

W23-2: Focussing on what is essential and economic

	Photoelectric proximity switches, BGB
	Photoelectric proximity switches, energetic
	Photoelectric reflex switches



for 24 V DC or 240 V AC operation, the integration into machinery or systems is made easy.

The indicator LEDs on the W23-2 offer 360° allround visibility for improved convenience during set up and operation.

Overview of W23-2:

- “Plug & Play” photoelectric reflex switch,
- Energetic sensor: easy Teach-in, ready to operate in less time,
- Faster monitoring with 360°, visibility for indicator LEDs.

Typical uses:

- Storage and conveying technology,
- Woodworking machinery,
- Doors/gates,
- Applications in automation processes.

The W23-2 series photoelectric switches are geared to applications where economic considerations are particularly important.

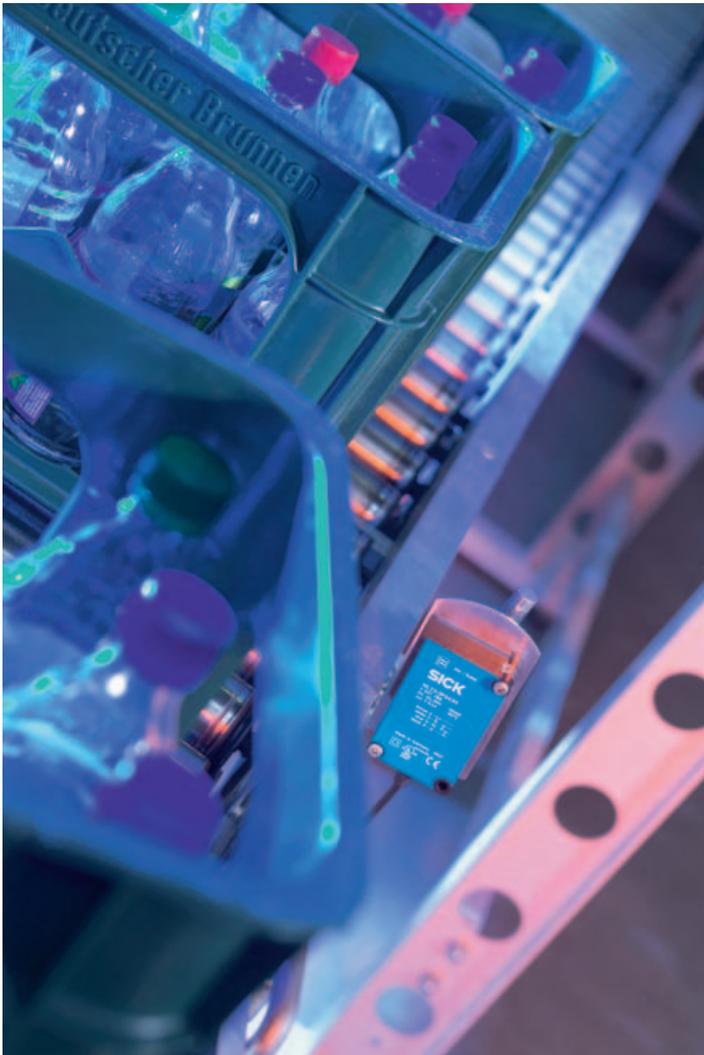
Easy to install and commission, they can be quickly aligned using the high visibility light spot and are ready to operate, enabling customers to “Plug and Play”.

The same applies to the energetic sensor. Within seconds, and at the touch of a button, it is adjusted to an object. Finally, the photoelectric proximity switch with background blanking completes the product range and also benefits from fast adjustment. With standardised connections and two versions

► WL23-2 photoelectric reflex switch reliably detects pallets while directing its visible red light on the reflector.



▼ WL23-2 photoelectric reflex switch detects very variable material to be conveyed, e.g. beverage boxes.



▼ Easy-Teach-in: Put energetic photoelectric proximity switch WTE23-2 quick and easily into function. Align on object, press Teach-in button 4 s, ready.

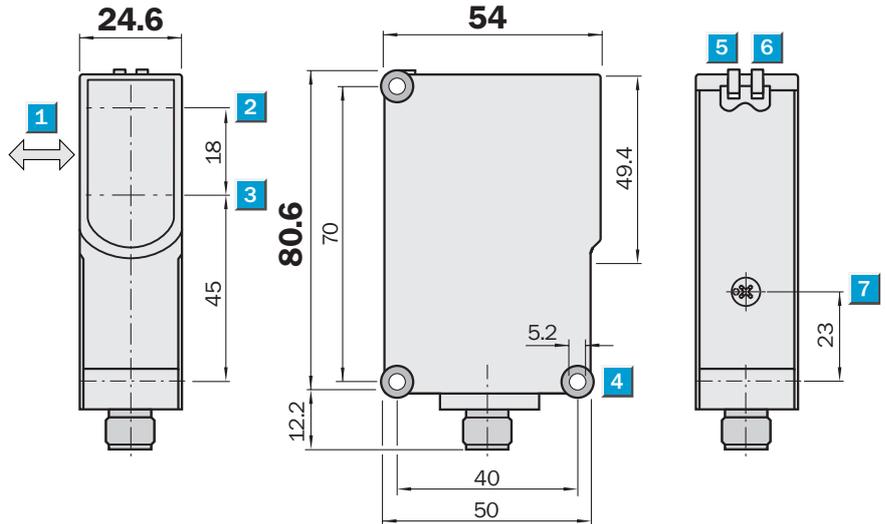


Photoelectric proximity switch, WT23-2, red light, BGB - DC


Scanning distance
 50 ... 800 mm
Photoelectric proximity switch

- Background blanking
- Red light, easier alignment
- 360° visibility on indicator LEDs, for faster monitoring

Dimensional drawing



Adjustments possible

WT23-2P2441
 WT23-2P3441

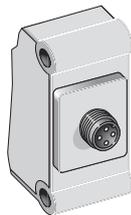


- 1 Standard direction of the material being scanned
- 2 Optical axis sender
- 3 Optical axis receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 LED indicator green; power on
- 6 LED indicator yellow; status of received light beam
- 7 Scanning distance adjustment: Poti

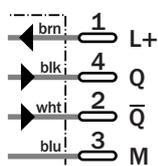


Connection type

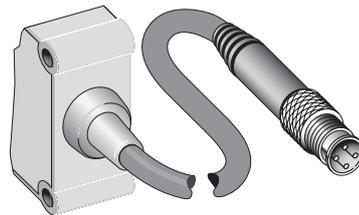
WT23-2P2441



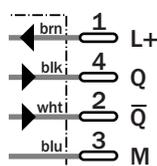
M12, 4-pin



WT23-2P3441



M12, 4-pin



See chapter Accessories

- Connector, M12, 4-pin
- Mounting systems
- Weather protection

Technical data		WT23-2	P2441	P3441										
Scanning distance typ. max.	50 ... 800 mm ¹⁾													
Operating distance	100 ... 800 mm ¹⁾													
Adjustment of operating distance	Potentiometer													
Light source, light type	LED, Red light, 660 nm ²⁾													
Light spot diameter	Approx. 30 mm at 800 mm distance													
Supply voltage V_s	10 ... 30 V DC ³⁾													
Ripple	≤ 5 V _{pp} ⁴⁾													
Power consumption	≤ 30 mA ⁵⁾													
Switching outputs	PNP antivalent													
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V													
Output current I _a max	≤ 100 mA													
Response time	≤ 2.5 ms ⁶⁾													
Switching frequency	200 Hz ⁷⁾													
Connection type	Connector, M12, 4-pin													
	Cable with plug, M12, 4-pin, PVC, 270 mm ⁸⁾													
VDE protection class	□ ⁹⁾													
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression													
Enclosure rating	IP 65													
Ambient temperature operation	-25 °C ... +60 °C													
Ambient temperature storage	-40 °C ... +70 °C													
Weight	Approx. 100 g													
	Approx. 120 g													
Housing material	ABS, PMMA													

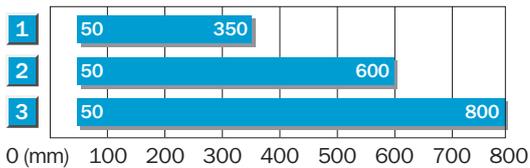
¹⁾ Object with 90% remission (based on standard white to DIN 5033)
²⁾ Average service life 100,000 h

at T_a = +25 °C
³⁾ Limit values, operation in short-circuit protected network max. 8 A

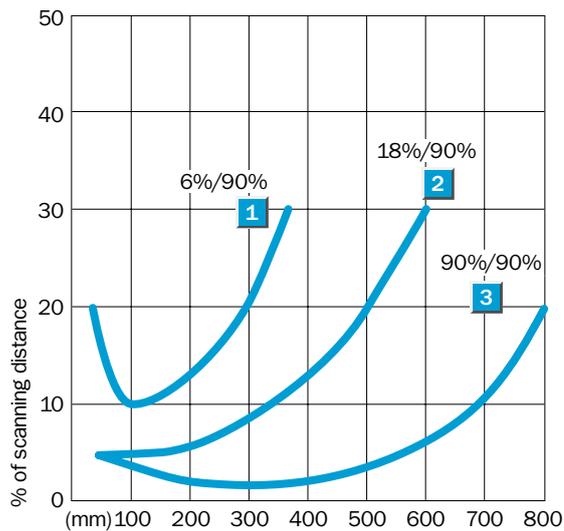
⁴⁾ may not exceed or fall short of V_s tolerances
⁵⁾ without load

⁶⁾ Signal transit time with resistive load
⁷⁾ with light/dark ratio 1:1
⁸⁾ do not bend below 0 °C
⁹⁾ Reference voltage 50 V DC

Scanning distance



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

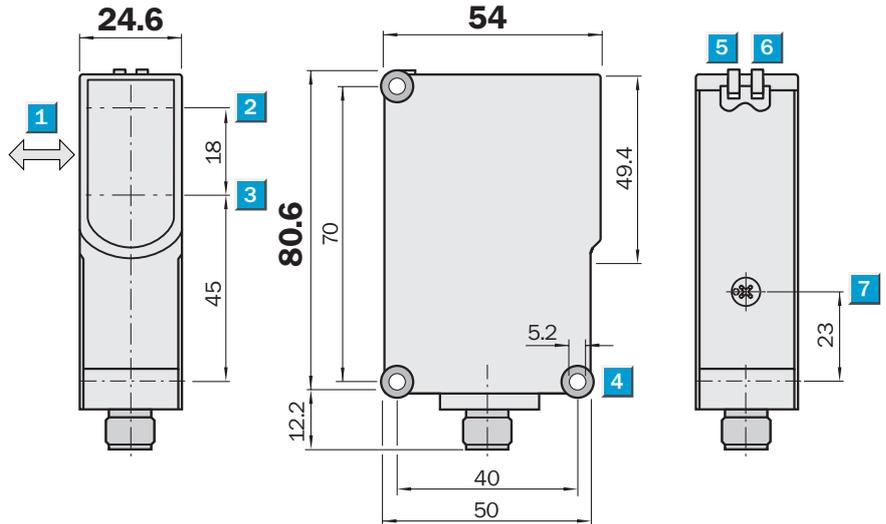


Order information	
Type	Order no.
WT23-2P2441	1 027 779
WT23-2P3441	1 028 066


Scanning distance
 50 ... 1,000 mm
Photoelectric proximity switch

- Infrared light, long scanning distance
- Background blanking
- Flexible: 24 V DC or 240 V AC
- 360° visibility on indicator LEDs, for faster monitoring

Dimensional drawing



Adjustments possible

- WT23-2N2421
- WT23-2P2421
- WT23-2S1521

- 1** Standard direction of the material being scanned
- 2** Optical axis sender
- 3** Optical axis receiver
- 4** Mounting hole \varnothing 5.2 mm
- 5** LED indicator green; power on
- 6** LED indicator yellow; status of received light beam
- 7** Scanning distance adjustment: Poti



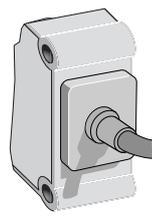
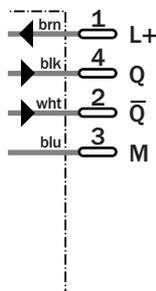
Connection type

- WT23-2N2421
- WT23-2P2421

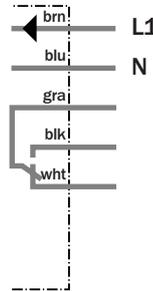
WT23-2S1521



M12, 4-pin



5 x 0.25 mm²



See chapter Accessories*

- Connector, M12, 4-pin
- Mounting systems
- Weather protection

*Recommendation for connectors



Technical data		WT23-2	N2421	P2421	S1521						
Scanning distance typ. max.	50 ... 1,000 mm ¹⁾										
Operating distance	100 ... 1,000 mm ¹⁾										
Adjustment of operating distance	Potentiometer										
Light source, light type	LED, Infrared light, 880 nm ²⁾										
Light spot diameter	Approx. 50 mm at 800 mm distance										
Supply voltage V _s	10 ... 30 V DC ³⁾										
	90 ... 265 V AC ⁴⁾										
Ripple	≤ 5 V _{pp} ⁵⁾										
Power consumption	≤ 35 mA ⁶⁾										
Switching outputs	NPN antivalent										
	PNP antivalent										
	Relay 1 x c/o, electrically isolated ⁷⁾										
Switching mode	Light-switching										
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V										
Signal voltage NPN HIGH / LOW	Approx. V _s / < 2.5 V										
Output current I _a max	≤ 100 mA										
Power consumption	≤ 2.5 VA										
Max. switching voltage	250 V AC / 250 V DC (max. 0.11A)										
Switching current max.	3 A @ 250 V AC or 24 V DC ⁸⁾										
Max. switching power	750 W AC / 72 W DC										
Response time	≤ 2.5 ms ⁹⁾										
	≤ 10 ms										
Switching frequency	200 Hz ¹⁰⁾										
	10 Hz ¹⁰⁾										
Connection type	Connector, M12, 4-pin										
	Cable, PVC, 2 m ¹¹⁾										
VDE protection class	□ ¹²⁾										
	□ ¹³⁾										
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression										
	V _s connections reverse-polarity protected / Interference suppression										
Enclosure rating	IP 65										
Ambient temperature operation	-25 °C ... +60 °C										
	-25 °C ... +60 °C ¹⁴⁾										
Ambient temperature storage	-40 °C ... +70 °C										
Weight	Approx. 100 g										
	Approx. 200 g										
Housing material	ABS, PMMA										

¹⁾ Object with 90% remission (based on standard white to DIN 5033)

²⁾ Average service life 100,000 h at T_a = +25°C

³⁾ Limit values, operation in short-circuit

protected network max. 8 A

⁴⁾ Limit values

⁵⁾ may not exceed or fall short of

V_s tolerances

⁶⁾ without load

⁷⁾ Provide suitable spark suppression for inductive or capacitive loads

⁸⁾ Usage category to EN 60947-1, AC-15, DC-13

⁹⁾ Signal transit time with resistive load

¹⁰⁾ with light/dark ratio 1:1

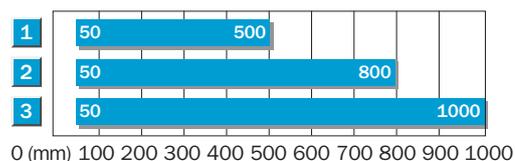
¹¹⁾ do not bend below 0 °C

¹²⁾ Reference voltage 50 V DC

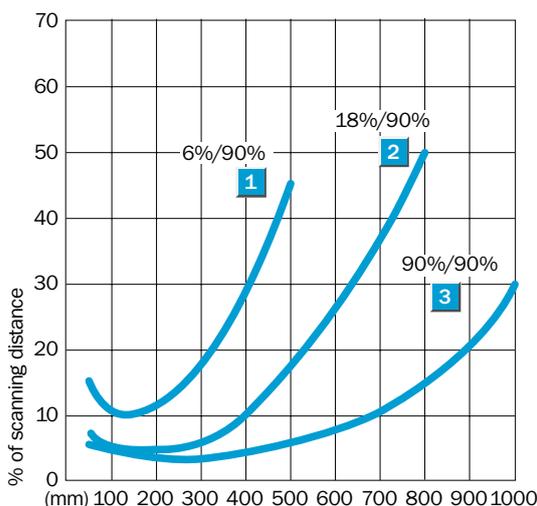
¹³⁾ Reference voltage 250 V AC

¹⁴⁾ UL: 0°C ... +60°C

Scanning distance



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



Order information

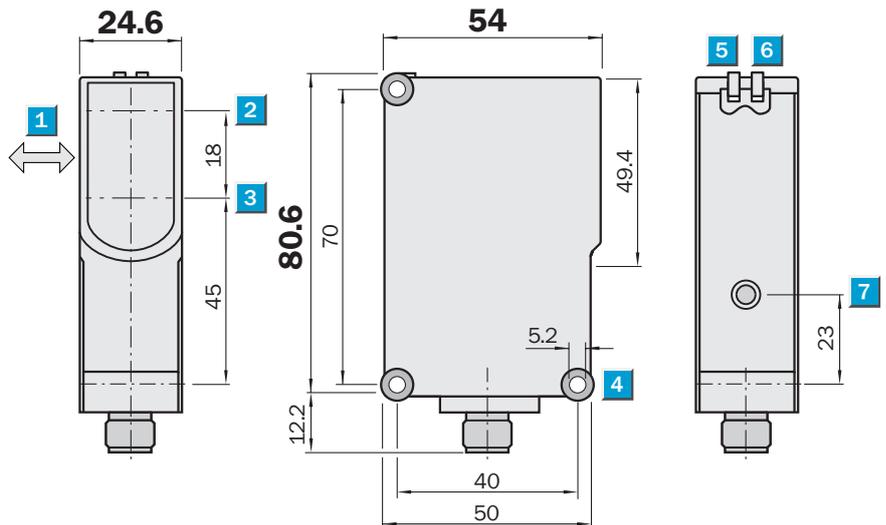
Type	Order no.
WT23-2N2421	1 028 073
WT23-2P2421	1 027 778
WT23-2S1521	1 027 780


Scanning distance
 50 ... 2,300 mm

Photoelectric proximity switch

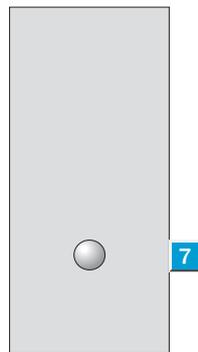
- Easy Teach-in, ready to operate in less time
- Infrared light, long scanning distance
- 360° visibility on indicator LEDs, for faster monitoring

Dimensional drawing



Adjustments possible

WTE23-2N2412
WTE23-2P2412



- 1 Standard direction of the material being scanned
- 2 Optical axis sender
- 3 Optical axis receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 LED indicator green; power on
- 6 LED indicator yellow; status of received light beam
- 7 Scanning distance adjustment: single teach button

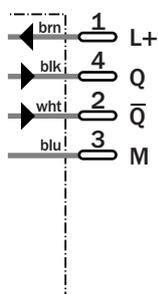


Connection type

WTE23-2N2412
WTE23-2P2412



M12, 4-pin



See chapter Accessories

Connector, M12, 4-pin
Mounting systems
Weather protection

Technical data		WTE23-2	N2412	P2412								
Scanning distance typ. max.	50 ... 2,300 mm ¹⁾											
Operating distance	300 ... 2,000 mm ¹⁾											
Adjustment of operating distance	Teach-in: single teach button											
Light source, light type	LED, Infrared light, 880 nm ²⁾											
Light spot diameter	Approx. 160 mm at 2000 mm distance											
Supply voltage V_s	10 ... 30 V DC ³⁾											
Ripple	$\leq 5 V_{pp}$ ⁴⁾											
Power consumption	$\leq 35 \text{ mA}$ ⁵⁾											
Switching outputs	NPN antivalent											
	PNP antivalent											
Signal voltage PNP HIGH / LOW	$> V_s - 2.5 \text{ V}$ / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. $V_s / < 2.5 \text{ V}$											
Output current I_a max	$\leq 100 \text{ mA}$											
Response time	$\leq 2.5 \text{ ms}$ ⁶⁾											
Switching frequency	200 Hz ⁷⁾											
Connection type	Connector, M12, 4-pin											
VDE protection class	\square ⁸⁾											
Circuit protection	V_s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression											
Enclosure rating	IP 65											
Ambient temperature operation	-25 °C ... +60 °C											
Ambient temperature storage	-40 °C ... +70 °C											
Weight	Approx. 100 g											
Housing material	ABS, PMMA											

¹⁾ Object with 90% remission (based on standard white to DIN 5033)

²⁾ Average service life 100,000 h

at $T_a = +25^\circ\text{C}$

³⁾ Limit values, operation in short-circuit protected network max. 8 A

⁴⁾ may not exceed or fall short of V_s tolerances

⁵⁾ without load

⁶⁾ Signal transit time with resistive load

⁷⁾ with light/dark ratio 1:1

⁸⁾ Reference voltage 50 V DC

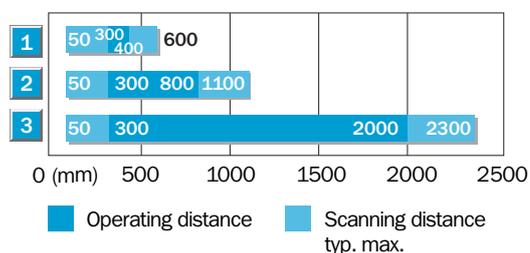
Teach-in function

Programming via Teach-in button.

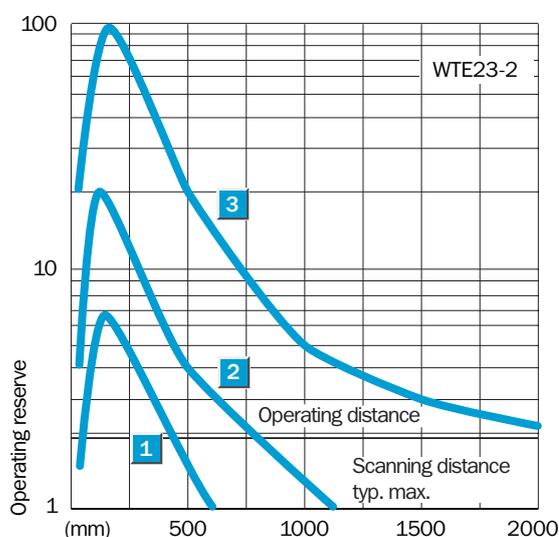
Position object in the light beam and push the teach-in button (< 4s), (approx. double reserve over switching threshold); adjustment is completed.

Yellow LED light and Teach-in value is stored.

Scanning distance



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



Order information

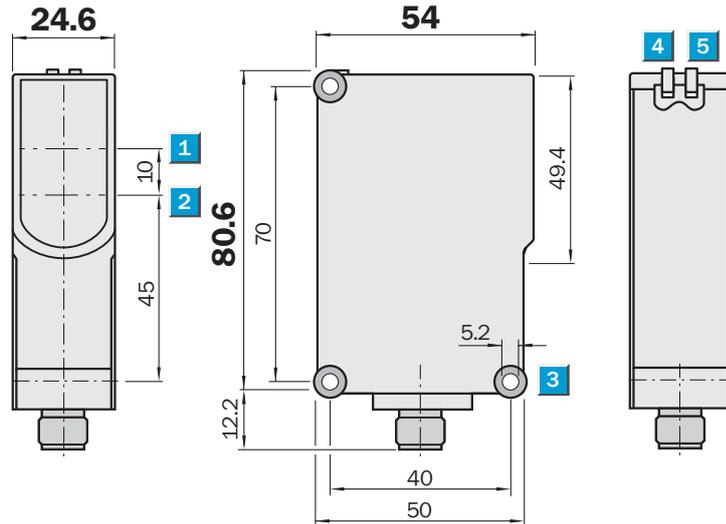
Type	Order no.
WTE23-2N2412	1 027 782
WTE23-2P2412	1 027 781

Photoelectric reflex switch, WL23-2, red light - DC


Scanning range
0.1 ... 10 m
Photoelectric reflex switch

- "Plug & Play", ready to operate in less time
- Excellent alignment to reflector
- Polarisation filter: safe detection even with shiny surfaces

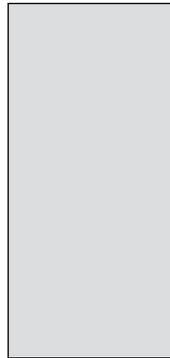
Dimensional drawing



Adjustments possible

- WL23-2N2430
- WL23-2P1130
- WL23-2P2430
- WL23-2P3430

- 1 Optical axis sender
- 2 Optical axis receiver
- 3 Mounting hole \varnothing 5.2 mm
- 4 LED indicator green; power on
- 5 LED indicator yellow; status of received light beam



Connection type

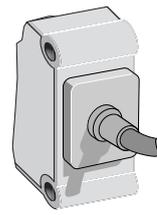
- WL23-2N2430
- WL23-2P2430

WL23-2P1130

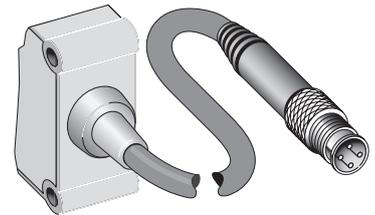
WL23-2P3430



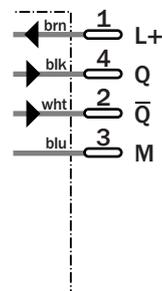
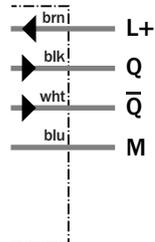
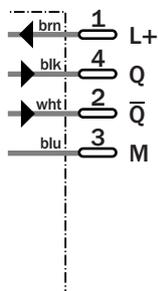
M12, 4-pin



4 x 0.25 mm²



M12, 4-pin



See chapter Accessories

- Connector, M12, 4-pin
- Mounting systems
- Reflectors
- Weather protection

Technical data		WL23-2	N2430	P1130	P2430	P3430							
Scanning range typ. max.	0.1 ... 10 m												
Scanning range, recommended	0.3 ... 7 m												
Relating to	Reflector PL80 A												
Light source, light type	LED, Red light, 660 nm ¹⁾												
Light spot diameter	Approx. 45 mm at 2.7 m distance												
Angle of dispersion	Approx. 1.5 °												
Polarisation filter	✓												
Supply voltage V _s	10 ... 30 V DC ²⁾												
Ripple	≤ 5 V _{pp} ³⁾												
Power consumption	≤ 35 mA ⁴⁾												
Switching outputs	NPN antivalent												
	PNP antivalent												
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V												
Signal voltage NPN HIGH / LOW	Approx. V _s / < 2.5 V												
Output current I _a max	≤ 100 mA												
Response time	≤ 2.5 ms ⁵⁾												
Switching frequency	200 Hz ⁶⁾												
Connection type	Connector, M12, 4-pin												
	Cable, PVC, 2 m ⁷⁾												
	Cable with plug, M12, 4-pin, PVC, 270 mm ⁷⁾												
VDE protection class	□ ⁸⁾												
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression												
Enclosure rating	IP 65												
Ambient temperature operation	-25 °C ... +60 °C												
Ambient temperature storage	-40 °C ... +70 °C												
Weight	Approx. 100 g												
	Approx. 180 g												
	Approx. 120 g												
Housing material	ABS, PMMA												

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

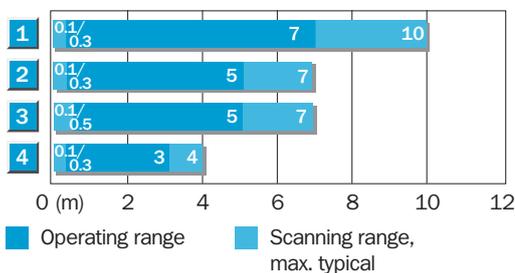
²⁾ Limit values, operation in short-circuit

³⁾ protected network max. 8 A may not exceed or fall short of

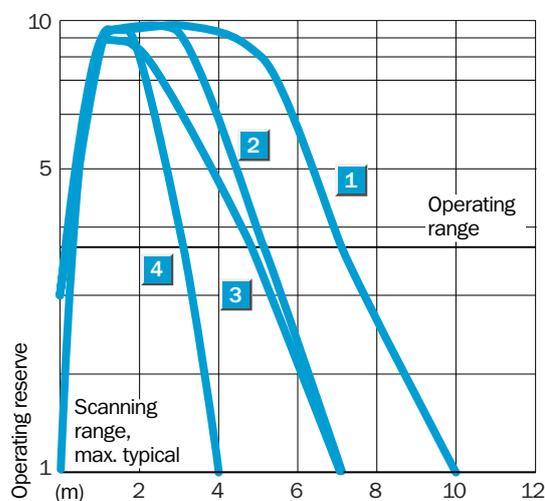
V_s tolerances
⁴⁾ without load
⁵⁾ Signal transit time with resistive load

⁶⁾ with light/dark ratio 1:1
⁷⁾ do not bend below 0 °C
⁸⁾ Reference voltage 50 V DC

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.3 ... 7.0 m
2 PL 40 A	0.3 ... 5.0 m
3 C 110	0.5 ... 5.0 m
4 PL 20 A	0.3 ... 3.0 m



Order information

Type	Order no.
WL23-2N2430	1 027 787
WL23-2P1130	1 027 784
WL23-2P2430	1 027 785
WL23-2P3430	1 027 786

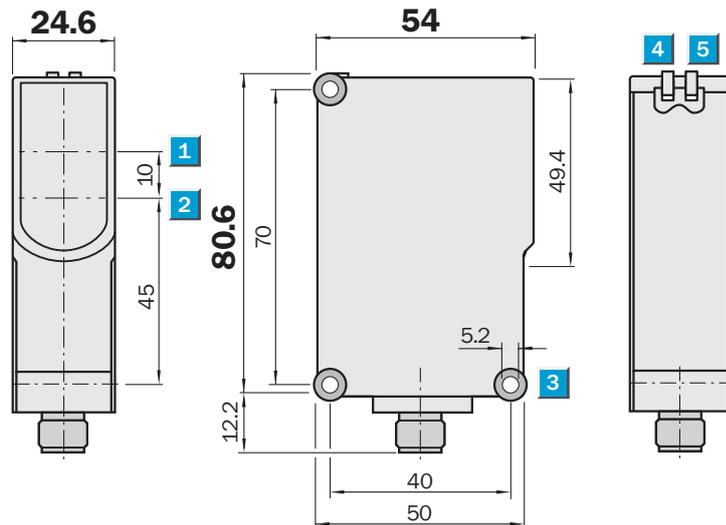
Photoelectric reflex switch, WL23-2, red light - AC


Scanning range
0.1 ... 10 m

Photoelectric reflex switch

- "Plug & Play": AC version (240 V)
- Excellent alignment to reflector
- Polarisation filter: safe detection even with shiny surfaces

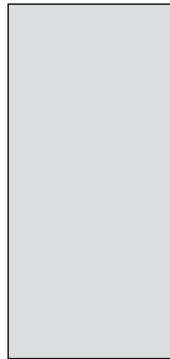
Dimensional drawing



Adjustments possible

WL23-2S1530
WL23-2S3730

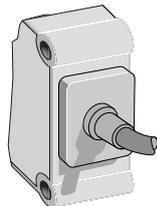
- 1** Optical axis sender
- 2** Optical axis receiver
- 3** Mounting hole \varnothing 5.2 mm
- 4** LED indicator green; power on
- 5** LED indicator yellow; status of received light beam



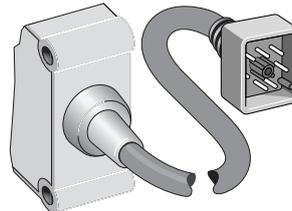
Connection type

WL23-2S1530

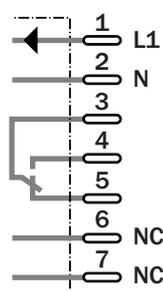
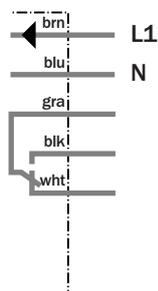
WL23-2S3730



5 x 0.25 mm²



Q7, 7-pin, AC/UC



See chapter Accessories*

- Connector, Q7, 7-pin, UC-coding
- Mounting systems
- Reflectors
- Weather protection

*Recommendation for connectors

 AWM Style 2464

Technical data		WL23-2	S1530	S3730										
Scanning range typ. max.	0.1 ... 10 m													
Scanning range, recommended	0.3 ... 7 m													
Relating to	Reflector PL80 A													
Light source, light type	LED, Red light, 660 nm ¹⁾													
Light spot diameter	Approx. 45 mm at 2.7 m distance													
Angle of dispersion	Approx. 1.5 °													
Polarisation filter	✓													
Supply voltage V_s	AC 90 ... 265 V ²⁾													
Switching outputs	Relay 1 x c/o, electrically isolated ³⁾													
Switching mode	Light-switching													
Power consumption	≤ 2.5 VA													
Max. switching voltage	250 V AC / 250 V DC (max. 0.11A)													
Switching current max.	3 A @ 250 V AC or 24 V DC ⁴⁾													
Max. switching power	750 W AC/ 72 W DC													
Response time	≤ 10 ms													
Switching frequency	10 Hz ⁵⁾													
Connection type	Cable, PVC, 2 m ⁶⁾													
	Cable with plug, Q7, 7-pin, AC/UC, PVC, 150 mm ⁶⁾													
VDE protection class	□ ⁷⁾													
Circuit protection	V _s connections reverse-polarity protected / Interference suppression													
Enclosure rating	IP 65													
Ambient temperature operation	-25 °C ... +60 °C ⁸⁾													
Ambient temperature storage	-40 °C ... +70 °C													
Weight	Approx. 200 g													
	Approx. 140 g													
Housing material	ABS, PMMA													

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

²⁾ Limit values

³⁾ Provide suitable spark suppression for inductive or capacitive loads

⁴⁾ Usage category to EN 60947-1, AC-15,

DC-13

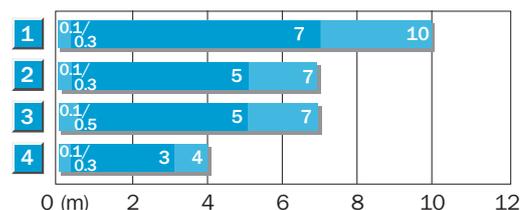
⁵⁾ with light/dark ratio 1:1

⁶⁾ do not bend below 0 °C

⁷⁾ Reference voltage 250 V AC

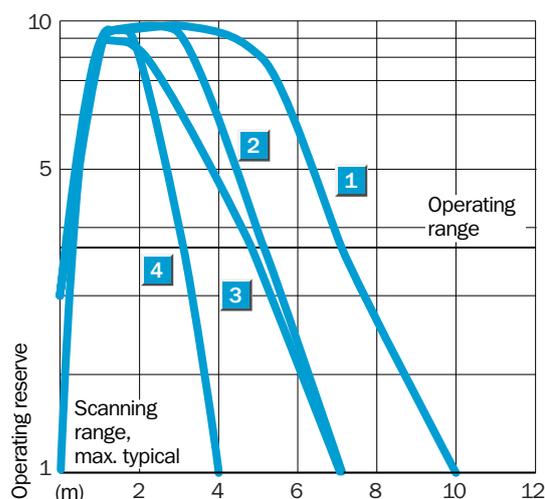
⁸⁾ UL: 0 °C ... +60 °C

Scanning range and operating reserve



■ Operating range ■ Scanning range, max. typical

Reflector type	Operating range
1 PL 80 A	0.3 ... 7.0 m
2 PL 40 A	0.3 ... 5.0 m
3 C 110	0.5 ... 5.0 m
4 PL 20 A	0.3 ... 3.0 m



Order information

Type	Order no.
WL23-2S1530	1 027 788
WL23-2S3730	1 027 789

W 24-2: Designed for hostile industrial environments

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



If the operating environment is particularly harsh or wet, the W 24-2 series of photoelectric switches ensures the required detection reliability. The photoelectric proximity switches feature high precision and high insensitivity to ambient light. The photoelectric switch and the through-beam photoelectric switch are impressive with their extremely long ranges.

Some useful additional features extend the applications in specialist areas; e.g. the front screen heating prevents misting in rapidly changing ambient temperatures, the cooling plates allow application even for operating temperatures above 60°C, the dust shield with air purge ensures clarity in dusty

areas and the weather hood ensures long life of the devices when used outdoors. User-friendliness, too, is highlighted by easy mounting and installation. The easily accessible terminal chamber facilitates the electrical connection, the rotatable plug connection adapts to the mounting situation.

Overview of W 24-2:

- Extremely robust metal housing for harsh industrial applications with IP 69K rating,
- Very long ranges and high precision, long scanning distance,
- High insensitivity to ambient light increases reliability and availability,
- Universal supply voltage offers flexibility,
- Useful additional functions and accessories for specialist applications.

Main industries:

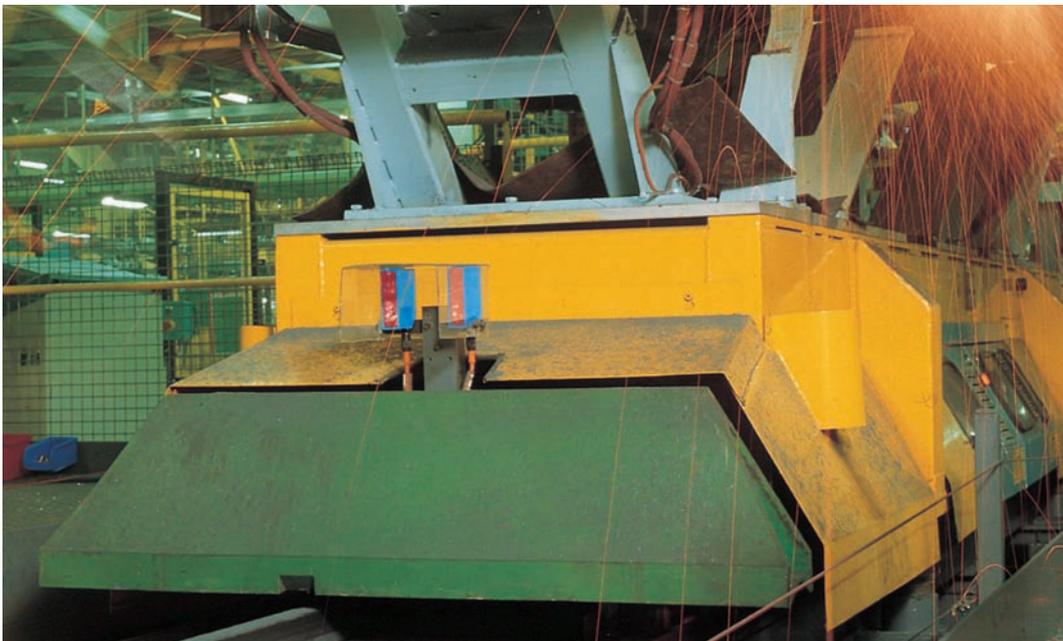
- Automotive industry,
- Chemical industry,
- Storage and material handling,
- Steel industry.



◀ Used as muting sensors, WT 24-2 photoelectric proximity switches signal the entry of an industrial truck into a protected zone and clock the multibeam photoelectric safety switch.



▶ Detection plus identification: WT 24-2 photoelectric proximity switches determine which body panels are to be placed on a conveyor belt.



◀ Collision protection in a fully automatic welding system – made possible thanks to the insensitivity to ambient light of WT 24-2 photoelectric proximity switches.

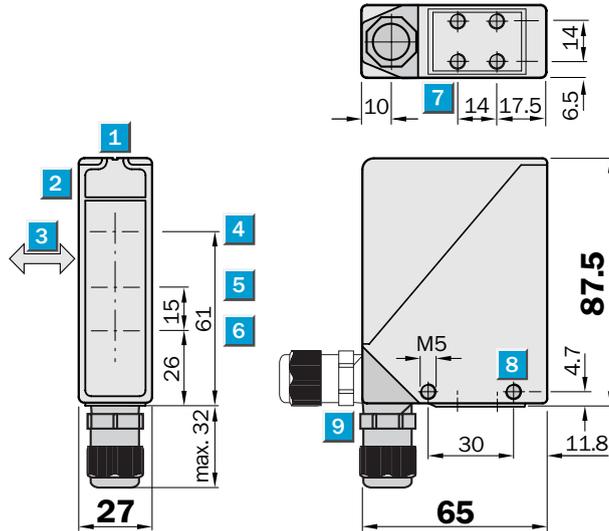
Scanning distance
100...1200 mm

Photoelectric proximity switches

- Robust metal housing
- Red light
- Background suppression, with very precise adjustment
- M16 screw fixing rotatable by 90°
- Front lens heating, time delay and pre-failure signalling output

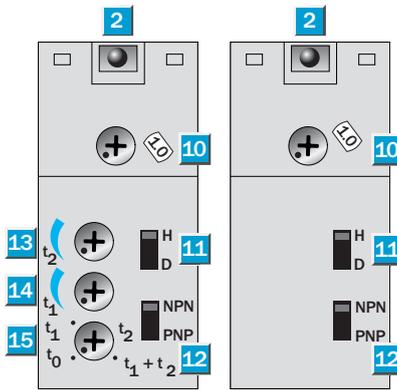


Dimensional drawing



Adjustments possible

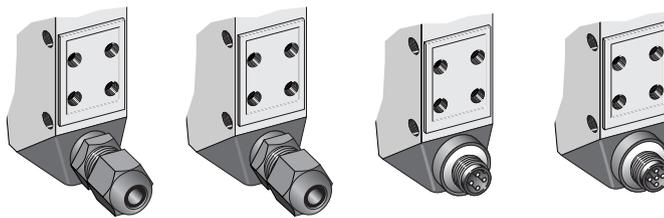
WT 24-2B 250	WT 24-2B 240
WT 24-2V 250	WT 24-2B 440
	WT 24-2V 540



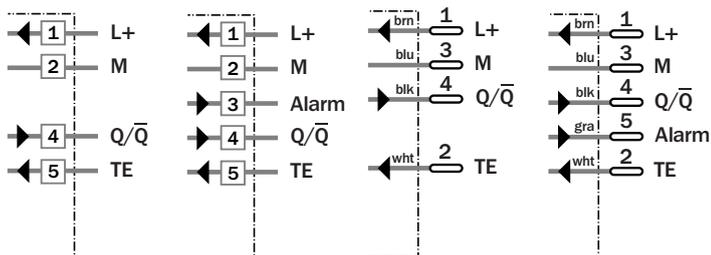
- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of the material being scanned
- 4 Centre of optical axis, sender
- 5 Centre of optical axis, receiver (close range)
- 6 Centre of optical axis, receiver (far range)
- 7 M5 threaded mounting hole, 6 mm deep
- 8 M5 threaded mounting hole, through-hole
- 9 M16 screw fixing and plug rotatable by 90°
- 10 Scanning distance adjustment
- 11 Light/dark selector
- 12 NPN/PNP selector
- 13 Time control t_2 = OFF-delay
- 14 Time control t_1 = ON-delay
- 15 Time delay selector switch

Connection types

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



M16, terminals	M16, terminals	4-pin, M12	5-pin, M12
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See chapter Accessories

Cables and connectors
Mounting systems
Special accessories



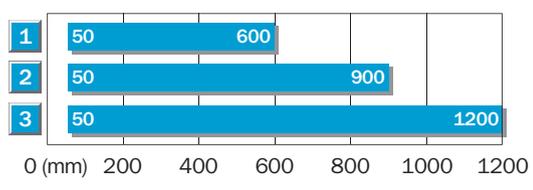
Technical data		WT 24-2	B 240	B 250	B 440	V 250	V 540					
Scanning distance	100...1200 mm, adjustable											
Light source¹⁾, light type	LED, red light											
Light spot diameter	Approx. 40 mm at 1200 mm											
Supply voltage V_S	10...30 V DC ²⁾											
Residual ripple ³⁾	< 5 V_{SS}											
Current consumption ⁴⁾	≤ 50 mA											
	≤ 70 mA, front lens heating											
Switching outputs	PNP or NPN, Q or \bar{Q}											
Output current I_A max.	100 mA											
Response time ⁵⁾	≤ 500 μ s											
Max. switching frequency ⁶⁾	1000/s											
Pre-failure signalling output	Alarm, PNP											
Time delay	Adjustable, 0.5...10 sec											
Test input "TE"	Sender switched off											
Sender OFF	PNP or NPN: TE to 0 V											
Connection type	M16 screw fixing											
	Plug											
VDE protection class⁷⁾	<input type="checkbox"/>											
Circuit protection⁸⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation -40 °C...+60 °C											
	Storage -40 °C...+75 °C											
Weight	Approx. 330 g											
Front lens heating												
Housing material	Zinc die-cast housing											

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

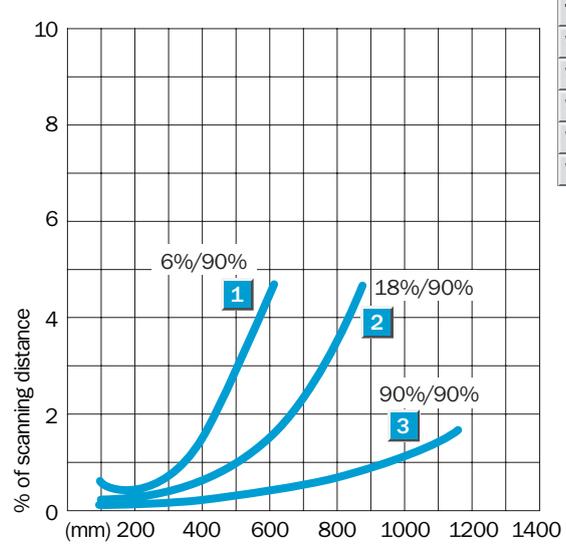
4) Without load
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Reference voltage 50 V DC

8) A = V_S connections reverse-polarity protected
 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 gray, 18% Remission
- 3 Scanning distance on white, 90% Remission



