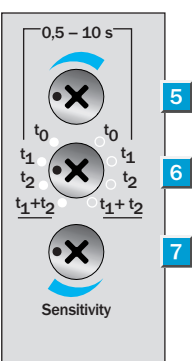
Through-beam photoelectric switches

- Red light
- Selectable time delay

Dimensional drawing



Adjustments possible
WS/WE 27-2R 630

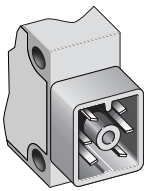


- 1 LED signal strength indicator
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 Time control
- 6 Time delay selector switch
- Light-switching
- Dark-switching
- 7 Sensitivity adjustment

Switch-selectable time delay

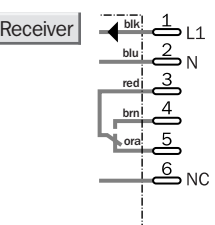
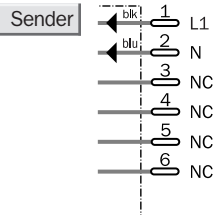
- 0.5 - 10 s**
- t_0 Without time delay
 - t_1 ON-delay from interruption of light path
 - t_2 OFF-delay from reset of light path
 - $t_1 + t_2$ ON- and OFF-delay

Connection types
WS/WE 27-2R 630



6-pin, Q6, AC/UC

- Accessories**
- Connectors
 - Mounting systems



Technical data WS/WE 27-2 R 630⁵⁾

Scanning range , max. typical	0...35 m	
Light source¹⁾, light type	LED, red light	
Light spot diameter	Approx. 1200 mm at 25 mm	
Angle of dispersion	3°	
Supply voltage V_S	24...240 V UC (+ 10 %, – 20 %)	
Current consumption	< 2 VA	
Switching outputs	SPDT, isolated ²⁾	
Max. switching voltage	250 V AC / 120 V DC	
Max. switching current	4 A / 240 V AC or 24 V DC	
Max. switching capacity	AC 1000 VA / DC 100 W	
Response time	< 6 ms	
Max. switching frequency ³⁾	10/s	
Delay range	0.5...10 s	
Connection type	Plug	
Circuit protection⁴⁾	A, C	
Enclosure rating	IP 65	
Ambient temperature T_A	Operation – 40 °C...+ 60 °C Storage – 40 °C...+ 75 °C	
Weight	Approx. 100 g	
Housing material	ABS	

¹⁾ Average service life 100,000 h at T_A = + 25 °C

²⁾ Provide suitable spark suppression for inductive and capacitive loads.

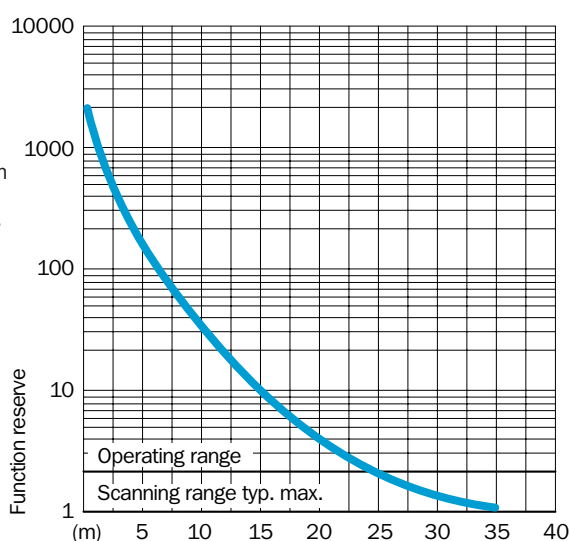
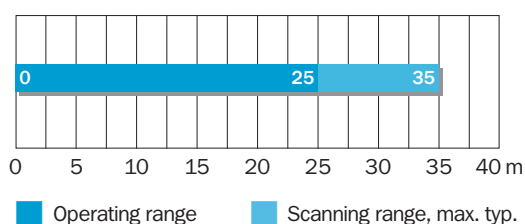
³⁾ With light/dark ratio 1:1

