

W 24-2: Designed for Rough Use in Industry



The design is also user-friendly, which is proved by the easily accessible terminal chambers, the rotatable plug connection, easy alignment of the sensors thanks to visible red light and the different supply voltages, including two universal voltage versions for AC and DC power supply.

Different equipment types are available. The WS/WE 24-2 through-beam photoelectric switch will win you over with its extremely high range of up to 60 m. The photoelectric reflex switches also has a range up to 22 m, farther than most other equipment. And finally the adjustable WT 24-2 photoelectric proximity switches: their background suppression even at the maximum scanning distance of 1200 mm with red light and 2500 mm with the infrared model provide an incomparable measure of accuracy.

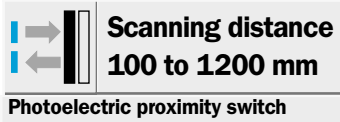
W

When the operating environment is especially rough or wet, the W 24-2 photoelectric switch series provides the required detection reliability. This is the result of a number of equipment features:

- Sturdy metal housing with enclosure rating IP 67
- Extremely high degree of insensitivity to ambient light
- Scratchproof front screen covers made of plastic
- Front screen heating.

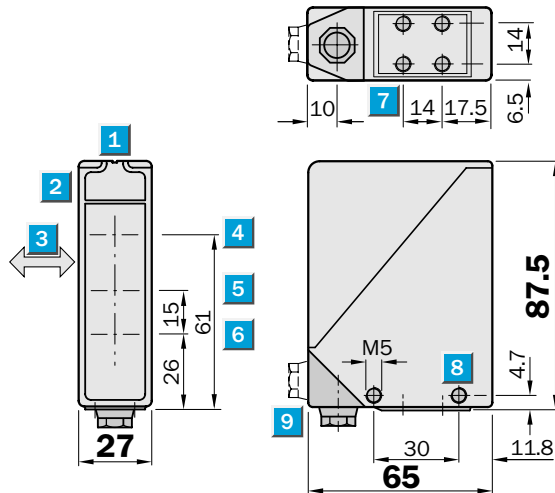
	Photoelectric proximity switches
	Photoelectric reflex switches
	Through-beam photoelectric switches

SICK



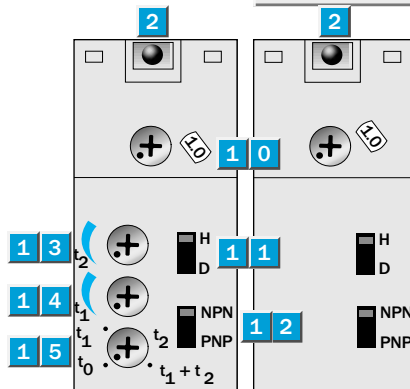
- Sturdy metal housing
- Red light
- Background suppression, can be set very precisely
- Equipment plug rotatable by 90°
- Front screen heating und selectable time delay, optional

Dimension illustration



Setting options

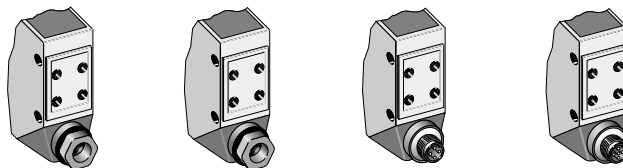
WT 24-2B 250	WT 24-2B 240
WT 24-2V 250	WT 24-2B 440
	WT 24-2V 540



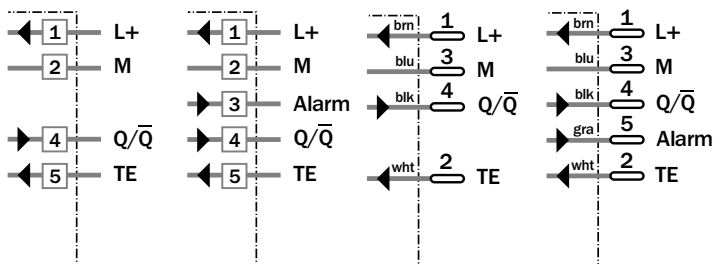
- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of material being scanned
- 4 Middle of optic axis, sender
- 5 Middle of optic axis, receiver at close range
- 6 Middle of optic axis, receiver at long range
- 7 M 5 threaded mounting hole, 6 mm deep
- 8 M 5 threaded mounting hole, through hole
- 9 PG screw fixing or plug rotatable by 90°
- 1 0 Scanning distance adjuster
- 1 1 Light/dark selector
- 1 2 NPN/PNP selector
- 1 3 Time control t_2 = OFF-delay
- 1 4 Time control t_1 = ON-delay
- 1 5 Time delay selector

Connection type

WT 24-2B 240	WT 24-2V 250	WT 24-2B 440	WT 24-2V 540
WT 24-2B 250			



Terminals	Terminals	4 pin, M 12	5 pin, M 12
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Accessories

- Cable receptacles
- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates



Technical data		WT 24-2	B 240	B 250	B 440	V 250	V 540						
Scanning distance	100 to 1200 mm, adjustable												
Light source ¹⁾	LED; red light												
Light spot diameter	Approx. 41 mm at a distance of 1,200 mm												
Supply voltage V_S	10 to 30 V DC ²⁾												
Ripple ³⁾	< 5 V _{pp}												
Current consumption ⁴⁾	≤ 50 mA												
	≤ 70 mA, front screen heating												
Switching outputs	PNP or NPN, Q or $\bar{Q}$												
Output current I_A max.	100 mA												
Response time ⁵⁾	≤ 500 μs												
Max. switching frequency ⁶⁾	1000/s												
VMA contamination signaling output	Alarm, PNP												
Time delay	Adjustable, 0.5 to 10 s												
Test input »TE«	Sender switched off												
Sender off	PNP or NPN: TE to 0 V												
Connection type	PG screw fixing												
	Plug												
VDE protection class ⁷⁾	☐												
Circuit protection ⁸⁾	A, B, C												
Enclosure rating	IP 67												
Ambient temperature	Operation -40 °C to +60 °C												
	Storage -40 °C to +75 °C												
Weight	Approx. 330 g												
Front screen heating													
Housing material	Zinc die-cast housing												

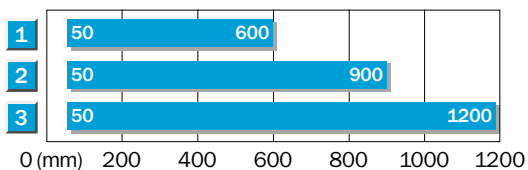
- 1) Average service life 100,000 h at $T_A = +25\text{ °C}$
 2) Limit values
 3) May not exceed or fall short of V_S tolerances

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

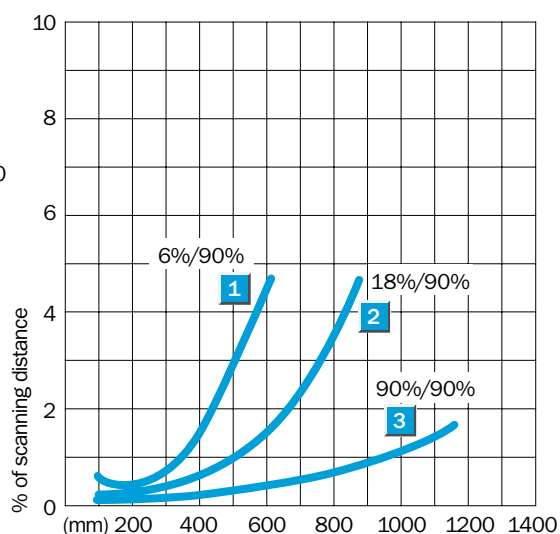
- 8) A = V_S connections reverse-polarity protected
 B = Outputs Q and $\bar{Q}$ short-circuit protected
 C = Interference pulse suppression

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

Scanning distance

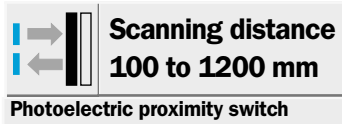


- 1) Scanning distance on black ⁹⁾
 2) Scanning distance on grey ⁹⁾
 3) Scanning distance on white ⁹⁾



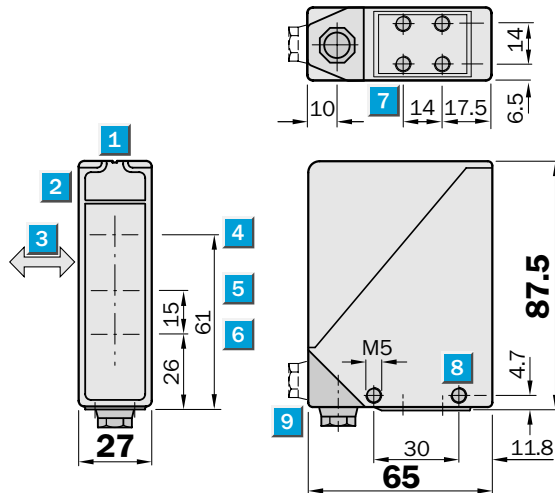
Order information

Type	Order no.
WT 24-2 B 240	1 017 813
WT 24-2 B 250	1 017 883
WT 24-2 B 440	1 016 934
WT 24-2 V 250	1 017 887
WT 24-2 V 540	1 017 888



- Sturdy metal housing
- Red light
- Background suppression, can be set very precisely
- PG screw fixing rotatable by 90°
- Front screen heating und selectable time delay, optional