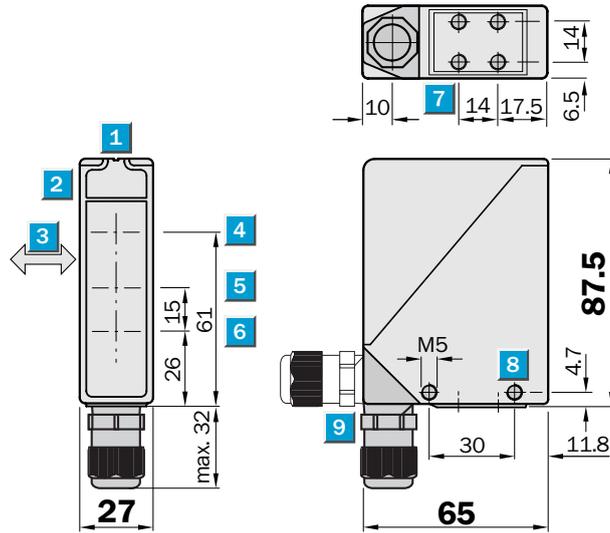
Order information

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


Scanning distance
100...1200 mm
 Photoelectric proximity switches

- Universal supply voltage
- Robust metal housing
- Red light
- Background suppression, with very precise adjustment
- M16 screw fixing rotatable by 90°
- Front lens heating and time delay

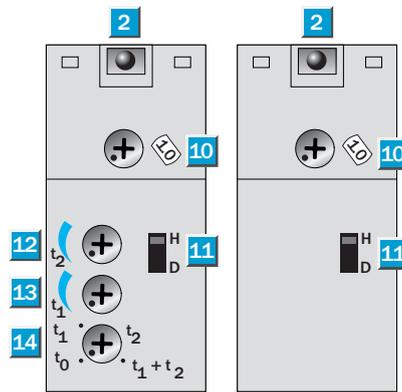
Dimensional drawing



Adjustments possible

WT 24-2R 250

WT 24-2R 240

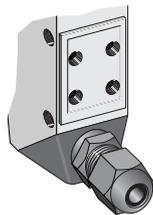


- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of the material being scanned
- 4 Centre of optical axis, sender
- 5 Centre of optical axis, receiver (close range)
- 6 Centre of optical axis, receiver (far range)
- 7 M5 threaded mounting hole, 6 mm deep
- 8 M5 threaded mounting hole, through-hole
- 9 M16 screw fixing rotatable by 90°
- 10 Scanning distance adjustment
- 11 Light/dark selector
- 12 Time control t_2 = OFF-delay
- 13 Time control t_1 = ON-delay
- 14 Time delay selector switch

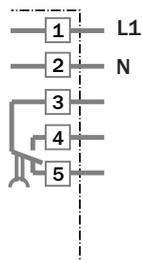
Connection type

WT 24-2R 240

WT 24-2R 250



M16, terminals



See chapter Accessories

Cables and connectors

Mounting systems

Special accessories

Technical data		WT 24-2	R 240	R 250									
Scanning distance	100...1200 mm, adjustable												
Light source¹⁾, light type	LED, red light												
Light spot diameter	Approx. 40 mm at 1200 mm												
Supply voltage V_S	12...240 V DC ²⁾ , 24...240 V AC ³⁾												
Power consumption without heating	< 2 VA												
Power consumption with heating	< 3 VA												
Switching output	SPDT, isolated ⁴⁾												
Max. switching voltage	250 V AC/120 V DC												
Max. switching current	4 A/250 V AC, 4 A/24 V DC ⁵⁾												
Max. switching capacity	AC: 1000 VA/DC: 100 W												
Response time	≤ 10 ms												
Max. switching frequency ⁶⁾	10/s												
Time delay	Adjustable, 0.5...10 sec												
Connection type	M16 screw fixing												
VDE protection class⁷⁾	□												
Circuit protection⁸⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature T_A	Operation -40 °C...+60 °C Storage -40 °C...+75 °C												
Weight	Approx. 330 g												
Front lens heating													
Housing material	Zinc die-cast housing												

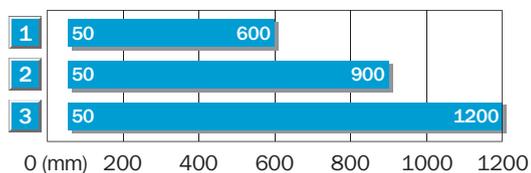
1) Average service life 100,000 h at T_A = +25 °C
 2) Limit values
 3) ± 10 %

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

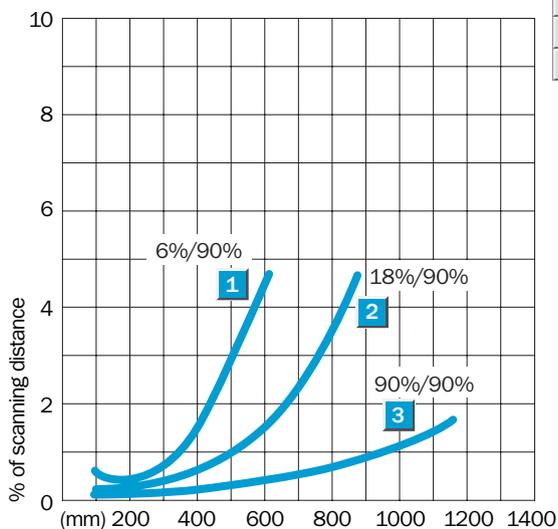
6) With light/dark ratio 1:1
 7) Reference voltage 250 V AC/DC

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

Scanning distance



1	Scanning distance on black, 6% Remission
2	Scanning distance on gray, 18% Remission
3	Scanning distance on white, 90% Remission



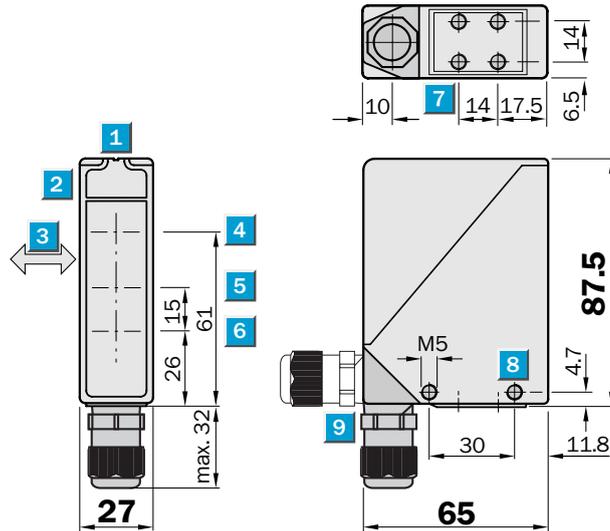
Order information

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

Scanning distance
100...2500 mm
 Photoelectric proximity switches

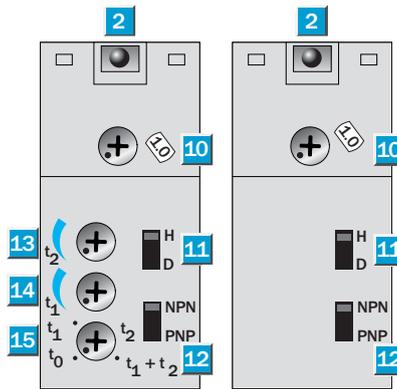
- Robust metal housing
- Infrared light
- Background suppression, with very precise adjustment
- M16 screw fixing or equipment plug rotatable by 90°
- Front lens heating, time delay and pre-failure signalling output

Dimensional drawing



Adjustments possible

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

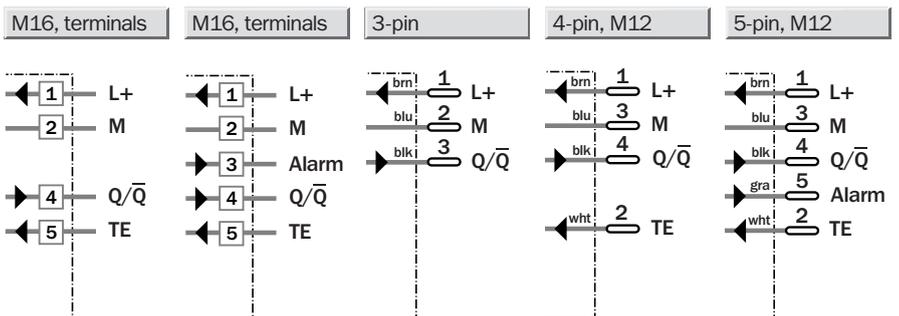
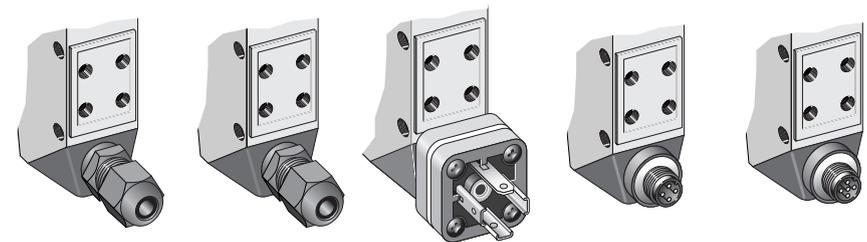


- Alignment sight
- LED signal strength indicator
- Standard direction of the material being scanned
- Centre of optical axis, sender
- Centre of optical axis, receiver (close range)
- Centre of optical axis, receiver (far range)
- M5 threaded mounting hole, 6 mm deep
- M5 threaded mounting hole, through-hole
- M16 screw fixing and plug rotatable by 90°
- Scanning distance adjustment
- Light/dark selector
- NPN/PNP selector
- Time control t_2 = OFF-delay
- Time control t_1 = ON-delay
- Time delay selector switch



Connection types

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	



See chapter Accessories

Cables and connectors
Mounting systems
Special accessories

Technical data		WT 24-2	B 210	B 220	B 313	B 410	B 420	V 220	V 510
Scanning distance	100...2500 mm, adjustable								
Light source¹⁾, light type	LED, infrared light								
Light spot diameter	Approx. 80 mm at 2500 mm								
Supply voltage V_S	10...30 V DC ²⁾								
Residual ripple ³⁾	< 5 V_{SS}								
Current consumption ⁴⁾	≤ 50 mA								
	≤ 70 mA, front lens heating								
Switching outputs	PNP or NPN, Q or \bar{Q}								
Output current I_A max.	100 mA								
Response time ⁵⁾	≤ 500 μ s								
Max. switching frequency ⁶⁾	1000/s								
Pre-failure signalling output	Alarm, PNP								
Time delay	Adjustable, 0.5...10 sec								
Test input "TE"	Sender switched off								
Sender OFF	PNP or NPN: TE to 0 V								
Connection types	M16 screw fixing								
	Plug								
VDE protection class⁷⁾	<input type="checkbox"/>								
Circuit protection⁸⁾	A, B, C								
Enclosure rating	IP 67								
Ambient temperature T_A	Operation -40 °C...+60 °C								
	Storage -40 °C...+75 °C								
Weight	Approx. 330 g								
Front lens heating									
Housing material	Zinc die-cast housing								

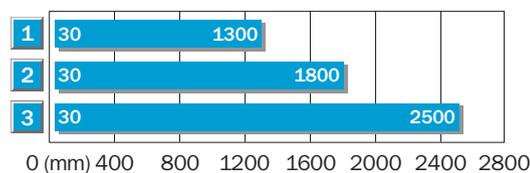
1) Average service life 100,000 h at $T_A = +25\text{ °C}$
 2) Limit values

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

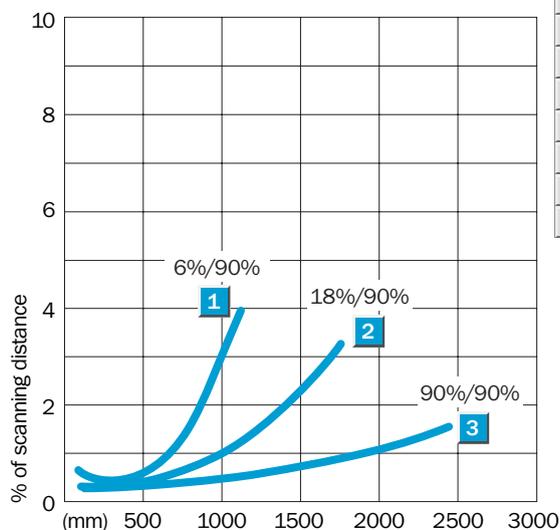
5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Reference voltage 50 V DC

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 gray, 18 % Remission
- 3 Scanning distance on white, 90 % Remission



Order information

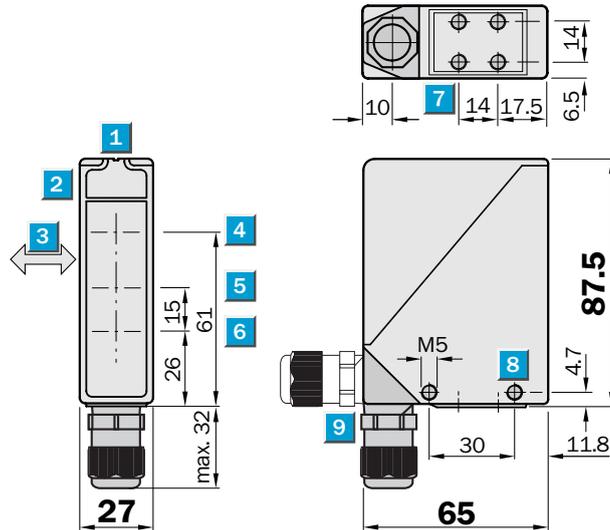
Type	Order no.
WT 24-2B 210	1 016 931
WT 24-2B 220	1 017 882
WT 24-2B 313	1 017 884
WT 24-2B 410	1 016 933
WT 24-2B 420	1 017 885
WT 24-2V 220	1 017 886
WT 24-2V 510	1 017 855


Scanning distance
100...2500 mm
 Photoelectric proximity switches

- Universal supply voltage
- Robust metal housing
- Infrared light
- Background suppression, with very precise adjustment
- M16 screw fixing rotatable by 90°
- Front lens heating and time delay



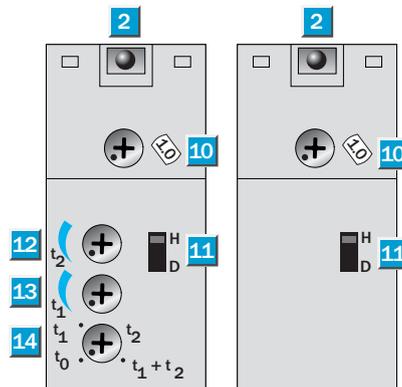
Dimensional drawing



Adjustments possible

WT 24-2R 220

WT 24-2R 210

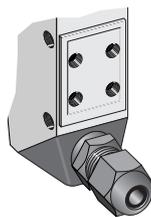


- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of the material being scanned
- 4 Centre of optical axis, sender
- 5 Centre of optical axis, receiver (close range)
- 6 Centre of optical axis, receiver (far range)
- 7 M5 threaded mounting hole, 6 mm deep
- 8 M5 threaded mounting hole, through-hole
- 9 M16 screw fixing rotatable by 90°
- 10 Scanning distance adjustment
- 11 Light/dark selector
- 12 Time control t_2 = OFF-delay
- 13 Time control t_1 = ON-delay
- 14 Time delay selector switch

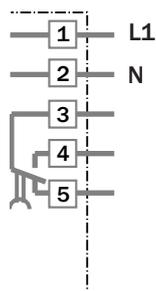
Connection type

WT 24-2R 210

WT 24-2R 220



M16, terminals



See chapter Accessories

Mounting systems

Special accessories



Technical data		WT 24-2	R 210	R 220								
Scanning distance	100...2500 mm, adjustable											
Light source¹⁾, light type	LED, infrared light											
Light spot diameter	Approx. 80 mm at 2500 mm											
Supply voltage V_S	12...240 V DC ²⁾ , 24...240 V AC ³⁾											
Power consumption without heating	< 2 VA											
Power consumption with heating	< 3 VA											
Switching output	SPDT, isolated ⁴⁾											
Max. switching voltage	250 V AC/120 V DC											
Max. switching current	4 A/250 V AC, 4 A/24 V DC ⁵⁾											
Max. switching capacity	AC: 1000 VA/DC: 100 W											
Response time	≤ 10 ms											
Max. switching frequency ⁶⁾	10/s											
Time delay	Adjustable, 0.5...10 sec											
Connection type	M16 screw fixing											
VDE protection class⁷⁾	□											
Circuit protection⁸⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation -40 °C...+60 °C Storage -40 °C...+75 °C											
Weight	Approx. 330 g											
Front lens heating												
Housing material	Zinc die-cast housing											

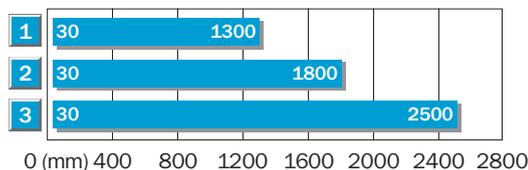
1) Average service life 100,000 h at T_A = +25 °C
 2) Limit values
 3) ± 10 %

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

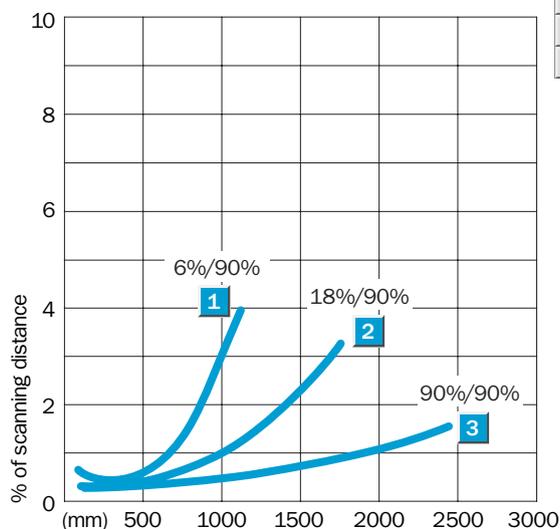
6) With light/dark ratio 1:1
 7) Reference voltage 250 V AC/DC

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

Scanning distance



- 1 Scanning distance on black, 6 % Remission
- 2 Scanning distance on gray, 18 % Remission
- 3 Scanning distance on white, 90 % Remission



Order information

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

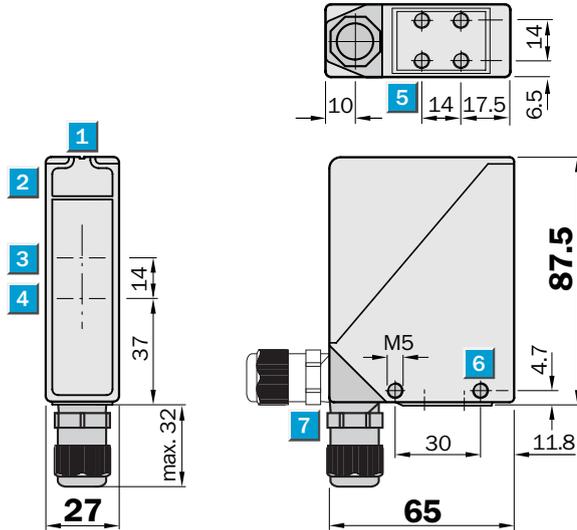
Scanning range
22 m

Photoelectric reflex switches

- Robust metal housing
- High operating reserve in visible red light
- M16 screw fixing or plug rotatable by 90°
- Front lens heating, time delay and pre-failure signalling output

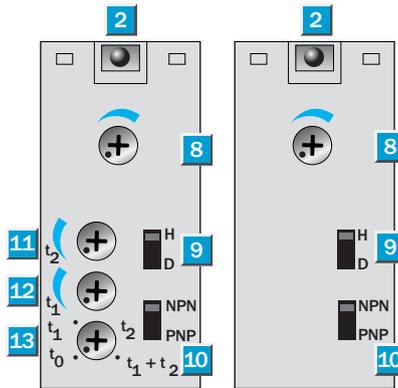


Dimensional drawing



Adjustments possible

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

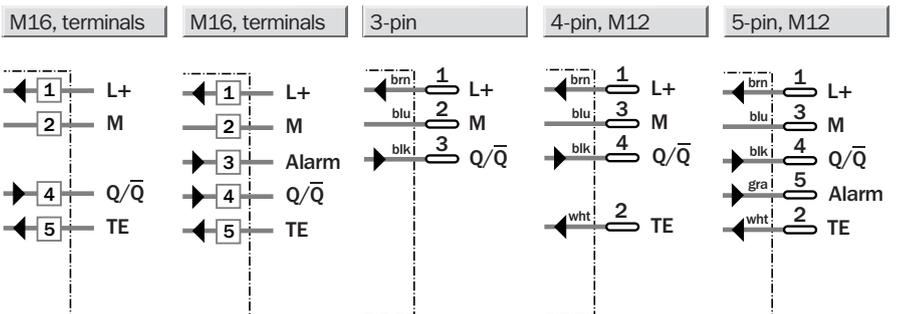
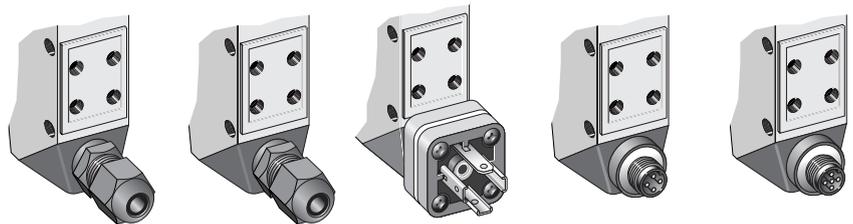


- Alignment sight
- LED signal strength indicator
- Centre of optical axis, sender
- Centre of optical axis, receiver
- M5 threaded mounting hole, 6 mm deep
- M5 threaded mounting hole, through-hole
- M16 screw fixing or plug rotatable by 90°
- Sensitivity adjustment
- Light/dark selector
- NPN/PNP selector
- Time control t_2 = OFF-delay
- Time control t_1 = ON-delay
- Time delay selector switch



Connection types

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	



See chapter Accessories

Cables and connectors
Mounting systems
Reflectors
Special accessories

Technical data		WL 24-2	B 230	B 240	B 333	B 430	B 440	V 230	V 530
Scanning range, max. typ./on reflector	22 m/on PL 80 A								
Sensitivity	Adjustable								
Light source¹⁾, light type	LED, red light								
Light spot diameter	Approx. 250 mm at 15 m								
Supply voltage V_S	10...30 V DC ²⁾								
Residual ripple ³⁾	< 5 V_{SS}								
Current consumption ⁴⁾	≤ 50 mA								
	≤ 70 mA, front lens heating								
Switching outputs	PNP or NPN, Q or \bar{Q}								
Output current I_A max.	100 mA								
Response time ⁵⁾	≤ 500 μ s								
Max. switching frequency ⁶⁾	1000/s								
Pre-failure signalling output	Alarm, PNP								
Time delay	Adjustable, 0.5...10 sec								
Test input "TE"	Sender switched off								
Sender OFF	PNP or NPN: TE to 0 V								
Connection types	M16 screw fixing								
	Plug								
VDE protection class⁷⁾	<input type="checkbox"/>								
Circuit protection⁸⁾	A, B, C								
Enclosure rating	IP 67								
Ambient temperature T_A	Operation -40 °C...+60 °C								
	Storage -40 °C...+75 °C								
Weight	Approx. 330 g								
Front lens heating									
Polarising filter									
Housing material	Zinc die-cast housing								

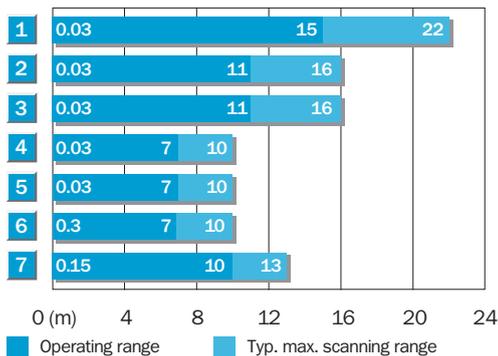
1) Average service life 100,000 h at $T_A = +25\text{ °C}$
 2) Limit values

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

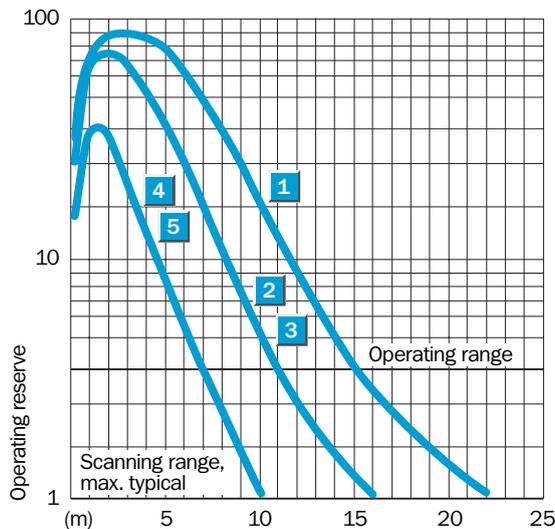
5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Reference voltage 50 V DC

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

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.03 to 15 m
2 PL 50 A	0.03 to 11 m
3 PL 40 A	0.03 to 11 m
4 PL 30 A	0.03 to 7 m
5 PL 20 A	0.03 to 7 m
6 Diamond Grade (20 cm x 20 cm)	0.3 to 7 m
7 C 110	0.15 to 10 m



Order information

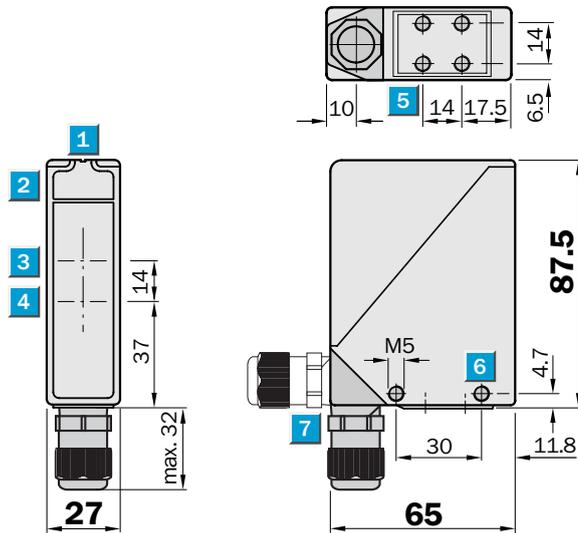
Type	Order no.
WL 24-2B 230	1 015 852
WL 24-2B 240	1 017 859
WL 24-2B 333	1 017 878
WL 24-2B 430	1 017 860
WL 24-2B 440	1 017 879
WL 24-2V 230	1 017 880
WL 24-2V 530	1 017 881


Scanning range
22 m

Photoelectric reflex switches

- Universal supply voltage
- Robust metal housing
- Large operating reserve and visible red light
- M16 screw fixing rotatable by 90°
- Front lens heating and time delay

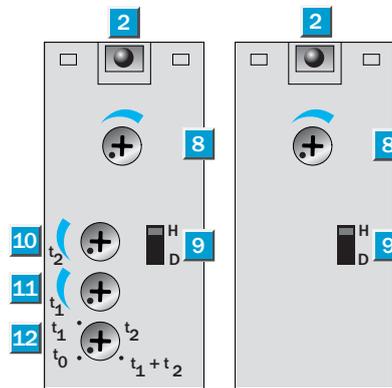
Dimensional drawing



Adjustments possible

WL 24-2R 240

WL 24-2R 230



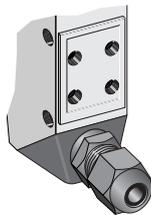
- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Centre of optical axis, sender
- 4 Centre of optical axis, receiver
- 5 M5 threaded mounting hole, 6 mm deep
- 6 M5 threaded mounting hole, through-hole
- 7 M16 screw fixing rotatable by 90°
- 8 Sensitivity adjustment
- 9 Light/dark selector
- 10 Time control t_2 = OFF-delay
- 11 Time control t_1 = ON-delay
- 12 Time delay selector switch



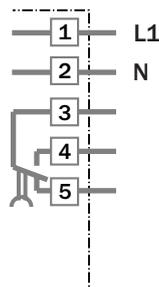
Connection type

WL 24-2R 230

WL 24-2R 240



M16, terminals



See chapter Accessories

Mounting systems

Reflectors

Special accessories

Technical data		WL 24-2	R 230	R 240									
Scanning range, max. typ./on reflector	22 m/on PL 80 A												
Sensitivity	Adjustable												
Light source¹⁾, light type	LED, red light												
Light spot diameter	Approx. 250 mm at a distance of 15 m												
Supply voltage V_S	12...240 V DC ²⁾ , 24...240 V AC ³⁾												
Power consumption without heating	< 2 VA												
Power consumption with heating	< 3 VA												
Switching output	SPDT, isolated ⁴⁾												
Max. switching voltage	250 V AC/120 V DC												
Max. switching current	4 A/250 V AC, 4 A/24 V DC ⁵⁾												
Max. switching capacity	AC: 1000 VA/DC: 100 W												
Response time ⁶⁾	≤ 10 ms												
Max. switching frequency ⁷⁾	10/s												
Time delay	Adjustable, 0.5...10 sec												
Connection type	M16 screw fixing												
VDE protection class⁸⁾	□												
Circuit protection⁹⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature T_A	Operation -40 °C...+60 °C Storage -40 °C...+75 °C												
Weight	Approx. 330 g												
Front lens heating													
Polarising filter													
Housing material	Zinc die-cast housing												

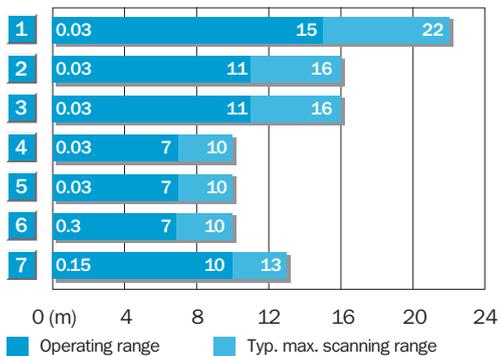
1) Average service life 100,000 h at T_U = +25 °C
 2) Limit values
 3) ± 10 %

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

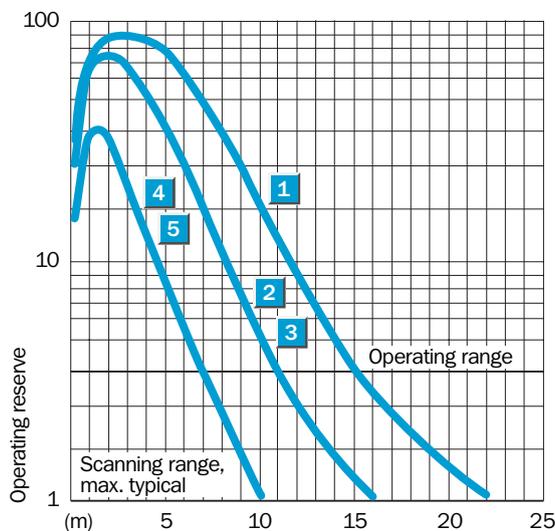
6) Signal transit time with resistive load
 7) With light/dark ratio 1:1
 8) Reference voltage 250 V UC

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

Operating range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.03 to 15 m
2 PL 50 A	0.03 to 11 m
3 PL 40 A	0.03 to 11 m
4 PL 30 A	0.03 to 7 m
5 PL 20 A	0.03 to 7 m
6 Diamond Grade (20 cm x 20 cm)	0.3 to 7 m
7 C 110	0.15 to 10 m



Order information

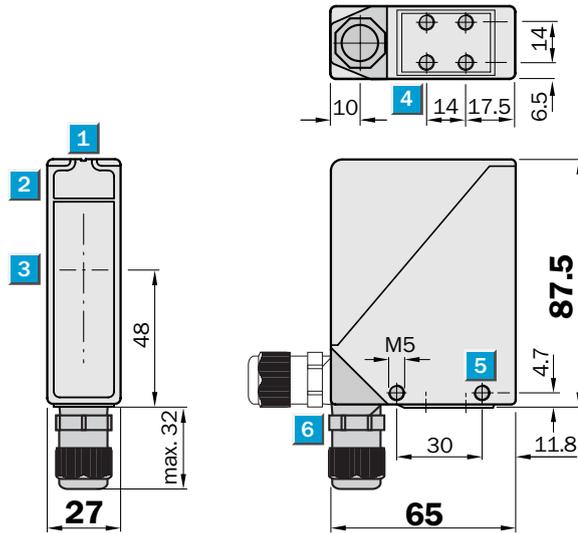
Type	Order no.
WL 24-2R 230	1 017 857
WL 24-2R 240	1 017 858

Scanning range
0...60 m

Through-beam photoelectric switches

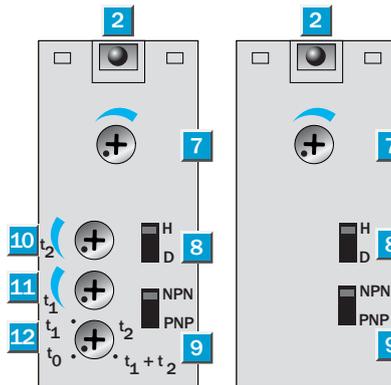
- Robust metal housing
- Large operating reserve and visible red light
- M16 screw fixing or plug rotatable by 90°
- Front lens heating, time delay and pre-failure signalling output

Dimensional drawing



Adjustments possible

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

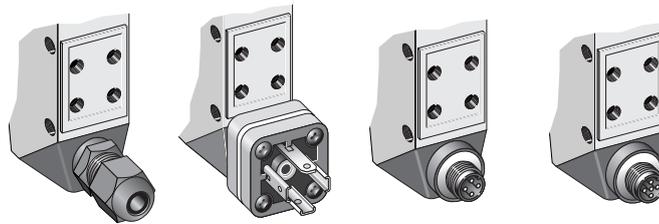


- Alignment sight
- LED signal strength indicator
- Centre of optical axis
- M5 threaded mounting hole, 6 mm deep
- M5 threaded mounting hole, through-hole
- M16 screw fixing and plug rotatable by 90°
- Sensitivity adjustment
- Light/dark selector
- NPN/PNP selector
- Time control t_2 = OFF-delay
- Time control t_1 = ON-delay
- Time delay selector switch



Connection types

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	



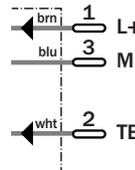
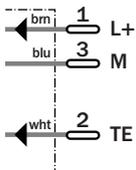
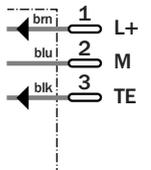
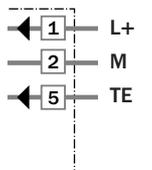
M16, terminals

3-pin

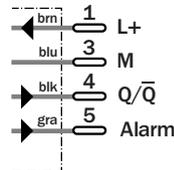
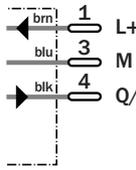
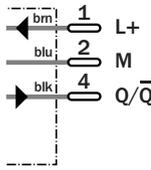
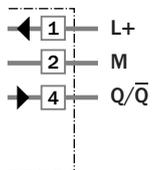
4-pin, M12

5-pin, M12

Sender



Receiver



See chapter Accessories

Cables and connectors

Mounting systems

Special accessories

Technical data		WS/WE 24-2	B 230	B 240	B 333	B 430	B 440	V 530				
Scanning range, max. typical	0...60 m											
Sensitivity	Adjustable											
Light source¹⁾, light type	LED, red light											
Light spot diameter	Approx. 700 mm at of 50 m											
Angle of dispersion/reception	1°/2.5°											
Supply voltage V_S	10...30 V DC ²⁾											
Residual ripple ³⁾	< 5 V _{SS}											
Current consumption ⁴⁾												
Sender without heating	≤ 50 mA											
Sender with heating	≤ 70 mA											
Receiver without heating	≤ 40 mA											
Receiver with heating	≤ 60 mA											
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											
Pre-failure signalling output	Alarm, PNP											
Time delay	Adjustable, 0.5...10 sec											
Test input "TE"	Sender switched off											
Sender OFF	PNP or NPN: test input to 0 V											
Connection types	Plug											
	M16 screw fixing											
VDE protection class⁷⁾	<input type="checkbox"/>											
Circuit protection⁸⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation -40 °C...+60 °C											
	Storage -40 °C...+75 °C											
Weight	Approx. 330 g											
Front lens heating												
Housing material	Zinc die-cast housing											

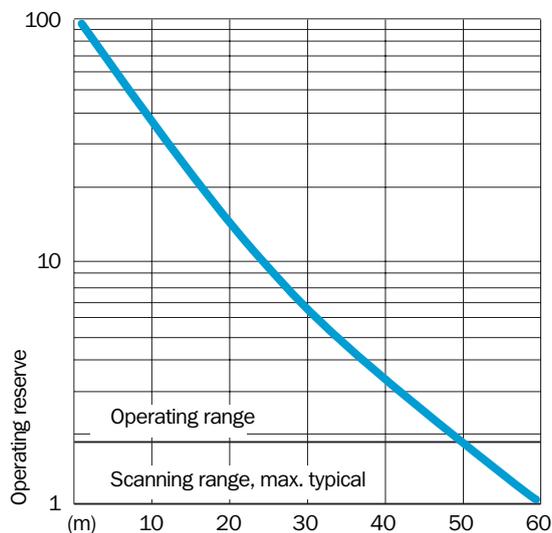
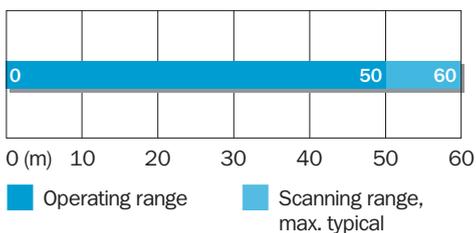
1) Average service life 100,000 h at T_A = +25 °C
 2) Limit values

3) May not exceed or fall short of V_S tolerances
 4) Same values for WS and WE, 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

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

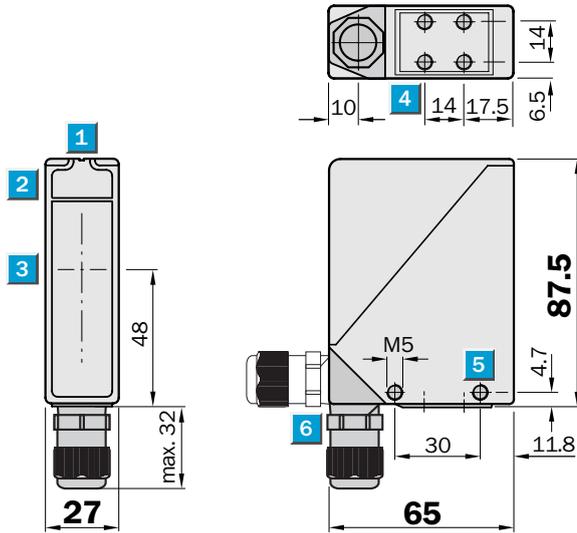
Scanning range
0...60 m

Through-beam photoelectric switches

- Universal supply voltage
- Robust metal housing
- Large operating reserve and visible red light
- M16 screw fixing rotatable by 90°
- Front lens heating and time delay



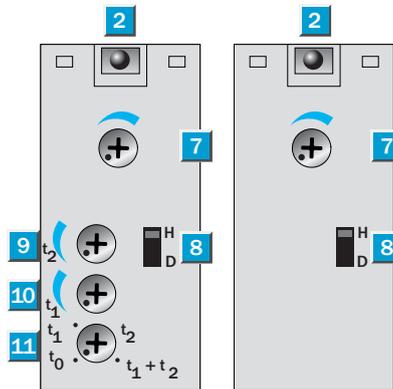
Dimensional drawing



Adjustments possible

WS/WE 24-2R 240

WS/WE 24-2R 230

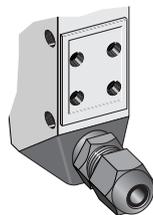


- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Centre of optical axis
- 4 M5 threaded mounting hole, 6 mm deep
- 5 M5 threaded mounting hole, through-hole
- 6 M16 screw fixing rotatable by 90°
- 7 Sensitivity adjustment
- 8 Light/dark selector
- 9 Time control t_2 = OFF-delay
- 10 Time control t_1 = ON-delay
- 11 Time delay selector switch

Connection type

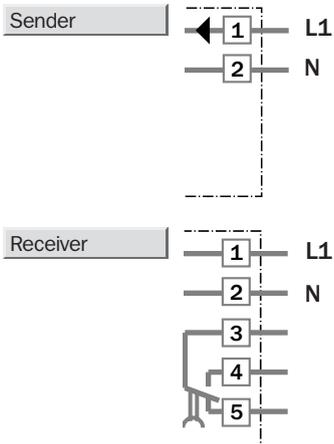
WS/WE 24-2R 230

WS/WE 24-2R 240



M16, terminals

See chapter Accessories
Mounting systems
Special accessories



Technical data		WS/WE 24-2	R 230	R 240								
Scanning range, max. typical	0...60 m											
Sensitivity	Adjustable											
Light source¹⁾, light type	LED, red light											
Light spot diameter	Approx. 700 mm at 50 m											
Angle of dispersion/reception	1°/2.5°											
Supply voltage V_S	12...240 V DC ²⁾ , 24...240 V AC ³⁾											
Power consumption without heating	< 2 VA											
Power consumption with heating	< 3 VA											
Switching output	SPDT, isolated ⁴⁾											
Max. switching voltage	250 V AC/120 V DC											
Max. switching current	4 A/250 V AC, 4 A/24 V DC ⁵⁾											
Max. switching capacity	AC: 1000 VA/DC: 100 W											
Response time	≤ 10 ms											
Max. switching frequency ⁶⁾	10/s											
Time delay	Adjustable, 0.5...10 sec											
Connection type	M16 screw fixing											
VDE protection class⁷⁾	□											
Circuit protection⁸⁾	A, C											
Enclosure rating	IP 69K											
Ambient temperature T_A	Operation -40 °C...+60 °C Storage -40 °C...+75 °C											
Weight	Approx. 330 g											
Front lens heating												
Housing material	Zinc die-cast housing											

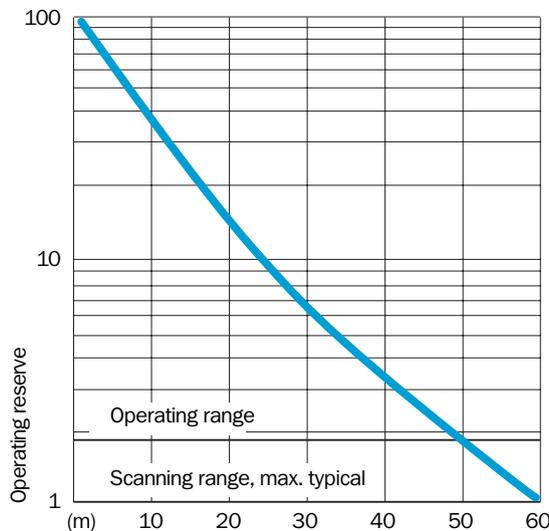
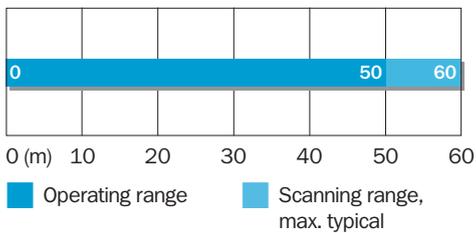
1) Average service life 100,000 h at T_U = +25 °C
 2) Limit values
 3) ± 10 %

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

6) With light/dark ratio 1:1
 7) Reference voltage 250 V UC

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

Operating range and function reserve



Order information

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

W250: Compact photoelectric switch series for a broad range of applications

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



Light-/dark-switching via control cable halves the number of device options and reduces stockholding.

Overview of W250:

- Universal supply voltage (DC or DC/AC) in a compact housing simplifies integration into machines,
- Visible light beam aids adjustment,
- light-/dark-switching reduces stockholding cost by reducing the number of variant required,
- supplied complete and ready for use, as mounting brackets and reflector (WL250 only) are included in the supply.

The W250 family of photoelectric switches features a special combination which integrates both the DC and DC/AC version in a very compact housing.

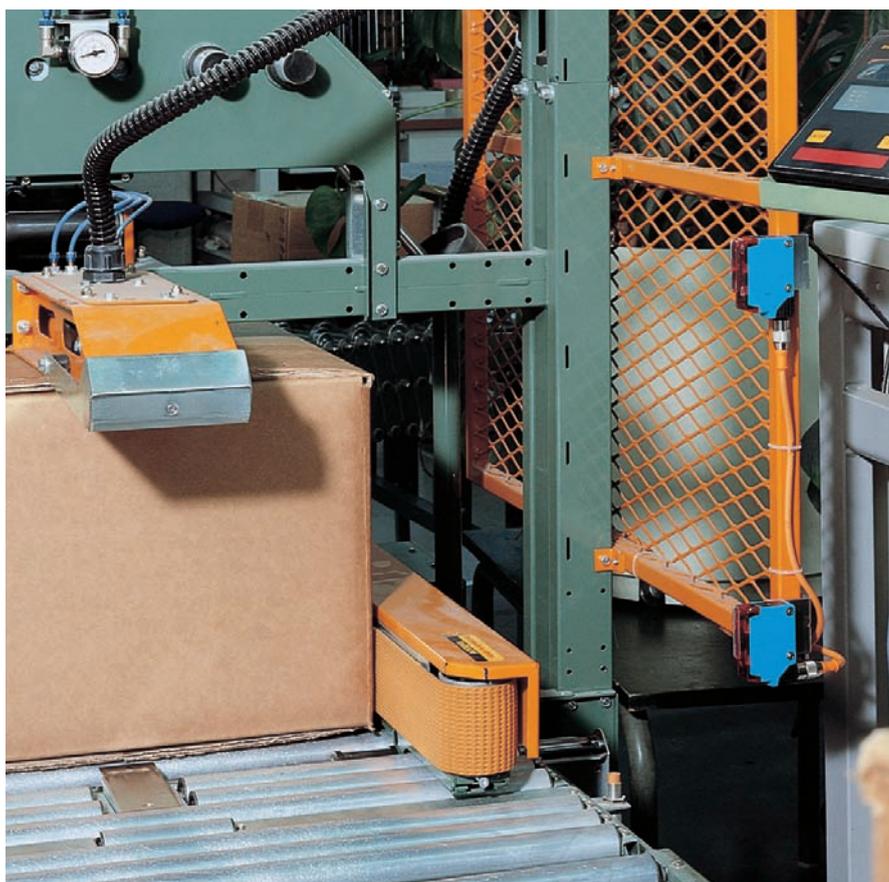
The cable version or the rotatable plug version gives the W250 flexibility for system integration.

During adjustments to sensitivity and scanning distance, the user is supported by an easily readable positioning display.

Principal areas of application:

- Mechanical engineering,
- Timber industry,
- Storage and materials handling,
- Bottling systems,
- Door/gate access control.

► The compact housing of the WL250 photoelectric reflex switch ensures optimum integration in materials handling applications.