⁴⁾ A = V_S connections reverse-polarity protected


C = Interference pulse suppression

⁵⁾ Relay contacts are separate from the power supply by basis insulation of 3 mm

Operating range and operating reserve



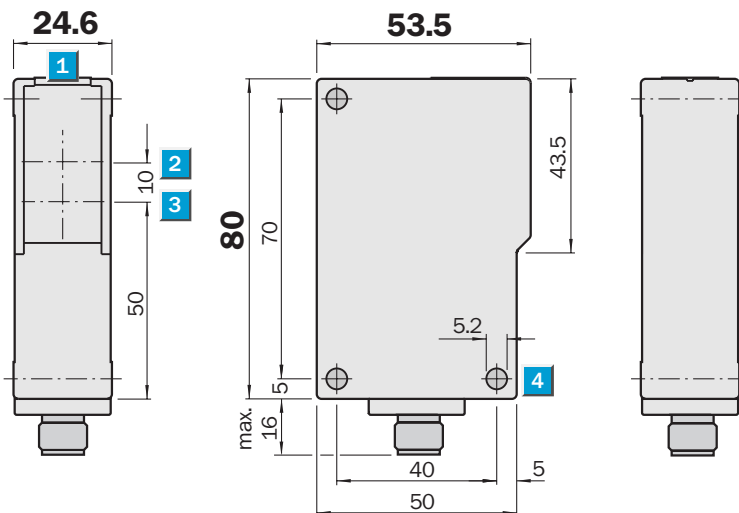
Order information	
Type	Part no.
WS/WE 27-2R 630	1 015 116

 **Scanning range**
35 m

Through-beam photoelectric switches

- Red light
- Selectable time delay
- With integrated AS-i chip

Dimensional drawing

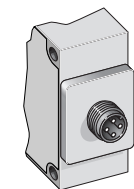


Adjustments possible
WS/WE 27-2Z 250



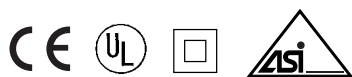
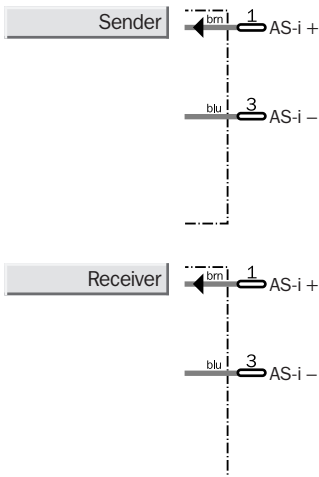
- 1 LED signal strength indicator
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 Mounting hole \varnothing 5.2 mm

Connection types
WS/WE 27-2Z 250



4-pin, M 12

Accessories
Connectors
Mounting systems
AS-i



Technical data		WS/WE 27-2	Z 250										
Scanning range , max. typical		0...35 m											
Light source¹⁾, light type		LED, red light											
Light spot diameter		Approx. 1200 mm at 25 m											
Angle of dispersion		3°											
Supply voltage V_S		26.5...31.6 V DC ²⁾											
Ripple ³⁾		≤ 5 V _{PP}											
Current consumption ⁴⁾	sender	≤ 35 mA, front screen heating											
	receiver	≤ 40 mA, front screen heating											
Response time ⁵⁾		500 μs											
Max. switching frequency ⁶⁾		1000/s											
Pre-failure signalling output Alarm													
Test input "TE"													
Connection type		Plug											
VDE protection class⁷⁾		□											
Circuit protection⁸⁾		A, C											
Enclosure rating		IP 67											
AS-i profile WS 27-2		S D.1											
AS-i profile WE 27-2		S 1.1											
Ambient temperature T_A		Operation - 40 °C...+ 60 °C											
		Storage - 40 °C...+ 75 °C											
Weight		Approx. 100 g											
Front screen heating													
Housing material		ABS											

1) Average service life 100,000 h at T_A = +25 °C
 2) Limit values
 3) May not exceed or fall short of V_S tolerances
 4) Without load
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Reference voltage 50 V DC
 8) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

WS 27-2 – Assignment of data bits			(Host level)
D ₀	Test function	0 Sender OFF 1 Sender ON	Output
D ₁	NC	0 1	Input
D ₂	NC	0 1	Input
D ₃	NC	0 1	Input

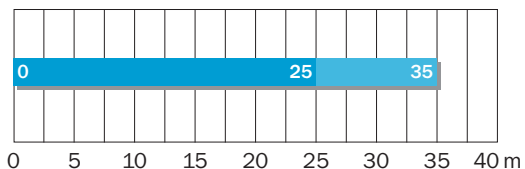
WS 27-2 – Assignment of parameter bits			(Host level)
P ₀ *	NC	0 1	Parameter
P ₁ *	NC	0 1	Parameter
P ₂ *	NC	0 1	Parameter
P ₃ *	NC	0 1	Parameter