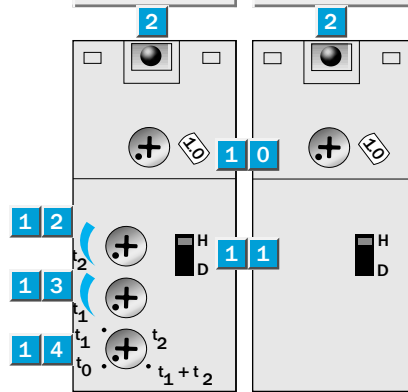
Dimension illustration



Setting options

WT 24-2R 250

WT 24-2R 240



- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of material being scanned
- 4 Middle of optic axis, sender
- 5 Middle of optic axis, receiver at close range
- 6 Middle of optic axis, receiver at long range
- 7 M 5 threaded mounting hole, 6 mm deep
- 8 M 5 threaded mounting hole, through hole
- 9 PG screw fixing rotatable by 90°
- 1 0 Scanning distance adjuster
- 1 1 Light/dark selector
- 1 2 Time control t_2 = OFF-delay
- 1 3 Time control t_1 = ON-delay
- 1 4 Time delay selector

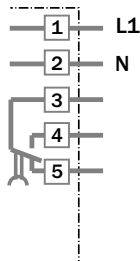
Connection type

WT 24-2R 240

WT 24-2R 250



Terminals



Accessories

- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates



Technical data		WT 24-2	R 240	R 250									
Scanning distance	100 to 1200 mm, adjustable												
Light source ¹⁾	LED; red light												
Light spot diameter	Approx. 40 mm at a distance of 1,200 mm												
Supply voltage V_s	12 to 240 V DC ²⁾ , 24 to 240 V AC ³⁾												
Power consumption without heating	< 2 VA												
Power consumption with heating	< 3 VA												
Switching output	Relay SPDT isolated ⁴⁾												
Max. switching voltage	250 V AC/120 V DC												
Max. switching current	4 A/240 V AC, 4 A/24 V DC												
Max. switching capacity	1000 VA AC/100 VA DC												
Response time	≤ 10 ms												
Max. switching frequency ⁵⁾	10/s												
Time delay	Adjustable, 0.5 to 10												
Connection type	PG screw fixing												
VDE protection class ⁶⁾	□												
Circuit protection ⁷⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature	Operation -40 °C to +60 °C												
	Storage -40 °C to +75 °C												
Weight	Approx. 330 g												
Front screen heating													
Housing material	Zinc die-cast housing												

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

2) Limit values

3) ± 10 %

4) Provide suitable spark suppression for
inductive or capacitive loads

5) With light/dark ratio 1:1

6) Withstand voltage 250 V AC/DC

7) A = V_s connections reverse-polarity
protected

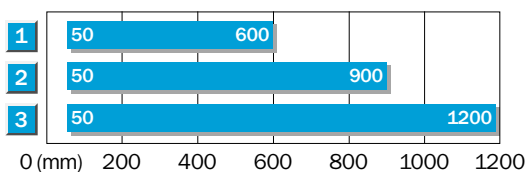
C = Interference pulse suppression

8) Black = 6 % remission

Grey = 18 % remission

White = 90 % remission

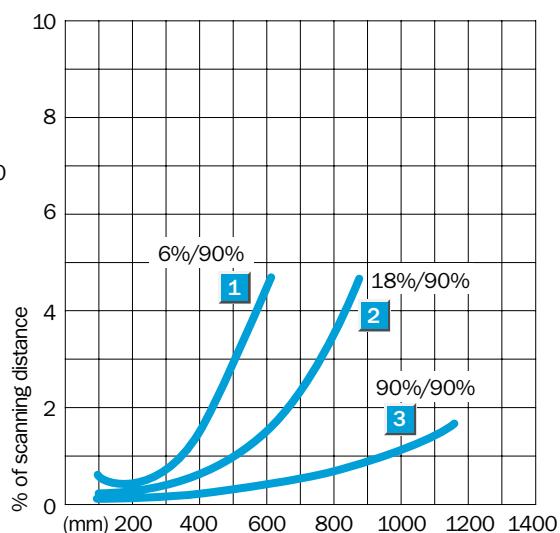
Scanning distance



1 Scanning distance on black ⁸⁾

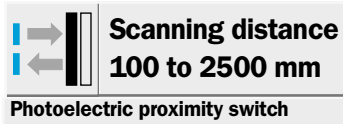
2 Scanning distance on grey ⁸⁾

3 Scanning distance on white ⁸⁾



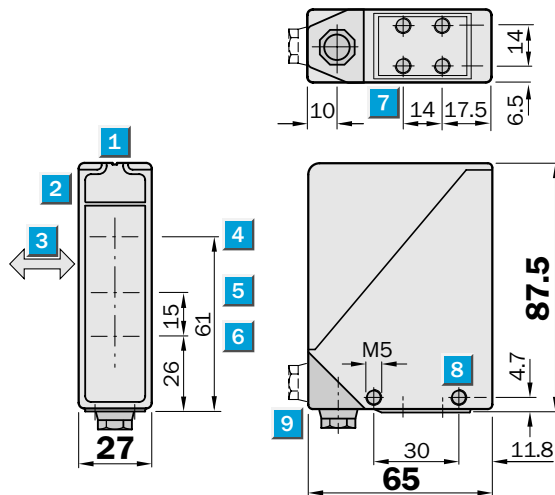
Order information

Type	Order no.
WT 24-2R 240	1 017 854
WT 24-2R 250	1 016 820



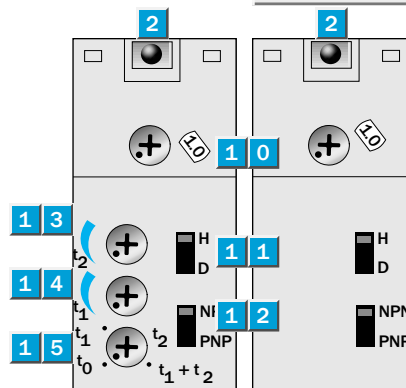
- Sturdy metal housing
- Infrared light
- Background suppression, can be set very precisely
- PG screw fixing or equipment plug rotatable by 90°
- Front screen heating and selectable time delay, optional

Dimension illustration



Setting options

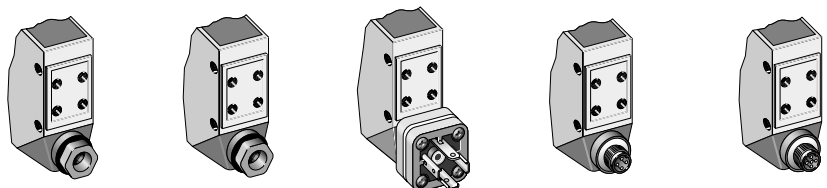
WT 24-2B 220	WT 24-2B 210
WT 24-2B 420	WT 24-2B 313
WT 24-2V 220	WT 24-2B 410
	WT 24-2V 510



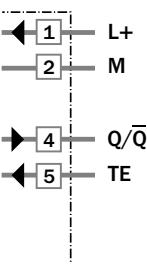
- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of material being scanned
- 4 Middle of optic axis, sender
- 5 Middle of optic axis, receiver at short range
- 6 Middle of optic axis, receiver at long range
- 7 M 5 threaded mounting hole, 6 mm deep
- 8 M 5 threaded mounting hole, through hole
- 9 PG screw fixing or plug rotatable by 90°

Connection type

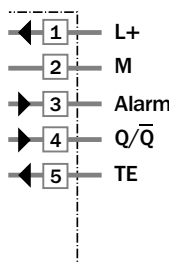
WT 24-2B 210	WT 24-2V 220	WT 24-2B 313	WT 24-2B 410	WT 24-2V 510
WT 24-2B 220			WT 24-2B 420	



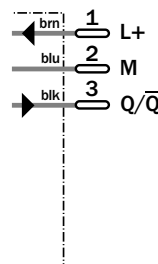
Terminals



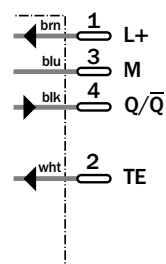
Terminals



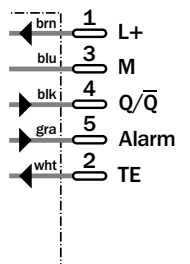
3 pin



4 pin, M 12



5 pin, M 12



Accessories

- Cable receptacles
- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates

Technical data		WT 24-2	B 210	B 220	B 313	B 410	B 420	V 220	V 510			
Scanning distance	100 to 2500 mm, adjustable											
Light source ¹⁾	LED; infrared											
Light spot diameter	Approx. 80 mm at a distance of 2,500 mm											
Supply voltage V_s	10 to 30 V DC ²⁾											
Ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	≤ 50 mA											
	≤ 70 mA, front screen heating											
Switching outputs	PNP or NPN, Q or $\bar{Q}$											
Output current I_A max.	100 mA											
Response time ⁵⁾	≤ 500 μs											
Max. switching frequency ⁶⁾	1000/s											
VMA contamination signaling output	Alarm, PNP											
Time delay	Adjustable, 0.5 to 10											
Test input »TE«	Sender switched off											
Sender off	PNP or NPN: TE to 0 V											
Connection type	PG screw fixing											
	Plug											
VDE protection class ⁷⁾	☐											
Circuit protection ⁸⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature	Operation -40 °C ... +60 °C											
	Storage -40 °C ... +75 °C											
Weight	Approx. 330 g											
Front screen heating												
Housing material	Zinc die-cast housing											