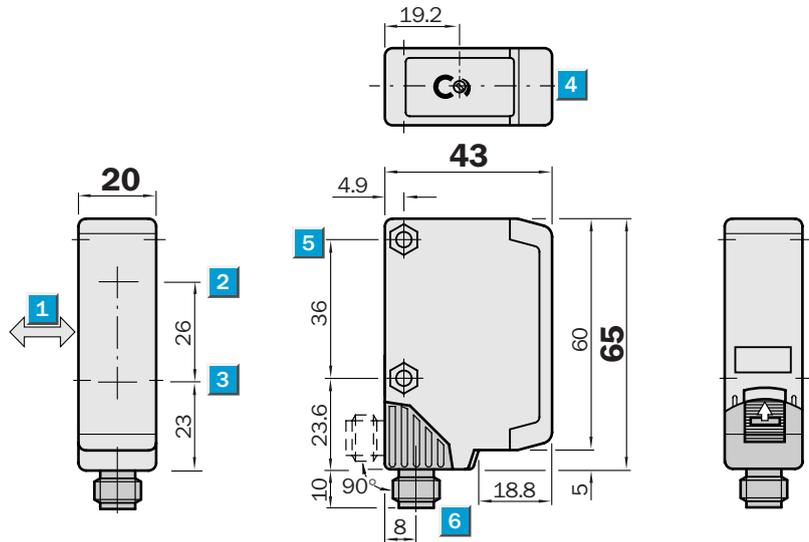


◄ Height control on a packaging line – implemented with the WT250 photoelectric proximity switch


Scanning distance
200 ... 1000 mm
 Photoelectric proximity switches

- Background suppression
- Scanning distance adjustment (2 turns) with position indicator (270°)
- Visible red light as an alignment aid
- Flexibility at the mounting position with rotatable plug connector

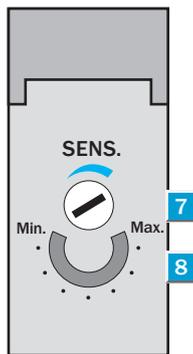
Dimensional drawing



Adjustments possible

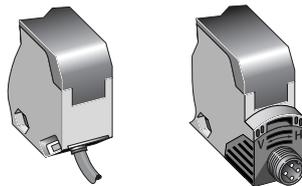
WT250-P172
WT250-P470
WT250-N172
WT250-N470

- 1 Standard direction of the material to be scanned
- 2 Transmission axis
- 3 Reception axis
- 4 Red LED signal strength indicator
- 5 Through hole Ø 4.2 mm, for M4 hexagon nut on both sides
- 6 Connection cable or M12 plug – 4-pin; plug position rotatable by 90° (V > H),
V → vertical final position
H → horizontal final position; can be locked with slider
- 7 Scanning distance adjustment (2 turns), over-turn protected
- 8 Position indicator for scanning distance setting (270°)

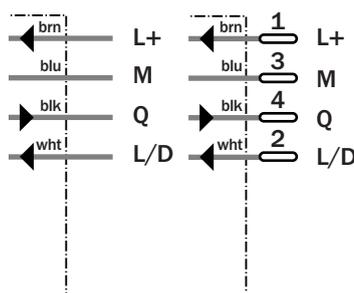


Connection types

WT250-P172	WT250-P470
WT250-N172	WT250-N470



4 x 0,18 mm ²	4-pin, M12
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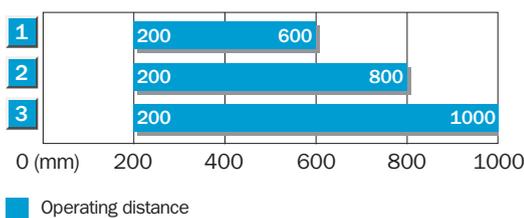
See chapter Accessories
 Cables and connectors
 Mounting systems*)

*) Mounting bracket included with delivery

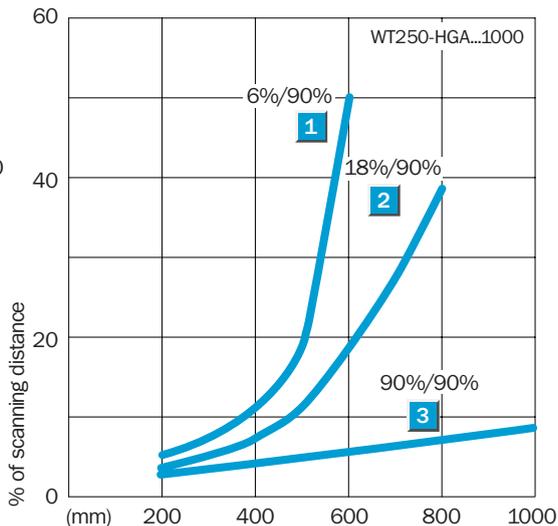
Technical data		WT250-	P172	P470	N172	N470						
Scanning distance, typ. max.	200 ... 1000 mm ¹⁾											
Recommended operating scanning dist.	200 ... 1000 mm ¹⁾											
Scanning distance, adjustable	Potentiometer, 2 rotations, with position indicator											
Light source²⁾	LED, visible red light											
Light spot diameter	Approx. 70 mm at 1000 mm											
Aperture angle sender	Approx. 3°											
Supply voltage V_S	10 ... 30 V DC ³⁾											
Residual ripple ⁴⁾	≤ 5 V _{PP}											
Current consumption ⁵⁾	≤ 35 mA											
Switching outputs	PNP, open collector: Q NPN, open collector: Q											
Output current I _A max.	100 mA											
Light receiver, switching mode	Light/dark switching per control wire: + V _S = light switching 0 V = dark switching											
Response time ⁶⁾ /switching sequ. max. ⁷⁾	≤ 2 ms; 250/s											
Connection types	PVC cable, 2 m ⁸⁾ 4 x 0.18 mm ² , Ø 3.8 mm M12 plug, 4-pin, 90° rotatable											
VDE protection class⁹⁾	□											
Circuit protection¹⁰⁾	A, B, C, D											
Enclosure rating	IP 67											
Ambient temperature	Operation - 25 °C ... + 55 °C Storage - 40 °C ... + 70 °C											
Weight	with connecting cable 2 m: Approx. 80 g with M12 plug, 4-pin: Approx. 40 g											
Material	Housing: ABS; optics: PC											

- 1) 90 % reflectance of material scanned
- 2) Average service life T_A = + 25 °C; LED, red light 100,000 h
- 3) Limit values, operation in short circuit protected network max. 8 A
- 4) May not exceed or fall short of V_S tolerances
- 5) Without load
- 6) Signal operating time with ohmic load
- 7) With dark/light ratio 1:1
- 8) Do not bend cable below 0 °C
- 9) Reference voltage 50 V DC
- 10) A = V_S connections reverse-polarity protected
B = Outputs Q und Q̄ short-circuit protected
C = Interference pulse suppression
D = Outputs overcurrent and short-circuit protected

Scanning distance



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



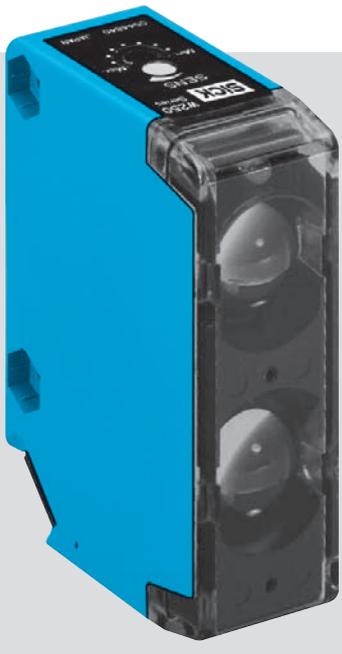
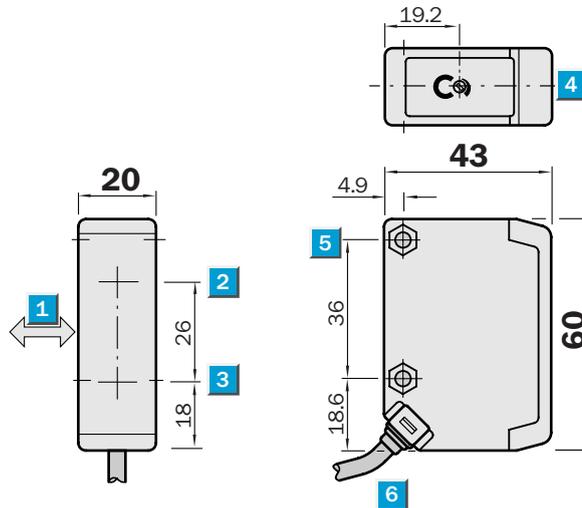
Order information

Type	Order no.
WT250-P172	6012647
WT250-P470	6012649
WT250-N172	6012644
WT250-N470	6012646


Scanning distance
200 ... 1000 mm
 Photoelectric proximity switch

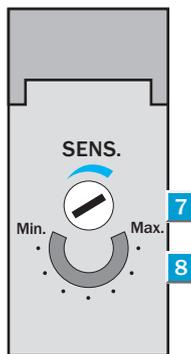
- Universal voltage
- Background suppression
- Scanning distance adjustment (2 turns) with position indicator (270°)
- Visible red light as an alignment aid

Dimensional drawing



Adjustments possible

WT250-S172



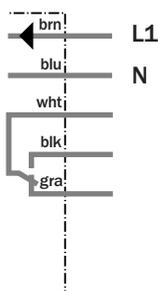
- 1 Standard direction of the material to be scanned
- 2 Transmission axis
- 3 Reception axis
- 4 Red LED signal strength indicator
- 5 Through hole Ø 4.2 mm, for M4 hexagon nut on both sides
- 6 Connection cable
- 7 Scanning distance adjustment (2 turns), over-turn protected
- 8 Position indicator for scanning distance setting (270°)

Connection type

WT250-S172



5 x 0.76 mm²



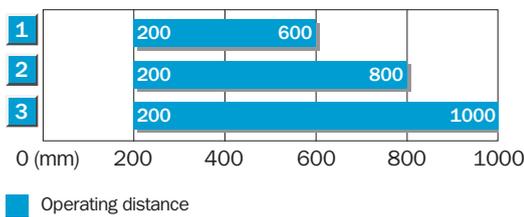
See chapter Accessories
Mounting systems*)

*) Mounting bracket included with delivery

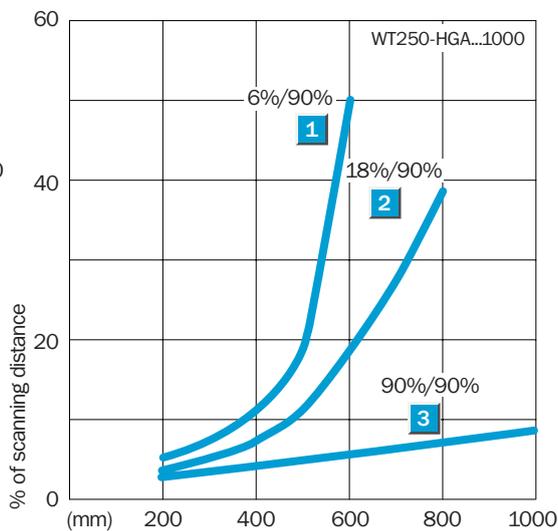
Technical data		WT250-	S172										
Scanning distance, typ. max.	200 ... 1000 mm ¹⁾												
Recommended operating scanning dist.	200 ... 1000 mm ¹⁾												
Scanning distance, adjustable	Potentiometer, 2 rotations, with position indicator												
Light source²⁾	LED, visible red light												
Light spot diameter	Approx. 70 mm at 1000 mm												
Aperture angle sender	Approx. 3°												
Supply voltage V_S³⁾	12 ... 240 V DC												
	24 ... 240 V UC												
Power consumption	≤ 2 VA												
Switching outputs	Relay 1 x a, indirect-coupled ⁴⁾												
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁵⁾												
Light receiver, switching mode	Light switching												
Response time/switching sequ. max. ⁶⁾	≤ 15 ms; 33/s												
Connection type	PVC cable ⁷⁾ , 2 m												
	5 x 0.76 mm ² , Ø 6.3 mm												
VDE protection class⁸⁾	□												
Circuit protection⁹⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature	Operation - 25 °C ... + 55 °C												
	Storage - 40 °C ... + 70 °C												
Weight	Approx. 160 g												
Material	Housing: ABS; optics: PC												

1) 90 % reflectance of material scanned
 2) Average service life T_A = + 25 °C; LED, red light 100,000 h
 3) ± 10 %
 4) Ensure spark extinguishing for inductive or capacitive load
 5) Usage category to EN 60947-1, 15 AC, 13 DC
 6) With dark/light ratio 1:1
 7) Do not bend cable below 0 °C
 8) Reference voltage 250 V UC
 9) A = V_s connections reverse-polarity protected
 C = Interference pulse suppression

Scanning distance



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



Order information

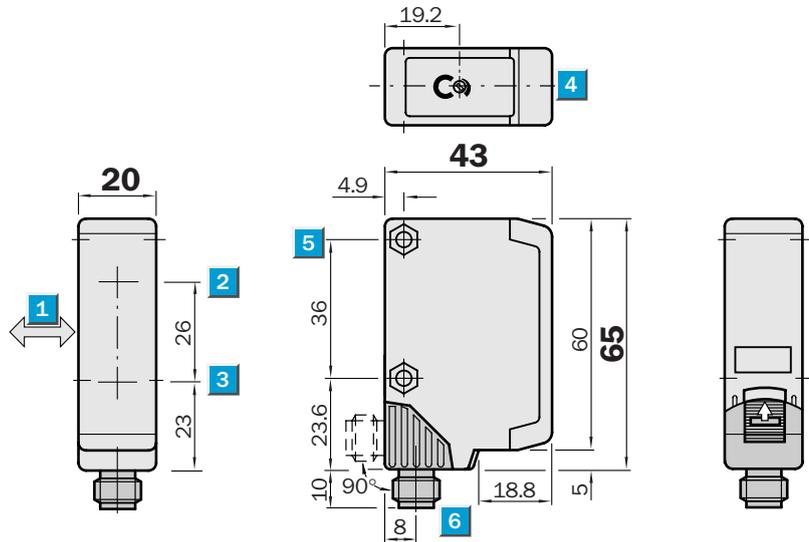
Type	Order no.
WT250-S172	6012650


Scanning distance
150 ... 500 mm

Photoelectric proximity switches

- Background suppression
- Scanning distance adjustment (2 turns) with position indicator (270°)
- Visible red light as an alignment aid
- Flexibility at the mounting position with rotatable plug connector

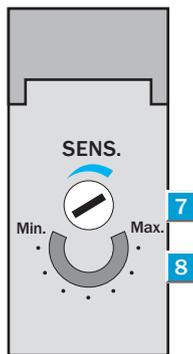
Dimensional drawing



Adjustments possible

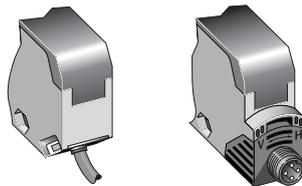
WT250-P162
WT250-P460
WT250-N162
WT250-N460

- 1 Standard direction of the material to be scanned
- 2 Transmission axis
- 3 Reception axis
- 4 Red LED signal strength indicator
- 5 Through hole \varnothing 4.2 mm, for M4 hexagon nut on both sides
- 6 Connection cable or M12 plug – 4-pin; plug position rotatable by 90° (V > H),
V → vertical final position
H → horizontal final position; can be locked with slider
- 7 Scanning distance adjustment (2 turns), over-turn protected
- 8 Position indicator for scanning distance setting (270°)

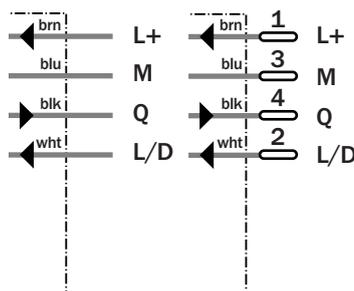


Connection types

WT250-P162	WT250-P460
WT250-N162	WT250-N460



4 x 0,18 mm ²	4-pin, M12
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See chapter Accessories

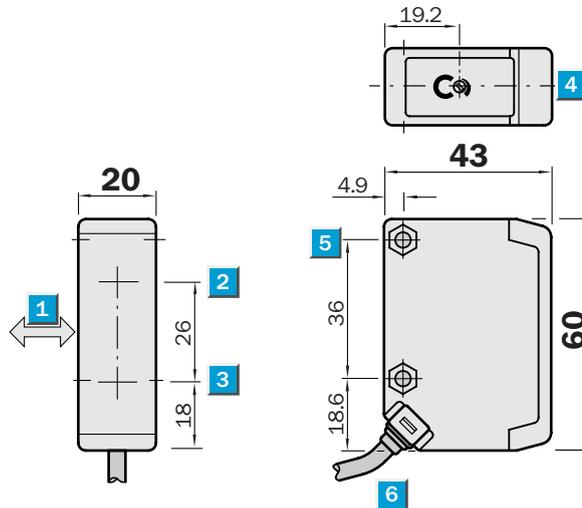
- Cables and connectors
- Mounting systems*)

*) Mounting bracket included with delivery


Scanning distance
150 ... 500 mm
 Photoelectric proximity switch

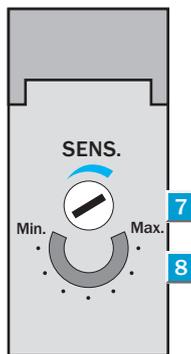
- Universal voltage
- Background suppression
- Scanning distance adjustment (2 turns) with position indicator (270°)
- Visible red light as an alignment aid

Dimensional drawing

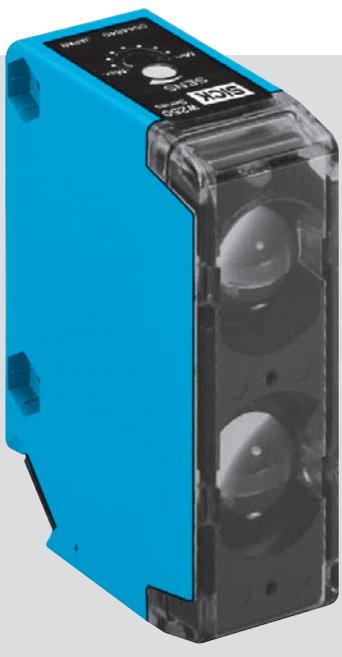


Adjustments possible

WT250-S162

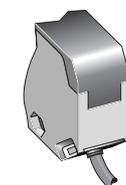


- 1 Standard direction of the material to be scanned
- 2 Transmission axis
- 3 Reception axis
- 4 Red LED signal strength indicator
- 5 Through hole Ø 4.2 mm, for M4 hexagon nut on both sides
- 6 Connection cable
- 7 Scanning distance adjustment (2 turns), over-turn protected
- 8 Position indicator for scanning distance setting (270°)

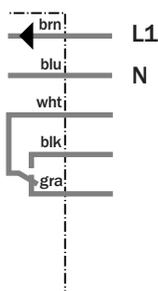


Connection type

WT250-S162



5 x 0.76 mm²



See chapter Accessories

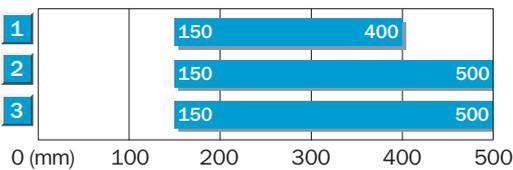
Mounting systems*)

*) Mounting bracket included with delivery

Technical data		WT250-	S162										
Scanning distance, typ. max.	150 ... 500 mm ¹⁾												
Recommended operating scanning dist.	150 ... 500 mm ¹⁾												
Scanning distance, adjustable	Potentiometer, 2 rotations, with position indicator												
Light source²⁾	LED, visible red light												
Light spot diameter	Approx. 35 mm at 500 mm												
Aperture angle sender	Approx. 3°												
Supply voltage V_S³⁾	12 ... 240 V DC												
	24 ... 240 V UC												
Power consumption	≤ 2 VA												
Switching outputs	Relay 1 x a, indirect-coupled ⁴⁾												
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁵⁾												
Light receiver, switching mode	Light switching												
Response time/switching sequ. max. ⁶⁾	≤ 15 ms; 33/s												
Connection type	PVC cable ⁷⁾ , 2 m												
	5 x 0.76 mm ² , Ø 6.3 mm												
VDE protection class⁸⁾	<input type="checkbox"/>												
Circuit protection⁹⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature	Operation - 25 °C ... + 55 °C												
	Storage - 40 °C ... + 70 °C												
Weight	Approx. 160 g												
Material	Housing: ABS; optics: PC												

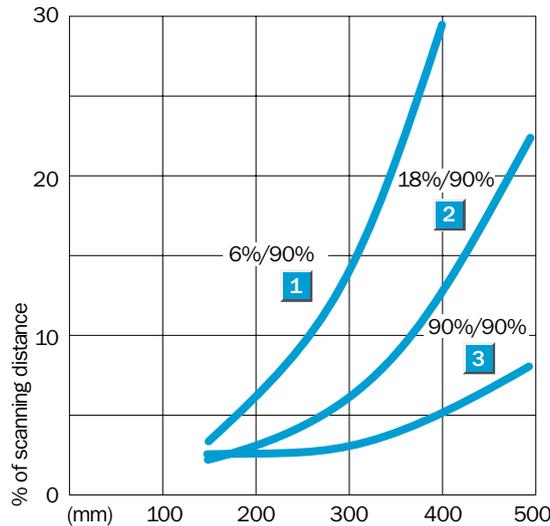
1) 90 % reflectance of material scanned
 2) Average service life T_A = + 25 °C; LED, red light 100,000 h
 3) ± 10 %
 4) Ensure spark extinguishing for inductive or capacitive load
 5) Usage category to EN 60947-1, 15 AC, 13 DC
 6) With dark/light ratio 1:1
 7) Do not bend cable below 0 °C
 8) Reference voltage 250 V UC
 9) A = V_s connections reverse-polarity protected
 C = Interference pulse suppression

Scanning distance



Operating distance

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



Order information

Type	Order no.
WT250-S162	6010707

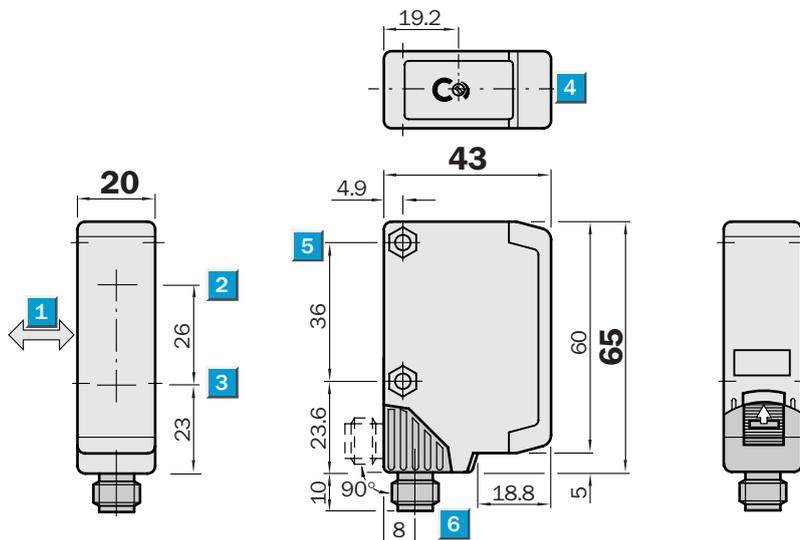

Scanning distance
100 ... 300 mm

Photoelectric proximity switches

- Background suppression
- Scanning distance adjustment (2 turns) with position indicator (270°)
- Visible red light as an alignment aid
- M12 plug rotatable by 90°
- Flexibility at the mounting position with rotatable plug connector



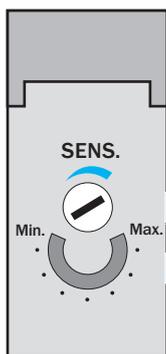
Dimensional drawing



Adjustments possible

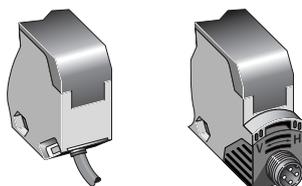
WT250-P142
WT250-P440
WT250-N142
WT250-N440

- 1 Standard direction of the material to be scanned
- 2 Transmission axis
- 3 Reception axis
- 4 Red LED signal strength indicator
- 5 Through hole Ø 4.2 mm, for M4 hexagon nut on both sides
- 6 Connection cable or M12 plug – 4-pin; plug position rotatable by 90° (V > H)
V → vertical final position
H → horizontal final position; can be locked with slider
- 7 Scanning distance adjustment (2 turns), over-turn protected
- 8 Position indicator for scanning distance setting (270°)

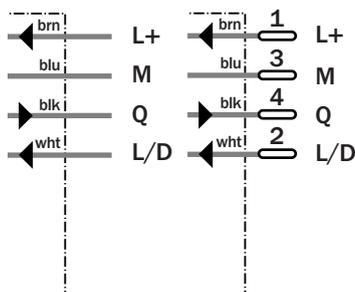


Connection types

WT250-P142	WT250-P440
WT250-N142	WT250-N440



4 x 0,18 mm ²	4-pin, M12
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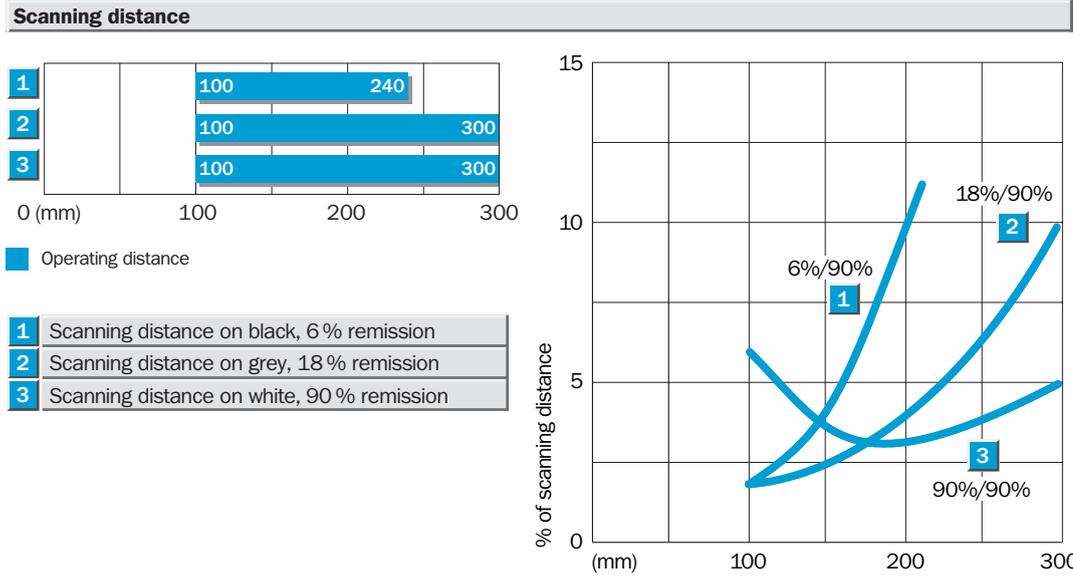
See chapter Accessories

- Cables and connectors
- Mounting systems*)

*) Mounting bracket included with delivery

Technical data		WT250-	P142	P440	N142	N440						
Scanning distance, typ. max.	100 ... 300 mm ¹⁾											
Recommended operating scanning dist.	100 ... 300 mm ¹⁾											
Scanning distance, adjustable	Potentiometer, 2 rotations, with position indicator											
Light source²⁾	LED, visible red light											
Light spot diameter	Approx. 25 mm at 300 mm											
Aperture angle sender	Approx. 3°											
Supply voltage V_S	10 ... 30 V DC ³⁾											
Residual ripple ⁴⁾	≤ 5 V _{PP}											
Current consumption ⁵⁾	≤ 35 mA											
Switching outputs	PNP, open collector: Q NPN, open collector: Q											
Output current I _A max.	100 mA											
Light receiver, switching mode	Light/dark switching per control wire: + V _S = light switching 0 V = dark switching											
Response time ⁶⁾ /switching sequ. max. ⁷⁾	≤ 2 ms; 250/s											
Connection types	PVC cable, 2 m ⁸⁾ 4 x 0.18 mm ² , Ø 3.8 mm M12 plug, 4-pin, 90° rotatable											
VDE protection class⁹⁾	□											
Circuit protection¹⁰⁾	A, B, C, D											
Enclosure rating	IP 67											
Ambient temperature	Operation - 25 °C ... + 55 °C Storage - 40 °C ... + 70 °C											
Weight												
with connecting cable 2 m	Approx. 80 g											
with M12 plug, 4-pin	Approx. 40 g											
Material	Housing: ABS; optics: PC											

- 1) 90 % reflectance of material scanned
- 2) Average service life T_A = + 25 °C; LED, red light 100,000 h
- 3) Limit values, operation in short circuit protected network max. 8 A
- 4) May not exceed or fall short of V_S tolerances
- 5) Without load
- 6) Signal operating time with ohmic load
- 7) With dark/light ratio 1:1, without time delay
- 8) Do not bend cable below 0 °C
- 9) Reference voltage 50 V DC
- 10) A = V_S connections reverse-polarity protected
B = Outputs Q and Q̄ short-circuit protected
C = Interference pulse suppression
D = Outputs overcurrent and short-circuit protected

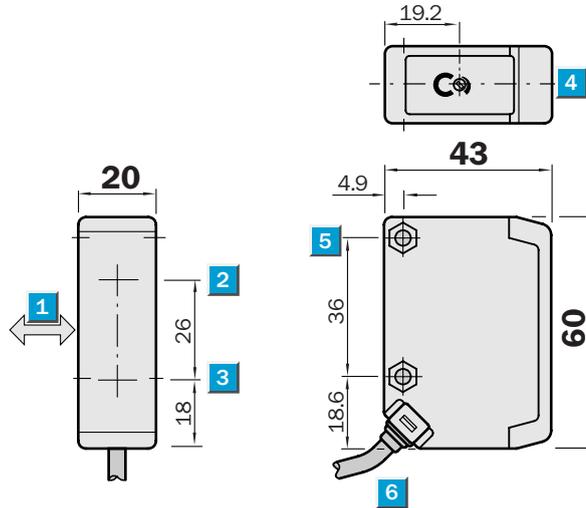


Order information	
Type	Order no.
WT250-P142	6010619
WT250-P440	6010621
WT250-N142	6010616
WT250-N440	6010618


Scanning distance
100 ... 300 mm
 Photoelectric proximity switch

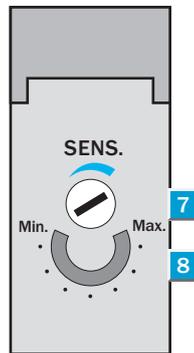
- Universal voltage
- Background suppression
- Scanning distance adjustment (2 turns) with position indicator (270°)
- Visible red light as an alignment aid
- Relay switching output (SPDT)

Dimensional drawing



Adjustments possible

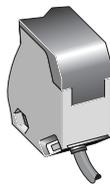
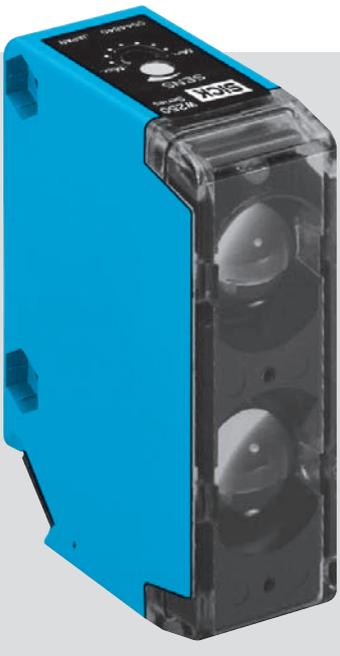
WT250-S142



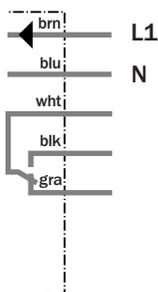
- 1 Standard direction of the scanned material
- 2 Transmission axis
- 3 Reception axis
- 4 Red LED signal strength indicator
- 5 Through hole Ø 4.2 mm, for M4 hexagon nut on both sides
- 6 Connection cable
- 7 Scanning distance adjustment (2 turns), over-turn protection
- 8 Position indicator for scanning distance setting (270°)

Connection type

WT250-S142



5 x 0.76 mm²



See chapter Accessories

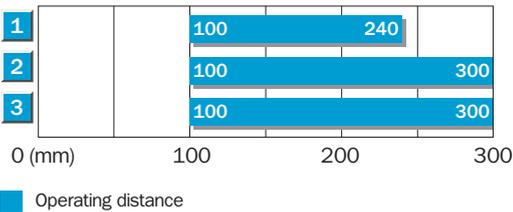
Mounting systems*)

*) Mounting bracket included with delivery

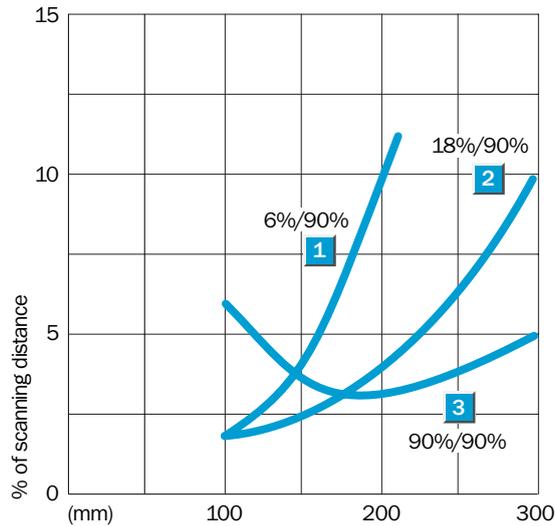
Technical data		WT250-	S142										
Scanning distance, typ. max.	100 ... 300 mm ¹⁾												
Recommended operating scanning dist.	100 ... 300 mm ¹⁾												
Scanning distance, adjustable	Potentiometer, 2 rotations, with position indicator												
Light source²⁾	LED, visible red light												
Light spot diameter	Approx. 25 mm at 300 mm												
Aperture angle sender	Approx. 3°												
Supply voltage V_S³⁾	12 ... 240 V DC												
	24 ... 240 V UC												
Current consumption	≤ 2 VA												
Switching outputs	Relay 1 x a, indirect-coupled ⁴⁾												
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁵⁾												
Light receiver, switching mode	Light switching												
Response time, switching sequ. max. ⁶⁾	≤ 15 ms; 33/s												
Connection type	PVC cable ⁷⁾ , 2 m												
	5 x 0.76 mm ² , Ø 6.3 mm												
VDE protection class⁸⁾	□												
Circuit protection⁹⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature	Operation -25 °C ... +55 °C												
	Storage -40 °C ... +70 °C												
Weight	Approx. 160 g												
Material	Housing: ABS; optics: PC												

1) 90 % reflectance of material scanned
 2) Average service life at T_A = +25 °C; LED, red light 100,000 h
 3) ± 10 %
 4) Ensure spark extinguishing for inductive or capacitive load
 5) Usage category to EN 60947-1, 15 AC, 13 DC
 6) With light/dark ratio 1:1
 7) Do not bend cable below 0 °C
 8) Reference voltage 250 V UC
 9) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

Scanning distance



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



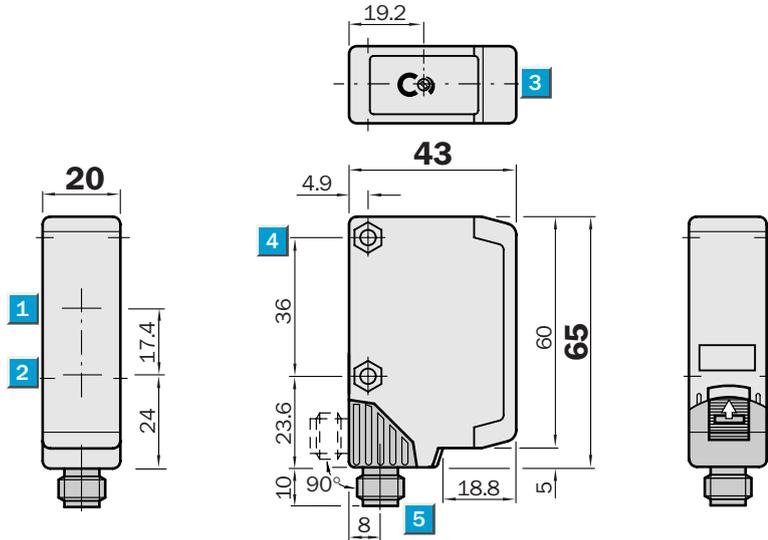
Order information

Type	Order no.
WT250-S142	6010622

	Scanning range 0.01 ... 13.5 m (PL80 A)
	Scanning range 0.01 ... 9.0 m (P250)
Photoelectric reflex switches	

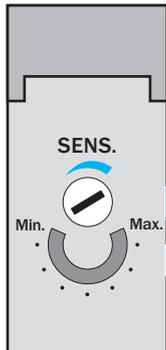
- Polarising filter, ensuring reliable detection of objects with reflective surfaces
- Robust, compact housing
- Adjustable sensitivity setting (2 turns) with position indicator (270°)
- Flexibility at the mounting position with rotatable plug connector

Dimensional drawing



Adjustments possible

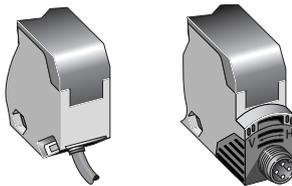
WL250-P132
WL250-P430
WL250-N132
WL250-N430



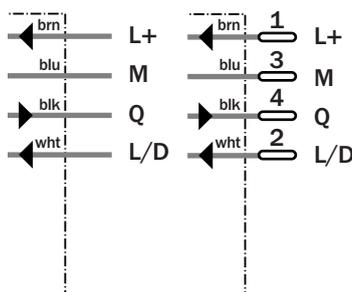
- 1 Reception axis
- 2 Transmission axis
- 3 Red LED signal strength indicator
- 4 Through hole Ø 4.2 mm, for M4 hexagon nut on both sides
- 5 Connection cable or M12 plug – 4-pin; plug position rotatable by 90° (V > H),
V → vertical final position
H → horizontal final position; can be locked with slider
- 6 Sensitivity control (2 U), over-turn protection
- 7 Position indicator for sensitivity setting (270°)

Connection types

WL250-P132	WL250-P430
WL250-N132	WL250-N430



4 x 0.18 mm ²	4-pin, M12
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See chapter Accessories

Cables and connectors
Mounting systems*)
Reflectors **)

*) Mounting bracket included with delivery
**) Reflector P250 included with delivery

Technical data	WL250-	P132	P430	N132	N430
Scanning range , typ. max./on reflector	0.01 ... 13.5 m/PL 80 A				
typ. max./on reflector	0.01 ... 9 m/P250 (suppl. with equipment)				
Recommended operating range	0.01 ... 8 m/P250				
Sensitivity, adjustable	Potentiometer, 2 rotations, with position indicator				
Light source¹⁾	LED, visible red light with polarizing filter				
Light spot diameter	Approx. 400 mm at 8 m				
Aperture angle sender	Approx. 2.5°				
Supply voltage V_S	10 ... 30 VDC ²⁾				
Residual ripple ³⁾	≤ 5 V _{pp}				
Current consumption ⁴⁾	≤ 35 mA				
Switching outputs	PNP, open collector: Q NPN, open collector: Q				
Output current I _A max.	100 mA				
Light receiver, switching mode	Light/dark switching per control wire: + V _S = Light switching 0 V = dark switching				
Response time ⁵⁾ /switching sequ. max. ⁶⁾	≤ 0.5 ms; 1000/s				
Connection types	PVC cable, 2 m ⁷⁾ 4 x 0.18 mm ² , Ø 3.8 mm M12 plug, 4-pin, 90° rotatable				
VDE protection class⁸⁾	□				
Circuit protection⁹⁾	A, B, C, D				
Enclosure rating	IP 67				
Ambient temperature	Operation -25 °C ... +55 °C Storage -40 °C ... +70 °C				
Weight					
with connection cable 2 m	Approx. 80 g				
with M12 plug, 4-pin	Approx. 40 g				
Material	Housing: ABS; optics: PMMA				

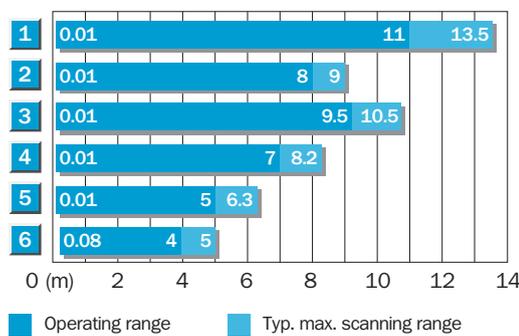
¹⁾ Average service life at T_A = +25 °C; LED, red light 100,000 h
²⁾ Limit values, operation in short circuit protected network max. 8 A

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

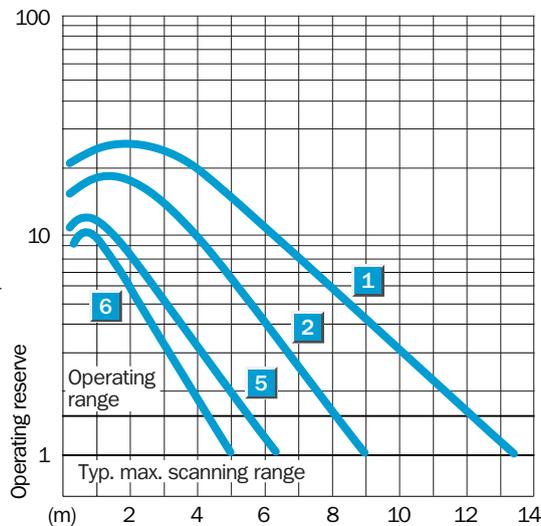
⁶⁾ With light/dark ratio 1:1, without time delay
⁷⁾ Do not bend cable below 0 °C
⁸⁾ Reference voltage 50 V DC

⁹⁾ A = V_S connections reverse-polarity protected
B = Outputs Q and Q̄ short-circuit protected
C = Interference pulse suppression
D = Outputs overcurrent and short-circuit protected

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.01 ... 11.0 m
2 P 250	0.01 ... 8.0 m
3 PL 50 A or PL 40 A	0.01 ... 9.5 m
4 PL 30 A or PL 31 A	0.01 ... 7.0 m
5 PL 20 A	0.01 ... 5.0 m
6 Reflective tape Diamond Grade	0.08 ... 4.0 m



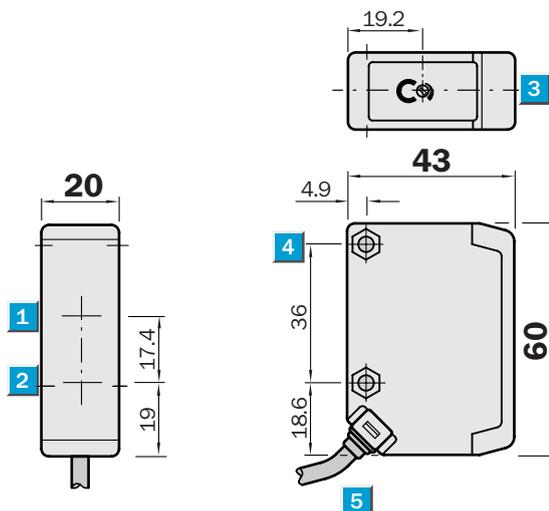
Order information

Type	Order no.
WL250-P132	6010608
WL250-P430	6010610
WL250-N132	6010605
WL250-N430	6010607

	Scanning range 0.01 ... 13.5 m (PL80 A)
	Scanning range 0.01 ... 9.0 m (P250)
Photoelectric reflex switches	

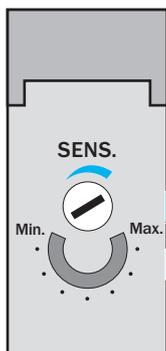
- Universal voltage
- Polarising filter, ensuring reliable detection of objects with reflective surfaces
- Robust, compact housing
- Red light LED sender as an alignment aid
- Relay switching output (SPDT)

Dimensional drawing



Adjustments possible

WL250-S132



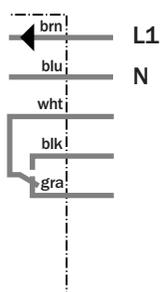
- 1 Reception axis
- 2 Transmission axis
- 3 Red LED signal strength indicator
- 4 Through hole Ø 4.2 mm, for M4 hexagon nut on both sides
- 5 Connection cable
- 6 Sensitivity adjustment (2 turns), over-turn protection
- 7 Position indicator for sensitivity setting (270°)

Connection type

WL250-S132



5 x 0.76 mm²



See chapter Accessories

Mounting systems*)

Reflectors **)

*) Mounting bracket included with delivery

**) Reflector P250 included with delivery

Technical data		WL250-	S132										
Scanning range , typ. max./on reflector	0.01 ... 13.5 m/PL 80 A												
	typ. max./on reflector	0.01 ... 9 m/P250 (suppl. with equipment)											
Recommended operating range	0.01 ... 8 m/P250												
Sensitivity, adjustable	Potentiometer, 2 rotations, with position indicator												
Light source¹⁾	LED, visible red light with polarizing filter												
Light spot diameter	Approx. 400 mm at 8 m												
Aperture angle sender	Approx. 2.5°												
Supply voltage V_S²⁾	12 ... 240 V DC												
	24 ... 240 V UC												
Current consumption	≤ 2 VA												
Switching outputs	Relay 1 x u, indirect-coupled ³⁾												
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁴⁾												
Light receiver, switching mode	Light switching												
Response time, switching sequ. max. ⁵⁾	≤ 15 ms; 33/s												
Connection type	PVC cable, 2 m ⁵⁾												
	5 x 0.76 mm ² , Ø 6.3 mm												
VDE protection class⁷⁾	□												
Circuit protection⁸⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature	Operation - 25 °C ... + 55 °C												
	Storage - 40 °C ... + 70 °C												
Weight	Approx. 160 g												
Material	Housing: ABS; optics: PMMA												