WE 27-2 – Assignment of data bits			(Host level)
D ₀	Switching state Mode: light-switching	0 Light is not received 1 Light is received	Input
D ₁	Alarm	0 Active 1 Inactive	Input
D ₂	NC	0 1	Input
D ₃	NC	0 1	Output

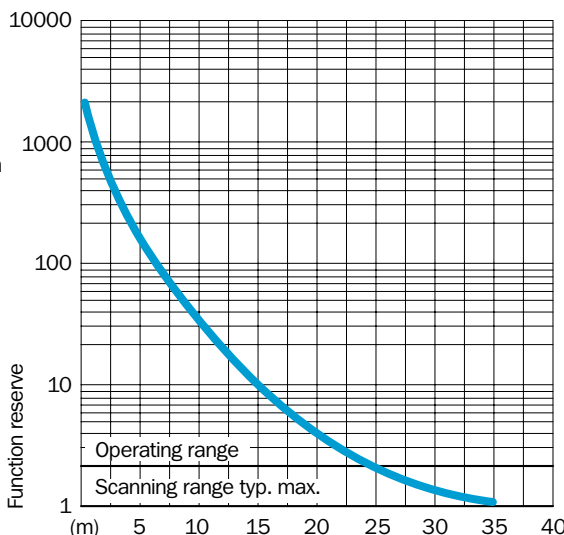
WE 27-2 – Assignment of parameter bits			(Host level)
P ₀ *	NC	0 1	Parameter
P ₁ *	Light-/dark-switching	0 Dark-switching 1 Light-switching	Parameter
P ₂ *	NC	0 1	Parameter
P ₃ *	NC	0 1	Parameter

* Default setting = 1

Operating range and operating reserve



■ Operating range ■ Scanning range, max. typ.



Order information

Type	Part no.
WS/WE 27-2Z 250	1 015 140

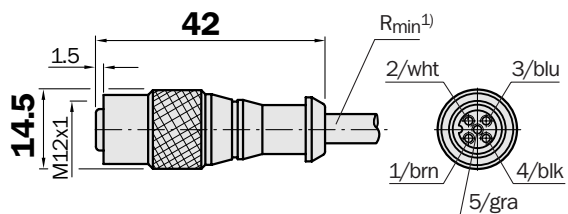
Dimensional drawings and order information

SENSICK screw-in system M 12, 4-pin, enclosure rating IP 67

Female connector M12, 4-pin, straight

Cable \varnothing 5/6 mm, 4/5 x 0.25 mm², sheath PVC

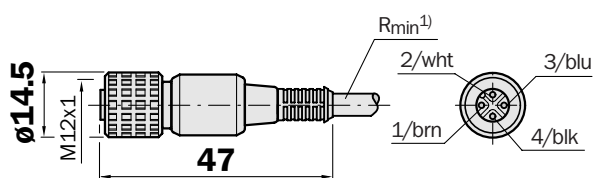
Type	Part no.	Contacts	Cable length
DOL-1204-G02M	6 009 382	4	2 m
DOL-1204-G05M	6 009 866	4	5 m
DOL-1204-G10M	6 010 543	4	10 m
DOL-1205-G15M	6 010 753	4	15 m



Female connector M 12, 4-pin, straight

Cable \varnothing 4.5 mm, 4 x 0.34 mm², sheath PUR

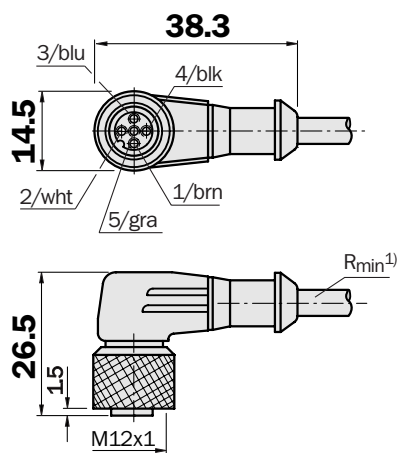
Type	Part no.	Cable length
DOL-1204-G05MB	7 902 084	5 m