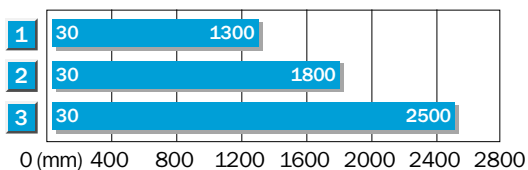
- 1) Average service life 100,000 h at $T_A = +25\text{ °C}$
 2) Limit values
 3) May not exceed or fall short of V_s tolerances

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

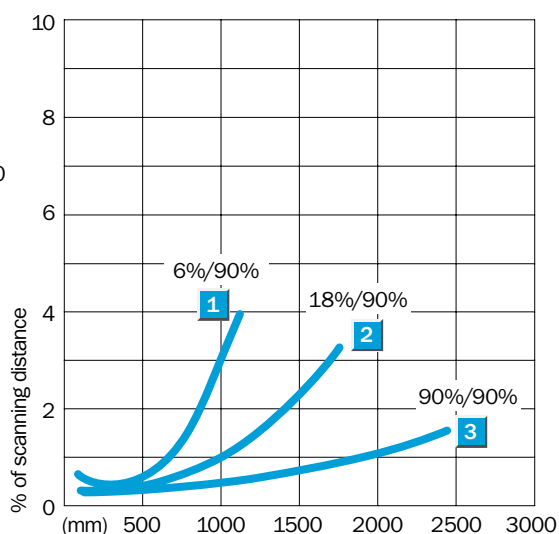
- 8) A = V_s connections reverse-polarity protected
 B = Outputs Q and $\bar{Q}$ short-circuit protected
 C = Interference pulse suppression

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

Scanning distance

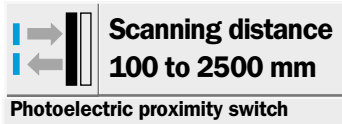


- 1 Scanning distance on black ⁹⁾
 2 Scanning distance on grey ⁹⁾
 3 Scanning distance on white ⁹⁾



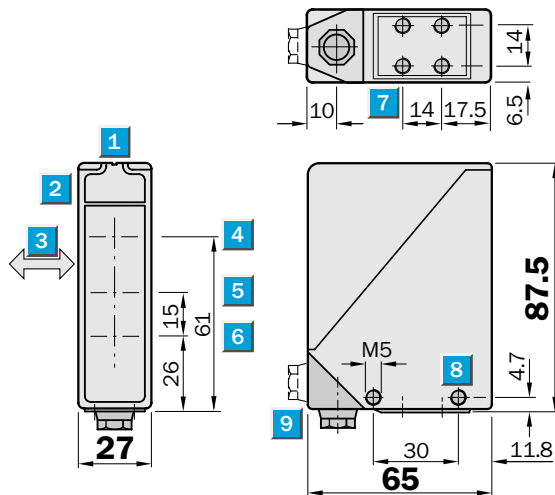
Order information

Type	Order no.
WT 24-2B 210	1 016 931
WT 24-2B 220	1 017 882
WT 24-2B 313	1 017 884
WT 24-2B 410	1 016 933
WT 24-2B 420	1 017 885
WT 24-2V 220	1 017 886
WT 24-2V 510	1 017 855



- Sturdy metal housing
- Infrared light
- Background suppression, can be set very precisely
- PG screw fixing rotatable by 90°
- Front screen heating and selectable time delay, optional

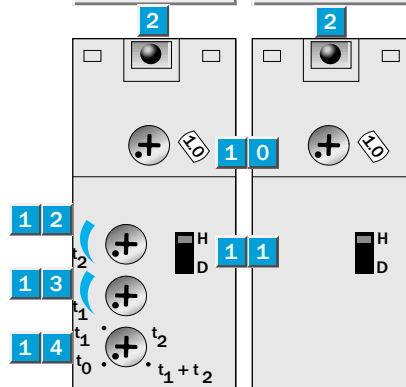
Dimension illustration



Setting options

WT 24-2R 220

WT 24-2R 210

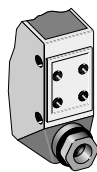


- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of the material being scanned
- 4 Middle of optic axis, sender
- 5 Middle of optic axis, receiver at close range
- 6 Middle of optic axis, receiver at long range
- 7 M5 threaded mounting hole, 6 mm deep
- 8 M5 threaded mounting hole, through hole
- 9 PG screw fixing rotatable by 90°
- 1.0 Scanning distance adjuster
- 1.1 Light/dark selector
- 1.2 Time control t_2 = OFF-delay
- 1.3 Time control t_1 = ON-delay
- 1.4 Time delay switch

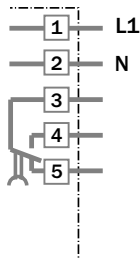
Connection type

WT 24-2R 210

WT 24-2R 220



Terminals



Accessories

- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates



Technical data		WT 24-2	R 210	R 220								
Scanning distance	100 to 2500 mm, adjustable											
Light source ¹⁾	LED; infrared											
Light spot diameter	Approx. 80 mm at a distance of 2,500 mm											
Supply voltage V_S	12 to 240 V DC ²⁾ , 24 to 240 V AC ³⁾											
Power consumption without heating	< 2 VA											
Power consumption with heating	< 3 VA											
Switching output	Relay SPDT isolated ⁴⁾											
Max. switching voltage	250 V AC/120 V DC											
Max. switching current	4 A/240 V AC, 4 A/24 V DC											
Max. switching capacity	1000 VA AC/100 VA DC											
Response time	≤ 10 ms											
Max. switching frequency ⁵⁾	10/s											
Time delay	Adjustable, 0.5 to 10											
Connection type	PG screw fixing											
VDE protection class ⁶⁾	□											
Circuit protection ⁷⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature	Operation -40 °C to +60 °C											
	Storage -40 °C to +75 °C											
Weight	Approx. 330 g											
Front screen heating												
Housing material	Zinc die-cast housing											

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

2) Limit values

3) ± 10 %

4) Provide suitable spark suppression for
inductive or capacitive loads

5) With light/dark ratio 1:1

6) Withstand voltage 250 V AC/DC

7) A = V_S connections reverse-polarity
protected

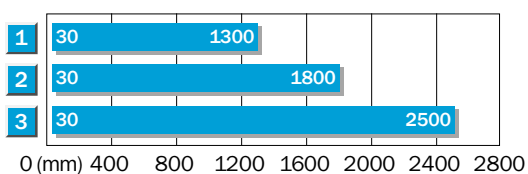
C = Interference pulse suppression

8) Black = 6 % remission

Grey = 18 % remission

White = 90 % remission

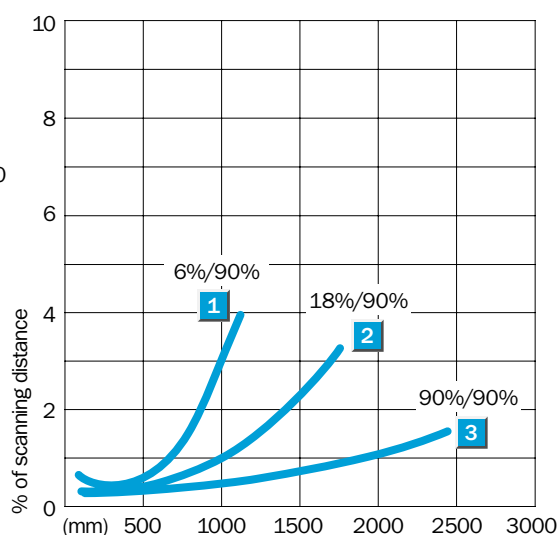
Scanning distance



1 Scanning distance on black ⁸⁾

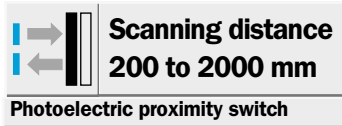
2 Scanning distance on grey ⁸⁾

3 Scanning distance on white ⁸⁾



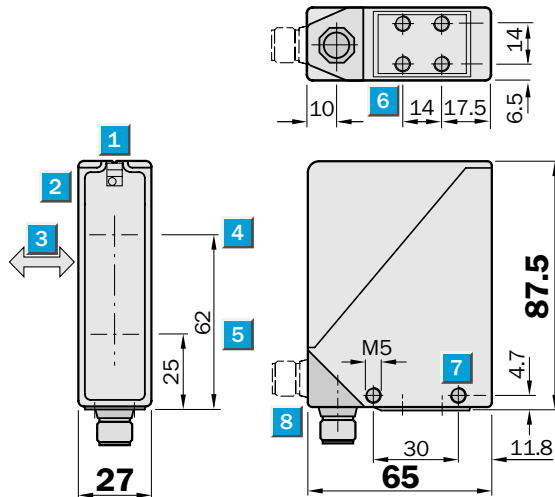
Order information

Type	Order no.
WT 24-2R 210	1 016 932
WT 24-2R 220	1 016 854



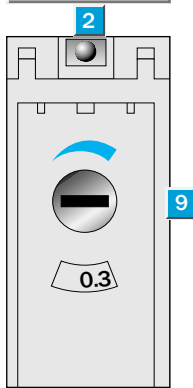
- Sturdy metal housing
- Infrared light
- Background suppression, adjustable
- Equipment plug rotatable by 90°