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

2) ± 10 %

3) Ensure spark extinguishing with inductive
or capacitive load

4) Usage category to EN 60947-1, 15 AC,
13 DC

5) With light/dark ratio 1:1,
without time delay

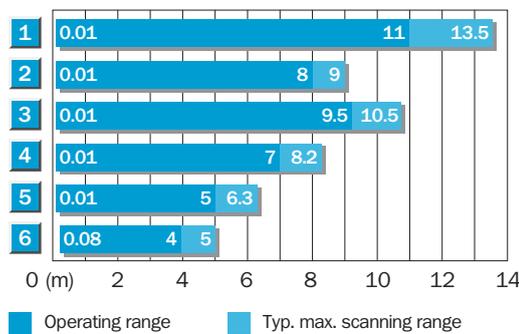
6) Do not bend cable below 0 °C

7) Reference voltage 250 V UC

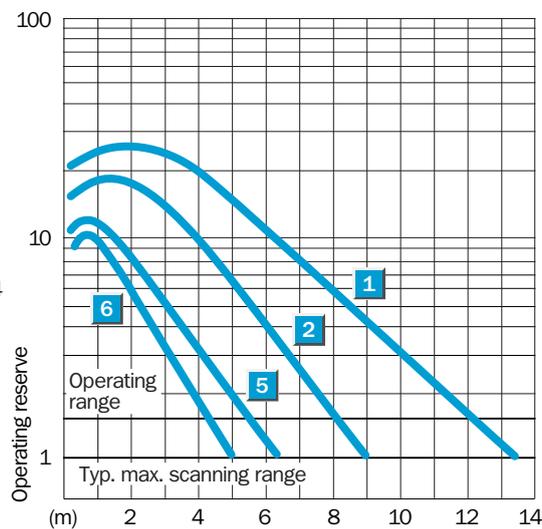
8) A = V_S connections reverse-polarity
protected

C = Interference pulse suppression

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.01 ... 11.0 m
2 P 250	0.01 ... 8.0 m
3 PL 50 A or PL 40 A	0.01 ... 9.5 m
4 PL 30 A or PL 31 A	0.01 ... 7.0 m
5 PL 20 A	0.01 ... 5.0 m
6 Reflective tape Diamond Grade	0.08 ... 4.0 m



Order information

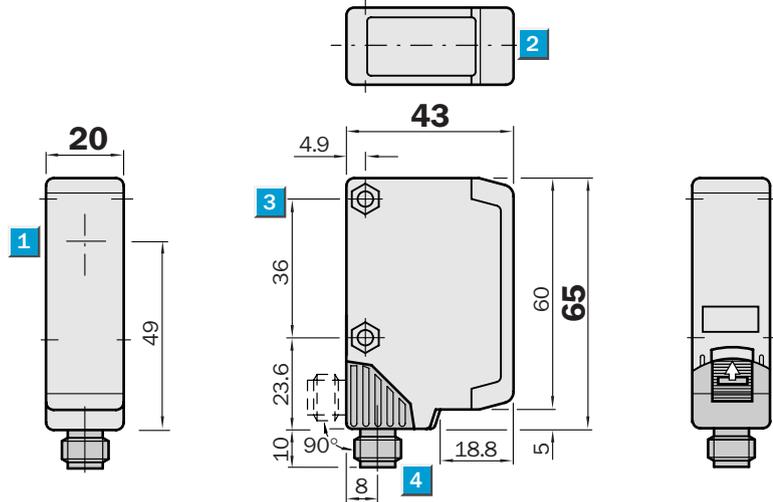
Type	Order no.
WL250-S132	6010611

Scanning range
0 ... 25 m

Through-beam photoelectric switches

- Robust, compact housing
- Red light LED sender as an alignment aid
- Flexibility at the mounting position with rotatable plug connector

Dimensional drawing

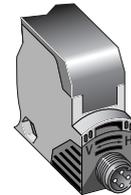
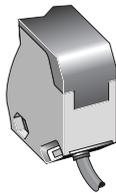


- Centre of the optical axis, sender (WS250), receiver (WE250)
- Red LED signal strength indicator (only receiver WE250)
- Through hole Ø 4.2 mm, for M4 hexagon nut on both sides
- Connection cable or M12 plug – 4-pin; plug position rotatable by 90° (V > H), V → vertical final position, H → horizontal final position; can be locked with slider

Connection types

WS/WE250-P142
WS/WE250-N142

WS/WE250-P440
WS/WE250-N440



2 x 0.18 mm²

4 x 0.18 mm²

4-pin, M12

4-pin, M12

Sender

WS250-D142

Receiver

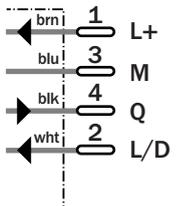
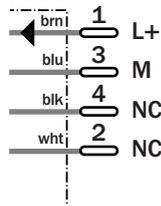
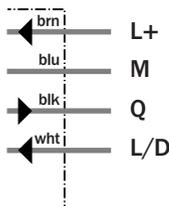
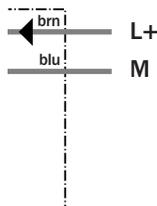
WE250-P142
WE250-N142

Sender

WS250-D 440

Receiver

WE250-P 440
WE250-N 440



See chapter Accessories

Cables and connectors
Mounting systems*)

*) Mounting bracket included with delivery

Technical data		WS/WE250-	P142	P440	N142	N440
Scanning range, typ. max.	0 ... 25 m					
Operating range	0 ... 20 m					
Light source¹⁾	LED, visible red light					
Light spot diameter	Approx. 1.5 m at 20 m					
Aperture angle sender	Approx. 4°					
Reception angle	Approx. 20°					
Supply voltage V_S	10 ... 30 V DC ²⁾					
Residual ripple ³⁾	≤ 5 V _{SS}					
Current consumption⁴⁾						
Sender	≤ 20 mA					
Receiver	≤ 35 mA					
Switching outputs	PNP, open collector: Q					
	NPN, open collector: Q					
Output current I _A max.	100 mA					
Light receiver, switching mode	Light/dark switching per control wire:					
	+ V _S = light switching					
	0 V = dark switching					
Response time ⁵⁾ /switching sequ. max. ⁶⁾	≤ 0.5 ms; 1000/s					
Connection types	PVC cable ⁷⁾ , 2 m					
Sender WS	2 x 0.18 mm ² , Ø 3.8 mm					
Receiver WE	4 x 0.18 mm ² , Ø 3.8 mm					
	M12 plug, 4-pin, 90° rotatable					
VDE protection class⁸⁾	□					
Circuit protection⁹⁾						
Sender	A					
Receiver	A, B, C, D					
Enclosure rating	IP 67					
Ambient temperature	Operation - 25 °C ... + 55 °C					
	Storage - 40 °C ... + 70 °C					
Weight						
with connection cable 2 m	Approx. 150 g					
with M12 plug, 4-pin	Approx. 70 g					
Material	Housing: ABS; optics: PC					

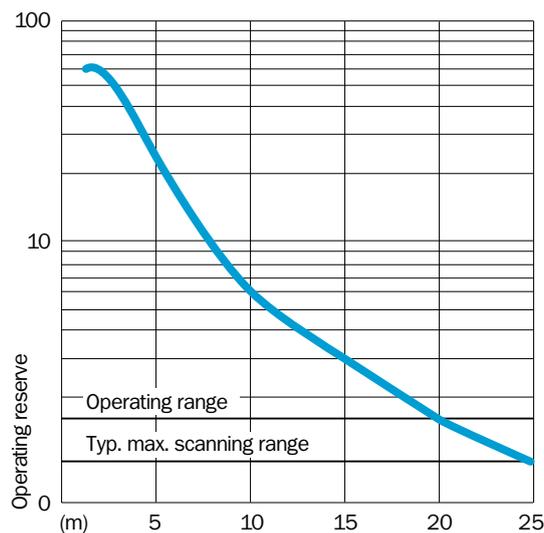
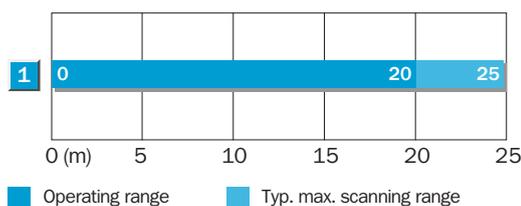
1) Average service life at T_A = + 25 °C; LED, red light 100,000 h
 2) Limit values, operation in short circuit protected network max. 8 A

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

6) With light/dark ratio 1:1
 7) Do not bend cable below 0 °C
 8) Reference voltage 50 V DC
 9) A = V_S connections reverse-polarity protected

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

Operating range and reserve



Order information

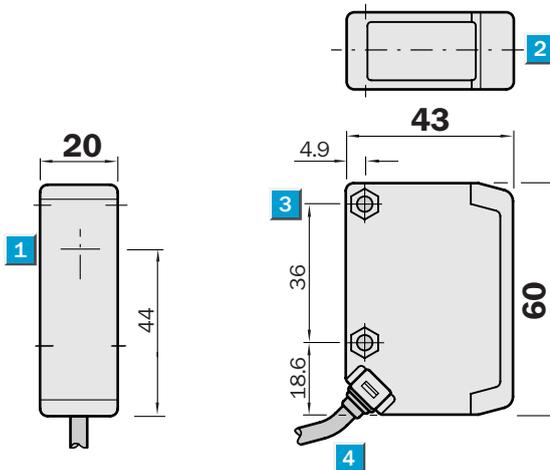
Type	Order no.
WS/WE250-P142	6026266
WS/WE250-P440	6026268
WS/WE250-N142	6026263
WS/WE250-N440	6026265

 **Scanning range**
0 ... 25 m

Through-beam photoelectric switch

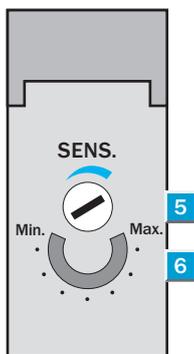
- Universal voltage
- Robust, compact housing
- Red light LED sender as an alignment aid
- Relay switching output (SPDT)

Dimensional drawing



Adjustments possible

WE250-S132



- 1 Center of the optics axis, sender (WS250), receiver (WE250)
- 2 Red LED signal strength indicator (only receiver WE250)
- 3 Through hole \varnothing 4.2 mm, for M4 hexagon nut on both sides
- 4 Connection cable
- 5 Sensitivity adjustment (2 turns), over-turn protection
- 6 Position indicator for sensitivity setting (270°)

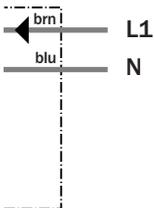


Connection type

WS/WE250-S132

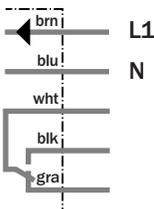


Sender 2 x 0.76 mm²
WS250-U132



See chapter Accessories
Mounting systems*)

Receiver 5 x 0.76 mm²
WE250-S132



*) Mounting bracket included with delivery

Technical data		WS/WE250-	S132									
Scanning range, typ. max.	0 ... 25 m											
Operating range	0 ... 20 m											
Sensitivity adjustable (WE)	Potentiometer, 2 rotations, with position indicator											
Light source¹⁾	LED, visible red light											
Light spot diameter	Approx. 1.5 m at 20 m											
Aperture angle sender	Approx. 4°											
Reception angle	Approx. 20°											
Supply voltage V_S²⁾	12 ... 240 V DC 24 ... 240 V UC											
Current consumption												
Sender	≤ 2 VA											
Receiver	≤ 2 VA											
Switching outputs	Relay 1 x u indirect-coupled ³⁾											
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁴⁾											
Light receiver, switching mode	Light switching											
Response time, switching sequ. max. ⁵⁾	≤ 15 ms; 33/s											
Connection type	PVC cable ⁶⁾ , 2 m											
Sender WS	2 x 0.76 mm ² , Ø 6.3 mm											
Receiver WE	5 x 0.76 mm ² , Ø 6.3 mm											
VDE protection class⁷⁾	□											
Circuit protection⁸⁾												
Sender	A											
Receiver	A, C											
Enclosure rating	IP 67											
Ambient temperature	Operation -25 °C ... +55 °C Storage -40 °C ... +70 °C											
Weight	Approx. 290 g											
Material	Housing: ABS; optics: PC											

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

2) ± 10%

3) Ensure spark extinguishing with inductive or capacitive load

4) Usage category to EN 60947-1, 15 AC, 13 DC

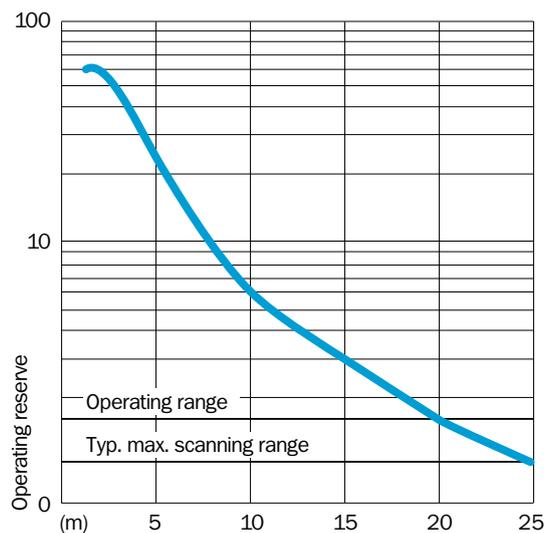
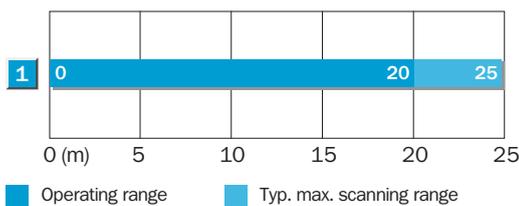
5) With light/dark ratio 1:1

6) Do not bend cable below 0 °C

7) 250 V UC

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

Operating range and reserve



Order information

Type	Order no.
WS/WE250-S132	6010603

W 260 series standard photoelectric switches for a wide range of applications

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



The easily accessible terminal chamber electrical connection ensures that the sensor can be connected and commissioned easily and quickly. Furthermore, mounting brackets and reflector (WL 260 only) are included in the supply.

Overview of W 260:

- 6 different detection systems in one configuration = standardised mounting system,
- DC/AC devices conform to EN 61000-6-3 (interference emission in "residential and commercial areas"),
- comprehensive range of fibre-optic cables covers many applications,
- universal supply voltage.

Main industries:

- Plastics technology,
- Materials handling,
- Mechanical engineering,
- Door/gate and, access control.

The W 260 series with its sensible ranges and useful technical features is superbly designed for a wide range of applications.

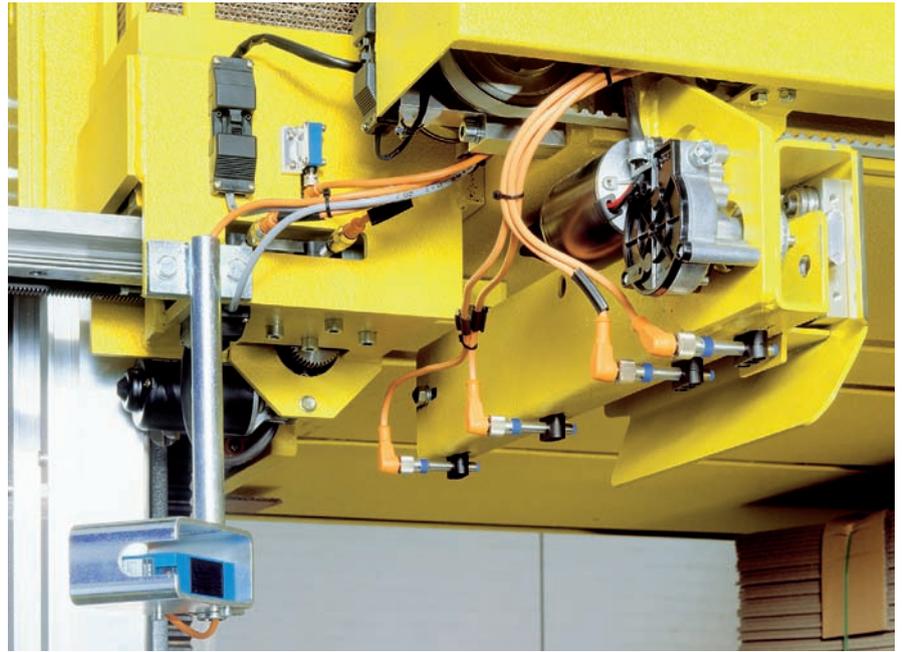
Six different detection methods are available in one configuration, saving on mounting systems and stockholding.

The outstanding features are the long ranges and scanning distances of each system.

The sensor, with a variety of adjustable features including teach-in for a fast set-up, is ideally suited to a wide range of applications. Glass and stainless steel fibre-optic cables open up new areas of application in restricted environments.

	Through-beam photoelectric switches
	Photoelectric fibre-optic switches (proximity)
	Photoelectric fibre-optic switches (through-beam)

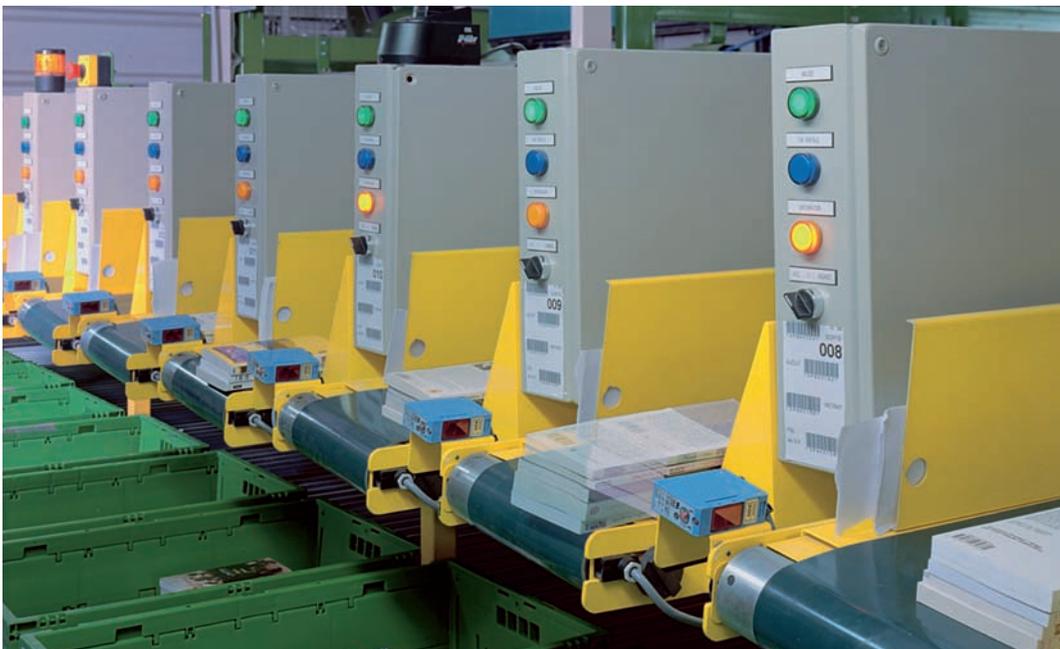
► The WT 260 photoelectric proximity switch is used for height control in a packaging machine.



▼ CE conformity to EN 61000-6-3 and, therefore, the right choice for residential and commercial applications: the WL 260 photoelectric reflex switch used to monitor the closing edges in automatic door and gate systems.



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

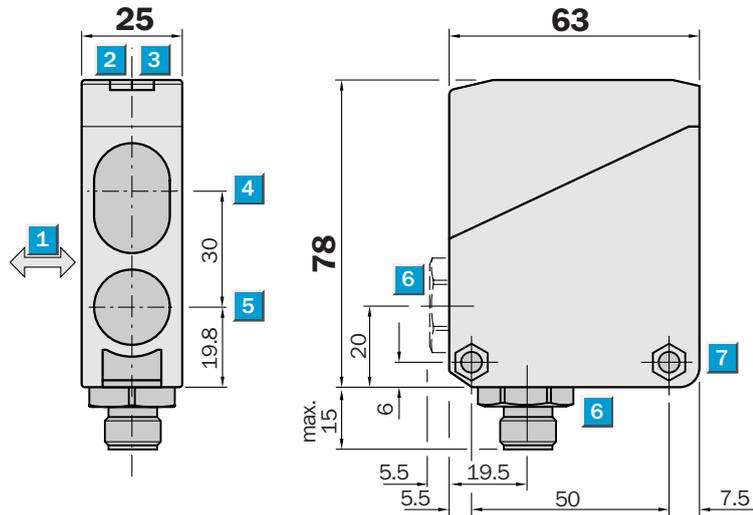


◀ WL 260 photoelectric reflex switches with a small light spot are used to ensure reliable mail order operations.


Scanning distance
 0.07 ... 2.1 m
Photoelectric proximity switch

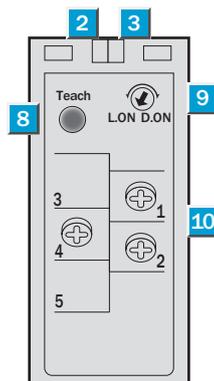
- Teach-in, ready to operate in less time
- Background suppression:
Reliable detection of dark objects even against light backgrounds
- Terminal chamber or M12 plug, 4-pin
- LED signal indicator green
Operating reserve/Pre-failure display

Dimensional drawing



Adjustments possible

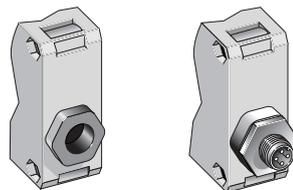
- WT 260T-P 290
- WT 260T-P 490
- WT 260T-N 290
- WT 260T-N 490



- 1 Standard direction of material being scanned
- 2 LED signal indicator orange, switching output active
- 3 LED signal indicator green, operating reserve
- 4 Middle of optic axis, receiver
- 5 Middle of optic axis, sender
- 6 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M12 equipment plug bottom (4-pin)
- 7 Through hole Ø 5.2 mm on both sides for M5 hex nut
- 8 Teach-in button (scanning distance setting/background suppression)
- 9 Light/dark-switching (L.ON = light-switching, D.ON = dark-switching)
- 10 Terminals

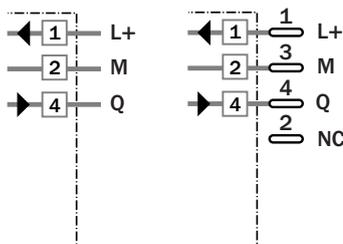
Connection types

WT 260T-P 290	WT 260T-P 490
WT 260T-N 290	WT 260T-N 490



Terminals

4-pin, M12



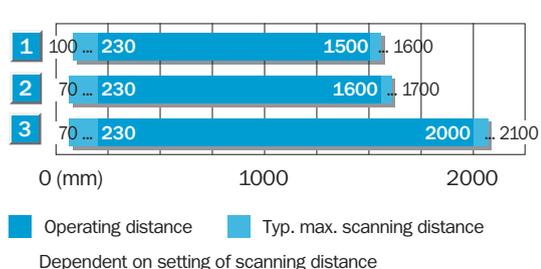
See chapter Accessories
 Cables and connectors
 Mounting systems*)

*) Mounting bracket included with delivery

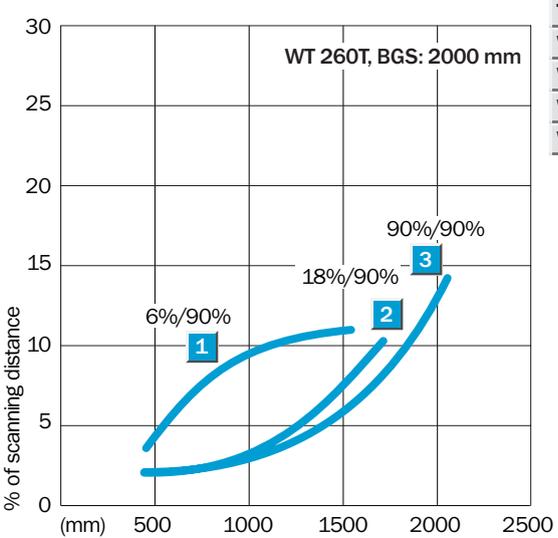
Technical data		WT 260T-	P 290	P 490	N 290	N 490						
Scanning distance, typ. max.	70 mm ... 2100 mm ¹⁾											
Recommended operating scanning dist.	100 mm ... 2000 mm ¹⁾											
Scanning distance setting	Automatic, per Teach-in button											
Light source ²⁾	LED, infrared											
Light spot diameter	Approx. 200 mm at 2000 mm											
Aperture angle sender	Approx. 6°											
Supply voltage V_s	10 ... 30 VDC ³⁾											
Ripple ⁴⁾	≤ 10 %											
Current consumption ⁵⁾	≤ 55 mA											
Switching outputs	PNP, open collector: Q NPN, open collector: Q											
Output current I _A max.	100 mA											
Light receiver, switching mode	Light-/dark-switching by rotary switch											
Response time ⁶⁾	≤ 5 ms											
Switching frequency max. ⁷⁾	100/s											
Connection types	Terminal chamber Plug M12, 4-pin											
VDE protection class ⁸⁾	□											
Circuit protection ⁹⁾	A, B, C, D											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation -25 °C ... +55 °C Storage -40 °C ... +70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; Optics: PMMA											

- ¹⁾ Object with 90 % remission (based on standard white DIN 5033)
 - ²⁾ Average service life 100,000 h at T_A = +25 °C
 - ³⁾ Limit values, operation in short circuit protected network max. 8 A
 - ⁴⁾ Must be within V_s tolerances
 - ⁵⁾ Without load
 - ⁶⁾ With resistive load
 - ⁷⁾ With light/dark ratio 1:1
 - ⁸⁾ Reference voltage 50 V DC
 - ⁹⁾ A = V_s connections reverse-polarity protected
- B = Outputs Q and \bar{Q} reverse-polarity protected
C = Interference suppression
D = Outputs overcurrent and short-circuit protected

Scanning distance



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



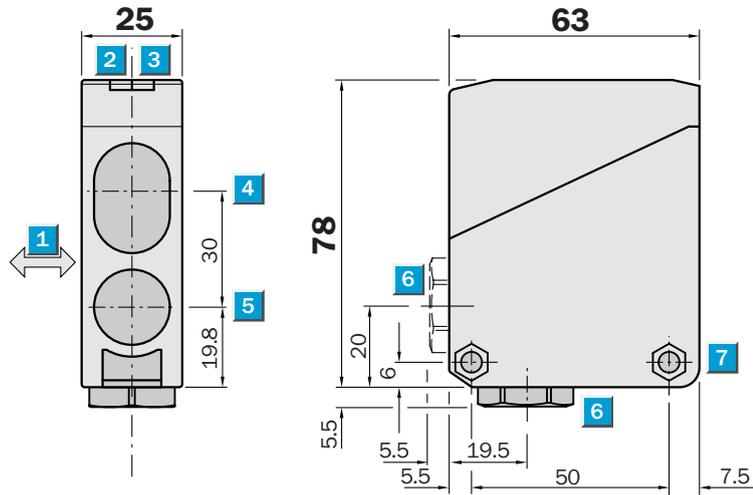
Order information

Type	Order no.
WT 260T-P 290	6 021 919
WT 260T-P 490	6 021 920
WT 260T-N 290	6 021 921
WT 260T-N 490	6 021 922


Scanning distance
 0.07 ... 2.1 m
 Photoelectric proximity switch

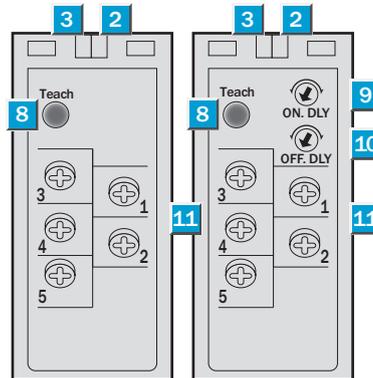
- Universal voltage
- Teach-in, ready to operate in less time
- Background suppression:
Reliable detection of dark objects even against light backgrounds
- Terminal chamber
- Relay output, SPDT, time delays

Dimensional drawing



Adjustments possible

WT 260T-S 290	WT 260T-R 290
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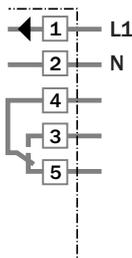
- 1 Standard direction of material being scanned
- 2 LED signal indicator orange, switching output active
- 3 LED signal indicator green, operating reserve
- 4 Middle of optic axis, receiver
- 5 Middle of optic axis, sender
- 6 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear;
- 7 Through hole Ø 5.2 mm on both sides for M5 hex nut
- 8 Teach-in button (scanning distance setting/ background suppression)
- 9 Time control ON delay t_{ON}
- 10 Time control OFF delay t_{OFF}
- 11 Terminals

Connection types

WT 260T-S 290
WT 260T-R 290



Terminals



See chapter Accessories

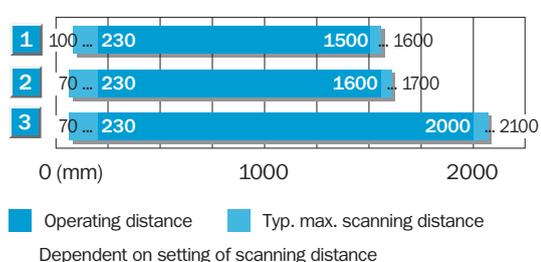
Mounting systems^{*)}

^{*)} Mounting bracket included with delivery

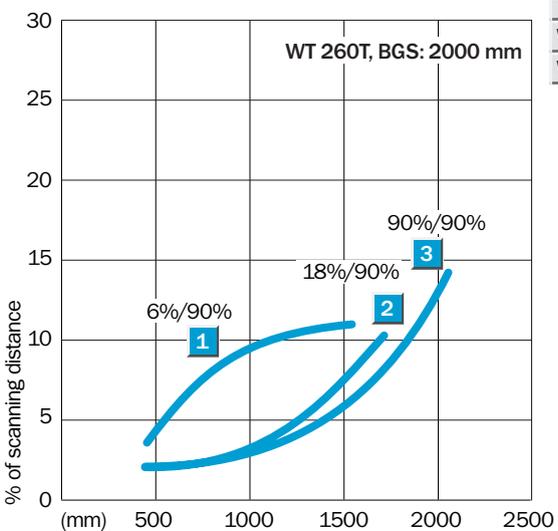
Technical data		WT 260T-	S 290	R 290								
Scanning distance, typ. max.	70 mm ... 2100 mm ¹⁾											
Recommended operating scanning dist.	100 mm ... 2000 mm ¹⁾											
Scanning distance setting	Automatic, per Teach-in button											
Light source²⁾	LED, infrared											
Light spot diameter	Approx. 200 mm at 2000 mm											
Aperture angle sender	Approx. 6°											
Supply voltage V_s³⁾	12 to 240 V DC											
	24 to 240 V UC											
Power consumption	≤ 5 VA											
Switching outputs	Relay, SPDT, electrically isolated ⁴⁾											
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁵⁾											
Light receiver, switching mode	Light-switching											
Response time	≤ 20 ms											
Switching frequency max. ⁶⁾	25/s											
Time delay												
ON delay t _{ON}	0.1 ... 10 s, can be connected separately											
OFF delay t _{OFF}	0.1 ... 10 s, can be connected separately											
Connection type	Terminal chamber											
VDE protection class⁷⁾	<input type="checkbox"/>											
Circuit protection⁸⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation - 25 °C to + 55 °C											
	Storage - 40 °C to + 70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; Optics: PMMA											

¹⁾ Object with 90 % remission (based on standard white DIN 5033)
²⁾ Average service life 100,000 h at T_A = + 25 °C
³⁾ ± 10 %
⁴⁾ Provide suitable spark suppression for inductive or capacitive loads
⁵⁾ Usage categorie to EN 60947-1, 15 AC, 13 DC
⁶⁾ With light/dark ratio 1:1
⁷⁾ Reference voltage 250 V UC
⁸⁾ A = V_s connections reverse-polarity protected
C = Interference suppression

Scanning distance



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



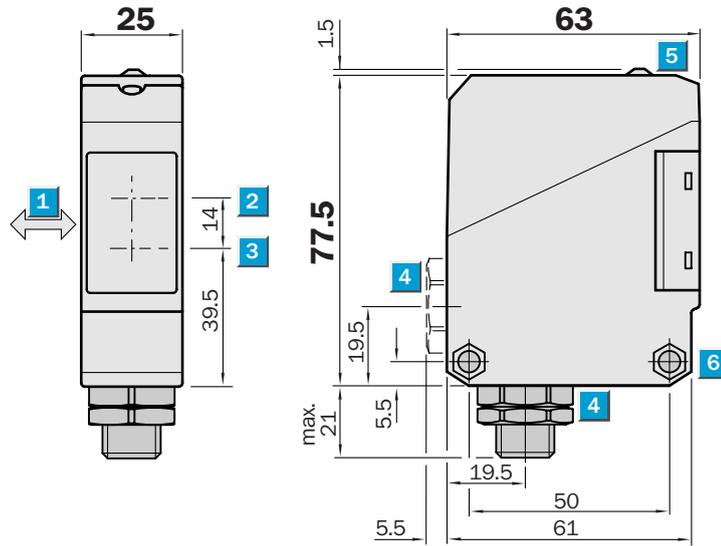
Order information

Type	Order no.
WT 260T-S 290	6 021 923
WT 260T-R 290	6 021 924


Scanning distance
 0 ... 380 mm
Photoelectric proximity switch

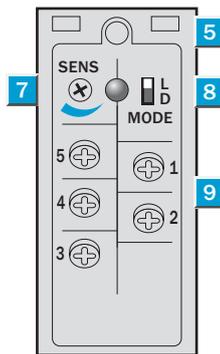
- Reliable detection of dark objects even against light backgrounds
- Scanning distance steplessly adjustable
- Terminal chamber or M12 plug, 4-pin or 5-pin
- Test input
- Contamination signaling output

Dimensional drawing



Adjustments possible

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

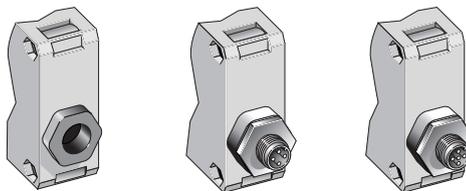


- 1 Standard direction of material being scanned
- 2 Middle optic axis, receiver
- 3 Middle optic axis, sender
- 4 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M12 equipment plug, bottom
- 5 LED signal strength indicator, red
- 6 Through hole \varnothing 5.2 mm on both sides for M5 hex nut
- 7 Scanning distance control
- 8 Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 9 Terminals



Connection types

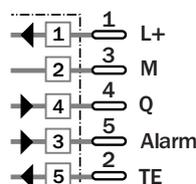
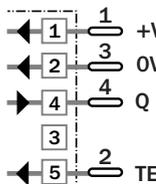
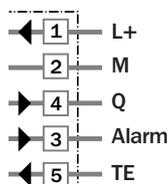
- WT 260-P 260
- WT 260-P 460
- WT 260-P 560



Terminals

4-pin, M12

5-pin, M12



See chapter Accessories

Cables and connectors

Mounting systems^{*)}

^{*)} Mounting bracket included with delivery



Technical data		WT 260-	P 260	P 460 ¹⁾	P 560 ¹⁾								
Scanning distance	Max.: 0 ... 380 mm, adjustable ²⁾												
	Min.: 75 ... 160 mm, adjustable ²⁾												
Scanning distance setting	per potentiometer 270°												
Light source³⁾	LED, infrared												
	Light spot diameter	Approx. 17 mm at 300 mm											
	Aperture angle sender	Approx. 1,5°											
Supply voltage V_s	10 to 30 VDC ⁴⁾												
	Ripple ⁵⁾	≤ 5 V _{PP}											
	Current consumption ⁶⁾	≤ 35 mA											
Switching outputs	PNP, open collector: Q												
	Output current I _A max.	100 mA											
	Light receiver, switching mode	Light-/dark-switching by rotary switch											
	Response time ⁷⁾	≤ 2 ms											
	Switching frequency max. ⁸⁾	250/s											
	Contamination signaling output VMA ⁹⁾	Alarm 100 mA, static											
Test input »TE« sender off	PNP: TE to + V _s												
Connection types	Terminal chamber												
	Plug M12, 4-pin												
	Plug M12, 5-pin												
VDE protection class¹⁰⁾	□												
Circuit protection¹¹⁾	A, B, C, D												
Enclosure rating	IP 66												
Ambient temperature T_A	Operation	-25 °C ... +55 °C											
	Storage	-40 °C ... +70 °C											
Weight	Approx. 120 g												
Material	Housing: ABS; Optic: PC												

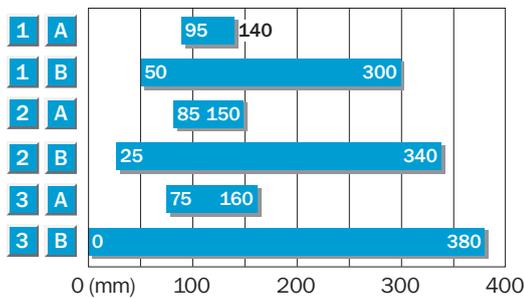
1) Without 
 2) Object with 90 % remission (based on standard white DIN 5033)
 3) Average service life 100,000 h at T_A = +25 °C

4) Limit values, operation in short circuit protected network max. 8 A
 5) Must be within V_s tolerances
 6) Without load
 7) With resistive load

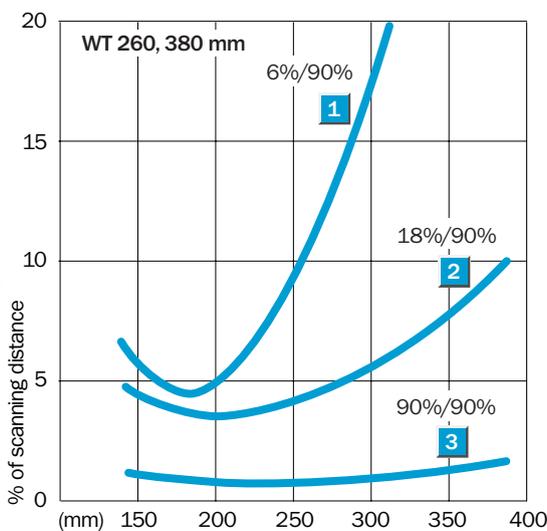
8) With light/dark ratio 1:1
 9) Operating reserve < 50 %
 10) Reference voltage 50 V DC
 11) A = V_s connections reverse-polarity protected

B = Inputs/outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance



- 1 Scanning range on black, 6 % remission
- 2 Scanning range on grey, 18 % remission
- 3 Scanning range on white, 90 % remission
- A Scanning distance control set to MIN
- B Scanning distance control set to MAX



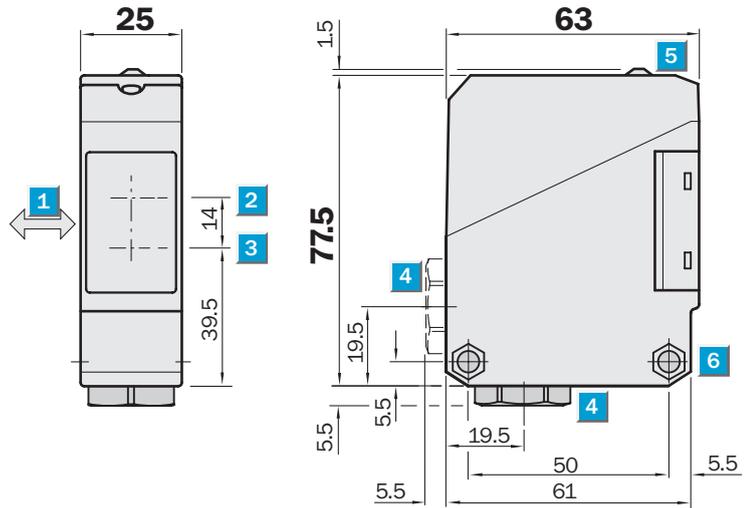
Order information

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

Scanning distance
 0 ... 380 mm
 Photoelectric proximity switch

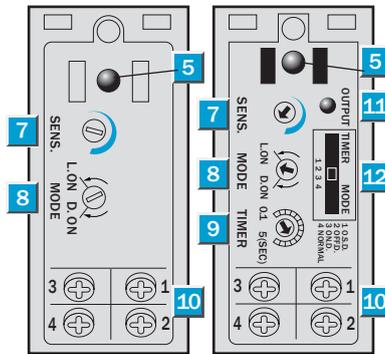
- Universal voltage
- Reliable detection of dark objects even against light backgrounds
- Scanning distance steplessly adjustable
- Terminal chamber
- Relay output, SPDT, time delays

Dimensional drawing



Adjustments possible

WT 260-S 260 WT 260-R 260



- Standard direction of material being scanned
- Middle of optic axis, receiver
- Middle of optic axis, sender
- Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear;
- LED signal strength indicator, red
- Through hole Ø 5.2 mm on both sides for M5 hex nut
- Scanning distance control
- Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- Time control
- Terminals
- Red LED status indicator; switching output active
- Time delay selector switch
O.S.D. = One Shot
OFF.D. = OFF delay
ON.D. = ON delay
Normal = No delay

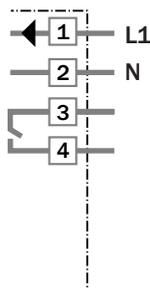


Connection types

WT 260-S 260
WT 260-R 260

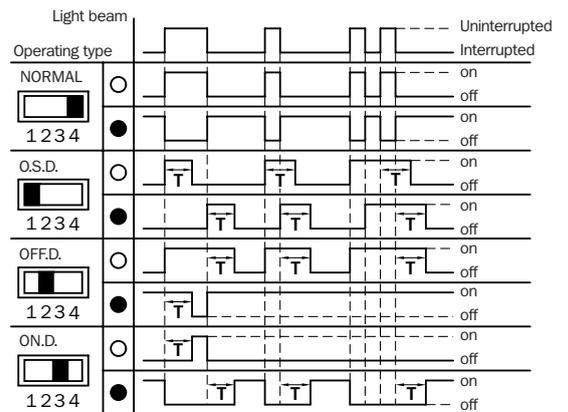


Terminals



Time delays

t = 0.1–5 s



See chapter Accessories

Mounting systems^{*)}

^{*)} Mounting bracket included with delivery

Technical data		WT 260-	S 260	R 260								
Scanning distance	max.: 0 ... 380 mm, adjustable ¹⁾											
	min.: 75 ... 160 mm, adjustable ¹⁾											
	Scanning distance setting	per potentiometer 270°										
Light source²⁾	LED, infrared											
	Light spot diameter	Approx. 17 mm at 300 mm										
	Aperture angle sender	Approx. 1,5°										
Supply voltage V_s³⁾	12 to 240 V DC											
	24 to 240 V UC											
	Current consumption	≤ 5 VA										
Switching outputs	Relay, SPDT, electrically isolated ⁴⁾											
	Output current I _A max.	3 A/240 V AC; 3 A/30 V DC ⁵⁾										
	Light receiver, switching mode	Light-/dark-switching by rotary switch										
	Response time	≤ 20 ms										
	Switching frequency max. ⁶⁾	25/s										
Time delay	With LED display: switching output active											
	Switch position: "1 O.S.D."	"One shot"										
	"2 OFF.D."	OFF delay										
	"3 ON.D."	ON delay										
	"4 Normal"	No delay										
Delay	Adjustable, 0.1 to 5 s; potentiometer 270°											
Connection type	Terminal chamber											
VDE protection class⁷⁾	<input type="checkbox"/>											
Circuit protection⁸⁾	A, C											
Enclosure rating	IP 66											
Ambient temperature T_A	Operation	- 25 °C ... + 55 °C										
	Storage	- 40 °C ... + 70 °C										
Weight	Approx. 120 g											
Material	Housing: ABS; Optic: PC											

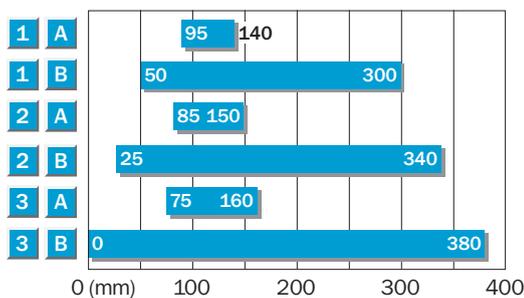
¹⁾ Object with 90 % remission (based on standard white DIN 5033)
²⁾ Average service life 100,000 h at T_A = + 25 °C

³⁾ ± 10 %
⁴⁾ Provide suitable spark suppression for inductive or capacitive loads

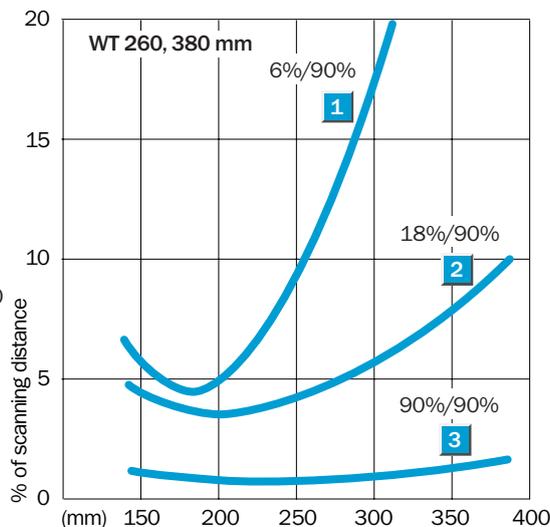
⁵⁾ Usage categorie to EN 60947-1, 15 AC, 13 DC
⁶⁾ With light/dark ratio 1:1

⁷⁾ Reference voltage 250 V UC
⁸⁾ A = V_s connections reverse-polarity protected
 C = Interference suppression

Scanning distance



- 1 Scanning range on black, 6 % remission
- 2 Scanning range on grey, 18 % remission
- 3 Scanning range on white, 90 % remission
- A Scanning distance control set to MIN
- B Scanning distance control set to MAX



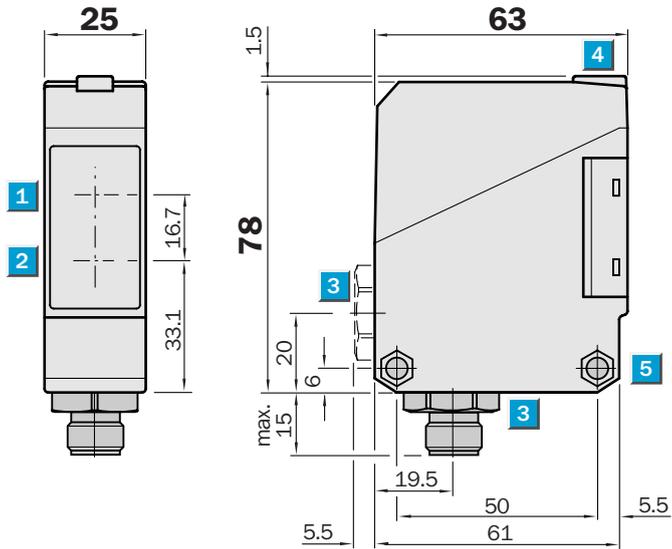
Order information

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


Scanning distance
10 ... 3200 mm
 Photoelectric proximity switch

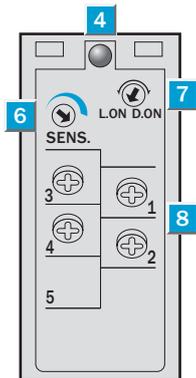
- Infrared light, very high scanning distance
- Terminal chamber or plug
- M12, 4-pin
- Test input