Female connector M12, 4-pin, right angle

Cable \varnothing 5/6 mm, 4/5 x 0.25 mm², sheath PVC

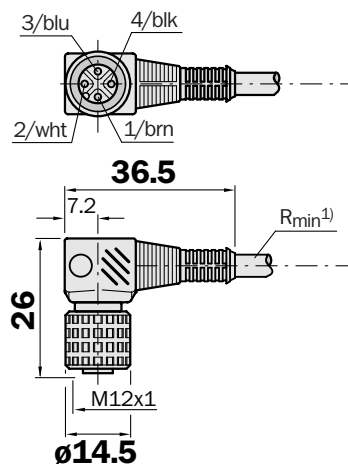
Type	Part no.	Contacts	Cable length
DOL-1204-W02M	6 009 383	4	2 m
DOL-1204-W05M	6 009 867	4	5 m
DOL-1204-W10M	6 010 541	4	10 m



Female connector M 12, 4-pin, right angle

Cable \varnothing 4.5 mm, 4 x 0.34 mm², sheath PUR

Type	Part no.	Contacts
DOL-1204-W05MB	7 902 085	5 m



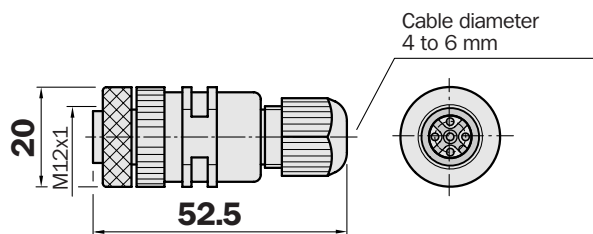
¹⁾ Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

Dimensional drawings and order information

SENSICK screw-in system M 12, 4-pin, enclosure rating IP 67

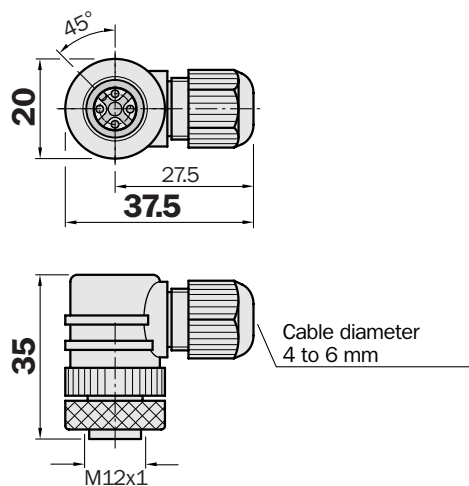
Female connector M 12, 4-pin, straight

Type	Part no.	Contacts
DOS-1204-G	6 007 302	4



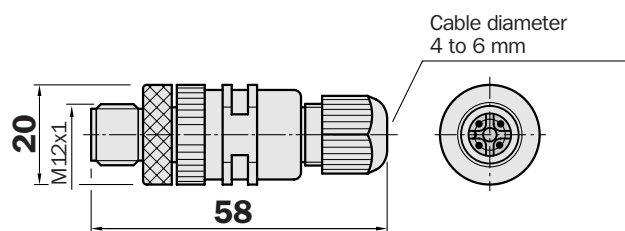
Female connector M 12, 4-pin, right angle