Dimension illustration



Setting options

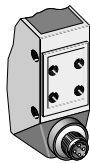
WT 24-2Z 4101



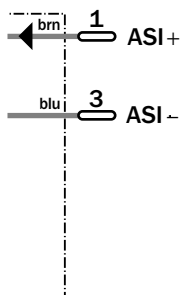
- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of the material being scanned
- 4 Middle of optic axis, sender
- 5 Middle of optic axis, receiver
- 6 M5 threaded mounting hole, 6 mm deep
- 7 M5 threaded mounting hole, through hole
- 8 Plug rotatable by 90°
- 9 Scanning distance adjuster

Connection type

WT 24-2Z 4101



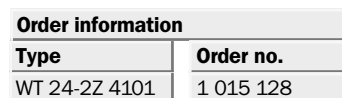
4 pin, M 12

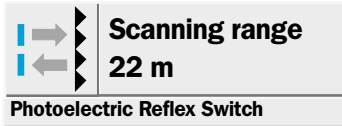


Accessories

- Cable receptacles
- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates

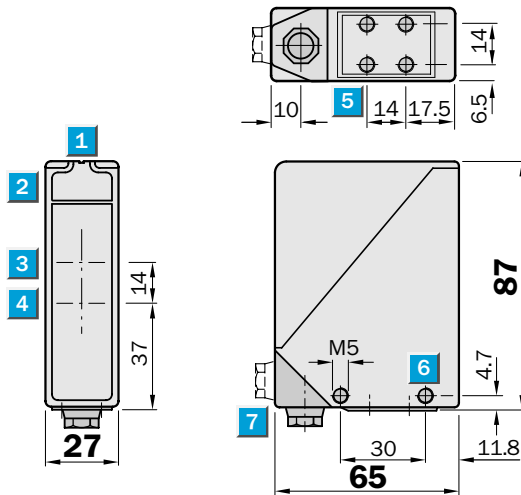
* Default setting = 1





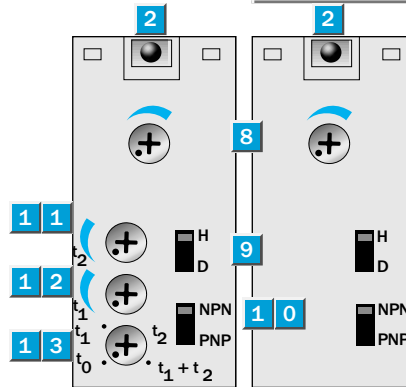
- Sturdy metal housing
- High operating reserve in visible red light
- PG screw fixing or equipment plug rotatable by 90°
- Front screen heating and selectable time delay, optional

Dimension illustration



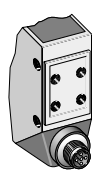
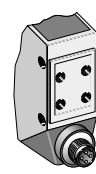
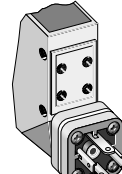
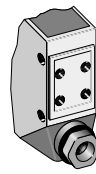
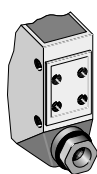
Setting options

WL 24-2B 240	WL 24-2B 230
WL 24-2B 440	WL 24-2B 333
	WL 24-2B 430
	WL 24-2V 230
	WL 24-2V 530



Connection type

WL 24-2B 230	WL 24-2V 230	WL 24-2B 333	WL 24-2B 430	WL 24-2V 530
WL 24-2B 240			WL 24-2B 440	



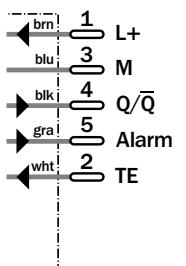
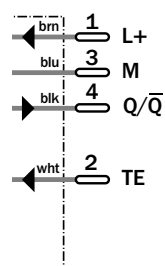
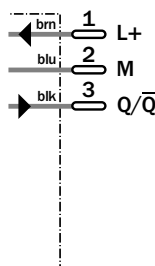
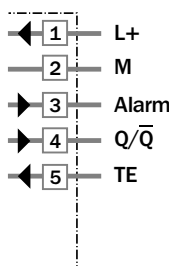
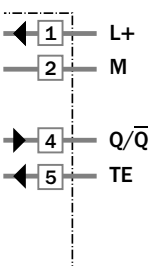
Terminals

Terminals

3 pin

4 pin, M 12

5 pin, M 12



Accessories

- Cable receptacles
- Reflectors
- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates

Technical data		WL 24-2	B 230	B 240	B 333	B 430	B 440	V 230	V 530			
Scanning range , typ. max./on reflector	22 m/on PL 80 A											
Sensitivity	Adjustable											
Light source³⁾, Light type	LED; red light											
Light spot diameter	Approx. 250 mm at a distance of 15 m											
Supply voltage V_s	10 to 30 V DC ²⁾											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾	≤ 50 mA											
	≤ 70 mA, front screen heating											
Switching outputs	PNP or NPN, Q or $\bar{Q}$											
Output current I_A max.	100 mA											
Response time ⁵⁾	≤ 500 μs											
Max. switching frequency ⁶⁾	1000/s											
VMA contamination signaling output	Alarm, PNP											
Time delay	Adjustable, 0.5 to 10 s											
Test input »TE«	Sender switched off											
Sender off	PNP or NPN: TE to 0 V											
Connection type	PG screw fixing											
	Plug											
VDE protection class⁷⁾	☐											
Circuit protection⁸⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature	Operation –40 °C to +60 °C											
	Storage –40 °C to +75 °C											
Weight	Approx. 330 g											
Front screen heating												
Polarizing filter												
Housing material	Zinc die-cast housing											

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

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

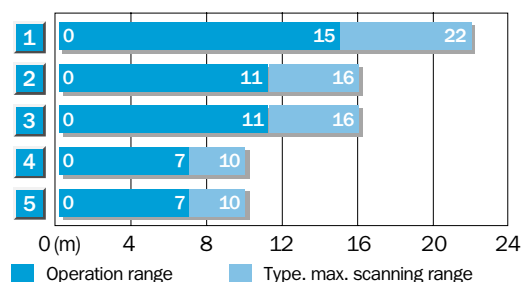
7) Withstand voltage 50 V DC

8) A = V_s connections reverse-polarity
protected

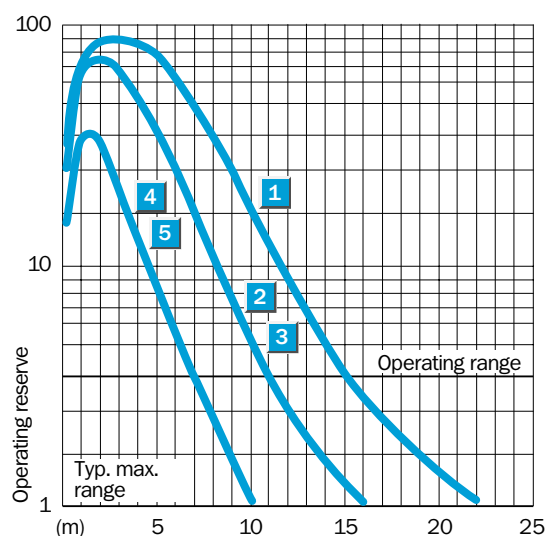
B = Outputs Q and $\bar{Q}$ short-circuit
protected

C = Interference pulse suppression

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0–15 m
2 PL 50 A	0–11 m
3 PL 40 A	0–11 m
4 PL 30 A	0–7 m
5 PL 20 A	0–7 m



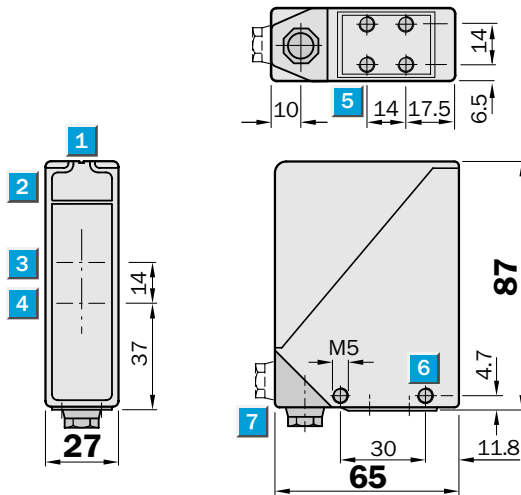
Order information

Type	Order no.
WL 24-2B 230	1 015 852
WL 24-2B 240	1 017 859
WL 24-2B 333	1 017 878
WL 24-2B 430	1 017 860
WL 24-2B 440	1 017 879
WL 24-2V 230	1 017 880
WL 24-2V 530	1 017 881

	Scanning range
	22 m
Photoelectric Reflex Switch	

- Sturdy metal housing
- High operating reserve in visible red light
- PG screw fixing rotatable by 90°
- Front screen heating and selectable time delay, optional

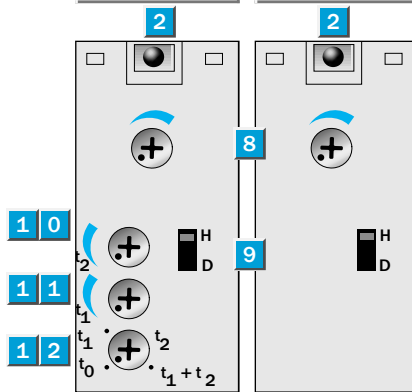
Dimension illustration



Setting options

WL 24-2R 240

WL 24-2R 230



- 1 Alignment sight
- 2 Led signal strength indicator
- 3 Middle of optic axis, sender
- 4 Middle of optic axis, receiver
- 5 M5 threaded mounting hole, 6 mm deep
- 6 M5 threaded mounting hole, through hole
- 7 PG screw fixing rotatable by 90°
- 8 Sensitivity control
- 9 Light/dark selector
- 1 0 Time control t_2 = OFF-delay
- 1 1 Time control t_1 = ON-delay
- 1 2 Time delay switch