Dimensional drawing



Adjustments possible

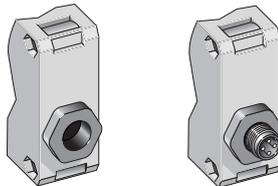
WT 260-F 280
WT 260-F 480
WT 260-E 280
WT 260-E 480



- 1 Middle of optic axis, receiver
- 2 Middle of optic axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M12 equipment plug, bottom
- 4 LED signal strength indicator, yellow, switching output active
- 5 Through hole \varnothing 5.2 mm on both sides for M5 hex nut
- 6 Scanning distance adjuster
- 7 Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 8 Terminals

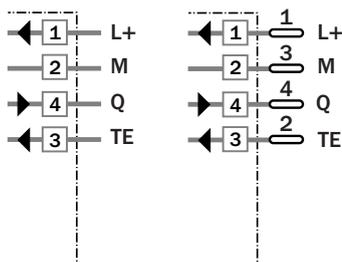
Connection Types

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



Terminals

4-pin, M12



See chapter Accessories

Cables and connectors

Mounting systems^{*)}

^{*)} Mounting bracket included with delivery

Technical data		WT 260-	F 280	F 480	E 280	E 480
Scanning distance, typ. max.	10 to 3200 mm, adjustable ¹⁾					
Operating distance	15 to 2500 mm, adjustable ¹⁾					
Scanning distance setting	per potentiometer 270°					
Light source ²⁾	LED, infrared					
Light spot diameter	Approx. 80 mm at 2500 mm					
Aperture angle sender	Approx. 1.8°					
Supply voltage V_s	10 to 30 VDC ³⁾					
Ripple ⁴⁾	≤ 5 V _{pp}					
Current consumption ⁵⁾	≤ 35 mA					
Switching outputs	PNP, open collector: Q NPN, open collector: Q					
Output current I _A max.	100 mA					
Light receiver, switching mode	Light-/dark-switching by rotary switch					
Response time ⁶⁾	≤ 5.0 ms					
Switching frequency max. ⁷⁾	100/s					
Test input »TE« sender off	PNP: TE to + V _s NPN: TE to 0 V					
Connection types	Terminal chamber Plug M12, 4-pin					
VDE protection class ⁸⁾	□					
Circuit protection ⁹⁾	A, B, C, D					
Enclosure rating	IP 67					
Ambient temperature T_A	Operation -25 °C ... +55 °C Storage -40 °C ... +70 °C					
Weight	Approx. 120 g					
Material	Housing: ABS; Optic: PC					

¹⁾ Object with 90 % remission (based on standard white DIN 5033)

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

³⁾ Limit values, operation in short circuit protected network max. 8 A

⁴⁾ Must be within V_s tolerances

⁵⁾ Without load

⁶⁾ With resistive load

⁷⁾ With light/dark ratio 1:1

⁸⁾ Reference voltage 50 V DC

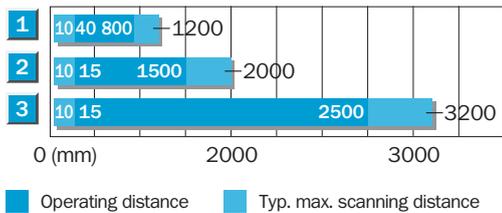
⁹⁾ A = V_s connections reverse-polarity protected

B = Inputs/outputs reverse-polarity protected

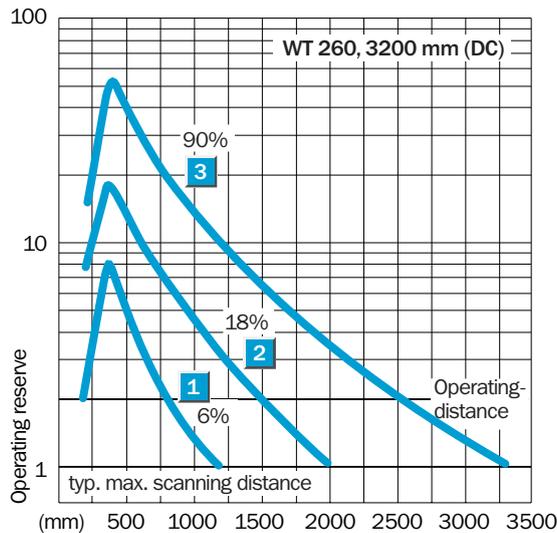
C = Interference suppression

D = Outputs overcurrent and short-circuit protected

Scanning distance



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



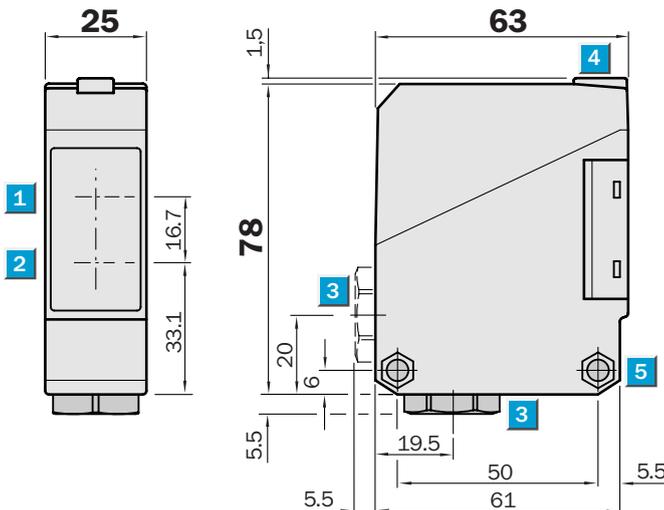
Order information

Type	Order no.
WT 260-F 280	6 020 982
WT 260-F 480	6 020 983
WT 260-E 280	6 020 984
WT 260-E 480	6 021 816


Scanning distance
10 ... 3500 mm
 Photoelectric proximity switch

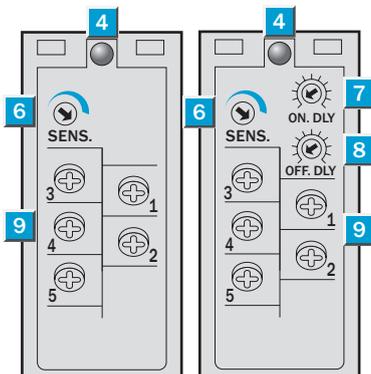
- Universal voltage
- Infrared light, very high scanning distance
- Terminal chamber
- Relay output, SPDT, time delays
- CE generic emission standard EN 61000-6-3 (“Residential and Commercial Areas”)

Dimensional drawing



Adjustments possible

WT 260-S 280 WT 260-R 280



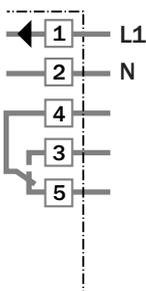
- 1 Middle of optic axis, receiver
- 2 Middle of optic axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- 4 LED signal strength indicator, red
- 5 Through hole Ø 5.2 mm on both sides for M5 hex nut
- 6 Scanning distance adjuster
- 7 Time control ON delay t_{ON}
- 8 Time control OFF delay t_{OFF}
- 9 Terminals

Connection types

WT 260-S 280
WT 260-R 280



Terminals



See chapter Accessories

Mounting systems^{*)}

^{*)} Mounting bracket included with delivery

Technical data		WT 260-	S 280	R 280								
Scanning distance, typ. max.	10 to 3500 mm, adjustable ¹⁾											
Operating distance	20 to 3000 mm, adjustable ¹⁾											
Scanning distance setting	per potentiometer 270°											
Light source²⁾	LED, infrared light											
Light spot diameter	Approx. 95 mm at 3000 mm											
Aperture angle sender	Approx. 1.7°											
Supply voltage V_s³⁾	12 to 240 V DC											
	24 to 240 V AC											
Power consumption	≤ 5 VA											
Switching output	Relay, SPDT, electrically isolated ⁴⁾											
Switching current I max	3 A/240 V AC; 3 A/30 V DC ⁵⁾											
Light receiver, switching mode	Light-switching											
Response time	≤ 20 ms											
Switching frequency max. ⁶⁾	25/s											
Time delays												
ON delay t _{ON}	0.1 to 10 s, can be connected separately											
OFF delay t _{OFF}	0.1 to 10 s, can be connected separately											
Connection type	Terminal chamber											
CE generic emission standard	Level EN 61000-6-3 ("Residential and Commercial Areas")											
VDE protection class⁷⁾	□											
Circuit protection⁸⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation -25 °C ... +55 °C Storage -40 °C ... +70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; Optics: PC											

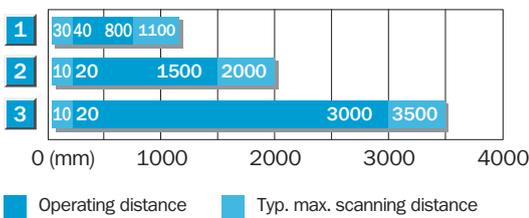
¹⁾ Object with 90 % remission (based on standard white DIN 5033)
²⁾ Average service life 100,000 h at T_A = +25 °C

³⁾ ± 10 %
⁴⁾ Provide suitable spark suppression for inductive or capacitive loads

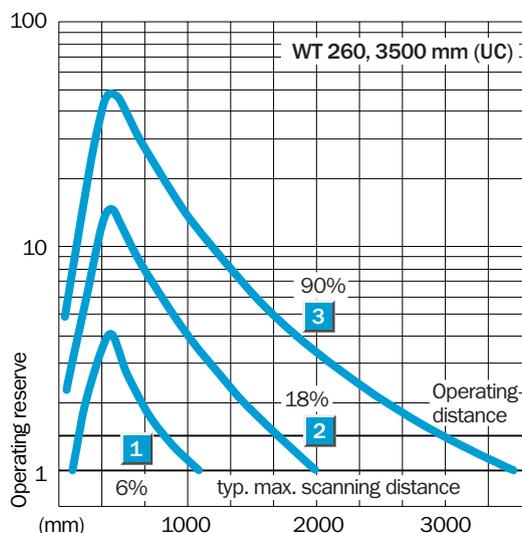
⁵⁾ Usage categorie to EN 60947-1, 15 AC, 13 DC
⁶⁾ With light/dark ratio 1:1
⁷⁾ Reference voltage 250 V UC

⁸⁾ A = V_s connections reverse-polarity protected
C = Interference suppression

Scanning distance



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



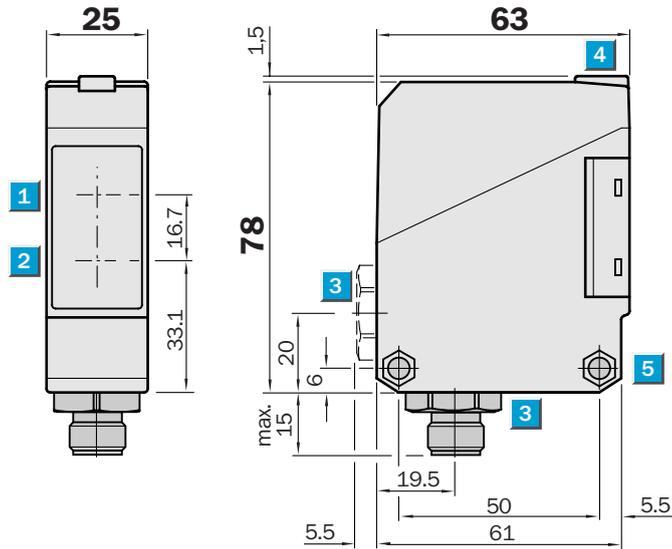
Order information

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


Scanning distance
 5 ... 1500 mm
 Photoelectric proximity switch

- Sensitivity, adjustable
- Terminal chamber or plug
M12, 4-pin
- Test input

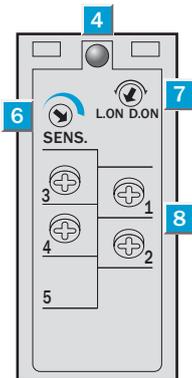
Dimensional drawing



Adjustments possible

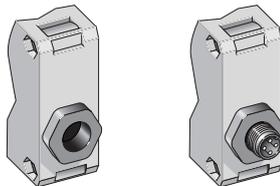
WT 260-F 270
WT 260-F 470
WT 260-E 270
WT 260-E 470

- 1 Middle of optic axis, receiver
- 2 Middle of optic axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M12 equipment plug, bottom
- 4 LED signal strength indicator, yellow, switching output active
- 5 Through hole \varnothing 5.2 mm on both sides for M5 hex nut
- 6 Scanning distance adjuster
- 7 Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 8 Terminals



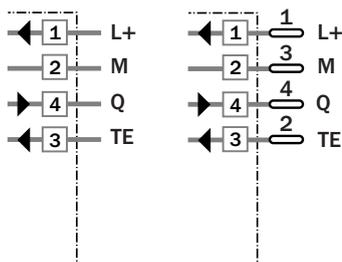
Connection types

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



Terminals

4-pin, M12



See chapter Accessories

Cables and connectors

Mounting systems^{*)}

^{*)} Mounting bracket included with delivery

Technical data		WT 260-	F 270	F 470	E 270	E 470
Scanning distance, typ. max.	15 to 1500 mm, adjustable ¹⁾					
Operating distance	5 to 1000 mm, adjustable ¹⁾					
Scanning distance setting	per potentiometer 270°					
Light source²⁾	LED, visible red light					
Light spot diameter	Approx. 45 mm at 1000 mm					
Aperture angle sender	Approx. 2.5°					
Supply voltage V_s	10 to 30 V DC ³⁾					
Ripple ⁴⁾	≤ 5 V _{pp}					
Current consumption ⁵⁾	≤ 35 mA					
Switching outputs	PNP, open collector: Q					
	NPN, open collector: Q					
Output current I _A max.	100 mA					
Light receiver, switching mode	Light-/dark-switching by rotary switch					
Response time ⁶⁾	≤ 0.5 ms					
Switching frequency max. ⁷⁾	1000/s					
Test input »TE« sender off	PNP: TE to + V _s					
	NPN: TE to 0 V					
Connection types	Terminal chamber					
	Plug M12, 4-pin					
VDE protection class⁸⁾	□					
Circuit protection⁹⁾	A, B, C, D					
Enclosure rating	IP 67					
Ambient temperature T_A	Operation -25 °C ... +55 °C					
	Storage -40 °C ... +70 °C					
Weight	Approx. 120 g					
Material	Housing: ABS; Optics: PC					

¹⁾ Object with 90 % remission (based on standard white DIN 5033)

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

³⁾ Limit values, operation in short circuit protected network max. 8 A

⁴⁾ Must be within V_s tolerances

⁵⁾ Without load

⁶⁾ With resistive load

⁷⁾ With light/dark ratio 1:1

⁸⁾ Reference voltage 50 V DC

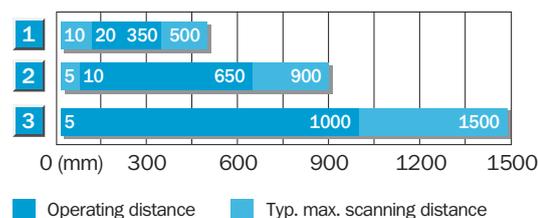
⁹⁾ A = V_s connections reverse-polarity protected

B = Inputs/outputs reverse-polarity protected

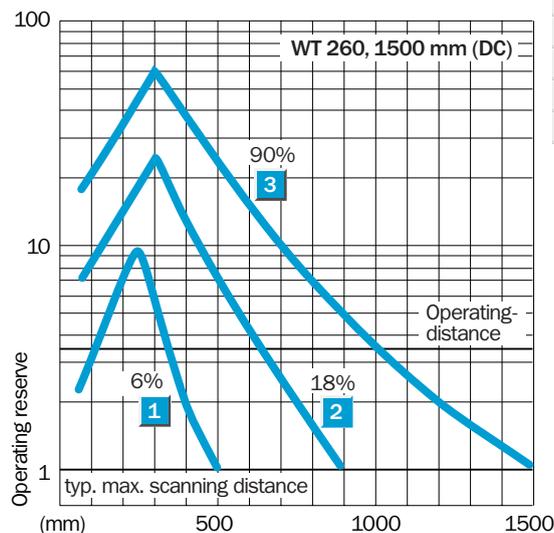
C = Interference suppression

D = Outputs overcurrent and short-circuit protected

Scanning distance



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



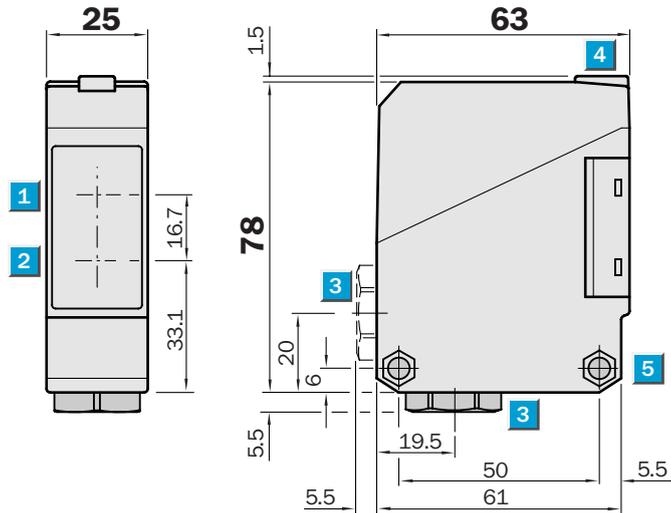
Order information

Type	Order no.
WT 260-F 270	6 020 979
WT 260-F 470	6 020 980
WT 260-E 270	6 020 981
WT 260-E 470	6 021 815

	Scanning distance 5 ... 1700 mm
Photoelectric proximity switch	

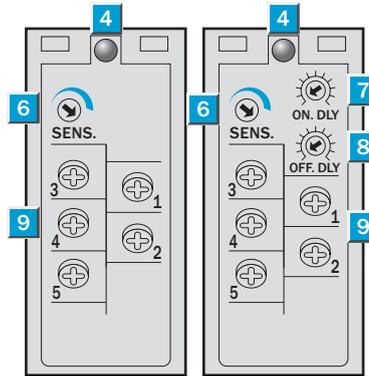
- Universal voltage
- Sensitivity, adjustable
- Terminal chamber
- Relay output, SPDT, time delays
- CE generic emission standard EN 61000-6-3 (“Residential and Commercial Areas”)

Dimensional drawing



Adjustments possible

WT 260-S 270	WT 260-R 270
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- 1 Middle of optic axis, receiver
- 2 Middle of optic axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- 4 LED signal strength indicator, red
- 5 Through hole \varnothing 5.2 mm on both sides for M5 hex nut
- 6 Scanning distance adjuster
- 7 Time control ON delay t_{ON}
- 8 Time control OFF delay t_{OFF}
- 9 Terminals

Connection types

WT 260-S 270
WT 260-R 270

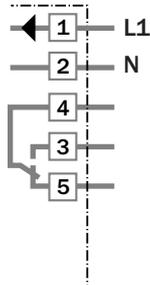


See chapter Accessories

Mounting systems^{*)}

^{*)} Mounting bracket included with delivery

Terminals



Technical data		WT 260-	S 270	R 270								
Scanning distance, typ. max.	5 to 1700 mm, adjustable ¹⁾											
Operating distance	5 to 1300 mm, adjustable ¹⁾											
Scanning distance setting	per potentiometer 270°											
Light source²⁾	LED, visible red light											
Light spot diameter	Approx. 60 mm at 1300 mm											
Aperture angle sender	Approx. 1.8°											
Supply voltage V_s³⁾	12 to 240 V DC											
	24 to 240 V AC											
Power consumption	≤ 5 VA											
Switching output	Relay, SPDT, electrically isolated ⁴⁾											
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁵⁾											
Light receiver, switching mode	Light-switching											
Response time	≤ 20 ms											
Switching frequency max. ⁶⁾	25/s											
Time delay												
ON delay t _{ON}	0.1 to 10 s, can be connected separately											
OFF delay t _{OFF}	0.1 to 10 s, can be connected separately											
Connection type	Terminal chamber											
CE generic emission standard	Level EN 61000-6-3 ("Residential and Commercial Areas")											
VDE protection class⁷⁾	□											
Circuit protection⁸⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation - 25 °C ... + 55 °C Storage - 40 °C ... + 70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; Optics: PC											

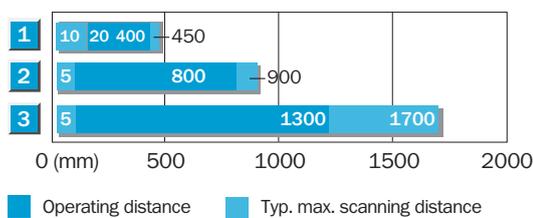
¹⁾ Object with 90% remission (based on standard white DIN 5033)
²⁾ Average service life 100,000 h at T_A = + 25 °C

³⁾ ± 10 %
⁴⁾ Provide suitable spark suppression for inductive or capacitive loads

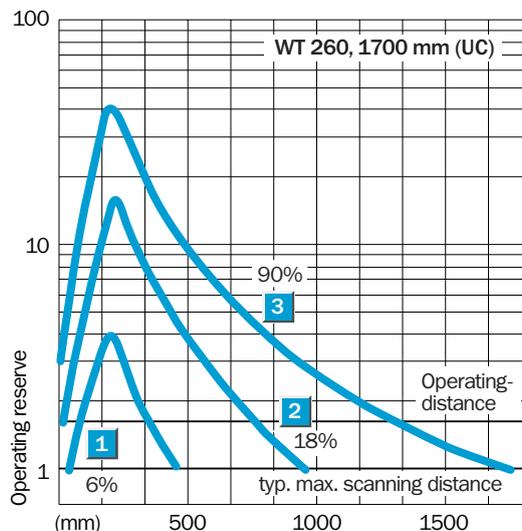
⁵⁾ Usage categorie to EN 60947-1, 15 AC, 13 DC
⁶⁾ With light/dark ratio 1:1
⁷⁾ Reference voltage 250 V UC

⁸⁾ A = V_s connections reverse-polarity protected
C = Interference suppression

Scanning distance



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



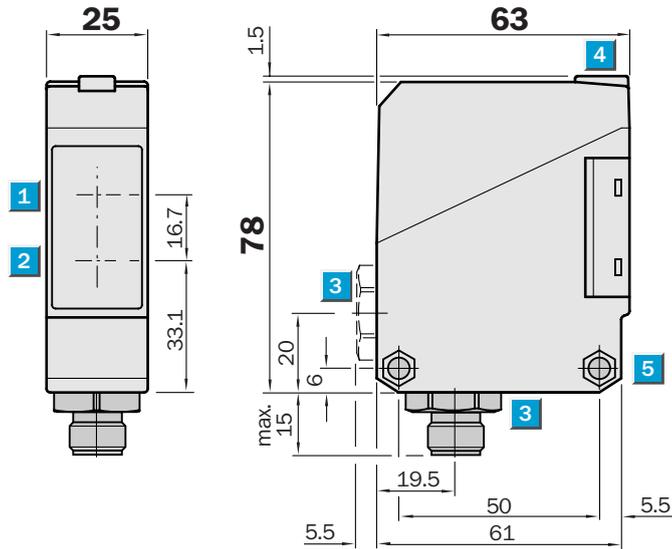
Order information

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

	Scanning range 0.01 ... 14 m
Photoelectric reflex switch	

- Polarizing filter providing reliable detection even of objects with shiny surfaces
- Sensitivity, adjustable
- Terminal chamber or plug M12, 4-pin
- Test input

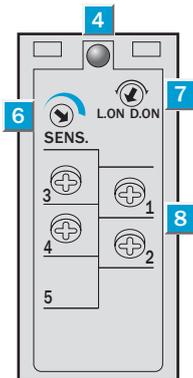
Dimensional drawing



Adjustments possible

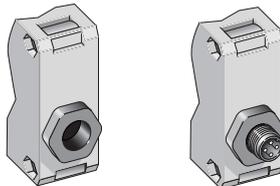
WL 260-F 270
WL 260-F 470
WL 260-E 270
WL 260-E 470

- 1 Middle of optic axis, receiver
- 2 Middle of optic axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M12 equipment plug, bottom
- 4 LED signal strength indicator, yellow, switching output active
- 5 Through hole Ø 5.2 mm on both sides for M5 hex nut
- 6 Sensitivity control
- 7 Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 8 Terminals

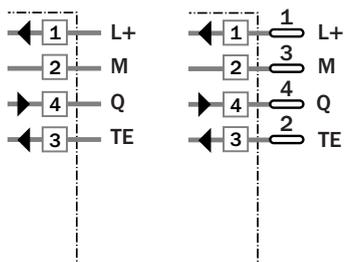


Connection types

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



Terminals 4-pin, M12



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

*) Mounting bracket included with delivery
 **) Reflector P 250 included with delivery

Technical data		WL 260-	F 270	F 470	E 270	E 470						
Scanning range , typ. max/on reflector	0.01 to 14 m/PL 80 A											
	0.01 to 9.5 m/P 250 (included)											
Operating range	0.01 to 8 m/P 250											
Sensitivity	Adjustable, potentiometer 270°											
Light source ⁴⁾	LED, visible red light											
	With polarizing filter											
Light spot diameter	Approx. 240 mm at 8 m											
Aperture angle sender	Approx. 1.7°											
Supply voltage V _s	10 to 30 V DC ²⁾											
Ripple ³⁾	≤ 5 V _{PP}											
Current consumption ⁴⁾	≤ 35 mA											
Switching outputs	PNP, open collector: Q											
	NPN, open collector: Q											
Output current I _A max.	100 mA											
Light receiver, switching mode	Light-/dark-switching by rotary switch											
Response time ⁵⁾	≤ 1.5 ms											
Switching frequency max. ⁶⁾	333/s											
Test input »TE« sender off	PNP: TE to + V _s											
	NPN: TE to 0 V											
Connection types	Terminal chamber											
	Plug M12, 4-pin											
VDE protection class ⁷⁾	□											
Circuit protection ⁸⁾	A, B, C, D											
Enclosure rating	IP 67											
Ambient temperature T _A	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; Optics: PMMA											

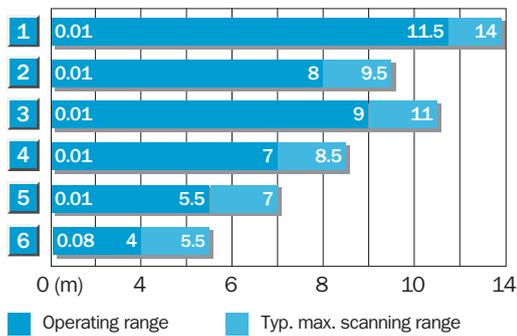
1) Average service life 100,000 h at T_A = +25 °C
 2) Limit values, operation in short circuit protected network max. 8 A

3) Must be within V_s tolerances
 4) Without load
 5) With resistive load
 6) With light/dark ratio 1:1

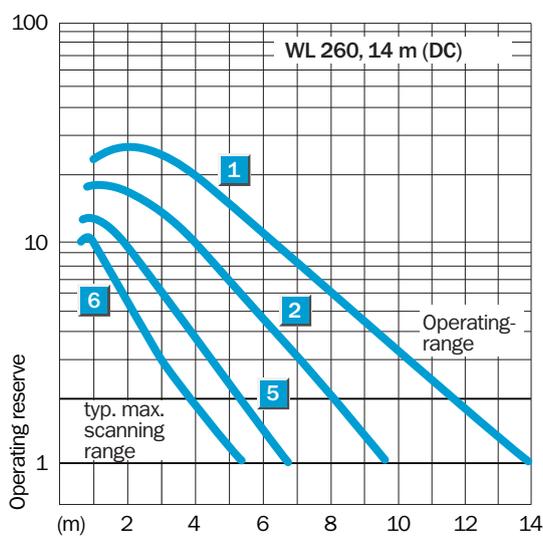
7) Reference voltage 50 V DC
 8) A = V_s connections reverse-polarity protected
 B = Inputs/outputs reverse-polarity protected

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

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.01 ... 11.5 m
2 P 250	0.01 ... 8 m
3 PL 50 A or PL 40 A	0.01 ... 9 m
4 PL 30 A or PL 31 A	0.01 ... 7 m
5 PL 20 A	0.01 ... 5.5 m
6 Reflective tape Diamond Grade	0.08 ... 4 m



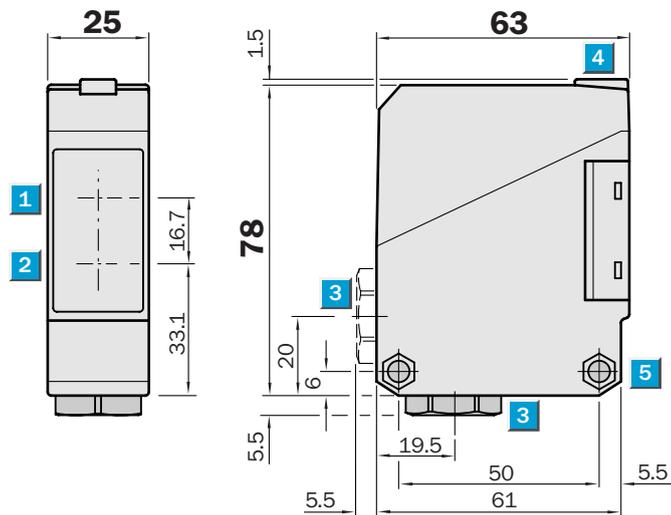
Order information

Type	Order no.
WL 260-F 270	6 020 976
WL 260-F 470	6 020 977
WL 260-E 270	6 020 978
WL 260-E 470	6 021 814

	Scanning range 0.01 ... 15 m
Photoelectric reflex switch	

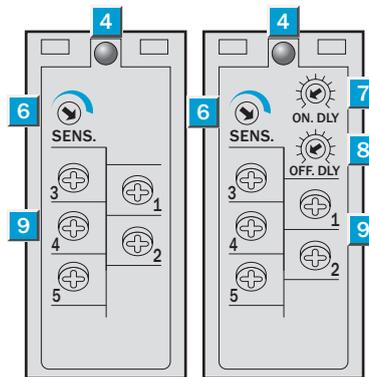
- Universal voltage
- Polarizing filter providing reliable detection even of objects with shiny surfaces
- Terminal chamber
- Relay output, SPDT, time delays
- CE generic emission standard EN 61000-6-3 (“Residential and Commercial Areas”)

Dimensional drawing



Adjustments possible

WL 260-S 270	WL 260-R 270
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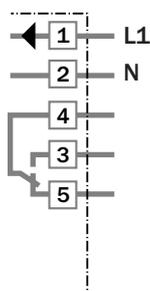
- 1 Middle of optic axis, receiver
- 2 Middle of optic axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- 4 LED signal strength indicator, red
- 5 Through hole Ø 5.2 mm on both sides for M5 hex nut
- 6 Sensitivity control
- 7 Time control ON delay t_{ON}
- 8 Time control OFF delay t_{OFF}
- 9 Terminals

Connection types

WL 260-S 270
WL 260-R 270



Terminals



See chapter Accessories

Mounting systems*)

Reflectors **)

*) Mounting bracket included with delivery

**) Reflector P 250 included with delivery

Technical data		WL 260-	S 270	R 270								
Scanning range , typ. max./on reflector	0.01 to 15 m/PL 80 A											
	typ. max./on reflector	0.01 to 11 m/P 250 (included)										
Operating range	0.01 to 10 m/P 250											
Sensitivity	Adjustable, potentiometer 270°											
Light source ⁴⁾	LED, visible red light											
	With polarizing filter											
Light spot diameter	Approx. 300 mm at 10 m											
Aperture angle sender	Approx. 1.7°											
Supply voltage V_S ²⁾	12 to 240 V DC											
	24 to 240 V AC											
Power consumption	≤ 5 VA											
Switching output	Relay, SPDT, electrically isolated ³⁾											
Switching current I max	3 A/240 V AC; 3 A/30 V DC ⁴⁾											
Light receiver, switching mode	Light-switching											
Response time	≤ 20 ms											
Switching frequency max. ⁵⁾	25/s											
Time delays												
ON delay t _{ON}	0.1 to 10 s, can be connected separately											
OFF delay t _{OFF}	0.1 to 10 s, can be connected separately											
Connection type	Terminal chamber											
CE generic emission standard	Level EN 61000-6-3 ("Residential and Commercial Areas")											
VDE protection class ⁶⁾	□											
Circuit protection ⁷⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation	-25 °C ... +55 °C										
	Storage	-40 °C ... +70 °C										
Weight	Approx. 120 g											
Material	Housing: ABS; Optics: PMMA											

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

²⁾ ± 10 %

³⁾ Provide suitable spark suppression for inductive or capacitive loads

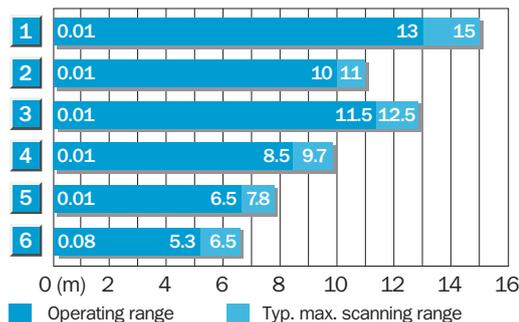
⁴⁾ Usage category to EN 60947-1, 15 AC, 13 DC

⁵⁾ With light/dark ratio 1:1

⁶⁾ Reference voltage 250 V UC

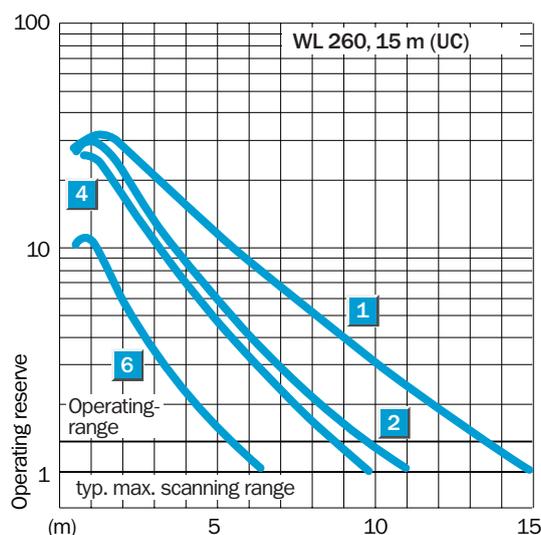
⁷⁾ A = V_s connections reverse-polarity protected
C = Interference suppression

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.01 ... 13.0 m
2 P 250	0.01 ... 10.0 m
3 PL 50 A or PL 40 A	0.01 ... 11.5 m
4 PL 30 A or PL 31 A	0.01 ... 8.5 m
5 PL 20 A	0.01 ... 6.5 m
6 Reflective tape Diamond Grade	0.08 ... 5.3 m

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Order information

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

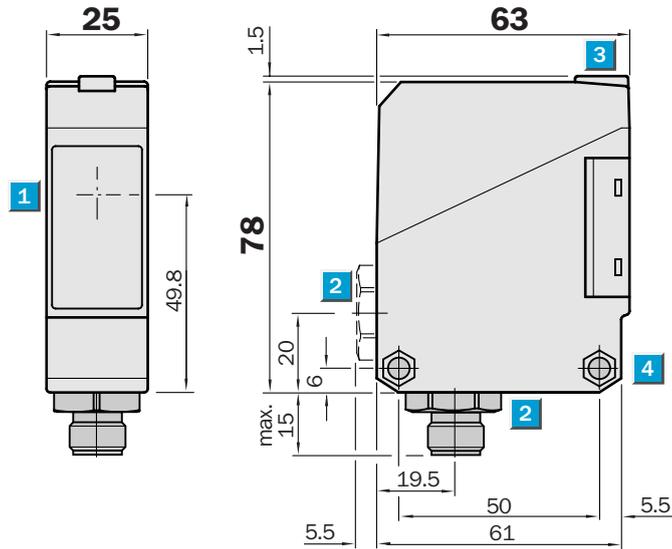
 **Scanning range**
0 ... 35 m

Through-beam photoelectric switch

- Sensitivity, adjustable
- Terminal chamber or plug
M12, 4-pin
- Test input

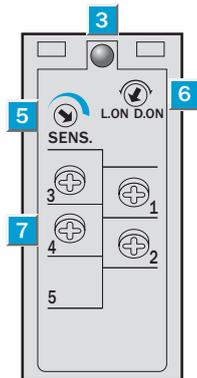


Dimensional drawing



Adjustments possible

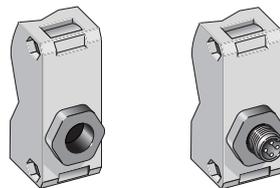
- WS/WE 260-F 270
- WS/WE 260-F 470
- WS/WE 260-E 270
- WS/WE 260-E 470



- 1** Middle of optic axis, sender/receiver
- 2** Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M12 equipment plug, bottom
- 3** LED signal indicator orange
WE 260: switching output active
WS 260: sender active
- 4** Through hole Ø 5.2 mm on both sides for M5 hex nut
- 5** Sensitivity control (WE 260)
- 6** Light/dark rotary switch (WE 260)
L.ON = light-switching, D.ON = dark-switching
- 7** Terminals
Terminal 3: WS 260 only
Terminal 4: WE 260 only

Connection types

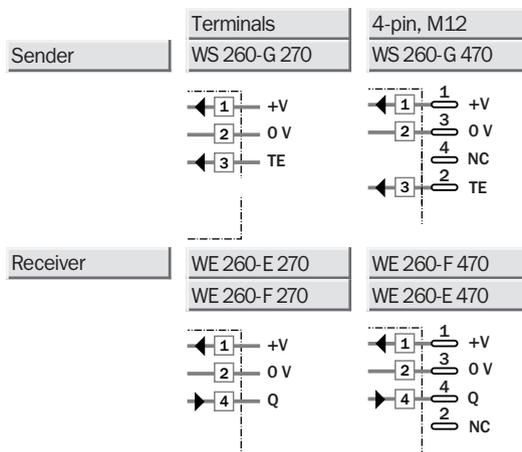
- WS/WE 260-F 270
- WS/WE 260-F 470
- WS/WE 260-E 270
- WS/WE 260-E 470



See chapter Accessories

- Cables and connectors
- Mounting systems*)
- Special accessories

*) Mounting bracket included with delivery



Technical data		WS/WE 260-	F 270	F 470	E 270	E 470						
Scanning range, typ. max.	0 ... 35 m											
Operating range	0 ... 30 m											
Sensitivity	Adjustable, potentiometer 270°											
Light source ¹⁾	LED, visible red light											
Light spot diameter	Approx. 700 mm at 30 m											
Aperture angle sender	Approx. 1.4°											
Angle of reception receiver	Approx. 20°											
Supply voltage V _s	10 to 30 V DC ²⁾											
Ripple ³⁾	≤ 5 V _{pp}											
Current consumption ⁴⁾												
sender	≤ 20 mA											
receiver	≤ 35 mA											
Switching outputs	PNP, open collector: Q NPN, open collector: Q											
Output current I _A max.	100 mA											
Light receiver, switching mode	Light-/dark-switching by rotary switch											
Response time ⁵⁾	≤ 1.5 ms											
Switching frequency max. ⁶⁾	333/s											
Test input »TE« sender off	PNP, NPN: TE to 0 V											
Connection types	Terminal chamber Plug M12, 4-pin											
VDE protection class ⁷⁾	□											
Circuit protection ⁸⁾												
sender	A, B											
receiver	A, B, C, D											
Enclosure rating	IP 67											
Ambient temperature T _A	Operation -25 °C ... +55 °C Storage -40 °C ... +70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; Optics: PC											

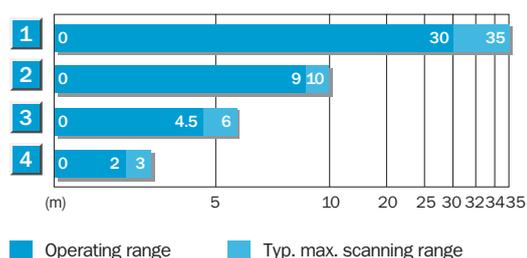
¹⁾ Average service life 100,000 h at T_A = +25 °C
²⁾ Limit values, operation in short circuit protected network max. 8 A

³⁾ Must be within V_s tolerances
⁴⁾ Without load
⁵⁾ With resistive load
⁶⁾ With light/dark ratio 1:1

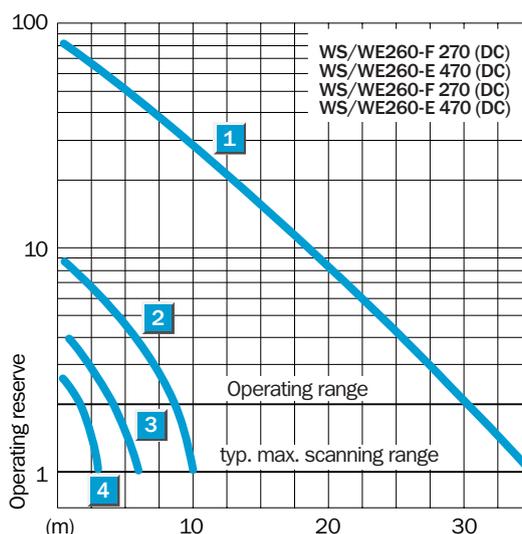
⁷⁾ Reference voltage 50 V DC
⁸⁾ A = V_s connections reverse-polarity protected
 B = Inputs/outputs reverse-polarity protected

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

Operating range and operating reserve



Scanning range reduction when using slotted masks	
1	Without slotted mask
2	Orifice width 5 mm
3	Orifice width 2 mm
4	Orifice width 1 mm



Order information

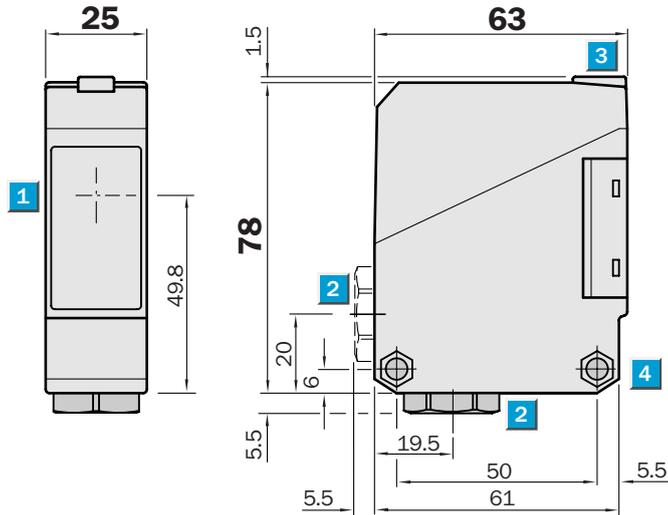
Type	Order no.
WS/WE 260-F 270	6 020 973
WS/WE 260-F 470	6 020 974
WS/WE 260-E 270	6 020 975
WS/WE 260-E 470	6 021 817

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

Through-beam photoelectric switch

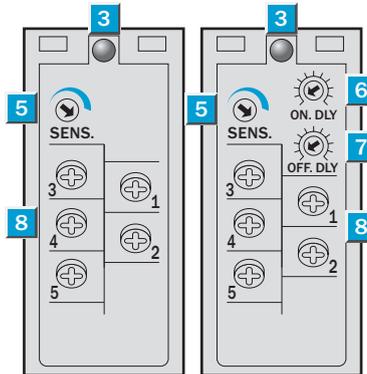
- Universal voltage
- Sensitivity, adjustable
- Terminal chamber
- Relay output, SPDT, time delays
- CE generic emission standard EN 61000-6-3 (“Residential and Commercial Areas”)

Dimensional drawing



Adjustments possible

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



- 1 Middle of optic axis, sender resp. receiver
- 2 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- 3 LED signal indicator orange; WE 260: switching output active WS 260: sender active
- 4 Through hole Ø 5.2 mm on both sides for M5 hex nut
- 5 Sensitivity control (WE 260)
- 6 Time control ON delay t_{ON} (WE 260)
- 7 Time control OFF delay t_{OFF} (WE 260)
- 8 Terminals 3, 4, 5: WE 260 only



Connection types

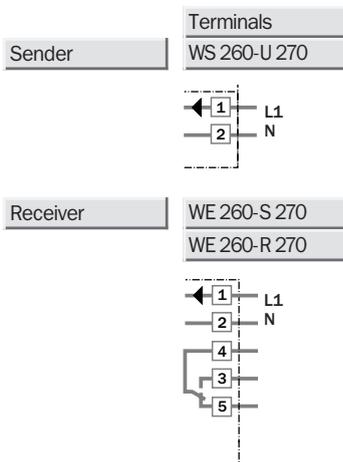
WS/WE 260-S 270
WS/WE 260-R 270



See chapter Accessories

- Mounting systems*)
- Special accessories

*) Reflector P 250 included with delivery



Technical data		WS/WE 260-	S 270	R 270								
Scanning range , typ. max.	0 ... 45 m											
Operating range	0 ... 40 m											
Sensitivity	Adjustable, potentiometer 270°											
Light source ¹⁾	LED, visible red light											
Light spot diameter	Approx. 700 mm at 40 m											
Aperture angle sender	Approx. 1°											
Angle of reception receiver	Approx. 20°											
Supply voltage V _S ²⁾	12 to 240 V DC 24 to 240 V AC											
Power consumption												
Sender	≤ 4 VA											
Receiver	≤ 5 VA											
Switching output	Relay, SPDT, electrically isolated ³⁾											
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁴⁾											
Light receiver, switching mode	Light-switching											
Response time	≤ 20 ms											
Switching frequency max. ⁵⁾	25/s											
Time delays												
ON delay t _{ON}	0.1 to 10 s, can be connected separately											
OFF delay t _{OFF}	0.1 to 10 s, can be connected separately											
Connection type	Terminal chamber											
CE generic emission standard	Level EN 61000-6-3 ("Residential and Commercial Areas")											
VDE protection class ⁶⁾	<input type="checkbox"/>											
Circuit protection ⁷⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T _A	Operation -25 °C ... +55 °C Storage -40 °C ... +70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS; Optics: PC											