Type	Part no.	Contacts
DOS-1204-W	6 007 303	4



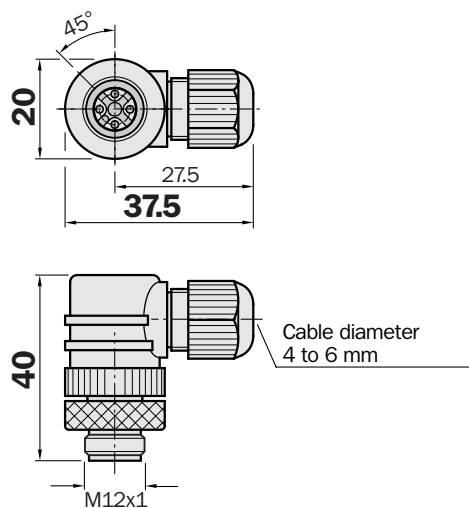
Male connector M 12, 4-pin, straight

Type	Part no.
STE-1204-G	6 009 932



Male connector M 12, 4-pin, right angle

Type	Part no.
STE-1204-W	6 022 084

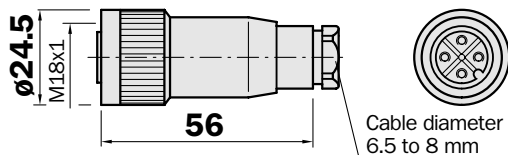


Dimensional drawings and order information

SENSICK screw-in system M 18, 4-pin, enclosure rating IP 65

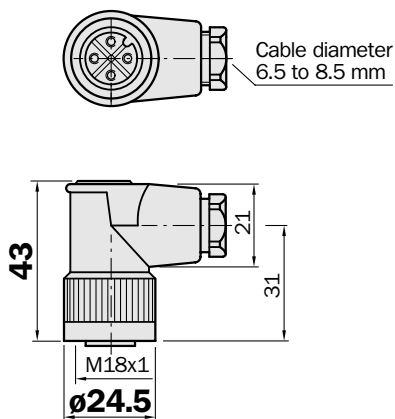
Female connector M18, 4-pin, straight

Type	Part no.
DOS-1804-G	6 009 436



Female connector M 18, 4-pin, right angle

Type	Part no.
DOS-1804-W	6 009 437



SENSICK rectangular plug-in system, Q 6, 6-pin, enclosure rating IP 65

Female connectors, 6-pin, DC-coding

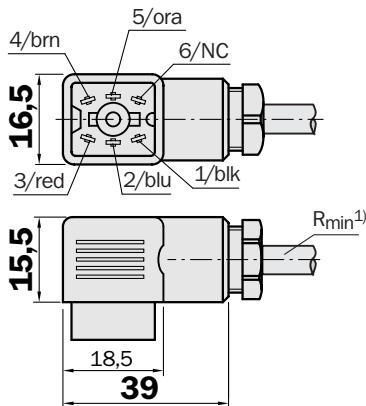
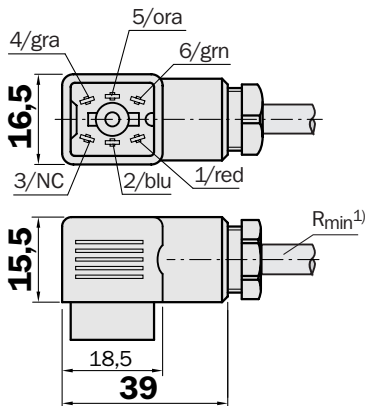
Cable ϕ 5 mm, 5 x 0.25 mm², sheath PVC

Type	Part no.	Cable length
DOS-1306-W	6 006 710	–
DOL-1306-02M	2 009 477	2 m
DOL-1306-03M	2 009 478	3 m
DOL-1306-05M5	2 009 479	5,5 m
DOL-1306-10M	2 009 480	10 m

Female connectors, 6-pin, AC/UC-coding

Cable ϕ 6.8 mm, 5 x 0.5 mm², sheath PVC

Type	Part no.	Cable length
DOS-1406-W	6 006 685	–
DOL-1406-02M	2 009 116	2 m
DOL-1406-03M	2 009 117	3 m
DOL-1406-05M5	2 009 118	5,5 m
DOL-1406-10M	2 009 119	10 m



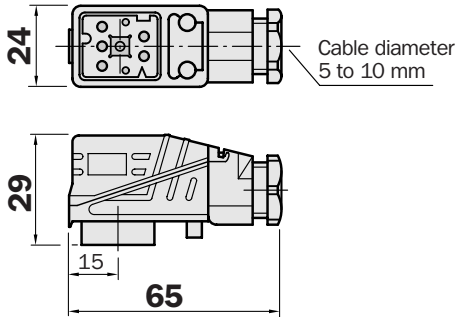
¹⁾ Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