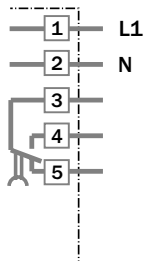
Connection type

WL 24-2R 230

WL 24-2R 240



Terminals



Accessories

- Reflectors
- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates

Technical data		WL 24-2	R 230	R 240								
Scanning range , typ. max./on reflector	22 m/on PL 80 A											
Sensitivity	Adjustable											
Light source ¹⁾	LED; red light											
Light spot diameter	Approx. 250 mm at a distance of 15 m											
Supply voltage V_S	12 to 240 V DC ²⁾ , 24 to 240 V AC ³⁾											
Power consumption without heating	< 2 VA											
Power consumption with heating	< 3 VA											
Switching output	Relay SPDT isolated ⁴⁾											
Max. switching voltage	250 V AC/120 V DC											
Max. switching current	4 A/240 V AC, 4 A/100VA DC											
Max. switching capacity	1000 VA AC/100 VA DC											
Response time ⁵⁾	≤ 10 ms											
Max. switching frequency ⁶⁾	10/s											
Time delay	Adjustable, 0.5 to 10 s											
Connection type	PG screw fixing											
VDE protection class ⁷⁾	□											
Circuit protection ⁸⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature	Operation -40 °C to +60 °C Storage -40 °C to +75 °C											
Weight	Approx. 330 g											
Front screen heating												
Polarizing filter												
Housing material	Zinc die-cast housing											

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

2) Limit values

3) ± 10 %

4) Provide suitable spark suppression
for inductive or capacitive loads

5) Signal flight time for ohmic loads

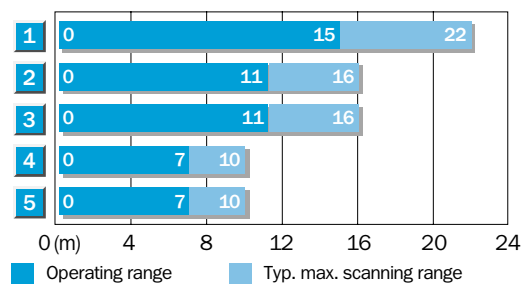
6) With light/dark ratio 1:1

7) Withstand voltage 250 V UC

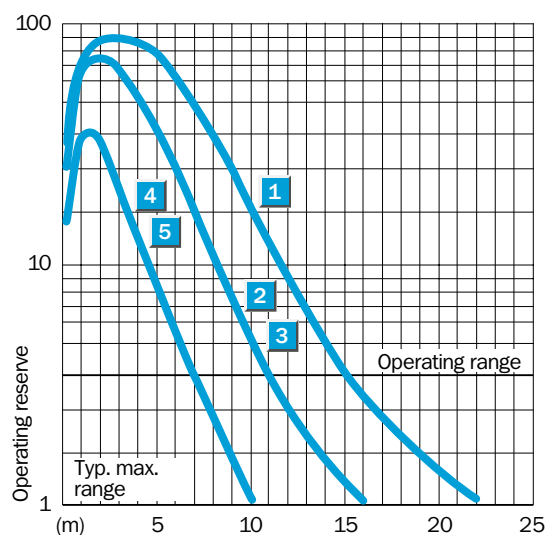
8) A = V_S connections reverse-polarity
protected

C = Interference pulse suppression

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0–15 m
2 PL 50 A	0–11 m
3 PL 40 A	0–11 m
4 PL 30 A	0–7 m
5 PL 20 A	0–7 m



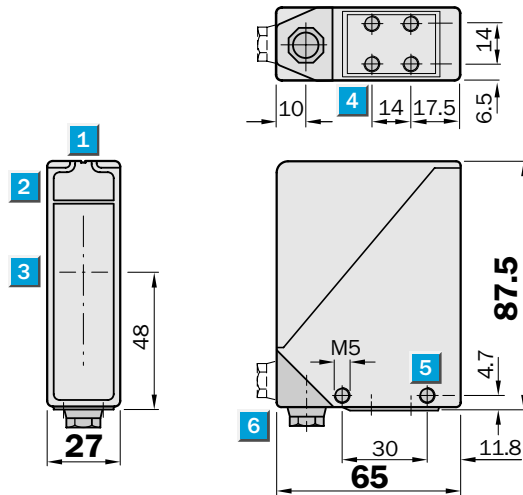
Order information

Type	Order no.
WL 24-2R 230	1 017 857
WL 24-2R 240	1 017 858



- Sturdy metal housing
- High operating reserve in visible red light
- PG screw fixing or equipment plug rotatable by 90°
- Front screen heating and selectable time delay, optional

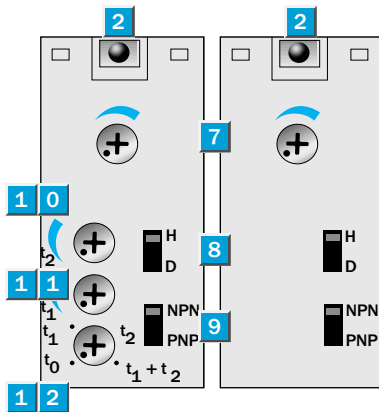
Dimension illustration



Setting options

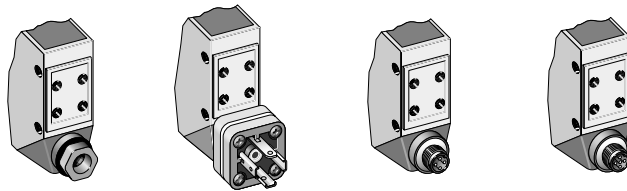
WS/WE 24-2B 440	WS/WE 24-2B 230
WS/WE 24-2B 240	WS/WE 24-2B 333
	WS/WE 24-2B 430
	WS/WE 24-2V 530

- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Middle of optic axis
- 4 M5 threaded mounting hole, 6 mm deep
- 5 M5 threaded mounting hole, through hole
- 6 PG screw fixing or plug rotatable by 90°
- 7 Sensitivity control
- 8 Light/dark selector
- 9 NPN/PNP selector
- 1 0 Time control t_2 = OFF-delay
- 1 1 Time control t_1 = ON-delay
- 1 2 Time delay switch



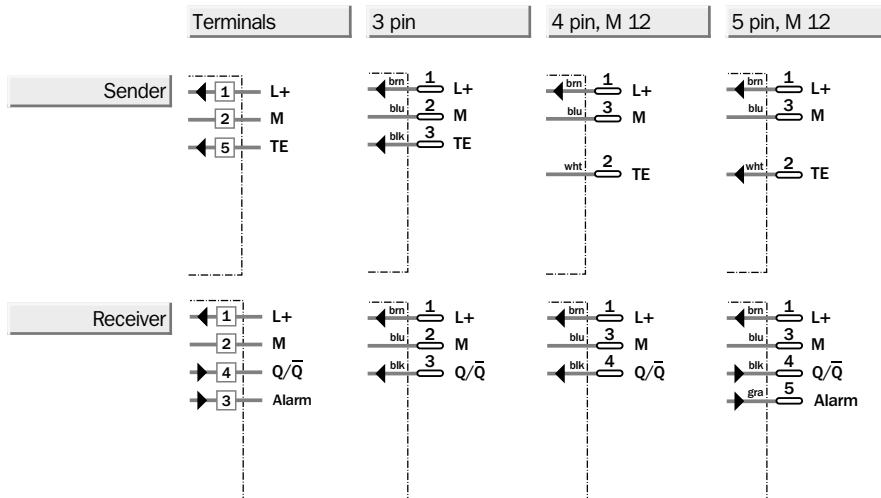
Connection type

WS/WE 24-2B 230	WS/WE 24-2B 333	WS/WE 24-2B 430	WS/WE 24-2V 530
WS/WE 24-2B 240		WS/WE 24-2B 440	



Accessories

- Cable receptacles
- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates

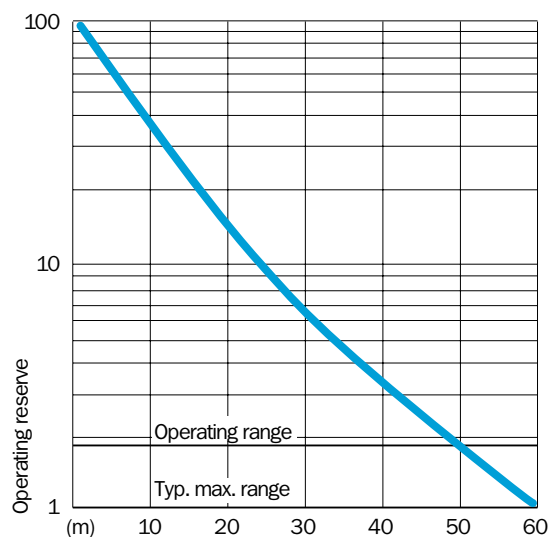
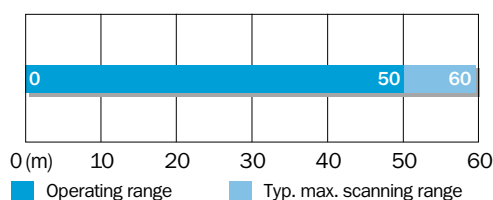