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

²⁾ ± 10 %

³⁾ Provide suitable spark suppression for inductive or capacitive loads

⁴⁾ Usage categorie to EN 60947-1, 15 AC, 13 DC

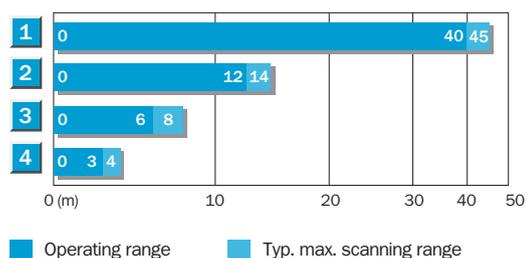
⁵⁾ With light/dark ratio 1:1

⁶⁾ Reference voltage 250 V UC

⁷⁾ A = V_S connections reverse-polarity protected

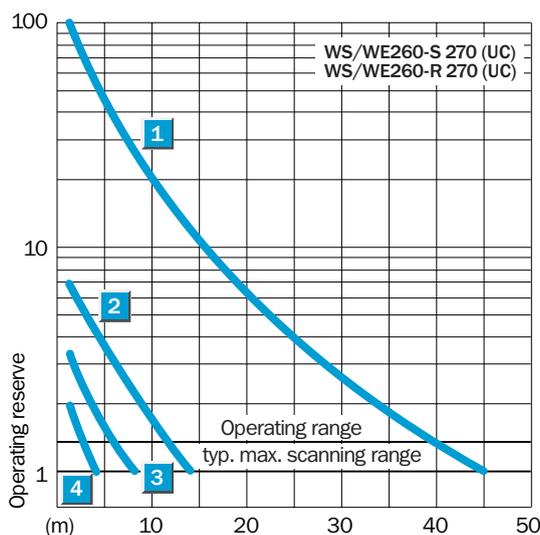
C = Interference suppression

Operating range and operating reserve



Scanning range reduction when using slotted masks

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



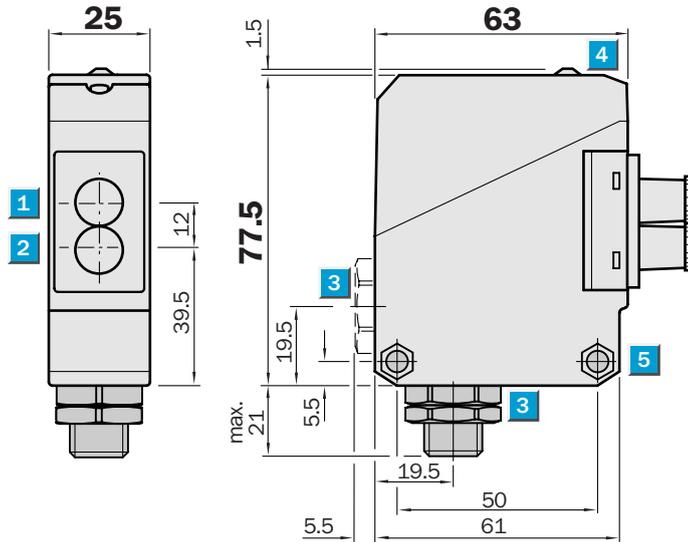
Order information

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

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

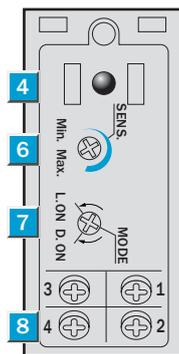
- Broad range of fibre-optic cables for through-beam and proximity applications
- Easy adaption of fibre-optic cable using cap nut
- Sensitivity, adjustable
- Terminal chamber, at bottom and rear or plug M12, 4-pin
- Test input

Dimensional drawing



Adjustments possible

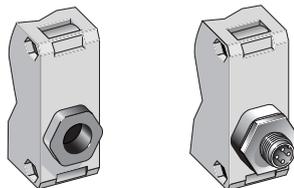
- WLL 260-F 240
- WLL 260-F 440
- WLL 260-E 240



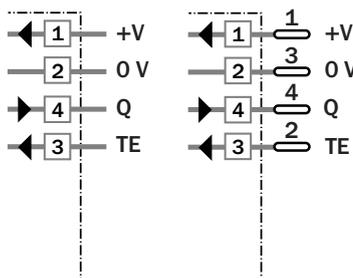
- 1 Middle of optic axis, receiver
- 2 Middle of optic axis, sender
- 3 Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear; or M12 equipment plug, bottom
- 4 LED signal strength indicator, red
- 5 Through hole Ø 5.2 mm on both sides for M5 hex nut
- 6 Sensitivity control
- 7 Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 8 Terminals

Connection types

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



Terminals 4-pin, M12



See chapter Accessories
Cables and connectors
Mounting systems*)
Fibre-optic cables

*) Mounting bracket included with delivery

Technical data		WLL 260-	F 240	F 440	E 240						
Suitable fibre-optic cable	Fibre-optic cable series LIS/LBS										
Scanning distance/range	Depends on the fibre-optic cable used										
Proximity system											
Typ. max. scanning distance ¹⁾	0 to 65 mm										
	0 to 110 mm with special fibre-optic cable										
Operating distance ¹⁾	0 to 50 mm										
	0 to 90 mm with special fibre-optic cable										
Through-beam system											
Typ. max. scanning range	0 to 800 mm										
Operating range	0 to 700 mm										
Sensitivity	Adjustable, potentiometer 270°										
Light source ²⁾											
Light spot diameter	LED, visible red light										
Aperture fibre-optic cable	Depends on scanning range										
	Approx. 65°										
Supply voltage V_S											
Supply voltage V _S	10 to 30 V DC ³⁾										
Ripple ⁴⁾	≤ 5 V _{PP}										
Current consumption ⁵⁾	≤ 35 mA										
Switching outputs											
	PNP, open collector: Q										
	NPN, open collector: Q										
Output current I _A max.	100 mA										
Light receiver, switching mode	Light-/dark-switching by rotary switch										
Response time ⁶⁾	≤ 0.7 ms										
Switching frequency max. ⁷⁾	700/s										
Test input »TE« sender off											
	PNP: TE following + V _S										
	NPN: TE following 0 V										
Connection types											
	Terminal chamber										
	Plug M12, 4-pin										
VDE protection class ⁸⁾											
VDE protection class ⁸⁾	<input type="checkbox"/>										
Circuit protection ⁹⁾											
Circuit protection ⁹⁾	A, B, C, D										
Enclosure rating											
Enclosure rating	IP 66										
Ambient temperature T_A											
Ambient temperature T _A	Operation -25 °C ... +55 °C										
	Storage -40 °C ... +70 °C										
Weight											
Weight	Approx. 120 g										
Material											
Material	Housing: ABS										

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

³⁾ Limit values, operation in short circuit protected network max. 8 A
⁴⁾ Must be within V_S tolerances
⁵⁾ Without load
⁶⁾ With resistive load

⁷⁾ With light/dark ratio 1:1
⁸⁾ Reference voltage 50 V DC
⁹⁾ A = V_S connections reverse-polarity protected

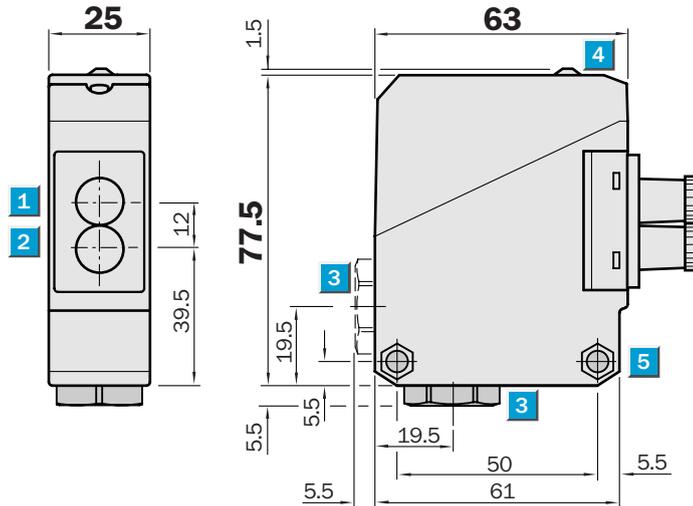
B = Inputs/outputs reverse-polarity protected
 C = Interference suppression
 D = Outputs overcurrent and short-circuit protected

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

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

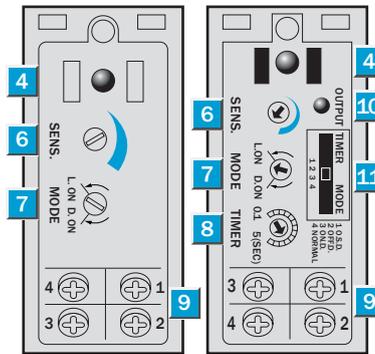
- Universal voltage
- Broad range of fibre-optic cables for through-beam and proximity applications
- Easy adaption of fibre-optic cable using cap nut
- Sensitivity, adjustable
- Terminal chamber
- Relay output, SPDT, time delays

Dimensional drawing



Adjustments possible

WLL 260-S 240	WLL 260-R 240
---------------	---------------



- 1** Middle of optic axis, receiver
- 2** Middle of optic axis, sender
- 3** Cable entry gland 1/2" PF thread for cable diameters from 6 to 10 mm optionally at bottom or rear
- 4** LED signal strength indicator, red
- 5** Through hole Ø 5.2 mm on both sides for M5 hex nut
- 6** Sensitivity control
- 7** Light/dark rotary switch
L.ON = light-switching, D.ON = dark-switching
- 8** Time range control
- 9** Terminals
- 10** Red LED status indicator, switching output active
- 11** Time delay selector switch
O.S.D. = One Shot
OFF.D. = OFF delay
ON.D. = ON delay
Normal = No delay



Connection types

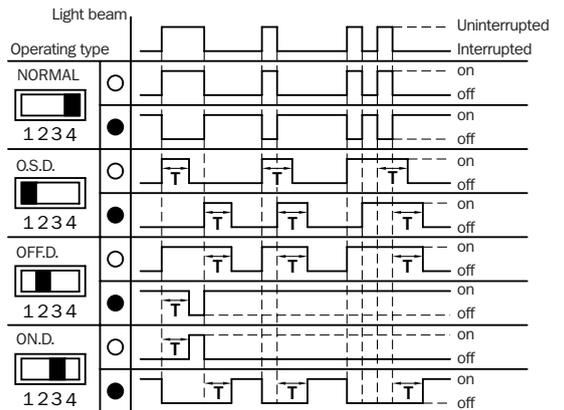
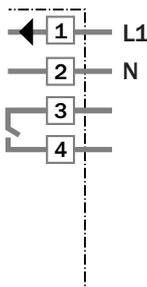
WLL 260-S 240
WLL 260-R 240

Time delays

t = 0.1–5 s



Terminals



Switching mode: ○ light-switching
● dark-switching



See chapter Accessories

- Mounting systems*)
- Fibre-optic cables

*) Mounting bracket included with delivery

Technical data		WLL 260-	S 240	R 240								
Suitable fibre-optic cable	Fibre-optic cable series LIS/LBS											
Scanning distance/range	Depends on the fibre-optic cable used											
Proximity system												
Typ. max. scanning distance ¹⁾	0 to 65 mm											
	0 to 110 mm with special fibre-optic cable											
Operating distance ¹⁾	0 to 50 mm											
	0 to 90 mm with special fibre-optic cable											
Through-beam system												
Typ. max. scanning range	0 to 800 mm											
Operating range	0 to 700 mm											
Sensitivity	Adjustable, potentiometer 270°											
Light source ²⁾	LED, visible red light											
Light spot diameter	Depends on scanning range											
Aperture fibre-optic cable	Approx. 65°											
Supply voltage V_s ³⁾	12 to 240 V DC											
	24 to 240 V AC											
Power consumption	≤ 5 VA											
Switching output	Relay, SPDT, electrically isolated ⁴⁾											
Switching current I max.	3 A/240 V AC; 3 A/30 V DC ⁵⁾											
Light receiver, switching mode	Light-/dark-switching by rotary switch											
Response time	≤ 20 ms											
Switching frequency max. ⁶⁾	25/s											
Time delays	With indicator LED: Switching output active											
Switch position	"1 O.S.D."	"One shot"										
	"2 OFF.D."	OFF delay t _{OFF}										
	"3 ON.D."	ON delay t _{ON}										
	"4 Normal"	No delay										
Time range	Adjustable, 0.1 to 5 s; potentiometer 270°											
Connection type	Terminal chamber											
VDE protection class ⁷⁾	<input type="checkbox"/>											
Circuit protection ⁸⁾	A, C											
Enclosure rating	IP 66											
Ambient temperature T_A	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
Weight	Approx. 120 g											
Material	Housing: ABS											

¹⁾ Object with 90 % remission (based on standard white DIN 5033)

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

³⁾ ± 10 %

⁴⁾ Provide suitable spark suppression for inductive or capacitive loads

⁵⁾ Usage categorie to EN 60947-1, 15 AC, 13 DC

⁶⁾ With light/dark ratio 1:1

⁷⁾ Reference voltage 50 V DC

⁸⁾ A = V_s connections reverse-polarity protected

C = Interference suppression

Order information

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

W 280: Powerful sensors for standard applications

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



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

Overview of W 280

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

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

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

Main industries:

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



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



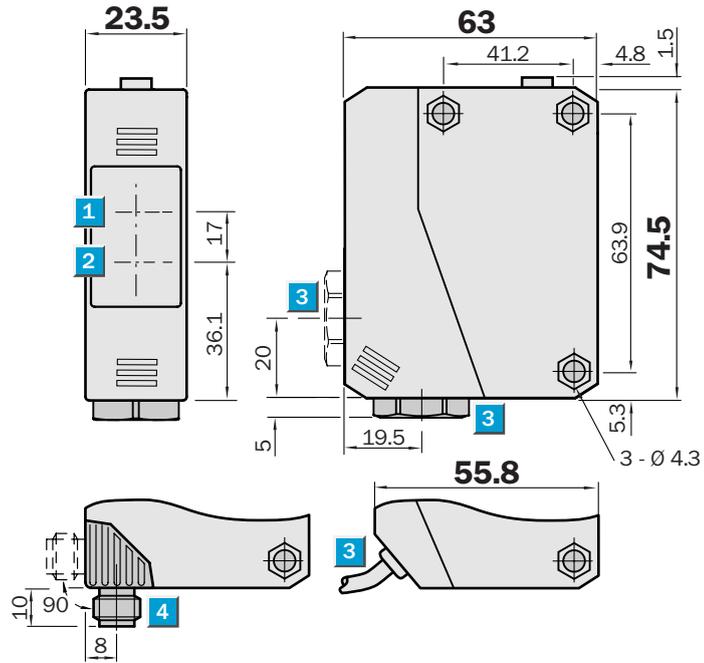
▲ 2 component system: The clever detail of the cable version, easy initial mounting and exchange.

Scanning distance
10 ... 1700 mm
 Photoelectric proximity switches

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

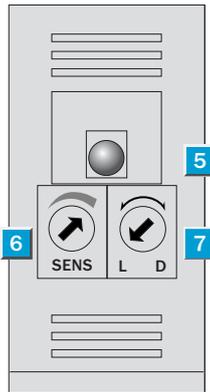


Dimensional drawing



Adjustments possible

All types

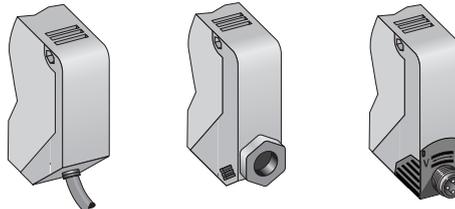


- 1 Centre of optical axis – receiver
- 2 Centre of optical axis – sender
- 3 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 3-core cable Ø 3.8 mm
- 4 Plug M12, 4-pin, rotatable by 90°
- 5 Signal strength indicator
- 6 Sensitivity adjustment
- 7 Light/dark rotary switch
L = light-switching,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



Connection type

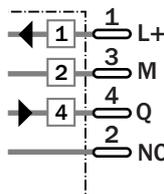
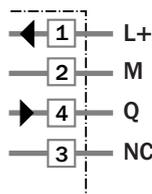
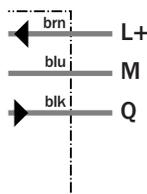
WT280-P132	WT280-P230	WT280-P430
WT280-N132	WT280-N230	WT280-N430



3 x 0.18 mm²

Terminals

4-pin, M12



See chapter Accessories

Cables and connectors

Mounting systems *)

*) Mounting brackets included with delivery

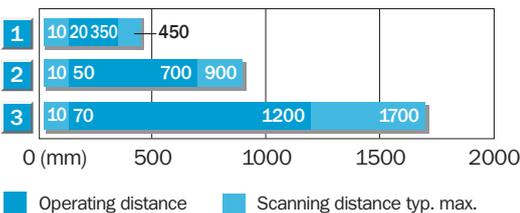
Technical data		WT 280-	P 132	P 230	P 430	N 132	N 230	N 430				
Scanning distance, max. typ.	10 mm ... 1700 mm, adjustable ⁴⁾											
Operating distance	10 mm ... 1200 mm, adjustable ⁴⁾											
Light source ²⁾, light type	LED, red light											
Light spot diameter	Approx. 38 mm at 1.3 m				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

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

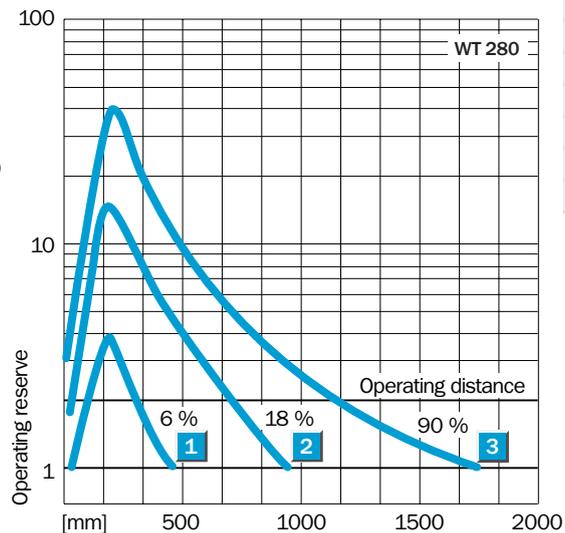
- 4) May not exceed or fall short of V_S tolerances
- 5) Without load
- 6) Signal transit time with resistive load
- 7) With light/dark ratio 1:1
- 8) Do not bend below 0 °C

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

Scanning distance



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



Order information

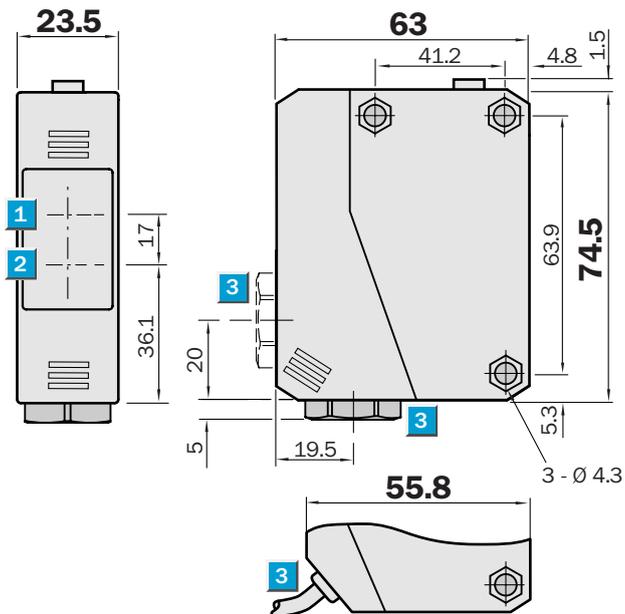
Type	Order no.
WT280-P132	6 028 278
WT280-P230	6 028 276
WT280-P430	6 028 280
WT280-N132	6 028 279
WT280-N230	6 028 277
WT280-N430	6 028 281

Scanning distance
10 ... 1700 mm
 Photoelectric proximity switches

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



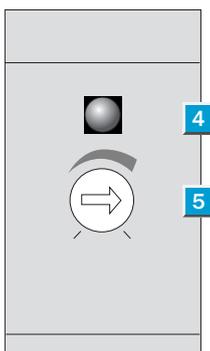
Dimensional drawing



Adjustments possible

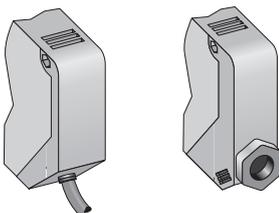
- WT280-S132
- WT280-S230

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

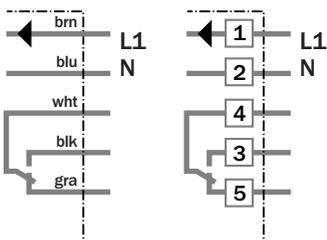


Connection type

- WT280-S132
- WT280-S230



5 x 0.76 mm² Terminals



See chapter Accessories
 Cables and connectors
 Mounting systems *)

*) Mounting brackets included with delivery

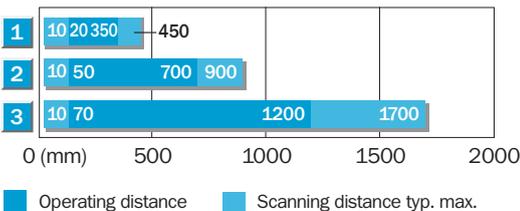
Technical data		WT 280-	S 132	S 230								
Scanning distance , max. typ.	10 mm ... 1700 mm, adjustable ⁴⁾											
Operating distance	10 mm ... 1200 mm, adjustable ⁴⁾											
Light source ²⁾, light type	LED, red light											
Light spot diameter	Approx. 38 mm at 1.3 m											
Angle of dispersion,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

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

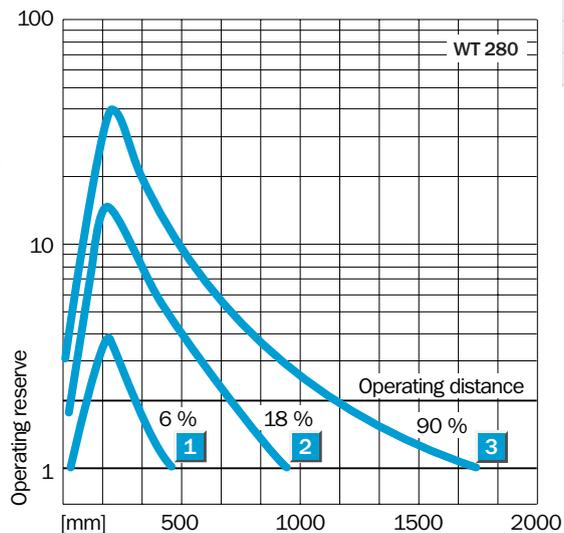
- 4) Provide suitable spark suppression for inductive and capacitive loads
- 5) Usage category to EN 60947-1, 15 AC, 13 DC
- 6) With light/dark ratio 1:1

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

Scanning distance



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



Order information

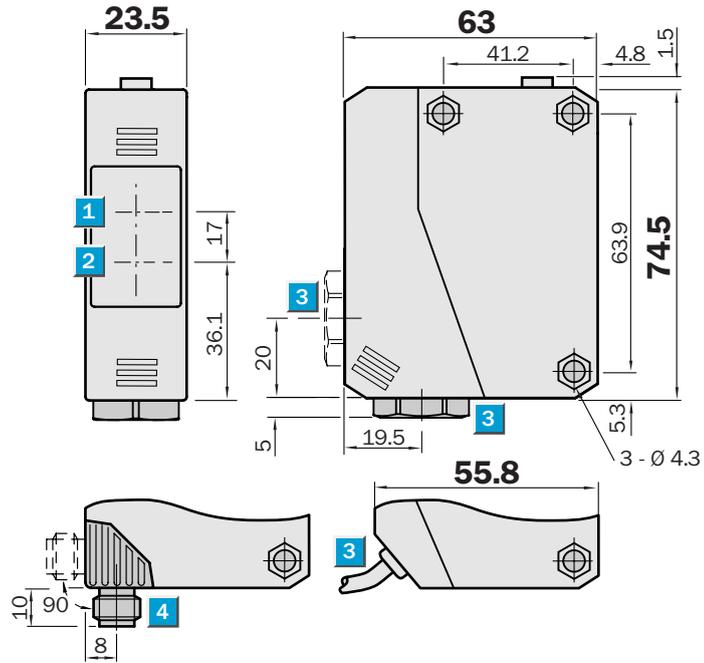
Type	Order no.
WT280-S132	6 027 482
WT280-S230	6 027 480


Scanning range
 0.01 ... 15 m
 Photoelectric reflex switches

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

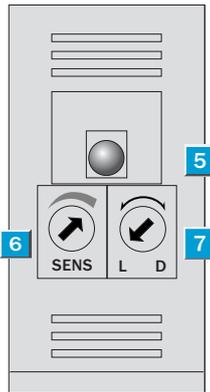


Dimensional drawing



Adjustments possible

All types

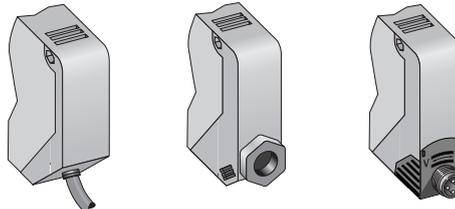


- 1 Centre of optical axis – receiver
- 2 Centre of optical axis – sender
- 3 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 3-core cable Ø 3.8 mm
- 4 Plug M12, 4-pin, rotatable by 90°
- 5 Signal strength indicator
- 6 Sensitivity adjustment
- 7 Light/dark rotary switch
L = light-switching,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



Connection type

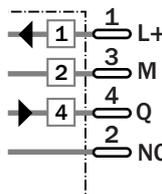
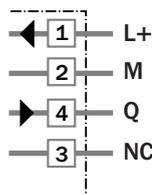
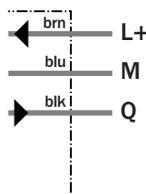
WL280-P132	WL280-P230	WL280-P430
WL280-N132	WL280-N230	WL280-N430



3 x 0.18 mm²

Terminals

4-pin, M12



See chapter Accessories

Cables and connectors

Mounting systems *)

Reflectors **)

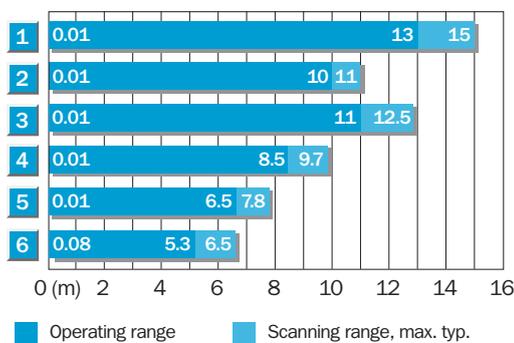
*) Mounting brackets included with delivery

**) Reflector P 250 included with delivery

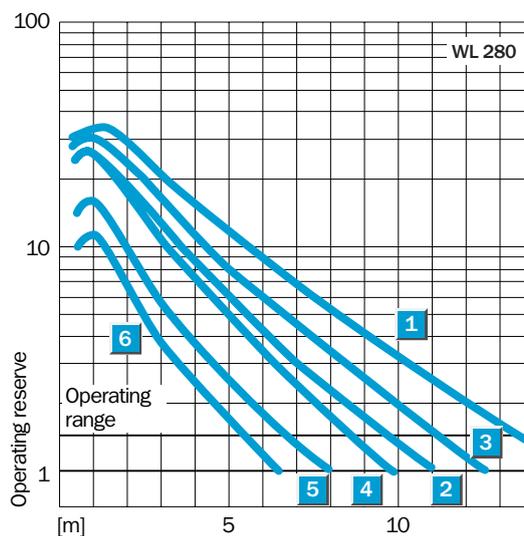
Technical data		WL 280-	P 132	P 230	P 430	N 132	N 230	N 430				
Scanning range , max. typ./on reflector	0.01 ... 15 m/PL 80 A											
Scanning range , max. typ./on reflector	0.01 ... 11 m/P 250											
Operating range	0.01 ... 10 m/P 250											
Light source ¹⁾, light type	LED, red light			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

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

Scanning range and operating reserve



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



Order information

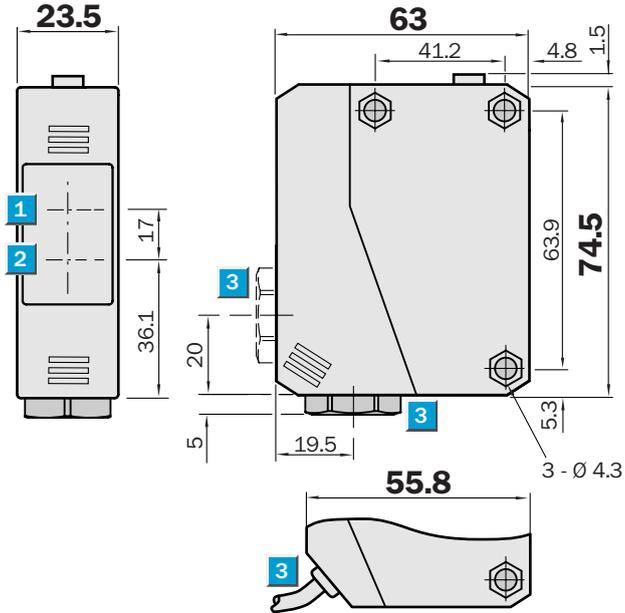
Type	Order no.
WL280-P132	6 028 284
WL280-P230	6 028 282
WL280-P430	6 028 286
WL280-N132	6 028 285
WL280-N230	6 028 283
WL280-N430	6 028 287

	Scanning range
	0.01 ... 15 m
Photoelectric reflex switches	

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



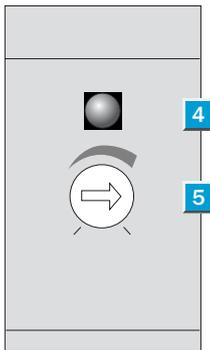
Dimensional drawing



Adjustments possible

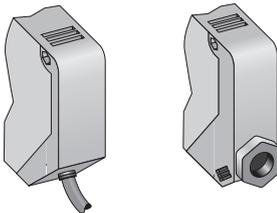
WL280-S132
WL280-S230

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



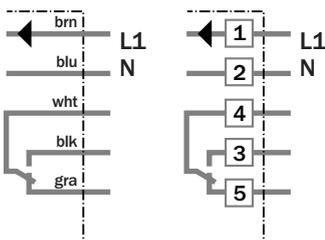
Connection type

WL280-S132	WL280-S230
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5 x 0.76 mm²

Terminals



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

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

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

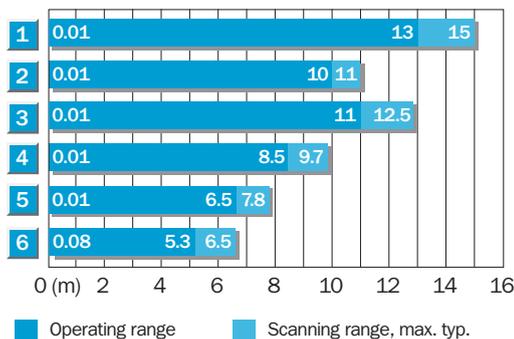
1) Average service life 100,000 h at $T_A = +25 °C$
 2) ± 10 %

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

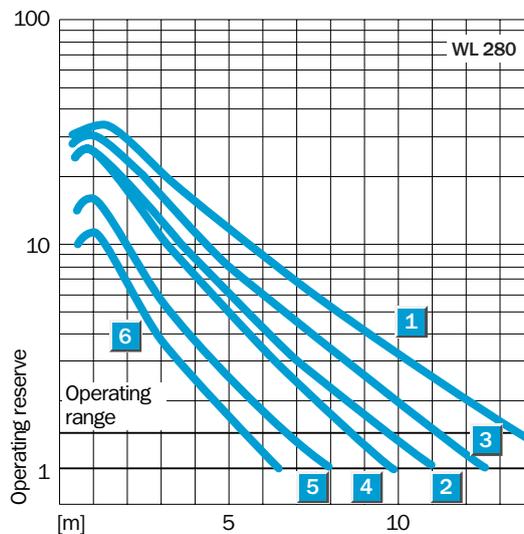
5) With light/dark ratio 1:1
 6) Do not bend below 0 °C
 7) Reference voltage 250 V UC

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

Scanning range and operating reserve



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



Order information

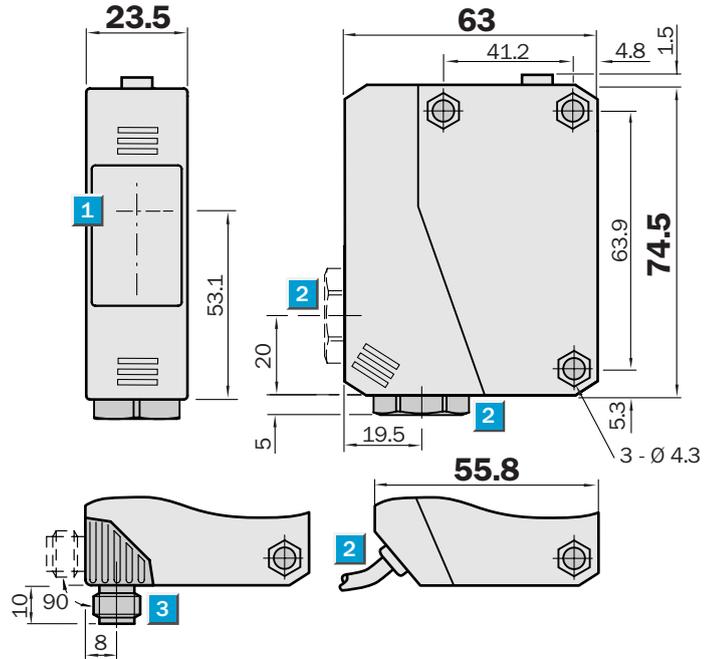
Type	Order no.
WL280-S132	6 027 486
WL280-S230	6 027 484

Scanning range
0 ... 45 m

Through-beam photoelectric switches

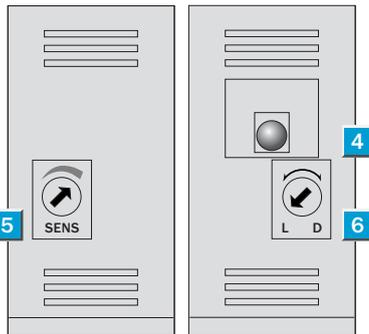
- Red light
- Terminal chamber or cable connection
- Flexible and ready for use with rotatable plug connector
- Light-/dark-switchable
- Mounting brackets (1.4301) included with delivery

Dimensional drawing



Adjustments possible

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

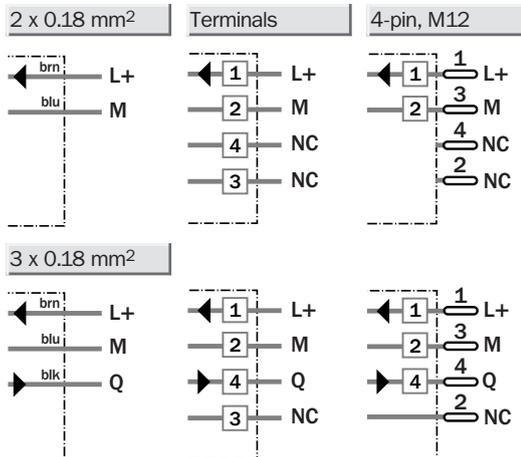
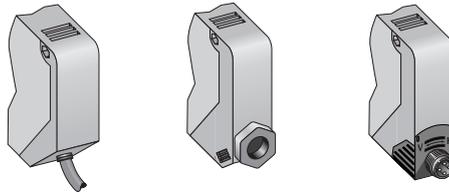


- 1 Optical axis – sender and receiver
- 2 Cable entry gland 1/2" PF for cable diameter 6 to 10 mm or 3-core cable Ø 3.8 mm
- 3 Plug M12, 4-pin, rotatable by 90°
- 4 Signal strength indicator
- 5 Sensitivity adjustment
- 6 Light/dark rotary switch
L = light-switching,
D = dark-switching



Connection type

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



See chapter Accessories
Cables and connectors
Mounting systems *)

*) Mounting brackets included with delivery



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

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

2) Limit values, operation in short circuit protected network max. 8 A

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

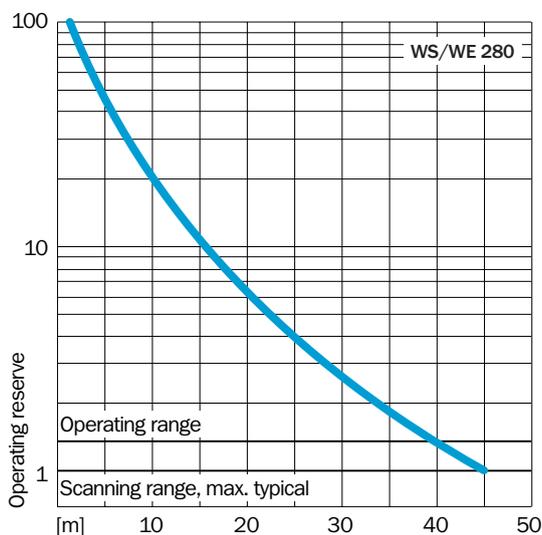
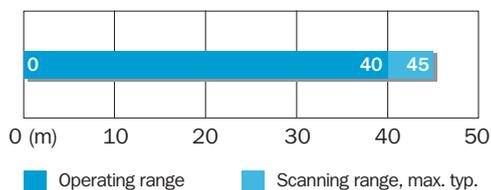
8) A = V_S connections reverse-polarity protected

B = Inputs/outputs reverse-polarity protected

C = Interference pulse suppression

D = Outputs overcurrent and short-circuit protected

Operating range and operating reserve



Order information

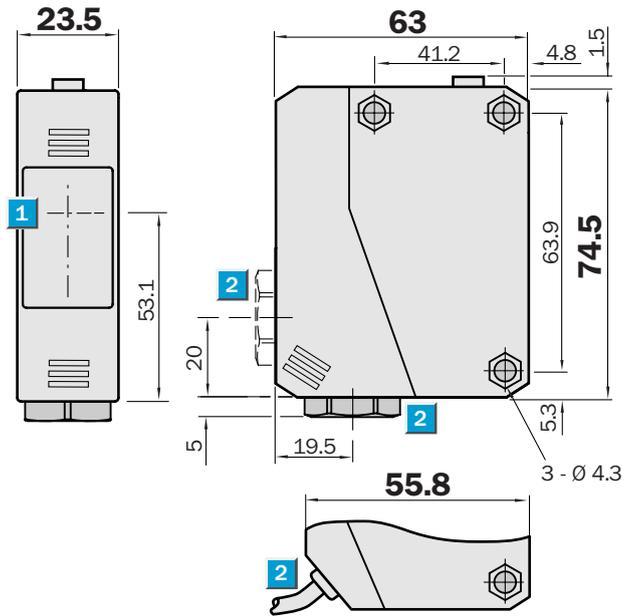
Type	Order no.
WS/WE280-P132	6 028 290
WS/WE280-P230	6 028 288
WS/WE280-P430	6 028 293
WS/WE280-N132	6 028 292
WS/WE280-N230	6 028 289
WS/WE280-N430	6 028 294

Scanning range
0 ... 45 m

Through-beam photoelectric switches

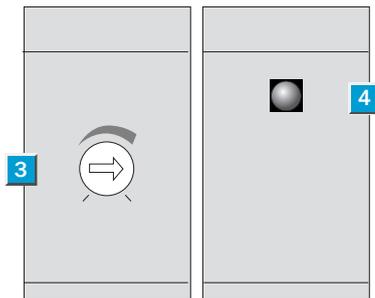
- Red light
- Terminal chamber or cable connection
- Mounting brackets (1.4301) included with delivery
- CE generic emission standard EN 61000-6-3 (“Residential and Commercial Areas”)

Dimensional drawing



Adjustments possible

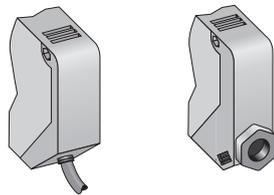
WS280-U132	WE280-S132
WS280-U230	WE280-S230



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

Connection type

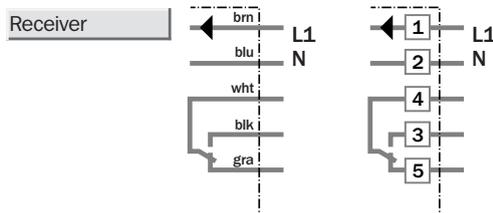
WS/WE280-S132	WS/WE280-S230
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2 x 0.76 mm² Terminals



5 x 0.76 mm²



See chapter Accessories

- Cables and connectors
- Mounting systems *)

*) Mounting brackets included with delivery

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

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

²⁾ ± 10 %

³⁾ Provide suitable spark suppression for inductive and capacitive loads

⁴⁾ Usage category to EN 60947-1, 15 AC, 13 DC

⁵⁾ With light/dark ratio 1:1

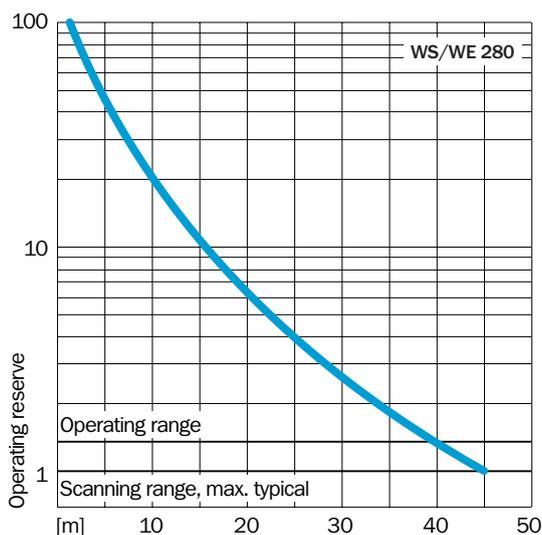
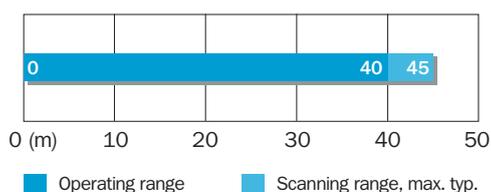
⁶⁾ Do not bend below 0 °C

⁷⁾ Reference voltage 250 V UC

⁸⁾ A = V_S connections reverse-polarity protected

C = Interference pulse suppression

Operating range and operating reserve



Order information

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

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

W27-3: The all-rounder: robust, powerful, very wide range of applications



speed of set up: simply press the button and, within seconds, the sensor is adjusted to the object. The highly visible red light enormously simplifies the alignment of the photoelectric reflex switch to the reflector.

Optionally, the photoelectric proximity switch can be offered with the new, unique IO-Link fieldbus link.

Overview of W27-3:

- Robust, universal all-rounder,
- Greater security against unwanted optical reflections,
- Easy Teach-in, simple and fast commissioning,
- **IP69K in preparation,**
- ECOLAB certifies the material resistance to cleaning agents and disinfectants in common use in the food-processing sector.



Typical uses:

- Storage and conveying technology,
- Automotive industry,
- Woodworking machinery,
- Doors/gates.

The all-rounder W27-3 shows its particular strengths in harsh industrial environments, easily coping with heavy vibration, shocks and extreme temperature variations. Another benefit of the W27-3 is its very wide range of applications. A choice of variants offering functions including 24 VDC or 24 to 240 VAC, output time delays and front screen heating, permits simple integration into any control system.

Additionally, the full W27-3 product range with different laser sensors and devices for Ex areas according to category 3G/3D (ATEX) opens up new applications (see separate data sheets).

The photoelectric proximity switch leads its class through improved operational security in case of unwanted optical reflections and its

► The WTB27-3 photoelectric proximity switch controls the bay allocation to ensure that everything in the warehouse is in its right place.



▼ The WL27-3 photoelectric reflex switch reliably detects the pallet wrapped with foil.



▲ Easy Teach-in: Commissioning the WTB27-3 photoelectric proximity switch easily and quickly: align on the object, press both keys for 2 seconds, ready.

▲ The WL27-3 photoelectric reflex switch meets the demanding quality requirements in the automotive industry.