Dimensional drawings and order information

SENSICK rectangular plug-in system, Q 7, 7-pin, enclosure rating IP 65

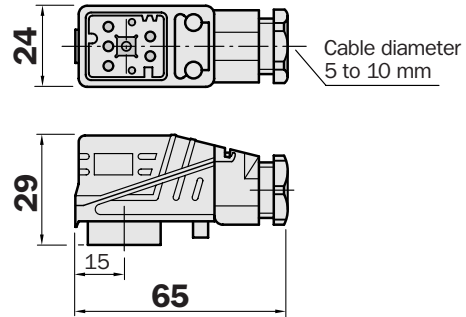
Female connector, 7-pin, DC-coding

Type	Part no.
DOS-2107-W	6 006 823



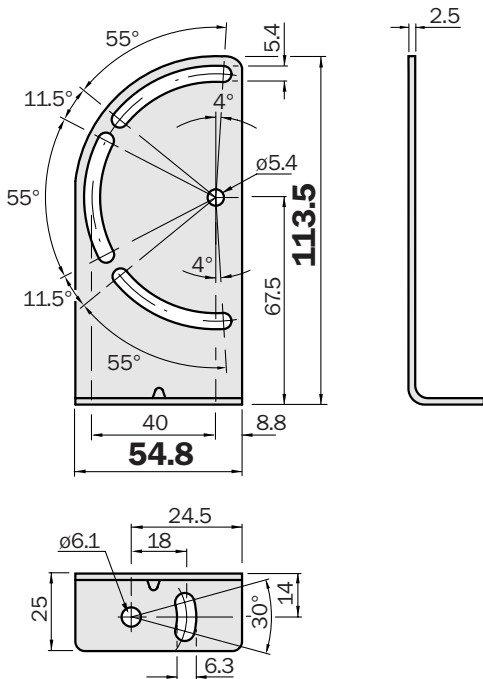
Female connector, 7-pin, AC/UC-coding

Type	Part no.
DOS-2207-W	6 006 821



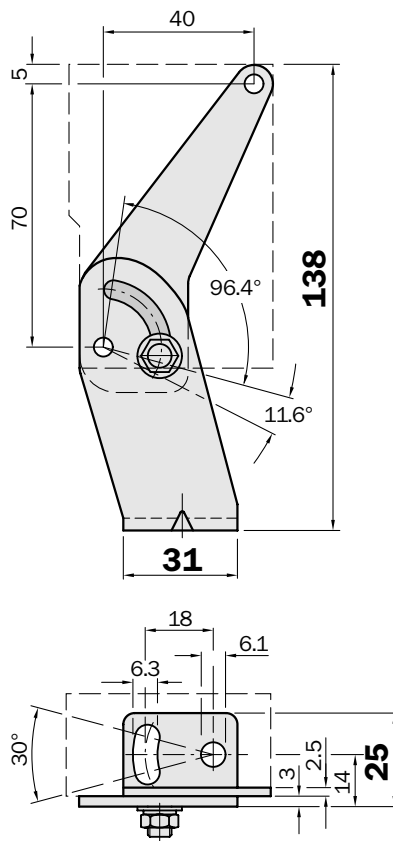
Mounting bracket for W 27-2

Type	Part no.
BEF-WN-W23	2 019 085

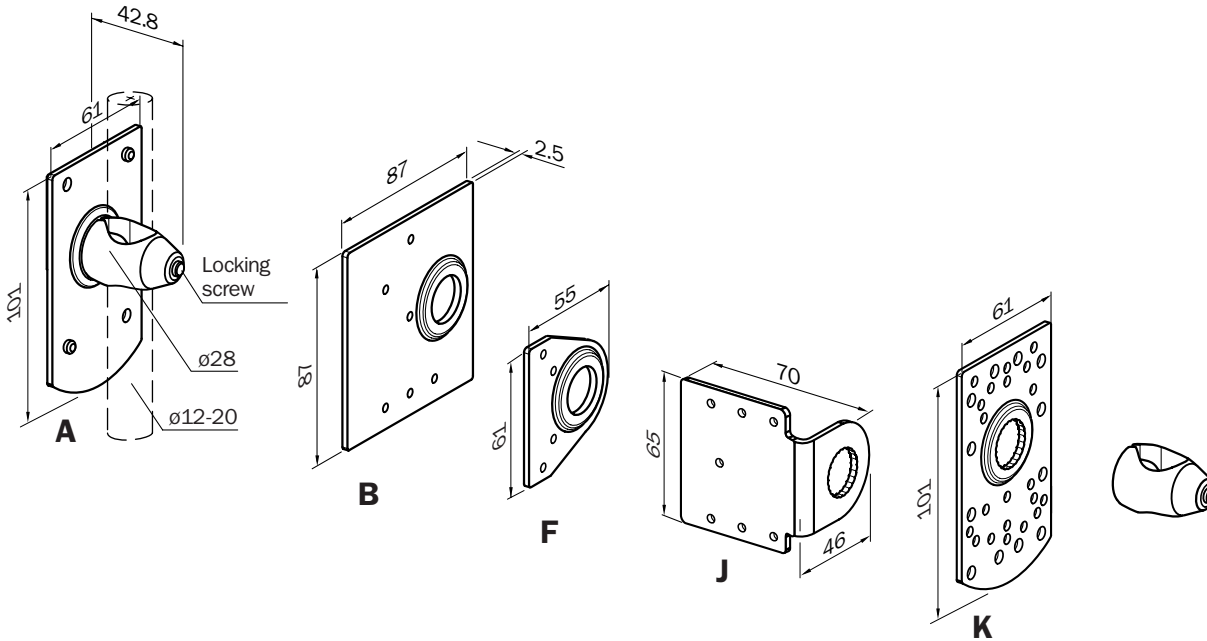


Mounting bracket for W 27-2

Type	Part no.
BEF-WN-W27	2 009 122



Universal bar clamps for sensors and reflectors



Mounting plates	Type	Part no.	for device/reflector type
A	BEF-KHS-A01	2 022 458 ¹⁾²⁾	W 23, W 27-2
B	BEF-KHS-B01	2 022 459 ¹⁾²⁾	P 250, PL 30 A, PL 40 A, PL 50 A, PL 80 A, C 110
F	BEF-KHS-F01	2 022 463 ¹⁾²⁾	W 260, PL 20 A, P 250