Technical data		WS/WE 24-2	B 230	B 240	B 333	B 430	B 440	V 530				
Scanning range, typ. max.	0 to 60 m											
Sensitivity	Adjustable											
Light source ¹⁾	LED; red light											
Light spot diameter	600 mm at a distance of 50 m											
Angle of dispersion/reception	1°/2.5°											
Supply voltage V_s	10 to 30 V DC ²⁾											
Ripple ³⁾	< 5 V _{PP}											
Current consumption ⁴⁾												
Sender without heating	≤ 50 mA											
Sender with heating	≤ 70 mA											
Receiver without heating	40 mA											
Receiver with heating	60 mA											
Switching output	PNP or NPN, Q or $\bar{Q}$											
Output current I_A max.	100 mA											
Response time ⁵⁾	≤ 500 μs											
Max. switching frequency ⁶⁾	1000/s											
VMA contamination signaling output	Alarm, PNP											
Time delay	Adjustable, 0.5 to 10 s											
Test input »TE«	Sender switched off											
Sender off	PNP or NPN: TE to 0 V											
Connection type	Plug											
	PG screw fixing											
VDE protection class ⁷⁾	□											
Circuit protection ⁸⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature	Operation -40 °C to +60 °C											
	Storage -40 °C to +75 °											
Weight	Approx. 330 g											
Front screen heating												
Housing material	Zinc die-cast housing											

1) Average service life 100,000 h at $T_A = +25\text{ °C}$
 2) Limit values
 3) May not exceed or fall short of V_s tolerances
 4) Same values for WS and WE, without load
 5) Signal flight time for ohmic loads
 6) With light/dark ratio 1:1
 7) Withstand voltage 50 V DC
 8) A = V_s connections reverse-polarity protected

B = Outputs Q and $\bar{Q}$ short-circuit protected
 C = Interference pulse suppression

Operating range and operating reserve



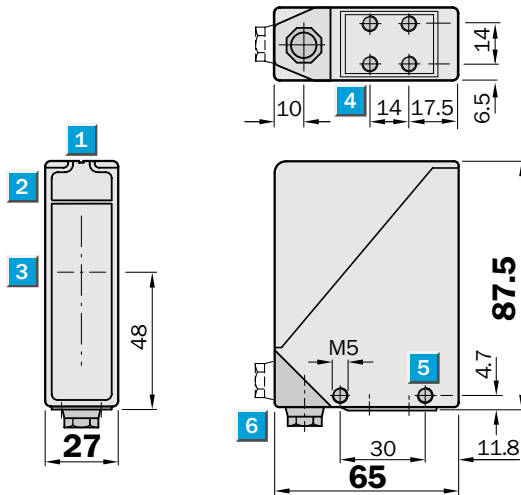
Order information

Type	Order no.
WS/WE 24-2B 230	1 017 861
WS/WE 24-2B 240	1 017 862
WS/WE 24-2B 333	1 017 874
WS/WE 24-2B 430	1 017 853
WS/WE 24-2B 440	1 017 875
WS/WE 24-2V 530	1 017 877



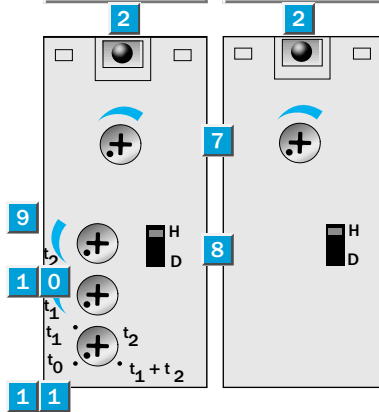
- Sturdy metal housing
- High operating reserve in visible red light
- PG screw fixing rotatable by 90°
- Front screen heating and selectable time delay, optional

Dimension illustration



Setting options

WS/WE 24-2R 240 WS/WE 24-2R 230

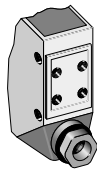


- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Middle of optic axis
- 4 M5 threaded mounting hole, 6 mm deep
- 5 M5 threaded mounting hole, through hole
- 6 PG screw fixing rotatable by 90°
- 7 Sensitivity control
- 8 Light/dark selector
- 9 Time control t_2 = OFF-delay
- 10 Time control t_1 = ON-delay
- 11 Time delay switch

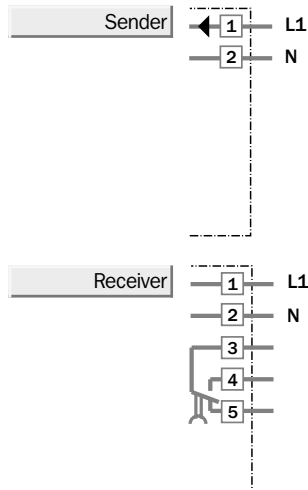
Connection type

WS/WE 24-2R 230

WS/WE 24-2R 240



Terminals



Accessories

- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates

Technical data		WS/WE 24-2	R 230	R 240									
Scanning range, typ. max.	0 to 60 m												
Sensitivity	Adjustable												
Light source ¹⁾	LED; red light												
Light spot diameter	Approx. 600 mm at a distance of 50 m												
Angle of dispersion/angle of reception	1°/2.5°												
Supply voltage V_S	12 to 240 V DC ²⁾ , 24 to 240 V AC ³⁾												
Power consumption without heating	< 2 VA												
Power consumption with heating	< 3 VA												
Switching output	Relay SPDT isolated ⁴⁾												
Max. switching voltage	250 V AC/120 V DC												
Max. switching current	4 A/240 V AC, 4 A/100 V DC												
Max. switching capacity	1000 VA AC/100 VA DC												
Response time	≤ 10 ms												
Max. switching frequency ⁵⁾	10/s												
Time delay	Adjustable, 0.5 to 10 s												
Connection type	PG screw fixing												
VDE protection class ⁶⁾	□												
Circuit protection ⁷⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature	Operation -40 °C to +60 °C												
	Storage -40 °C to +75 °C												
Weight	Approx. 330 g												
Front screen heating													
Housing material	Zinc die-cast housing												

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

2) Limit values

3) ± 10 %

4) Provide suitable spark suppression for
inductive or capacitive loads

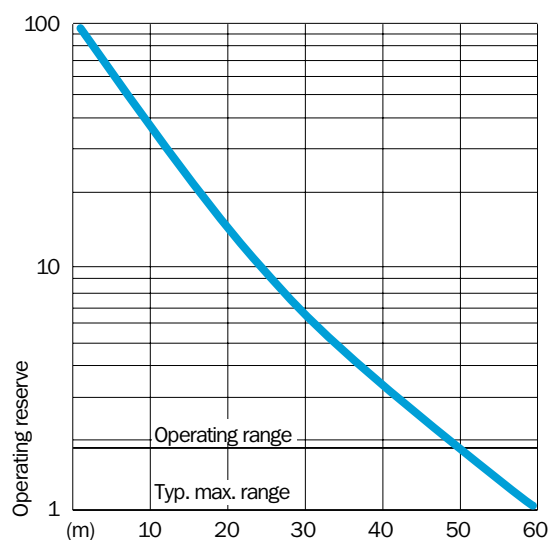
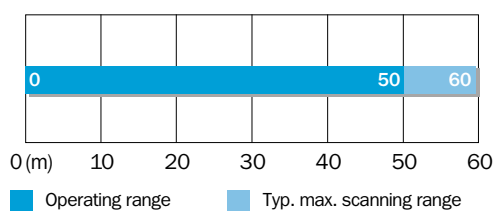
5) With light/dark ratio 1:1

6) Withstand voltage 250 V UC

7) A = V_S connections reverse-polarity
protected

C = Interference pulse suppression

Operating range and operating reserve



Order information

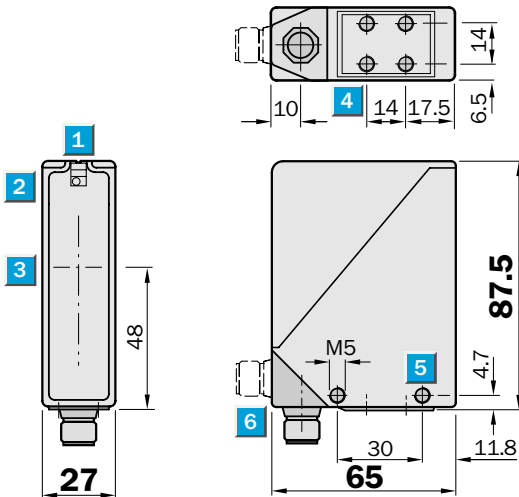
Type	Order no.
WS/WE 24-2R 230	1 017 863
WS/WE 24-2R 240	1 017 864

Scanning range
0 to 40 m

Through-beam photoelectric switch

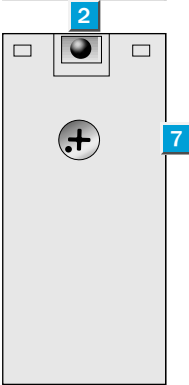
- Sturdy metal housing
- High operating reserve in visible red light
- Equipment plug rotatable by 90°

Dimension illustration



Setting options

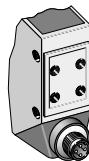
WS/WE 24-2Z 4301



- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Middle of optic axis
- 4 M5 threaded mounting hole, 6 mm deep
- 5 M5 threaded mounting hole, through hole
- 6 Plug rotatable by 90°
- 7 Sensitivity control