Technical data		WTB27-3	E2641	F2641	P2441	P2443	P3741						
Scanning distance typ. max.	30 ... 1,100 mm ¹⁾												
Operating distance	100 ... 1,100 mm ¹⁾												
Adjustment of operating distance	Potentiometer												
	Teach-in: double teach button												
Light source, light type	LED, Red light, 660 nm ²⁾												
Light spot diameter	Approx. 15 mm at 500 mm distance												
Supply voltage V _s	10 ... 30 V DC ³⁾												
Ripple	≤ 5 V _{pp} ⁴⁾												
Power consumption	≤ 35 mA ⁵⁾												
Switching outputs	NPN antivalent												
	PNP antivalent												
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V												
Signal voltage NPN HIGH / LOW	Approx. V _s / < 2.5 V												
Output current I _a max	100 mA												
Response time	≤ 1.5 ms ⁶⁾												
Switching frequency	350 Hz ⁷⁾												
Time delay	Selectable: 0.5 ... 10 s / 0.02 ... 0.5 s												
Time type	OFF, T _{off} , T _{on} , T _{off} + T _{on}												
Test input sender off	TE to V _s												
	TE to 0 V												
Connection type	Connector, Q6, 6-pin, DC												
	Connector, M12, 4-pin												
	Cable with plug, Q7, 7-pin, DC, PVC, 150 mm ⁸⁾												
VDE protection class	□ ⁹⁾												
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression												
Enclosure rating	IP 65												
	IP 66, IP 67												
Ambient temperature operation	-40 °C ... +60 °C												
Ambient temperature storage	-40 °C ... +75 °C												
Weight	Approx. 100 g												
	Approx. 120 g												
Housing material	ABS, PMMA												

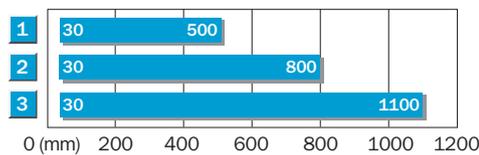
¹⁾ Object with 90 % remission (based on standard white to DIN 5033)
²⁾ Average service life 100,000 h

at T_a = +25 °C
³⁾ Limit values, operation in short-circuit protected network max. 8 A

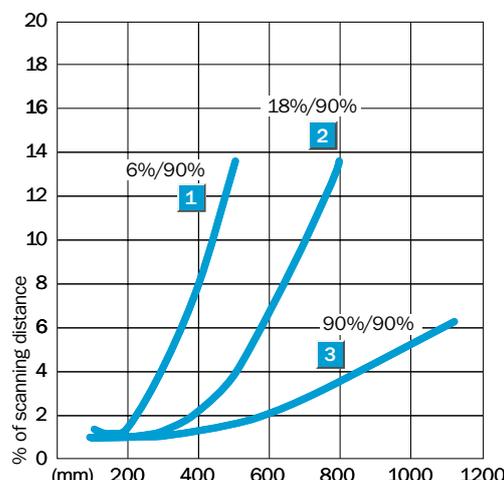
⁴⁾ may not exceed or fall short of V_s tolerances
⁵⁾ without load

⁶⁾ Signal transit time with resistive load
⁷⁾ with light/dark ratio 1:1
⁸⁾ do not bend below 0 °C
⁹⁾ Reference voltage 50 V DC

Scanning distance



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



Order information

Type	Order no.
WTB27-3E2641	1 027 747
WTB27-3F2641	1 027 746
WTB27-3P2441	1 027 744
WTB27-3P2443	1 027 745
WTB27-3P3741	1 027 748

Photoelectric proximity switch, WTB27-3, BGS, red light - UC

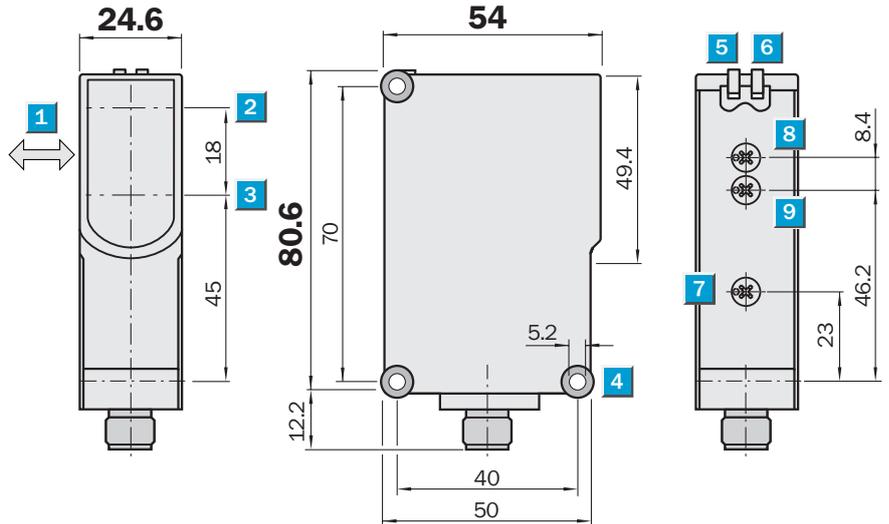
Scanning distance
30 ... 1,100 mm

Photoelectric proximity switch

- Universal supply voltage
- High-precision background suppression without scanning distance drift
- Reliable in industrial environments; secure against the effects of ambient light, unwanted optical reflections, other sensors mounted adjacently and temperatures from -40 °C ... +60 °C

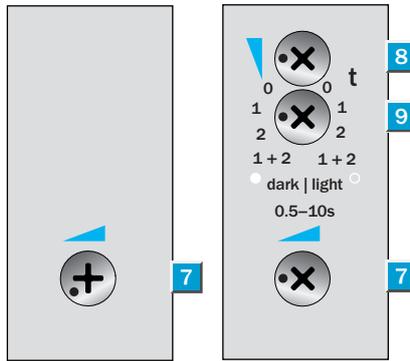


Dimensional drawing



Adjustments possible

WTB27-3S1541	WTB27-3R2641
WTB27-3S3741	

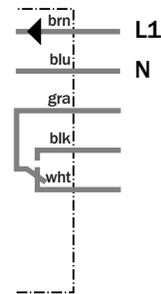
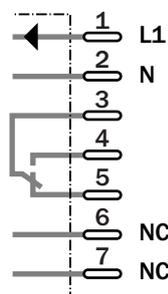
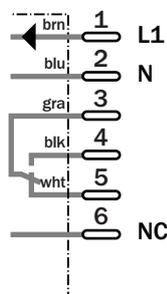
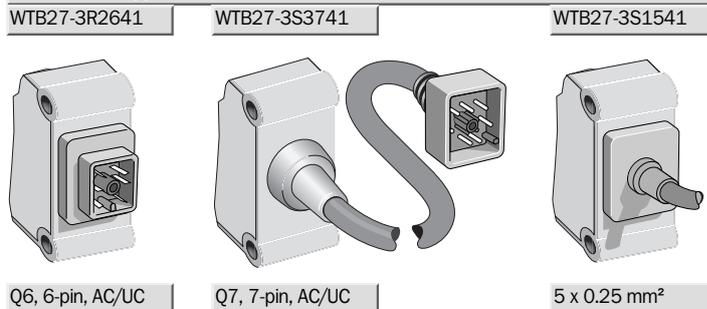


- 1 Standard direction of the material being scanned
- 2 Optical axis sender
- 3 Optical axis receiver
- 4 Mounting hole Ø 5.2 mm
- 5 LED indicator green; power on
- 6 LED indicator yellow; status of received light beam
- 7 Adjustment of scanning distance: Poti
- 8 Time control
- 9 Time delay selector switch
- 0 Light-switching (L)
- Dark-switching (D)

Switch-selectable time delay

D L	0.5 - 10s
0 0	Without time delay
2 1	Time delay from trailing edge of object
1 2	Time delay from leading edge of object
1 + 2	Time delay from trailing and leading edge of object

Connection type



See chapter Accessories*

Connector, Q6, 6-pin, UC-coding
Connector, Q7, 7-pin, UC-coding
Mounting systems
Weather protection

* Recommendation for connectors:



Technical data		WTB27-3	R2641	S1541	S3741							
Scanning distance typ. max.	30 ... 1,100 mm ¹⁾											
Operating distance	100 ... 1,100 mm ¹⁾											
Adjustment of operating distance	Potentiometer											
Light source, light type	LED, Red light, 660 nm ²⁾											
Light spot diameter	Approx. 15 mm at 500 mm distance											
Supply voltage V _s	24 ... 240 V UC ³⁾											
Switching outputs	Relay 1 x c/o, electrically isolated ⁴⁾											
	Relay 1 x c/o, electrically isolated ⁵⁾											
Switching mode	Light-/dark-switching, switchable											
	Light-switching											
Power consumption	≤ 2.5 VA											
Max. switching voltage	250 V AC / 250 V DC (max. 0.11 A)											
Switching current max.	3 A @ 250 V AC o. 24 V DC ⁶⁾											
Max. switching power	750 W AC / 72 W DC											
Response time	≤ 10 ms											
Switching frequency	10 Hz ⁷⁾											
Time delay	Selectable: 0.5 ... 10 s											
Time type	OFF, T _{off} , T _{on} , T _{off} + T _{on}											
Connection type	Connector, Q6, 6-pin, AC/UC											
	Cable, PVC, 2 m ⁸⁾											
	Cable with plug, Q7, 7-pin, AC/UC, PVC, 150 mm ⁸⁾											
VDE protection class	□ ⁹⁾											
Circuit protection	V _s connections reverse-polarity protected / Interference suppression											
Enclosure rating	IP 65											
	IP 66, IP 67											
Ambient temperature operation	-40 °C ... +60 °C ¹⁰⁾											
Ambient temperature storage	-40 °C ... +75 °C											
Weight	Ca. 120 g											
	Approx. 200 g											
	Approx. 140 g											
Housing material	ABS, PMMA											

¹⁾ Object with 90 % remission (based on standard white to DIN 5033)

²⁾ Average service life 100,000 h at T_a = +25 °C

³⁾ ± 10 %

⁴⁾ Provide suitable spark suppression for inductive or capacitive loads. Relay contacts are separated from the power supply by a basic isolation of 3 mm. Depending on the application, additional

isolation might have to be applied in the user's circuit

⁵⁾ Provide suitable spark suppression for inductive or capacitive loads

⁶⁾ Usage category to EN 60947-1,

AC-15, DC-13

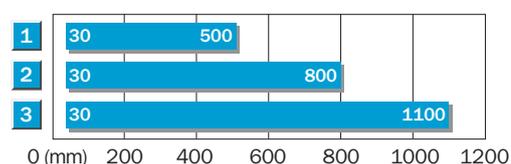
⁷⁾ with light/dark ratio 1:1

⁸⁾ do not bend below 0 °C

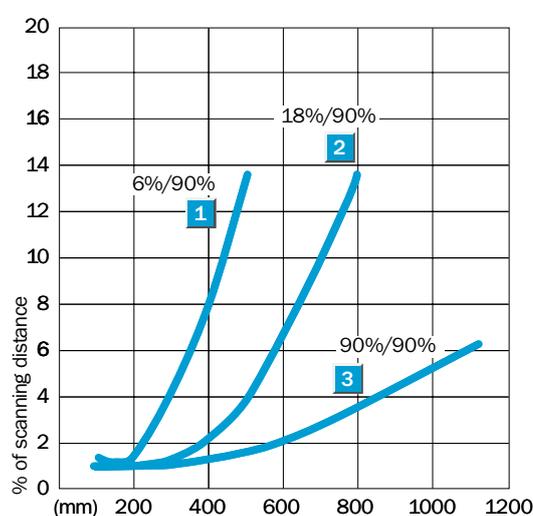
⁹⁾ Reference voltage 250 V AC

¹⁰⁾ UL: 0 °C ... +60 °C

Scanning distance



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



Order information

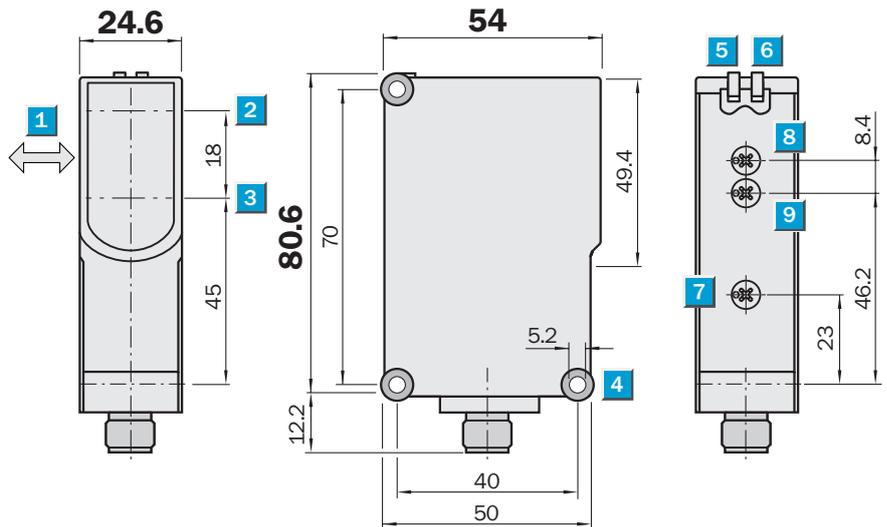
Type	Order no.
WTB27-3R2641	1 027 750
WTB27-3S1541	1 027 749
WTB27-3S3741	1 027 751

Scanning distance
30 ... 1,600 mm

Photoelectric proximity switch

- Infrared light, very long scanning distance
- Reliable in industrial environments; secure against the effects of ambient light, unwanted optical reflections, other sensors mounted adjacently and temperatures from -40 °C ... +60 °C
- Time delays, test input, front screen heating

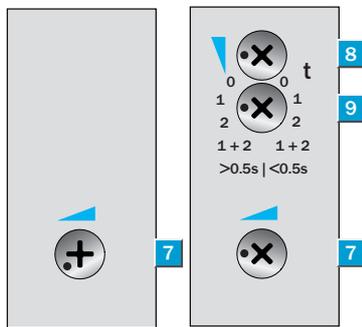
Dimensional drawing



Adjustments possible

WTB27-3P1111	WTB27-3E2411
WTB27-3P2411	WTB27-3E2611
WTB27-3P2421	WTB27-3F2411
WTB27-3P3711	WTB27-3F2611

- Standard direction of the material being scanned
- Optical axis sender
- Optical axis receiver
- Mounting hole Ø 5.2 mm
- LED indicator green; power on
- LED indicator yellow; status of received light beam
- Adjustment of scanning distance: Poti
- Time control
- Time delay selector switch



Switch-selectable time delay

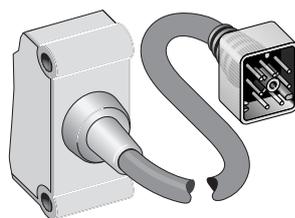
0.02 - 0.5s or 0.5 - 10s

- 0 Without time delay
- 1 Time delay from trailing edge of object
- 2 Time delay from leading edge of object
- 1 + 2 Time delay from trailing and leading edge of object

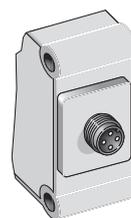


Connection type

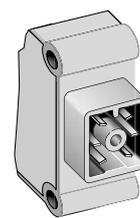
WTB27-3P3711	WTB27-3E2411	WTB27-3E2611	WTB27-3P1111
	WTB27-3F2411	WTB27-3F2611	
	WTB27-3P2411		
	WTB27-3P2421		



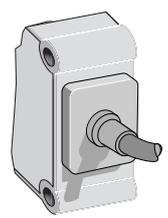
Q7, 7-pin, DC



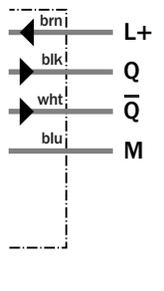
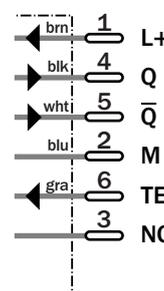
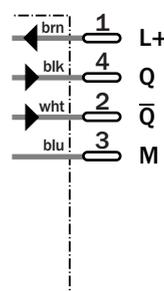
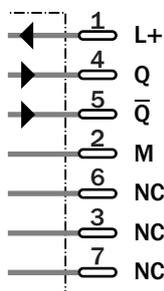
M12, 4-pin



Q6, 6-pin, DC



4 x 0.25 mm²



See chapter Accessories

- Connector, M12, 4-pin
- Connector, Q6, 6-pin, DC-coding
- Connector, Q7, 7-pin, DC-coding
- Mounting systems
- Weather protection

Technical data		WTB27-3	E2411	E2611	F2411	F2611	P1111	P2411	P2421	P3711		
Scanning distance typ. max.	30 ... 1,600 mm ¹⁾											
Operating distance	100 ... 1,600 mm ¹⁾											
Adjustment of operating distance	Potentiometer											
Light source, light type	LED, Infrared light, 880 nm ²⁾											
Light spot diameter	Approx. 25 mm at 800 mm distance											
Supply voltage V _s	10 ... 30 V DC ³⁾											
Ripple	≤ 5 V _{pp} ⁴⁾											
Power consumption	≤ 40 mA ⁵⁾											
	≤ 55 mA ⁵⁾											
Switching outputs	NPN antivalent											
	PNP antivalent											
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V _s / < 2.5 V											
Output current I _a max	100 mA											
Response time	≤ 1.5 ms ⁶⁾											
Switching frequency	350 Hz ⁷⁾											
Time delay	Selectable: 0.5 ... 10 s / 0.02 ... 0.5 s											
Time type	OFF, T _{off} , T _{on} , T _{off} + T _{on}											
Test input sender off	TE to V _s											
	TE to 0 V											
Connection type	Connector, M12, 4-pin											
	Connector, Q6, 6-pin, DC											
	Cable, PVC, 2 m ⁸⁾											
	Cable with plug, Q7, 7-pin, DC, PVC, 150 mm ⁸⁾											
VDE protection class	□ ⁹⁾											
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression											
Enclosure rating	IP 66, IP 67											
	IP 65											
Ambient temperature operation	-40 °C ... +60 °C											
Ambient temperature storage	-40 °C ... +75 °C											
Weight	Approx. 100 g											
	Approx. 180 g											
	Approx. 120 g											
Front screen heating	✓											
Housing material	ABS, PMMA											

¹⁾ Object with 90 % remission (based on standard white to DIN 5033)

²⁾ Average service life 100,000 h

at T_a = +25 °C

³⁾ Limit values, operation in short-circuit protected network max. 8 A

⁴⁾ may not exceed or fall short of V_s tolerances

⁵⁾ without load

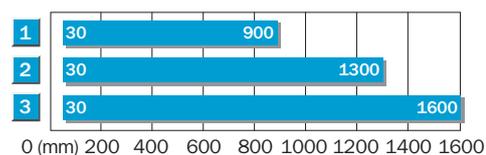
⁶⁾ Signal transit time with resistive load

⁷⁾ with light/dark ratio 1:1

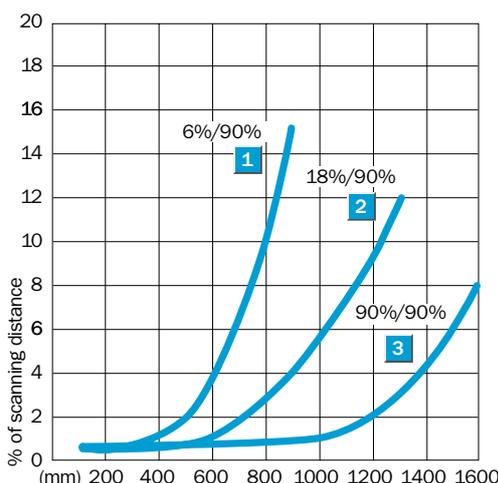
⁸⁾ do not bend below 0 °C

⁹⁾ Reference voltage 50 V DC

Scanning distance



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



Order information

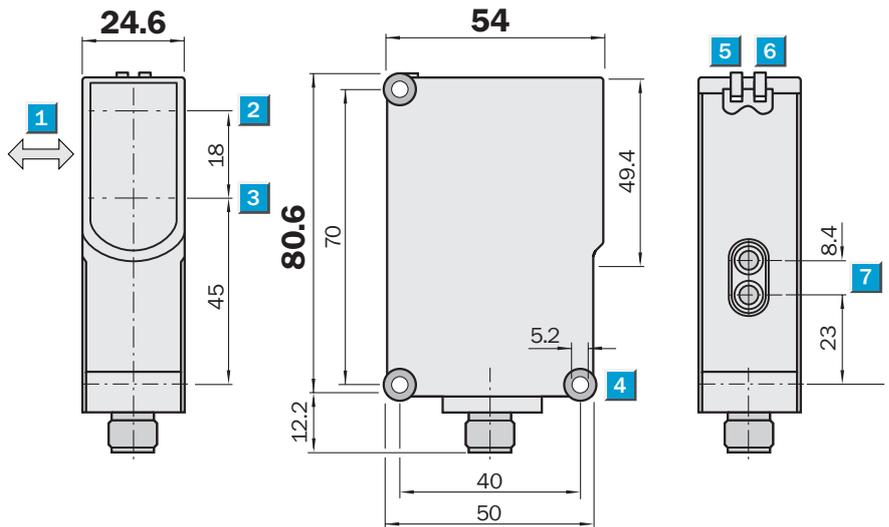
Type	Order no.
WTB27-3E2411	1 027 755
WTB27-3E2611	1 027 757
WTB27-3F2411	1 027 753
WTB27-3F2611	1 027 756
WTB27-3P1111	1 027 752
WTB27-3P2411	1 025 994
WTB27-3P2421	1 027 754
WTB27-3P3711	1 027 758

Scanning distance
30 ... 1,600 mm

Photoelectric proximity switch

- Infrared light, very long scanning distance
- Easy Teach-in, simple and fast commissioning
- Reliable in industrial environments; secure against the effects of ambient light, unwanted optical reflections, other sensors mounted adjacently and temperatures from -40 °C ... +60 °C

Dimensional drawing



Adjustments possible

- WTB27-3N2413
- WTB27-3P1113
- WTB27-3P2413

- 1 Standard direction of the material being scanned
- 2 Optical axis sender
- 3 Optical axis receiver
- 4 Mounting hole Ø 5.2 mm
- 5 LED indicator green; power on
- 6 LED indicator yellow; status of received light beam
- 7 Adjustment of scanning distance: double teach button



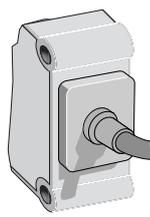
Connection type

- WTB27-3N2413
- WTB27-3P2413

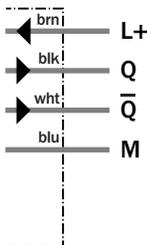
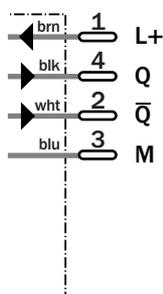
WTB27-3P1113



M12, 4-pin



4 x 0.25 mm²



See chapter Accessories

- Connector, M12, 4-pin
- Mounting systems
- Weather protection

Technical data		WTB27-3	N2413	P1113	P2413								
Scanning distance typ. max.	30 ... 1,600 mm ¹⁾												
Operating distance	100 ... 1,600 mm ¹⁾												
Adjustment of operating distance	Teach-in: double teach button												
Light source, light type	LED, Infrared light, 880 nm ²⁾												
Light spot diameter	Approx. 25 mm at 800 mm distance												
Supply voltage V _s	10 ... 30 V DC ³⁾												
Ripple	≤ 5 V _{pp} ⁴⁾												
Power consumption	≤ 40 mA ⁵⁾												
Switching outputs	NPN antivalent												
	PNP antivalent												
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V												
Signal voltage NPN HIGH / LOW	Approx. V _s / < 2.5 V												
Output current I _a max	100 mA												
Response time	≤ 1.5 ms ⁶⁾												
Switching frequency	350 Hz ⁷⁾												
Connection type	Connector, M12, 4-pin												
	Cable, PVC, 2 m ⁸⁾												
VDE protection class	□ ⁹⁾												
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression												
Enclosure rating	IP 66, IP 67												
Ambient temperature operation	-40 °C ... +60 °C												
Ambient temperature storage	-40 °C ... +75 °C												
Weight	Approx. 100 g												
	Approx. 180 g												
Housing material	ABS, PMMA												

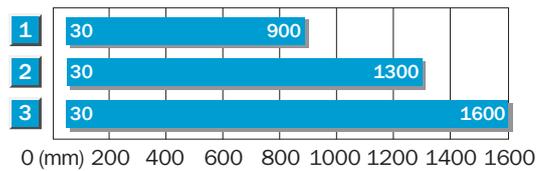
¹⁾ Object with 90 % remission (based on standard white to DIN 5033)
²⁾ Average service life 100,000 h

at T_a = +25 °C
³⁾ Limit values, operation in short-circuit protected network max. 8 A

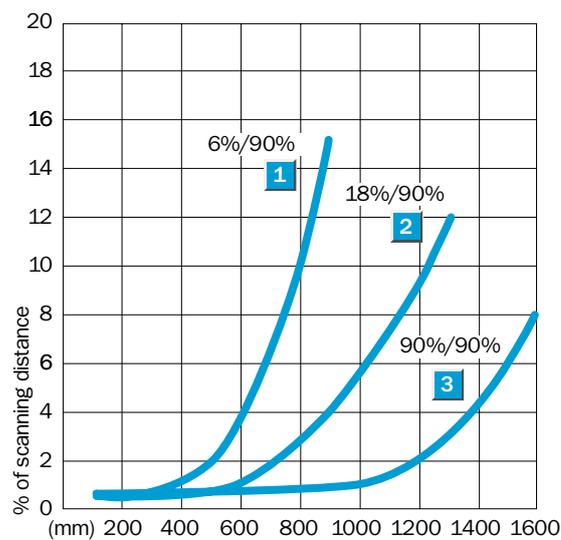
⁴⁾ may not exceed or fall short of V_s tolerances
⁵⁾ without load

⁶⁾ Signal transit time with resistive load
⁷⁾ with light/dark ratio 1:1
⁸⁾ do not bend below 0 °C
⁹⁾ Reference voltage 50 V DC

Scanning distance



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



Ordering information	
Type	Order no.
WTB27-3N2413	1 027 761
WTB27-3P1113	1 027 759
WTB27-3P2413	1 027 760

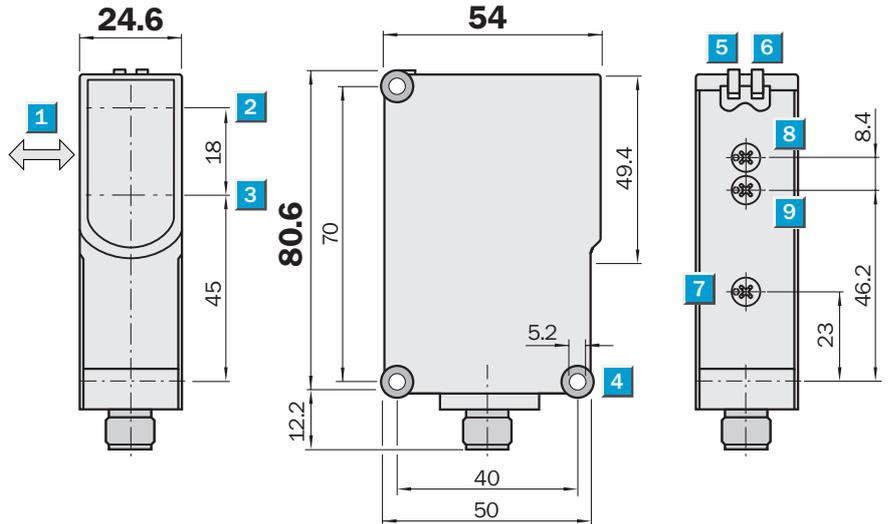
Scanning distance
30 ... 1,600 mm

Photoelectric proximity switch

- Universal supply voltage
- Infrared light, very long scanning distance
- Reliable in industrial environments; secure against the effects of ambient light, unwanted optical reflections, other sensors mounted adjacently and temperatures from -40 °C ... +60 °C
- Time delays

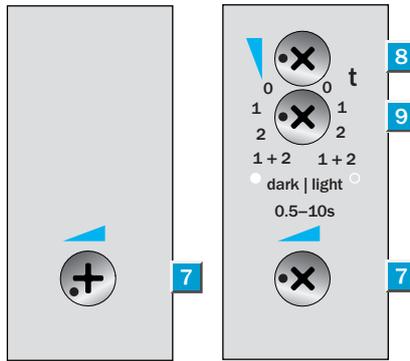


Dimensional drawing



Adjustments possible

WTB27-3S1511	WTB27-3R2611
WTB27-3S3711	



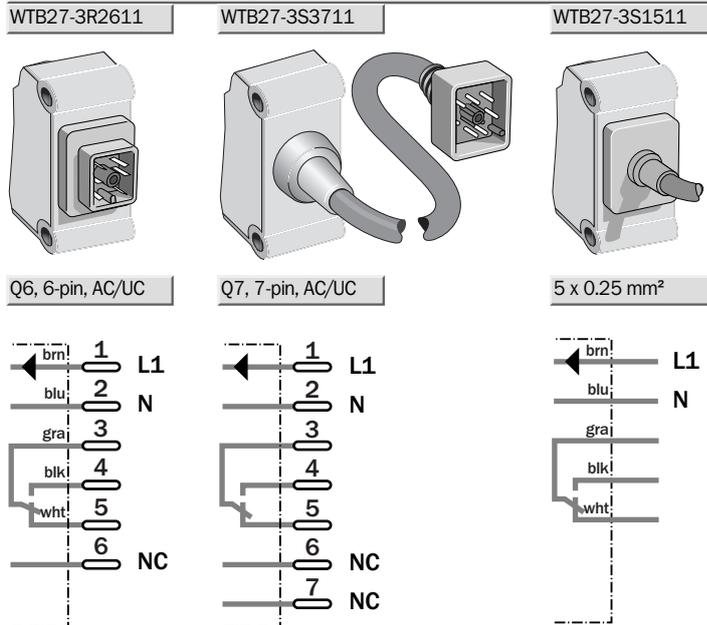
- 1 Standard direction of the material being scanned
- 2 Optical axis sender
- 3 Optical axis receiver
- 4 Mounting hole Ø 5.2 mm
- 5 LED indicator green; power on
- 6 LED indicator yellow; status of received light beam
- 7 Adjustment of scanning distance: Poti
- 8 Time control
- 9 Time delay selector switch
- 0 Light-switching (L)
- Dark-switching (D)

Switch-selectable time delay

D L	0.5 - 10s
0 0	Without time delay
2 1	Time delay from trailing edge of object
1 2	Time delay from leading edge of object
1 + 2	Time delay from trailing and leading edge of object



Connection type



See chapter Accessories*

Connector, Q6, 6-pin, UC-coding
Connector, Q7, 7-pin, UC-coding
Mounting systems
Weather protection

* Recommendation for connectors:



Technical data		WTB27-3	R2611	S1511	S3711								
Scanning distance typ. max.	30 ... 1,600 mm ¹⁾												
Operating distance	100 ... 1,600 mm ¹⁾												
Adjustment of operating distance	Potentiometer												
Light source, light type	LED, Infrared light, 880 nm ²⁾												
Light spot diameter	Approx. 25 mm at 800 mm distance												
Supply voltage V _s	24 ... 240 V UC ³⁾												
Switching outputs	Relay 1 x c/o, electrically isolated ⁴⁾												
	Relay 1 x c/o, electrically isolated ⁵⁾												
Switching mode	Light-/dark-switching, switchable												
	Light-switching												
Power consumption	≤ 2.5 VA												
Max. switching voltage	250 V AC / 250 V DC (max. 0.11A)												
Switching current max.	3 A @ 250 V AC o. 24 V DC ⁶⁾												
Max. switching power	750 W AC / 72 W DC												
Response time	≤ 10 ms												
Switching frequency	10 Hz ⁷⁾												
Time delay	Selectable: 0.5...10s												
Time type	OFF, T _{off} , T _{on} , T _{off} + T _{on}												
Connection type	Connector, Q6, 6-pin, AC/UC												
	Cable, PVC, 2 m ⁸⁾												
	Cable with plug, Q7, 7-pin, AC/UC, PVC, 150 mm ⁸⁾												
VDE protection class	□ ⁹⁾												
Circuit protection	V _s connections reverse-polarity protected / Interference suppression												
Enclosure rating	IP 65												
	IP 66, IP 67												
Ambient temperature operation	-40 °C ... +60 °C ¹⁰⁾												
Ambient temperature storage	-40 °C ... +75 °C												
Weight	Approx. 120 g												
	Approx. 200 g												
	Approx. 140 g												
Housing material	ABS, PMMA												

¹⁾ Object with 90 % remission (based on standard white to DIN 5033)

²⁾ Average service life 100,000 h at T_a = +25 °C

³⁾ ± 10%

⁴⁾ Provide suitable spark suppression for inductive or capacitive loads. Relay contacts are separated from the power supply by basic isolation of 3 mm. Depending on the application, additional

isolation might have to be applied in the user's circuit

⁵⁾ Provide suitable spark suppression for inductive or capacitive loads

⁶⁾ Usage category to EN 60947-1,

AC-15, DC-13

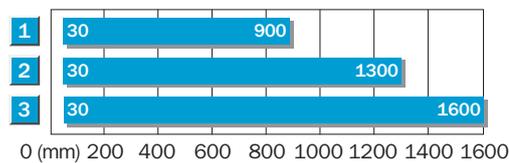
⁷⁾ with light/dark ratio 1:1

⁸⁾ do not bend below 0 °C

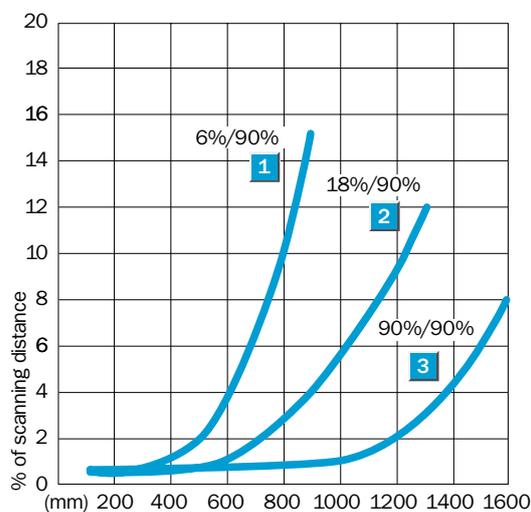
⁹⁾ Reference voltage 250 V AC

¹⁰⁾ UL: 0 °C ... +60 °C

Scanning distance



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



Order information

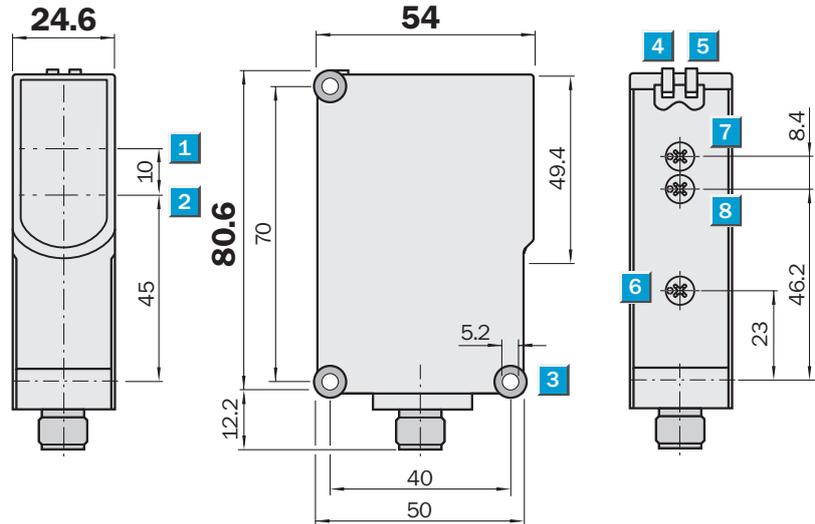
Type	Order no.
WTB27-3R2611	1 027 763
WTB27-3S1511	1 027 762
WTB27-3S3711	1 027 764

Scanning range
0.1 ... 15 m

Photoelectric reflex switch

- Red light for easier alignment
- Long range, high operating reserve
- Reliable in industrial environments; secure against the effects of ambient light, other sensors mounted adjacently and temperatures from -40 °C ... +60 °C
- Front screen heating, time delays

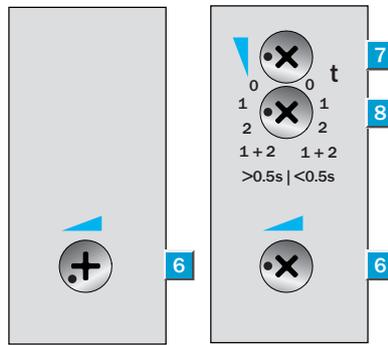
Dimensional drawing



Adjustments possible

WL27-3P1131	WL27-3E2631
WL27-3P2431	WL27-3F2631
WL27-3P2451	

- 1 Optical axis sender
- 2 Optical axis receiver
- 3 Mounting hole Ø 5.2 mm
- 4 LED indicator green; power on
- 5 LED indicator yellow; status of received light beam
- 6 Sensitivity adjustment: Poti
- 7 Time control
- 8 Time delay selector switch



Switch-selectable time delay

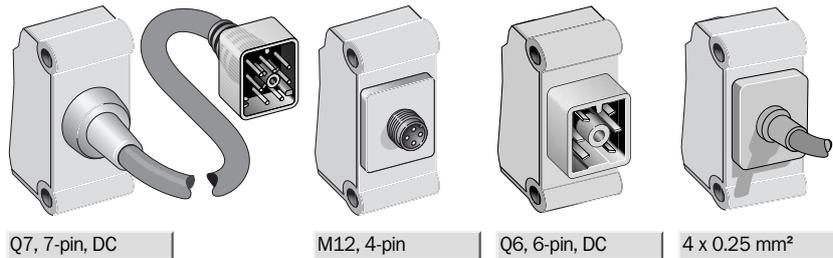
0.02 - 0.5s or 0.5 - 10s

- 0 Without time delay
- 1 Time delay from trailing edge of object
- 2 Time delay from leading edge of object
- 1 + 2 Time delay from trailing and leading edge of object



Connection type

WL27-3P3730	WL27-3P2430	WL27-3E2631	WL27-3P1131
	WL27-3P2431	WL27-3F2631	
	WL27-3P2450		
	WL27-3P2451		

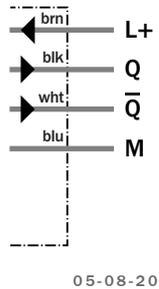
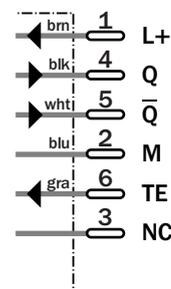
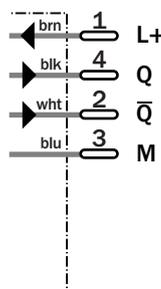
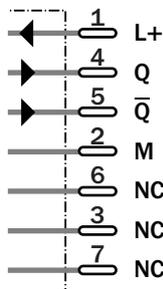


Q7, 7-pin, DC

M12, 4-pin

Q6, 6-pin, DC

4 x 0.25 mm²



See chapter Accessories

Connector, M12, 4-pin
Connector, Q6, 6-pin, DC-coding
Connector, Q7, 7-pin, DC-coding
Mounting systems
Reflectors
Weather protection

Technical data		WL27-3	E2631	F2631	P1131	P2430	P2431	P2450	P2451	P3730		
Scanning range typ. max.	0.1 ... 15 m											
Scanning range, recommended	0.1 ... 11 m											
Relating to	Reflector PL80 A											
Sensitivity adjustment	Potentiometer											
Light source, light type	LED, Red light, 660 nm ¹⁾											
Light spot diameter	Approx. 220 mm at 10 m distance											
Angle of dispersion	Approx. 1.5 °											
Polarisation filter	✓											
Supply voltage V_s	10 ... 30 V DC ²⁾											
Ripple	≤ 5 V _{pp} ³⁾											
Power consumption	≤ 45 mA ⁴⁾											
	≤ 30 mA ⁴⁾											
Switching outputs	NPN antivalent											
	PNP antivalent											
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V _s / < 2.5 V											
Output current I _a max	100 mA											
Response time	≤ 500 μs ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Time delay	Selectable: 0.5 ... 10 s / 0.02 ... 0.5 s											
Time type	OFF, T _{off} , T _{on} , T _{off} + T _{on}											
Test input sender off	TE to V _s											
	TE to 0 V											
Connection type	Connector, Q6, 6-pin, DC											
	Cable, PVC, 2 m ⁷⁾											
	Connector, M12, 4-pin											
	Cable with plug, Q7, 7-pin, DC, PVC,											
VDE protection class	□ ⁸⁾											
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression											
Enclosure rating	IP 65											
	IP 66, IP 67											
Ambient temperature operation	-40 °C ... +60 °C											
Ambient temperature storage	-40 °C ... +75 °C											
Weight	Approx. 100 g											
	Approx. 180 g											
	Approx. 120 g											
Front screen heating	✓											
Housing material	ABS, PMMA											

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

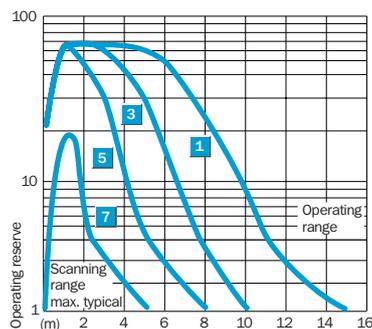
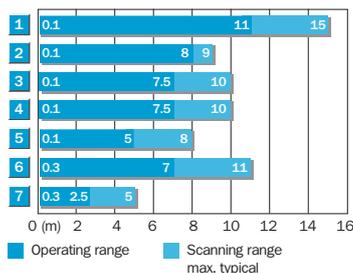
²⁾ Limit values, operation in short-circuit

³⁾ protected network max. 8 A
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

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.1 ... 11.0 m
2 PL 50 A	0.1 ... 8.0 m
3 PL 40 A	0.1 ... 7.5 m
4 PL 30 A	0.1 ... 7.5 m
5 PL 20 A	0.1 ... 5.0 m
6 C 110	0.3 ... 7.0 m
7 Reflective tape Diamond Grade	0.3 ... 2.5 m

Order information

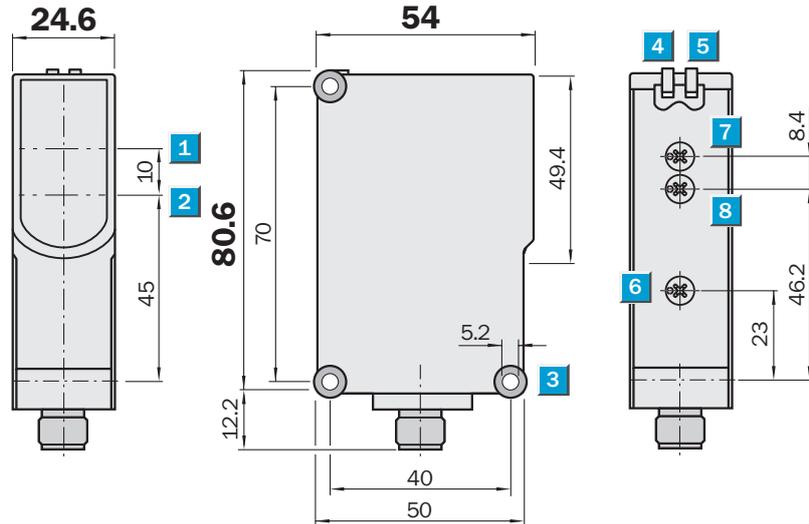
Type	Order no.
WL27-3E2631	1 027 773
WL27-3F2631	1 027 772
WL27-3P1131	1 027 768
WL27-3P2430	1 027 769
WL27-3P2431	1 027 982
WL27-3P2450	1 027 771
WL27-3P2451	1 027 770
WL27-3P3730	1 027 774

Photoelectric reflex switch, WL27-3, red light - UC


Scanning range
0.1 ... 15 m
Photoelectric reflex switch

- Universal supply voltage
- Red light for easier alignment
- Reliable in industrial environments; secure against the effects of ambient light, other sensors mounted adjacently and temperatures from -40 °C ... +60°C
- Time delays

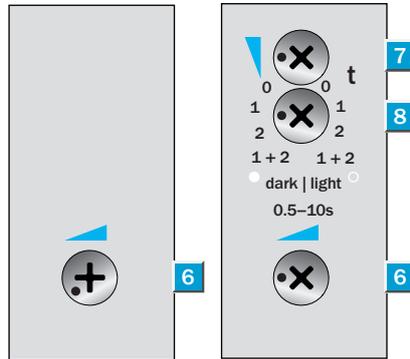
Dimensional drawing



Adjustments possible

WL27-3S1531
 WL27-3S3731

WL27-3R2631



- 1 Optical axis sender
- 2 Optical axis receiver
- 3 Mounting hole \varnothing 5.2 mm
- 4 LED indicator green; power on
- 5 LED indicator yellow; status of received light beam
- 6 Sensitivity adjustment: Poti
- 7 Time control
- 8 Time delay selector switch
- 0 Light-switching (L)
- Dark-switching (D)



Switch-selectable time delay

D L	0.5 - 10s
0 0	Without time delay
2 1	Time delay from trailing edge of object
1 2	Time delay from leading edge of object
1 + 2	Time delay from trailing and leading edge of object



Connection type

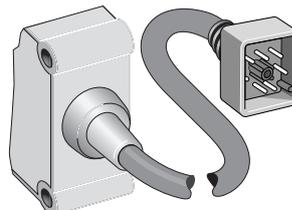
WL27-3R2631

WL27-3S3731

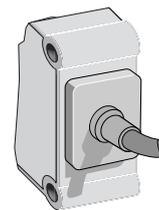
WL27-3S1531



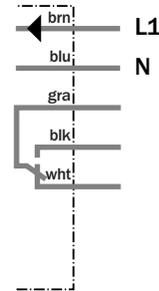
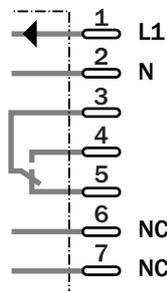
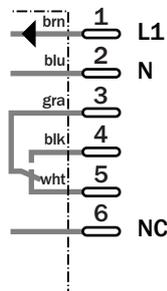
Q6, 6-pin, AC/UC



Q7, 7-pin, AC/UC



5 x 0.25 mm²



See chapter Accessories*

- Connector, Q6, 6-pin, UC-coding
- Connector, Q7, 7-pin, UC-coding
- Mounting systems
- Reflectors
- Weather protection

* Recommendation for connectors:

AWM Style 2464

Technical data		WL27-3	R2631	S1531	S3731								
Scanning range typ. max.	0.1 ... 15 m												
Scanning range, recommended	0.1 ... 11 m												
Relating to	Reflector PL80 A												
Sensitivity adjustment	Potentiometer												
Light source, light type	LED, Red light, 660 nm ¹⁾												
Light spot diameter	Approx. 220 mm at 10 m distance												
Angle of dispersion	Approx. 1.5 °												
Polarisation filter	✓												
Supply voltage V_s	24 ... 240 V UC ²⁾												
Switching outputs	Relay 1 x c/o, electrically isolated ³⁾												
	Relay 1 x c/o, electrically isolated ⁴⁾												
Switching mode	Light-/dark-switching, selectable												
	Light-switching												
Power consumption	≤ 2.5 VA												
Max. switching voltage	250 V AC / 250 V DC (max. 0.11 A)												
Switching current max.	3 A @ 250 V AC o. 24 V DC ⁵⁾												
Max. switching power	750 W AC / 72 W DC												
Response time	≤ 10 ms												
Switching frequency	10 Hz ⁶⁾												
Time delay	Selectable: 0.5 ... 10 s												
Time type	OFF, T _{off} , T _{on} , T _{off} + T _{on}												
Connection type	Connector, Q6, 6-pin, AC/UC												
	Cable, PVC, 2 m ⁷⁾												
	Cable with plug, Q7, 7-pin, AC/UC, PVC, 150 mm ⁷⁾												
VDE protection class	□ ⁸⁾												
Circuit protection	V _s connections reverse-polarity protected / Interference suppression												
Enclosure rating	IP 65												
	IP 66, IP 67												
Ambient temperature operation	-40 °C ... +60 °C ⁹⁾												
Ambient temperature storage	-40 °C ... +75 °C												
Weight	Approx. 120 g												
	Approx. 200 g												
	Approx. 140 g												
Housing material	ABS, PMMA												

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

²⁾ ± 10 %

³⁾ Provide suitable spark suppression for

inductive or capacitive loads. Relay contacts are separated from the power supply by a basic isolation of 3 mm. Depending on the application, additional