J	BEF-KHS-J01	2 022 719 ¹⁾²⁾	PL 20 A, PL 40 A, PL 50 A, P 250, C 110
K	BEF-KHS-K01	2 022 718 ¹⁾	W 11, W 12-2, W 12L-2, W 14, W 18-2, W 23, W 24-2, W 27-2, W 30, W 32, W 34, W 36, KT 2, KT 5, KT 10, CS, LUT 3, DS 60, PL 20 A, PL 30 A, PL 40 A, PL 50 A, PL 80 A, P 250, C 110
	BEF-KHS-KH1	2 022 726	Clamp bracket rod mounting without attachment plate and mounting material

¹⁾ The order no. contains pole bracket and mounting material.

²⁾ Mounting plate does not contain threads; the sensor/reflector is mounted from the sensor-/reflector side with self-cutting screws.

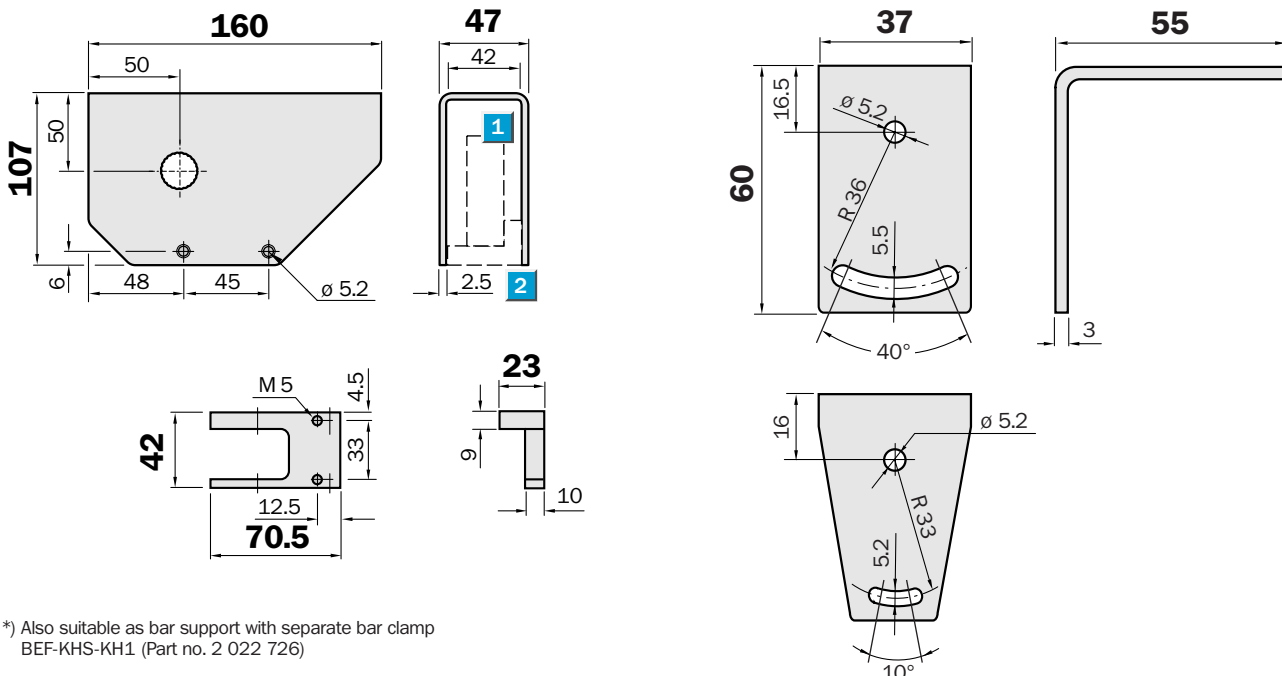
Special accessories

Weather protection hood for W 23, W 24-2, W 27-2, W 34, W 260 *)

Type	Part no.	1	2
OBW-KHS-M01	2 023 240	Sensor	Clamp with mounting material included with delivery