Connection type

WS/WE 24-2Z 4301

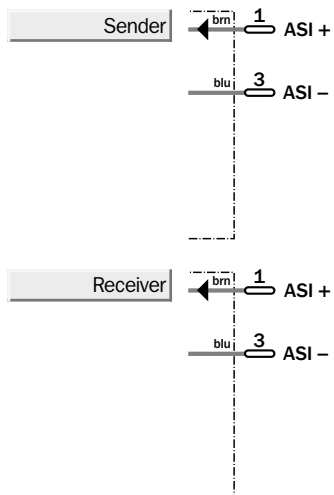


4 pin, M 12



Accessories

- Mounting brackets
- Dust shields
- Weather hoods
- Cooling plates



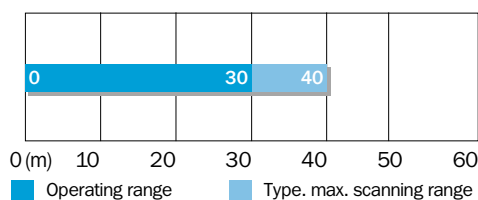
Technical data		WS/WE 24-2	Z 4301												
Scanning range , typ. max.	0 to 40 m														
Sensitivity	Adjustable														
Light source ¹⁾	LED; red light														
Light spot diameter	Approx. 450 mm at a distance of 25 m														
Angle of dispersion/angle of reception	1°/2.5°														
Supply voltage V_S	26.5 to 31.6 V DC ²⁾														
Ripple ³⁾	< 5 V _{PP}														
Current consumption ⁴⁾	≤ 50 mA														
Response time ⁵⁾	≤ 500 μs														
Max. switching frequency ⁶⁾	1000/s														
VMA contamination signaling output	Alarm														
Connection type	Plug														
VDE protection class ⁷⁾	□														
Circuit protection ⁸⁾	A, C														
Enclosure rating	IP 67														
Ambient temperature	Operation –25 °C to +55 °C														
	Storage –25 °C to +70 °C														
Weight	Approx. 330 g														
Housing material	Zinc die-cast housing														

WS 24-2 Assignment of data bits				(Host level)	WS 24-2 Assignment of parameter bits				(Host level)
D ₀ *	Test function	0 Sender on	Input		P ₀ *	NC	0	Parameter	
		1 Sender off					1		
D ₁	NC	0	Input		P ₁ *	NC	0	Parameter	
		1					1		
D ₂	NC	0	Input		P ₂ *	NC	0	Parameter	
		1					1		
D ₃	NC	0	Output		P ₃ *	NC	0	Parameter	
		1					1		

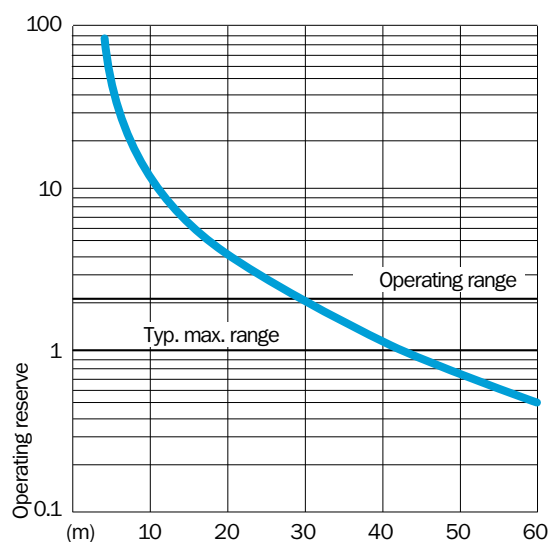
WE 24-2 assignment of data bits				(Host level)	WE 24-2 assignment of parameter bits				(Host level)
D ₀	Switching state	0 no reflectance	Input		P ₀ *	NC	0	Parameter	
		1 reflectance					1		
D ₁	VMA	0 active	Input		P ₁ *	Light/dark selector	0 dark-switching	Parameter	
		1 inactive					1 light-switching		
D ₂	NC	0	Input		P ₂ *	NC	0	Parameter	
		1					1		
D ₃ *	NC	0	Output		P ₃ *	NC	0	Parameter	
		1					1		

* Default setting = 1

Operating range and operating reserve



- 1) Average service life 100,000 h at $T_A = +25\text{ °C}$
- 2) Limit values
- 3) May not exceed or fall short of V_S tolerances
- 4) Same values for WS and WE, without load
- 5) Signal flight time for ohmic loads
- 6) With light/dark ratio 1:1
- 7) Withstand voltage 50 V DC
- 8) A = V_S connections reverse-polarity protected
C = Interference pulse suppression



Order information

Type	Order no.
WS/WE 24-2Z 4301	1 015 129

Dimension illustrations of cable receptacles

- Contact assignments according to EN 50044
- DC coding

Pin assignments

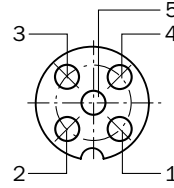
Pin 1 = brown

Pin 2 = white

Pin 3 = blue

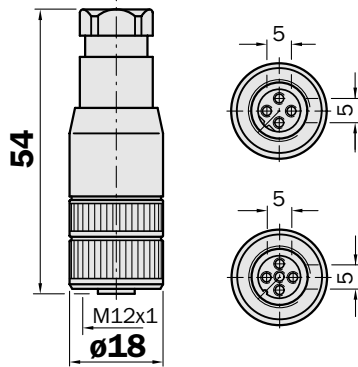
Pin 4 = black

Pin 5 = grey



M12 cable receptacles, 4 or 5 pin, straight

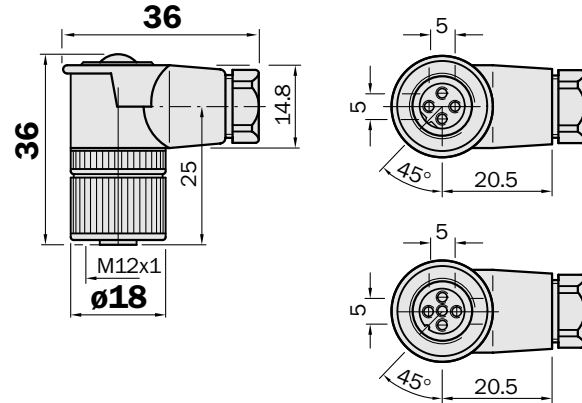
Pins	Type	Order no.	Cable lengths
4	DOS-1204-G	6 007 302	—
5	DOS-1205-G	6 007 719	—



Can be self-made for cables Ø 4.5 to 6.5 mm long

M12 cable receptacles, 4 or 5 pin, angled

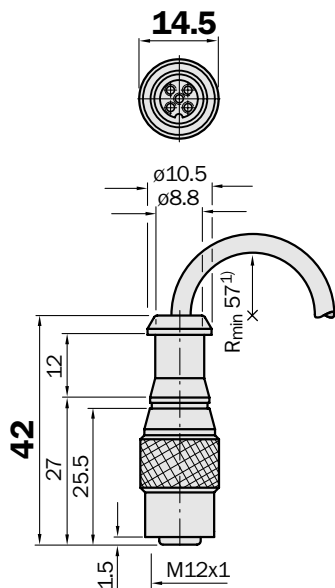
Pins	Type	Order no.	Cable lengths
4	DOS-1204-W	6 007 303	—
5	DOS-1205-W	6 007 720	—



Can be self-made for cables Ø 4.5 to 6.5 mm long

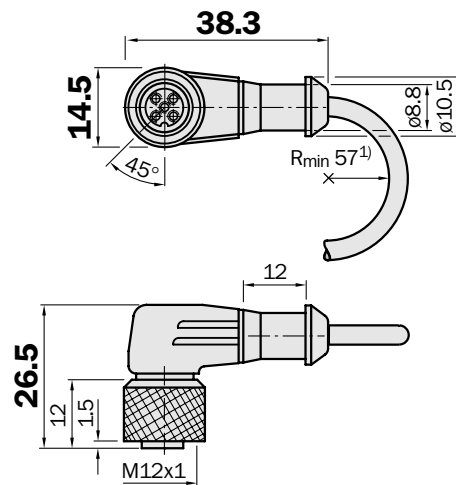
M12 cable receptacles, 4 or 5 pin, straight

Pins	Type	Order no.	Cable lengths
4	DOS-1204-G02M	6 009 382	2 m
4	DOS-1204-G05M	6 009 866	5 m
4	DOS-1204-G10M	6 010 543	10 m
5	DOS-1205-G02M	6 008 899	2 m
5	DOS-1205-G05M	6 009 868	5 m
5	DOS-1205-G10M	6 010 544	10 m



M12 cable receptacle, 4 or 5 pin, angled

Pins	Type	Order no.	Cable lengths
4	DOS-1204-W02M	6 009 383	2 m
4	DOS-1204-W05M	6 009 867	5 m
4	DOS-1204-W10M	6 010 541	10 m
5	DOS-1205-W02M	6 008 900	2 m
5	DOS-1205-W05M	6 009 869	5 m
5	DOS-1205-W10M	6 010 542	10 m

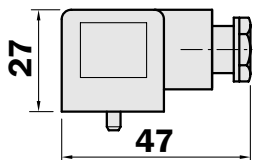
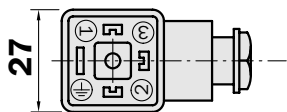


¹⁾ Minimum bending radius with dynamic use

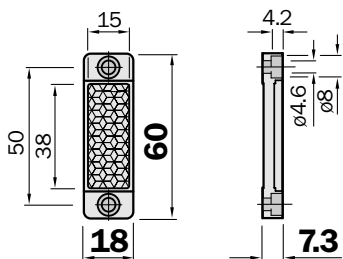
¹⁾ Minimum bending radius with dynamic use

Cable receptacle 3 pin, angled, DIN 43650

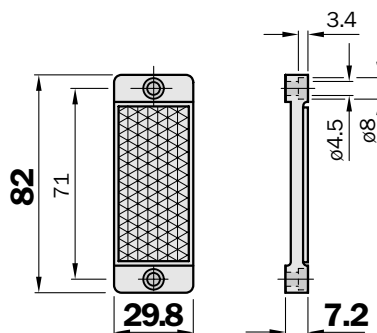
Pins	Type	Order no.	Cable lengths
3	DOS-0303-W	6 005 698	-

**Dimension illustrations of reflectors****Reflector 20 x 40 mm**

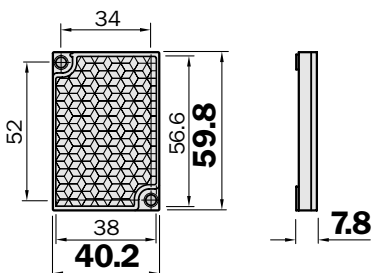
Type	Order no.
PL 20A	1 012 719

**Reflector 30 x 50 mm**

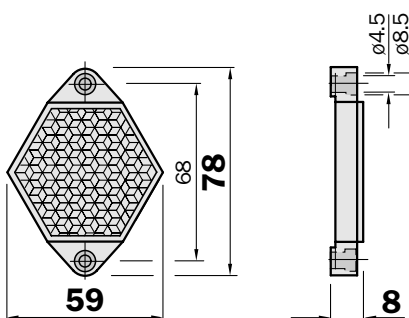
Type	Order no.
PL 30A	1 002 314

**Reflector 40 x 60 mm**

Type	Order no.
PL 40A	1 012 720

**Reflector hexagonal, SW 48 mm**

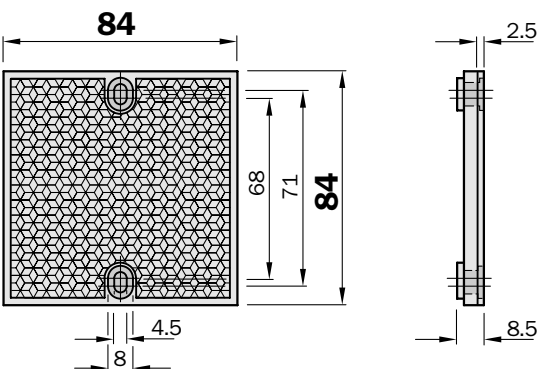
Type	Order no.
PL 50A	1 000 132



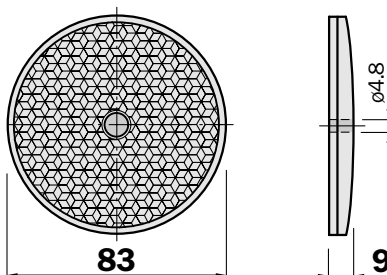
Also available in heatable model:
Continuous heating: PL 50HK,
Order no. 1 001 545
Regulated heating: PL 50HS,
Order no. 1 009 871

Reflector 80 x 80 mm

Type	Order no.
PL 80A	1 003 865

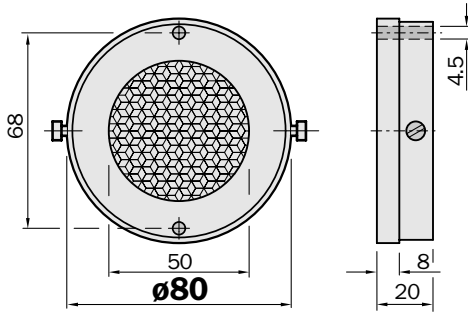
**Reflector ø 83 mm, center hole mounting**

Type	Order no.
C 110	5 304 549



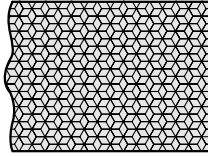
Reflector for ambient temperatures to 300 °C

Type	Order no.
SW 50	1 000 131



Reflective tape

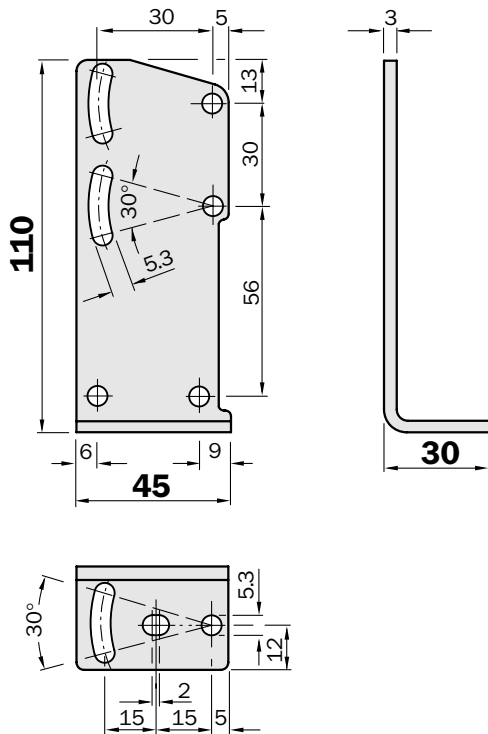
Type	Order no.	
REF-DG-K	4 019 634	fabricated
REF-DG	5 304 334	sheet 749 x 914 mm



Dimension illustrations of mounting brackets

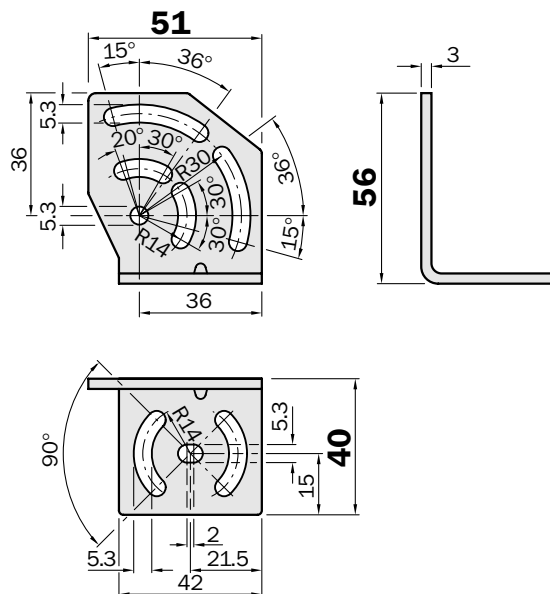
Mounting bracket, large

Type	Order no.
BEF-WG-W24	4 026 324



Mounting bracket, small

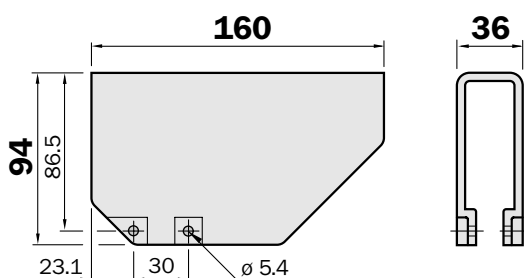
Type	Order no.
BEF-WK-W24	4 027 532



Special accessories

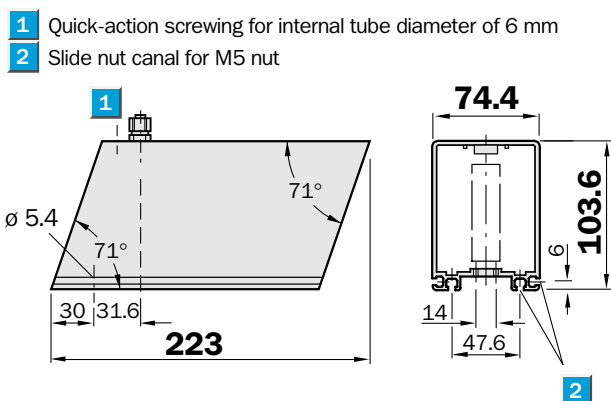
Weather hood

Type	Order no.
OBW-W24	2 015 070



Dust shield with air purge

Type	Order no.
OBS-W24	2 015 069

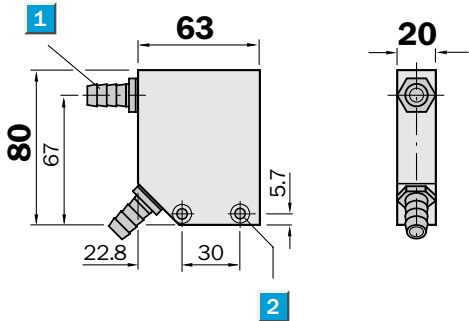


- 1 Quick-action screwing for internal tube diameter of 6 mm
- 2 Slide nut canal for M5 nut

Cooling plate for water cooling

Type	Order no.
OBS-W24	2 015 069

- 1 Hose nozzle R 1/4"
- 2 Borehole for M5 countersunk screw



Two pieces are required per photoelectric switch/proximity switch.

- 1 Cooling water temperature: approx. 20 °C