Mounting bracket for weather protection hood OBW-KHS-M01

Type	Part no.
BEF-WN-OBW	2 023 251



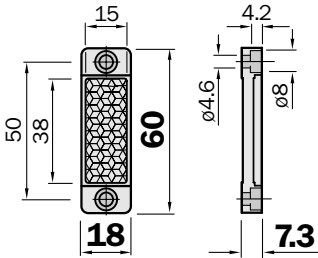
*) Also suitable as bar support with separate bar clamp BEF-KHS-KH1 (Part no. 2 022 726)

Dimensional drawings and order information

Plastic design for temperatures up to 65 °C

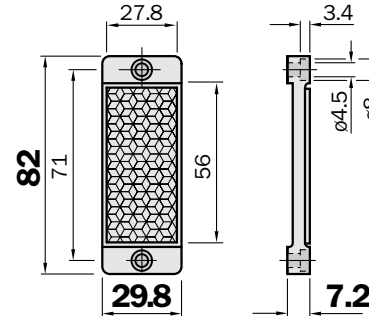
Reflector 20 x 40 mm

Type	Part no.
PL 20 A	1 012 719



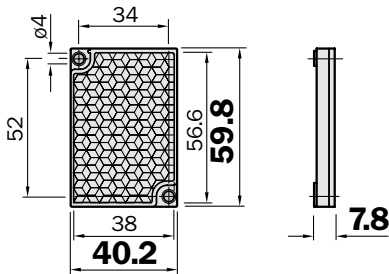
Reflector 30 x 50 mm

Type	Part no.
PL 30 A	1 002 314



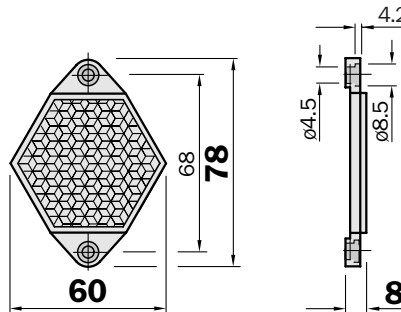
Reflector 40 x 60 mm

self-adhesive	
Type	Part no.
PL 40 A	1 012 720



Reflector, 6-sided

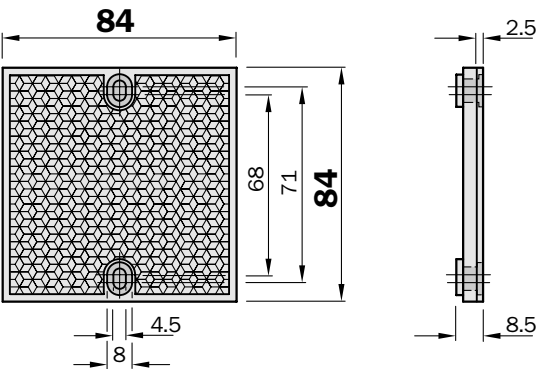
width across flats 48 mm	
Type	Part no.
PL 50 A	1 000 132



Also available with heating:
 Continuous heating: PL 50HK,
 part no. 1 011 545
 Regulated heating: PL 50HS,
 part no. 1 009 871

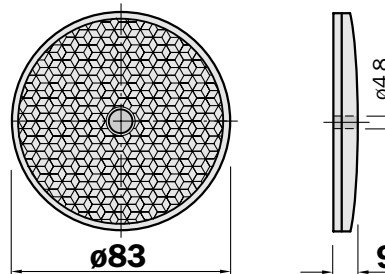
Reflector 80 x 80 mm

Type	Part no.
PL 80 A	1 003 865



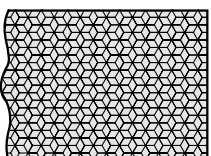
Reflector ø 83 mm, centre hole mounting

Type	Part no.
C 110	5 304 549



Reflective tape

Type	Part no.	
REF-DG-K	4 019 634	Cut to size
REF-DG	5 304 334	Sheet 749 x 914 mm



AS-i Clip

Technical data

Dimensions	48 x 34 x 14 mm
Current	Min. 5 mA/max. 120 mA
Voltage	Max. 50 V
Cable cross-section	0.24 mm ² /0.35 m ²
Enclosure rating	IP 52
Ambient temperature	Operation + 10 ... + 55 °C
	Storage - 25 ... + 75 °C

Order information

Type	Part no.
ASI-AD	2 016 755

Additional AS-i system components for standard sensors and sensors with integrated AS-i chip on request.

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