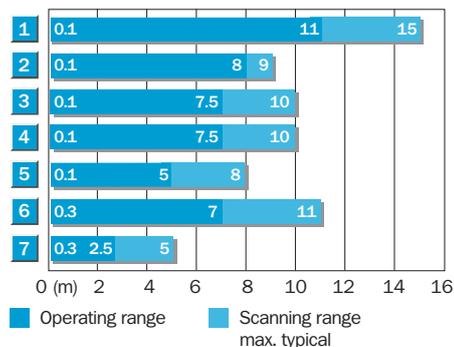
isolation might have to be applied in the user's circuit
⁴⁾ Provide suitable spark suppression for inductive or capacitive loads

⁵⁾ Usage category to EN 60947-1, AC-15, DC-13

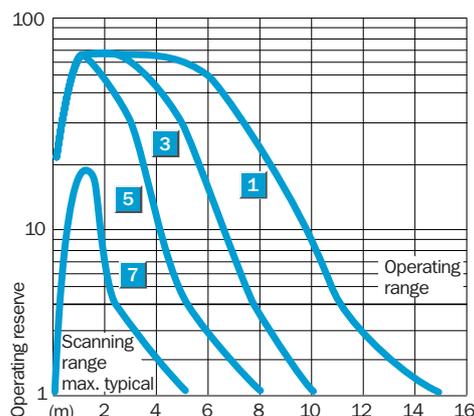
⁶⁾ with light/dark ratio 1:1
⁷⁾ do not bend below 0 °C

⁸⁾ Reference voltage 250 V AC

Scanning range and operating reserve



Reflector type	Operating range
1	PL 80 A 0.1 ... 11.0 m
2	PL 50 A 0.1 ... 8.0 m
3	PL 40 A 0.1 ... 7.5 m
4	PL 30 A 0.1 ... 7.5 m
5	PL 20 A 0.1 ... 5.0 m
6	C 110 0.3 ... 7.0 m
7	Reflective tape Diamond Grade 0.3 ... 2.5 m



Order information

Type	Order no.
WL27-3R2631	1 027 776
WL27-3S1531	1 027 775
WL27-3S3731	1 027 777

Through-beam photoelectric switch, WSE27-3, red light - DC

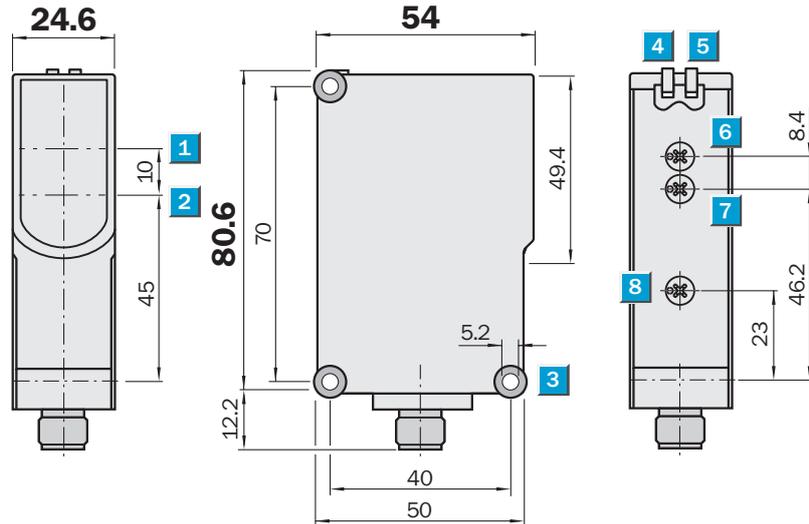


Scanning range
0 ... 35 m

Through-beam photoelectric switch

- Red light for easier alignment
- Long range, high operating reserve
- Reliable in industrial environments; secure against the effects of ambient light and temperatures from -40 °C ... +60 °C
- Alarm output, front screen heating, test input, time delays

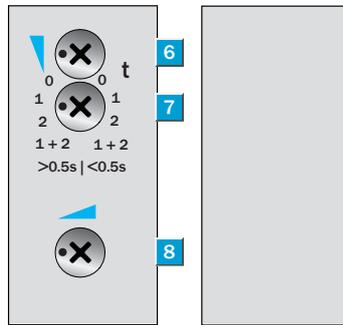
Dimensional drawing



Adjustments possible

WSE27-3E2631	WSE27-3P2430
WSE27-3F2631	WSE27-3P2450
	WSE27-3P3730

- 1 Optical axis sender
- 2 Optical axis receiver
- 3 Mounting hole \varnothing 5.2 mm
- 4 LED indicator green; power on
- 5 LED indicator yellow; status of received light beam
- 6 Time control
- 7 Time delay selector switch
- 8 Sensitivity adjustment: Poti



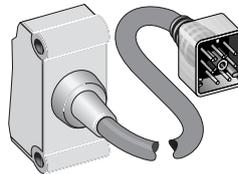
Switch-selectable time delay

0.02 - 0.5s or 0.5 - 10s

- 0 Without time delay
- 1 Time delay from trailing edge of object
- 2 Time delay from leading edge of object
- 1 + 2 Time delay from trailing and leading edge of object

Connection type

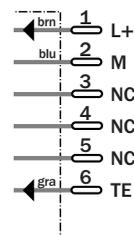
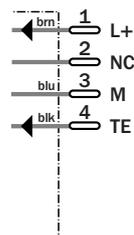
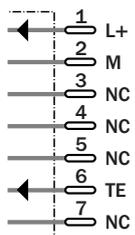
WSE27-3P3730	WSE27-3P2430 WSE27-3P2450	WSE27-3E2631 WSE27-3F2631
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Sender Q7, 7-pin, DC

M12, 4-pin

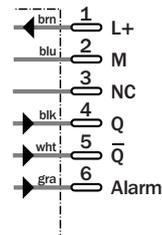
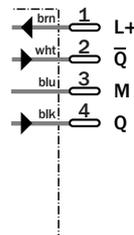
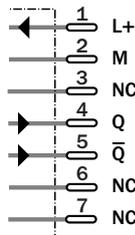
Q6, 6-pin, DC



Receiver Q7, 7-pin, DC

M12, 4-pin

Q6, 6-pin, DC



See chapter Accessories

- Connector, M12, 4-pin
- Connector, Q6, 6-pin, DC-coding
- Connector, Q7, 7-pin, DC-coding
- Mounting systems
- Weather protection

Technical data		WSE27-3	E2631	F2631	P2430	P2450	P3730						
Scanning range typ. max.	0 ... 35 m												
Scanning range, recommended	0 ... 25 m												
Sensitivity adjustment	Potentiometer												
Light source, light type	LED, Red light, 645 nm ¹⁾												
Light spot diameter	Approx. 600 mm at 25 m distance												
Angle of dispersion	Approx. 1.5 °												
Angle of reception	Approx. 3 °												
Supply voltage V _s	10 ... 30 V DC ²⁾												
Ripple	≤ 5 V _{pp} ³⁾												
Power consumption, sender	≤ 35 mA without front screen heating ≤ 50 mA with front screen heating												
Power consumption, receiver	≤ 20 mA without front screen heating ⁴⁾ ≤ 35 mA with front screen heating ⁴⁾												
Switching outputs	NPN antivalent PNP antivalent												
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V												
Signal voltage NPN HIGH / LOW	Approx. V _s / < 2.5 V												
Output current I _a max	100 mA												
Response time	≤ 500 μs ⁵⁾												
Switching frequency	1,000 Hz ⁶⁾												
Time delay	Selectable: 0.5 ... 10 s / 0.02 ... 0.5 s												
Time type	OFF, T _{off} , T _{on} , T _{off} + T _{on}												
Test input sender off	TE to 0 V												
Alarm output	Alarm ⁷⁾												
Connection type	Connector, Q6, 6-pin, DC Connector, M12, 4-pin Cable with plug, Q7, 7-pin, DC, PVC, 150 mm ⁸⁾												
VDE protection class	□ ⁹⁾												
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression												
Enclosure rating	IP 65 IP 66, IP 67												
Ambient temperature operation	-40 °C ... +60 °C												
Ambient temperature storage	-40 °C ... +75 °C												
Weight	Approx. 200 g Approx. 240 g												
Front screen heating	✓												
Housing material	ABS, PMMA												

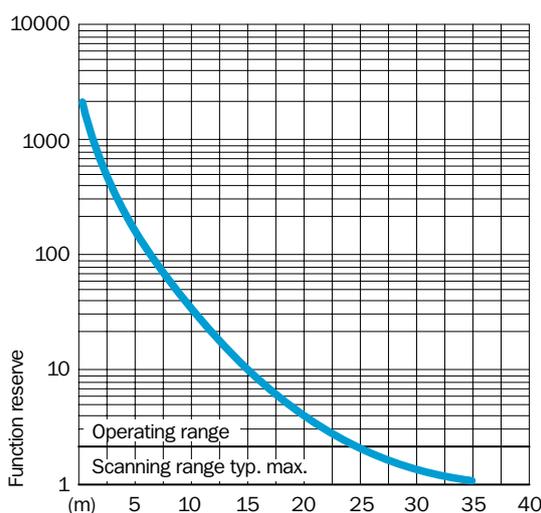
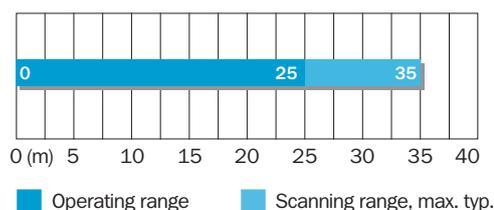
¹⁾ Average service life 100,000 h at T_a = +25 °C
²⁾ Limit values, operation in short-circuit

protected network max. 8 A
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⁾ do not bend below 0 °C
⁹⁾ Reference voltage 50 V DC

Scanning range and operating reserve



Order information	
Type	Order no.
WSE27-3E2631	1 027 793
WSE27-3F2631	1 027 792
WSE27-3P2430	1 027 790
WSE27-3P2450	1 027 791
WSE27-3P3730	1 027 794

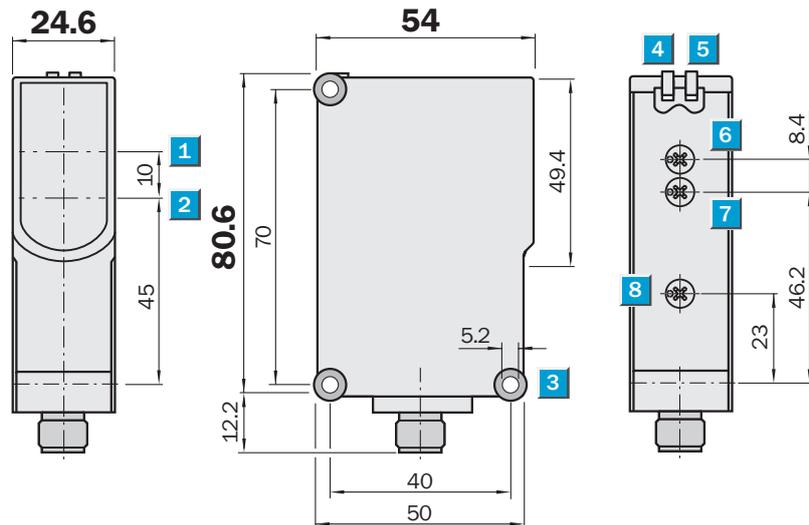
Through-beam photoelectric switch, WSE27-3, red light - UC

Scanning range
0 ... 35 m

Through-beam photoelectric switch

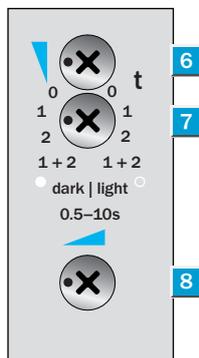
- Universal supply voltage
- Red light for easier alignment
- Long range, high operating reserve
- Reliable in industrial environments; secure against the effects of ambient light and temperatures from -40 °C ... +60 °C
- Time delays

Dimensional drawing



Adjustments possible

WSE27-3R2631



- 1 Optical axis sender
- 2 Optical axis receiver
- 3 Mounting hole Ø 5.2 mm
- 4 LED indicator green; power on
- 5 LED indicator yellow; status of received light beam
- 6 Time control
- 7 Time delay selector switch
- 8 Sensitivity adjustment: Poti
- 0 Light-switching (L)
- Dark-switching (D)

Switch-selectable time delay

D L	0.5 - 10s
0 0	Without time delay
2 1	Time delay from trailing edge of object
1 2	Time delay from leading edge of object
1 + 2	Time delay from trailing and leading edge of object

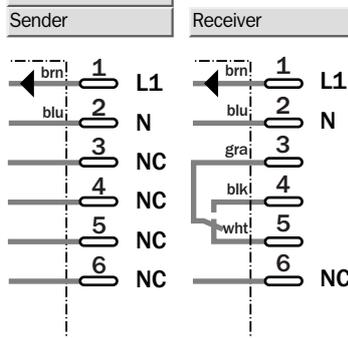


Connection type

WSE27-3R2631



Q6, 6-pin, AC/UC



See chapter Accessories*

Connector, Q6, 6-pin, UC-coding

Mounting systems

Weather protection

* Recommendation for connectors:

AWM Style 2464

Technical data		WSE27-3	R2631																	
Scanning range typ. max.	0 ... 35 m																			
Scanning range, recommended	0 ... 25 m																			
Sensitivity adjustment	Potentiometer																			
Light source, light type	LED, Red light, 645 nm ¹⁾																			
Light spot diameter	Approx. 600 mm at 25 m distance																			
Angle of dispersion	Approx. 1.5 °																			
Angle of reception	Approx. 3 °																			
Supply voltage V_s	24 ... 240 V UC ²⁾																			
Switching outputs	Relay 1 x c/o, electrically isolated ³⁾																			
Switching mode	Light-/dark-switching, selectable																			
Power consumption, sender	≤ 2 VA																			
Power consumption, receiver	≤ 2.5 VA																			
Max. switching voltage	250 V AC / 250 V DC (max. 0.11 A)																			
Switching current max.	3 A @ 250 V AC o. 24 V DC ⁴⁾																			
Max. switching power	750 AC / 72 W DC																			
Response time	≤ 10 ms ⁵⁾																			
Switching frequency	10 Hz ⁶⁾																			
Time delay	Selectable: 0.5 ... 10 s																			
Time type	OFF, T _{off} , T _{on} , T _{off} + T _{on}																			
Connection type	Connector, Q6, 6-pin, AC/UC																			
VDE protection class	□ ⁷⁾																			
Circuit protection	V _s connections reverse-polarity protected / Interference suppression																			
Enclosure rating	IP 65																			
Ambient temperature operation	-40 °C ... +60 °C ⁸⁾																			
Ambient temperature storage	-40 °C ... +75 °C																			
Weight	Approx. 240 g																			
Housing material	ABS, PMMA																			

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

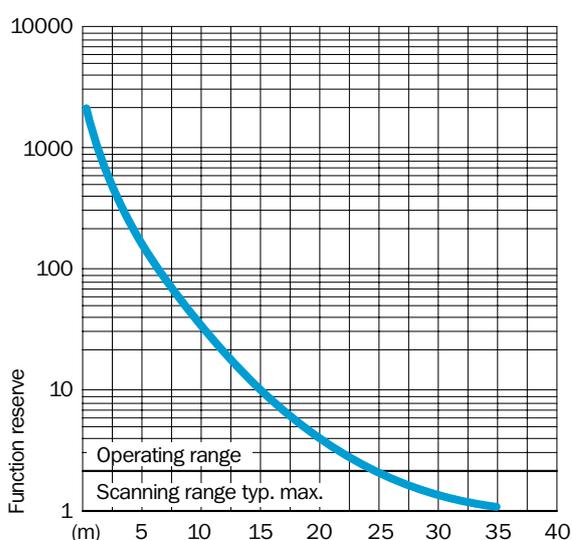
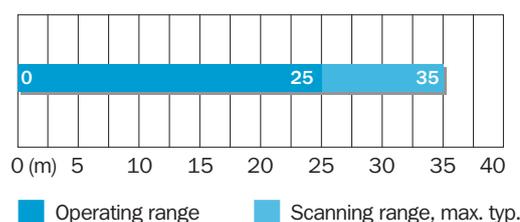
²⁾ ± 10 %

³⁾ Provide suitable spark suppression for

inductive or capacitive loads. Relay contacts are separated from the power supply by a basic isolation of 3 mm. Depending on the application, additional

isolation might have to be applied in the user's circuit
⁴⁾ Usage category to EN 60947-1, AC-15, DC-13

⁵⁾ Signal transit time with resistive load
⁶⁾ with light/dark ratio 1:1
⁷⁾ Reference voltage 250 V AC
⁸⁾ UL: 0 °C ... +60 °C



Order information

Type	Order no.
WSE27-3R2631	1 027 795

W 34: Sensor technology that does justice to demanding requirements

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



Due to their easy operation, the devices are quickly ready to operate. The screw connections and device plugs, which are rotatable through 90°, provide optimum cable entry in any mounting position. Moreover, the W 34 series is compatible with the W 36 series from a mounting viewpoint. All W34s are available either as a DC or DC/AC option.

Overview of W 34:

Very robust housing with very good resistance to chemicals as well as IP 69K.

Very long ranges and high precision, long scanning range.

High insensitivity to ambient light increases the reliability.

User-friendly connection concept offers fast commissioning.

Useful features reduce the number of options and stockholding.

Main industries:

- Plant construction (glass production, ceramics, construction),
- Timber industry,
- Lifting and transport technology,
- Chemical industry,
- Door and gate and access control.

Long ranges, fast and easy assembly and independence from the available type of voltage supply are the highlights of the W 34 series of photoelectric switches.

The further prominent features are precise background suppression and insensitivity to ambient light.

The robust plastic housing can even be used in a temperature range of 40°C ... +60°C.

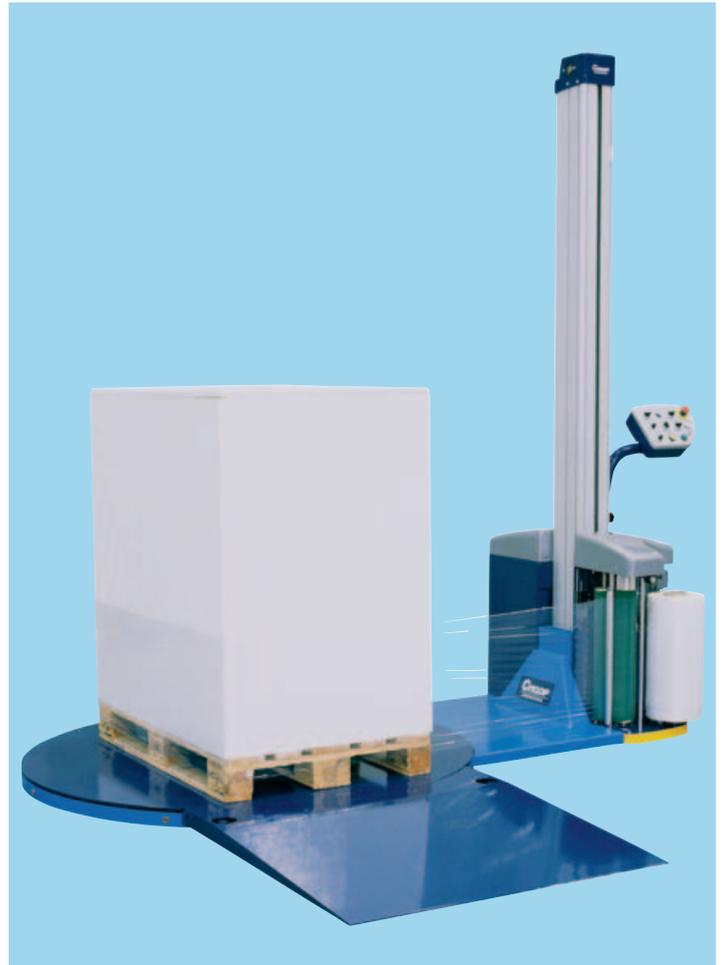
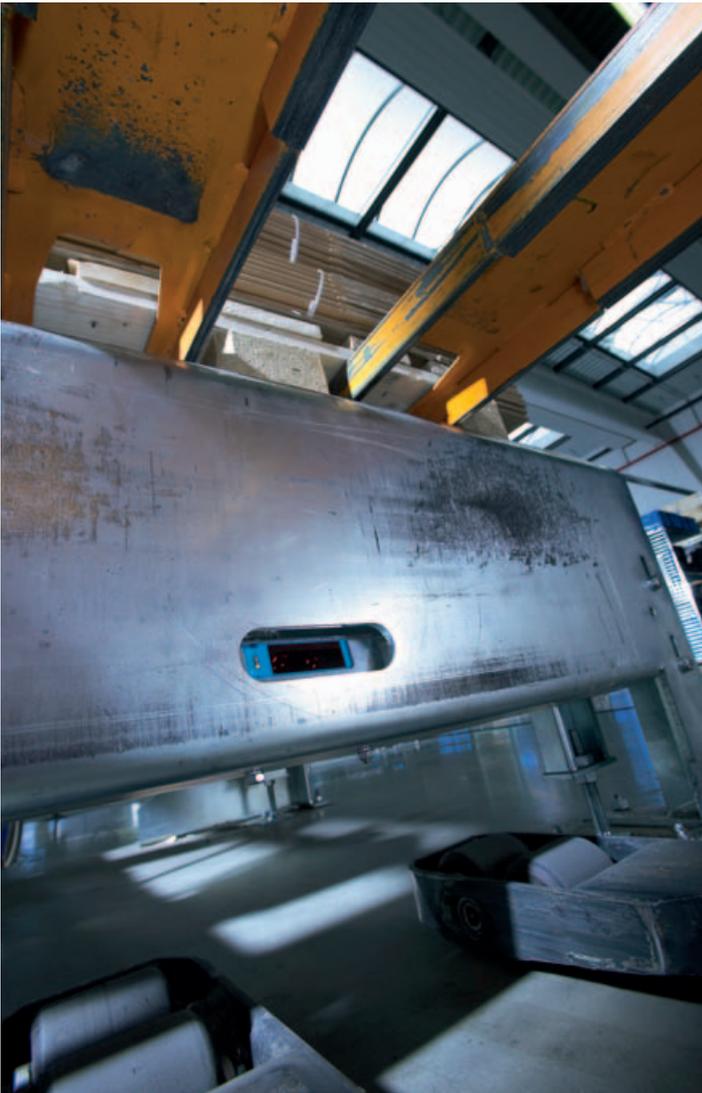
Useful features increase the flexibility and reduce the number of options and stockholding, e.g. selectable light-/dark-switching, NPN/PNP switching.

Alarm output, test input and time delays extend the range of applications.



◀ The WT34 photoelectric proximity switch stands out for its large scanning distance with regard to checking whether second or backward storage bays are occupied.

▼ The WL34 photoelectric reflex switch is impressive with its long range for overhang control on a conveyor system.



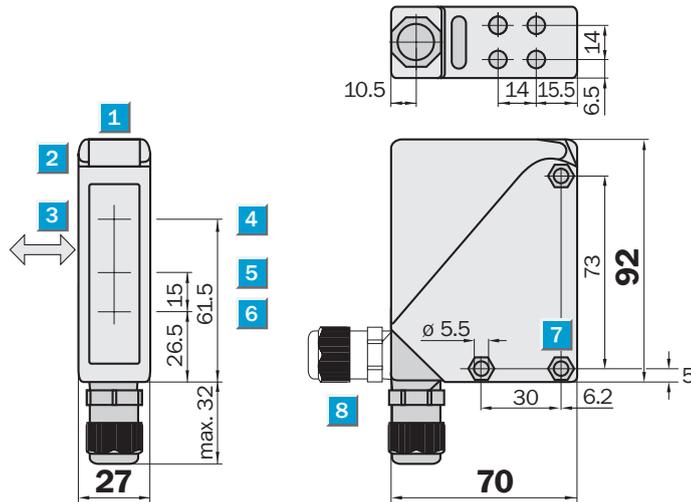
◀ The WT34 photoelectric proximity switch detects the forklift truck and thus stops incoming pallets during loading and unloading at the pallet dispatch station.

▲ Cyklop International uses the WT34 photoelectric proximity switch for setting height detection for standard right-hand wrappers.

Scanning distance
100 to 1200 mm
 Photoelectric proximity switch

- Sturdy plastic housing
- Visible red light
- Background suppression, can be set very precisely
- M16 screw fixing or equipment plug rotatable by 90°
- Test input, time delays and contamination signaling output

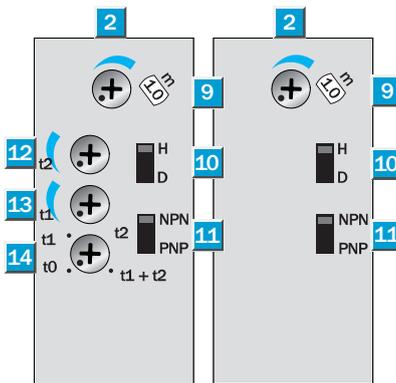
Dimensional drawing



Adjustments possible

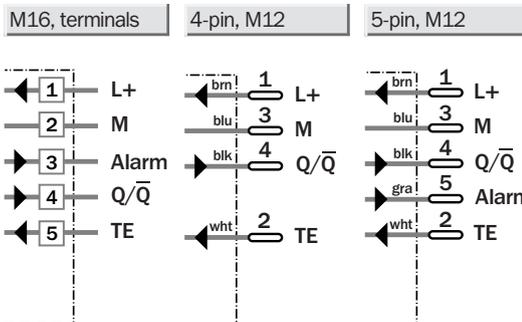
WT 34-V 250	WT 34-V 240
WT 34-B 450	WT 34-B 440
	WT 34-V 540

- 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 Mounting hole \varnothing 5.5 mm, for M5 hexagon nuts on both sides
- 8 M16 screw fixing or plug rotatable by 90°
- 9 Scanning distance adjuster
- 10 Light/dark selector
- 11 NPN/PNP selector
- 12 Time control t_2 = OFF-delay
- 13 Time control t_1 = ON-delay
- 14 Time delay selector switch



Connection type

WT 34-V 240	WT 34-B 440	WT 34-V 540
WT 34-V 250	WT 34-B 450	



See chapter Accessories

Cables and connectors
Mounting systems
Special accessories

Technical data		WT 34-	V 240	V 250	B 440	B 450	V 540					
Scanning distance	100 to 1200 mm, adjustable											
Light source ¹⁾, light type	LED; red light											
Light spot diameter	Approx. 40 mm at 1200 mm											
Supply voltage V_S	10 to 30 V DC ²⁾											
Residual ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	≤ 50 mA											
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 signalling 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	M16 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. 140 g											
Housing material	ABS											

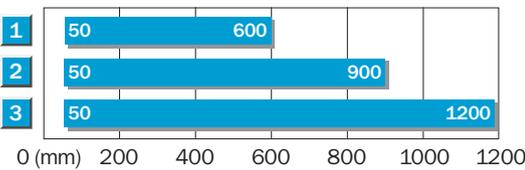
1) Average service life 100,000 h at T_A = +25 °C
 2) Limit values

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

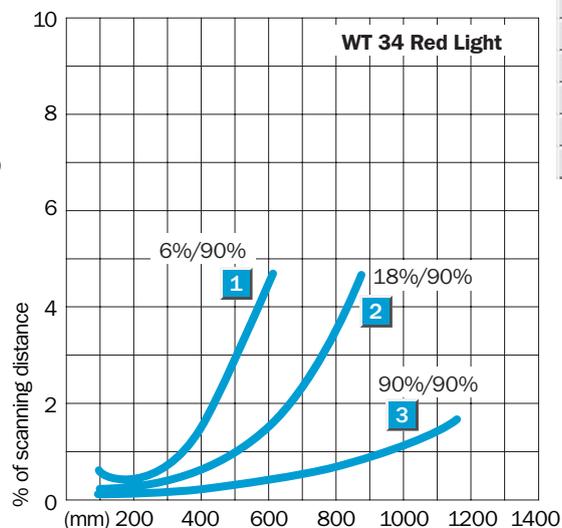
5) Signal flight time with ohmic load
 6) With light/dark ratio 1:1
 7) Withstand voltage 50 V DC

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

Scanning distance



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



Order information

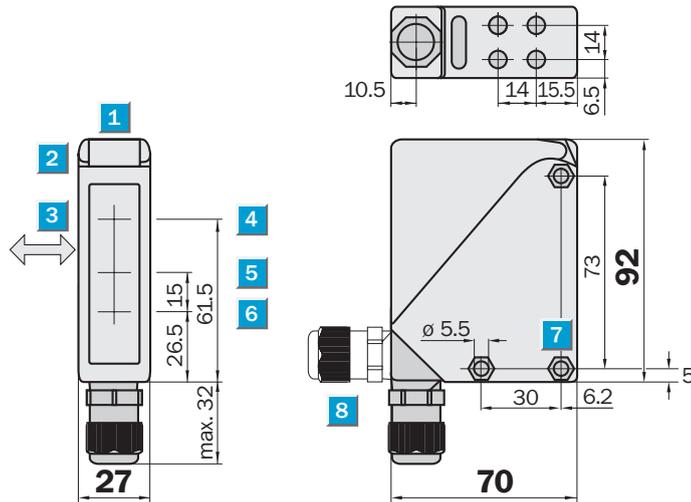
Type	Order no.
WT 34-V 240	1 019 227
WT 34-V 250	1 019 236
WT 34-B 440	1 019 237
WT 34-B 450	1 019 234
WT 34-V 540	1 019 238

 **Scanning distance**
100 to 1200 mm

Photoelectric proximity switch

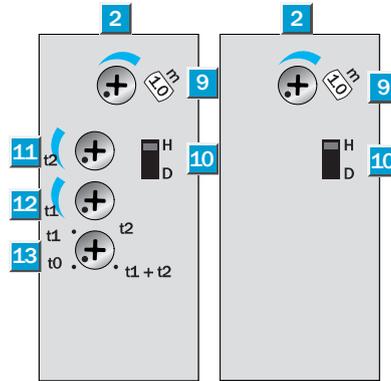
- Universal voltage
- Sturdy plastic housing
- Visible red light
- Background suppression, can be set very precisely
- M16 screw fixing rotatable by 90°
- Time delay

Dimensional drawing



Adjustments possible

WT 34-R 250 WT 34-R 240

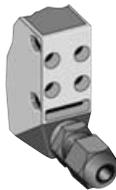


- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of material being scanned
- 4 Middle of optic axis, sender
- 5 Middle of optic axis, receiver at close range
- 6 Middle of optic axis, receiver at long range
- 7 Mounting hole $\varnothing 5.5$ mm, for M5 hexagon nuts on both sides
- 8 M16 screw fixing rotatable by 90°
- 9 Scanning distance adjuster
- 10 Light/dark selector
- 11 Time control t_2 = OFF-delay
- 12 Time control t_1 = ON-delay
- 13 Time delay selector switch

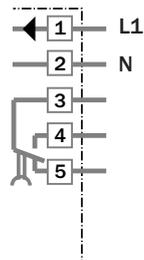


Connection type

WT 34-R 240
WT 34-R 250



M16, terminals



See chapter Accessories

Cables and connectors
Mounting systems
Special accessories

Technical data		WT 34-	R 240	R 250								
Scanning distance	100 to 1200 mm, adjustable											
Light source ¹⁾, light type	LED; red light											
Light spot diameter	Approx. 40 mm at 1200 mm											
Supply voltage V_S	12 to 240 V DC ²⁾ , 24 to 240 V AC ³⁾											
Power consumption	< 2 VA											
Switching output	Relay SPDT isolated ⁴⁾											
Max. switching voltage	250 V AC/120 V DC											
Max. switching current	4 A/250 V AC, 4 A/24 V DC ⁵⁾											
Max. switching capacity	1000 VA AC/100 W DC											
Response time	≤ 10 ms											
Max. switching frequency ⁵⁾	10/s											
Time delay	Adjustable, 0.5 to 10 s											
Connection type	M16 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. 140 g											
Housing material	ABS											

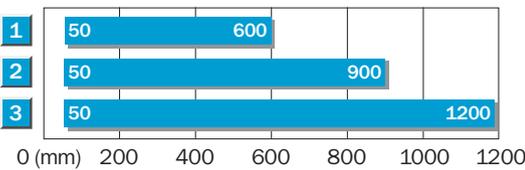
¹⁾ Average service life 100,000 h at $T_A = +25\text{ °C}$
²⁾ Limit values
³⁾ ± 10 %

⁴⁾ Provide suitable spark suppression for inductive or capacitive loads
⁵⁾ Usage category to EN 60947-1, 15 AC, 13 DC

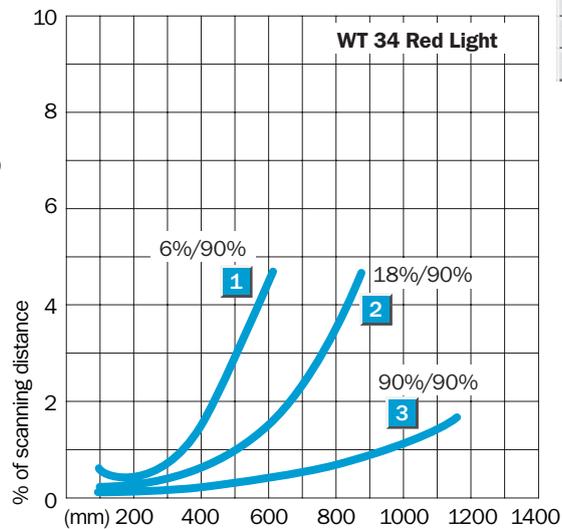
⁶⁾ With light/dark ratio 1:1
⁷⁾ Withstand voltage 250 V AC/DC

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

Scanning distance



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



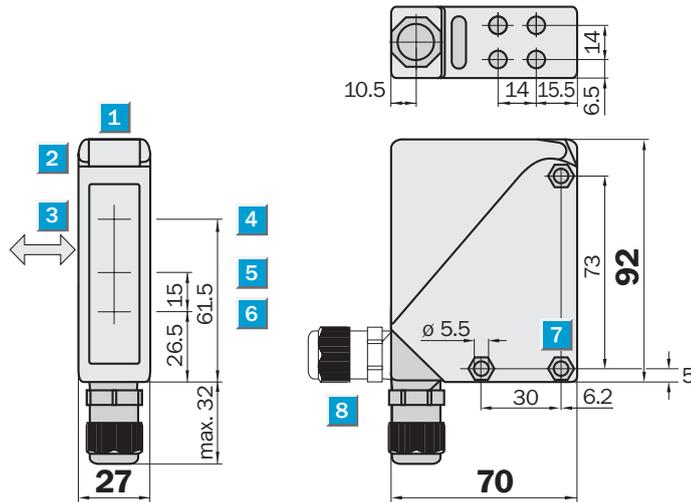
Order information

Type	Order no.
WT 34-R 240	1 019 239
WT 34-R 250	1 019 240


Scanning distance
100 to 2500 mm
 Photoelectric proximity switch

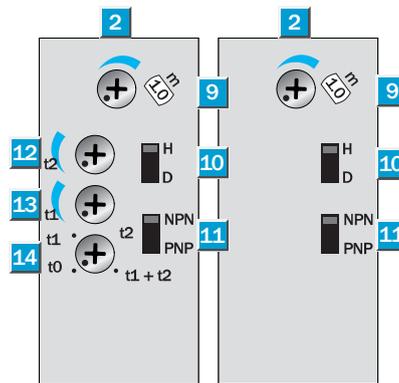
- Sturdy plastic housing
- Infrared light
- Background suppression, can be set very precisely
- M16 screw fixing or equipment plug rotatable by 90°
- Test input, time delays and contamination signaling output

Dimensional drawing



Adjustments possible

WT 34-B 420	WT 34-B 410
WT 34-V 220	WT 34-V 210
	WT 34-V 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 Mounting hole \varnothing 5.5 mm, for M5 hexagon nuts on both sides
- 8 M16 screw fixing or plug rotatable by 90°
- 9 Sensitivity control
- 10 Light/dark selector
- 11 NPN/PNP selector
- 12 Time control t_2 = OFF-delay
- 13 Time control t_1 = ON-delay
- 14 Time delay selector switch



Connection type

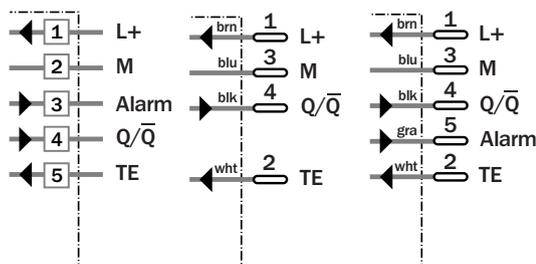
WT 34-V 210	WT 34-B 410	WT 34-V 510
WT 34-V 220	WT 34-B 420	



M16, terminals

4-pin, M12

5-pin, M12



See chapter Accessories

- Cables and connectors
- Mounting systems
- Special accessories

Technical data		WT 34-	V 210	V 220	B 410	B 420	V 510					
Scanning distance	100 to 2500 mm, adjustable											
Light source ¹⁾, light type	LED; infrared											
Light spot diameter	Approx. 80 mm at 2500 mm											
Supply voltage V_S	10 to 30 V DC ²⁾											
Residual ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾	≤ 50 mA											
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 signalling 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	M16 screw fixing											
	Plug											
VDE protection class⁷⁾	□											
Circuit protection⁸⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature	Operation -40 °C ... +60 °C											
	Storage -40 °C ... +75 °C											
Weight	Approx. 140 g											
Housing material	ABS											

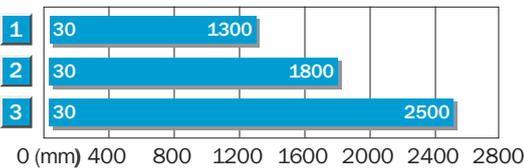
¹⁾ Average service life 100,000 h at T_A = +25 °C
²⁾ Limit values

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

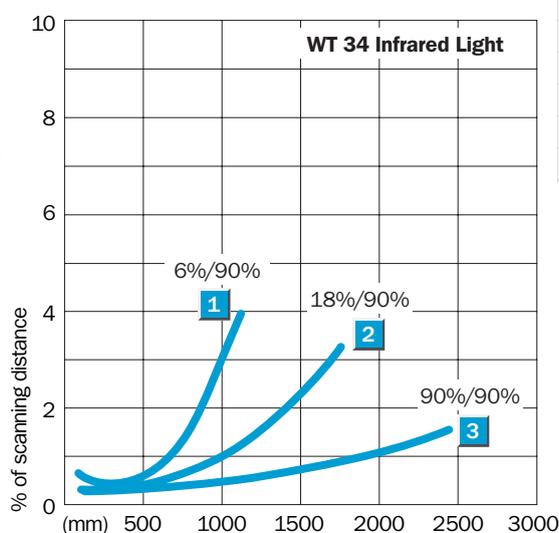
⁵⁾ Signal flight time with ohmic load
⁶⁾ With light/dark ratio 1:1
⁷⁾ Withstand voltage 50 V DC

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

Scanning distance



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



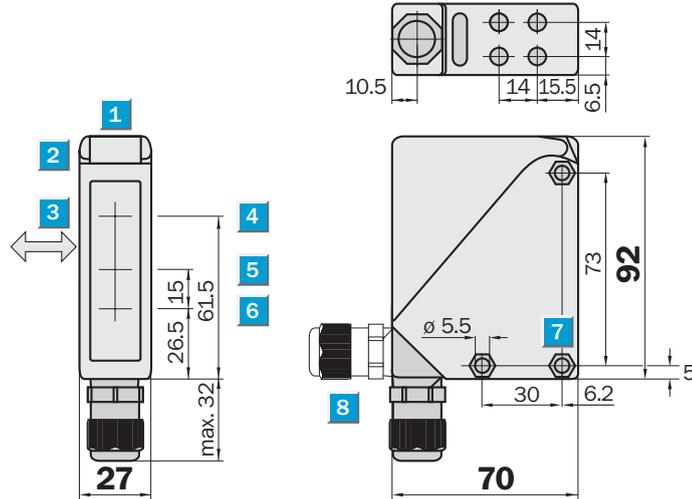
Order information

Type	Order no.
WT 34-V 210	1 019 280
WT 34-V 220	1 019 228
WT 34-B 410	1 019 229
WT 34-B 420	1 019 230
WT 34-V 510	1 019 231


Scanning distance
100 to 2500 mm
 Photoelectric proximity switch

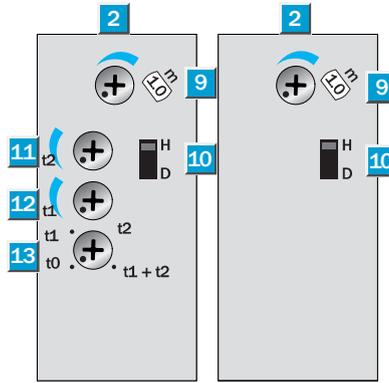
- Universal voltage
- Sturdy plastic housing
- Infrared light
- Background suppression, can be set very precisely
- M16 screw fixing rotatable by 90°
- Time delay

Dimensional drawing



Adjustments possible

WT 34-R 220 WT 34-R 210

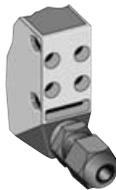


- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Standard direction of the material being scanned
- 4 Middle of optic axis, sender
- 5 Middle of optic axis, receiver at close range
- 6 Middle of optic axis, receiver at long range
- 7 Mounting hole \varnothing 5.5 mm, for M5 hexagon nuts on both sides
- 8 M16 screw fixing rotatable by 90°
- 9 Scanning distance adjuster
- 10 Light/dark selector
- 11 Time control t_2 = OFF-delay
- 12 Time control t_1 = ON-delay
- 13 Time delay selector switch

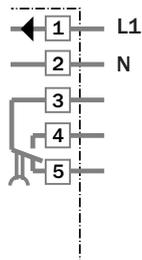
Connection type

WT 34-R 210

WT 34-R 220



M16, terminals



See chapter Accessories

Cables and connectors

Mounting systems

Special accessories

Technical data		WT 34-	R 210	R 220								
Scanning distance	100 to 2500 mm, adjustable											
Light source ¹⁾, light type	LED; infrared											
Light spot diameter	Approx. 80 mm at 2500 mm											
Supply voltage V_S	12 to 240 V DC ²⁾ , 24 to 240 V AC ³⁾											
Power consumption	< 2 VA											
Switching output	Relay SPDT isolated ⁴⁾											
Max. switching voltage	250 V AC/120 V DC											
Max. switching current	4 A/250 V AC, 4 A/24 V DC ⁵⁾											
Max. switching capacity	1000 VA AC/100 W DC											
Response time	≤ 10 ms											
Max. switching frequency ⁶⁾	10/s											
Time delay	Adjustable, 0.5 to 10 s											
Connection type	M16 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. 140 g											
Housing material	ABS											

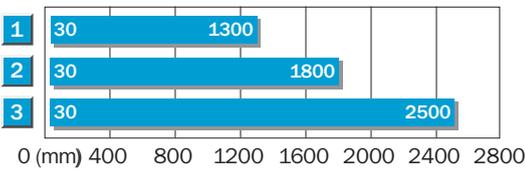
¹⁾ Average service life 100,000 h at T_A = +25 °C
²⁾ Limit values

³⁾ ± 10 %
⁴⁾ Provide suitable spark suppression for inductive or capacitive loads

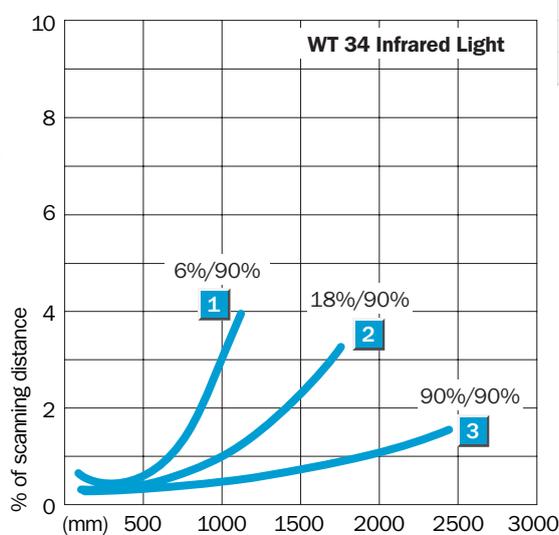
⁵⁾ Usage category to EN 60947-1, 15 AC, 13 DC
⁶⁾ With light/dark ratio 1:1
⁷⁾ Withstand voltage 250 V AC/DC

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

Scanning distance



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



Order information

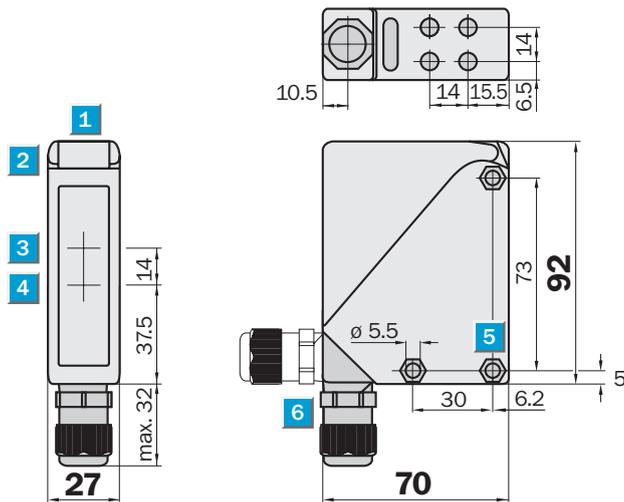
Type	Order no.
WT 34-R 210	1 019 232
WT 34-R 220	1 019 233


Scanning range
22 m

Photoelectric reflex switch

- Sturdy plastic housing
- High operating reserve in visible red light
- M16 screw fixing or equipment plug rotatable by 90°
- Time delay

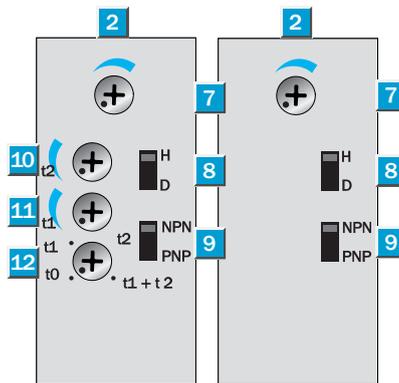
Dimensional drawing



Adjustments possible

WL 34-B 440	WL 34-B 430
WL 34-V 240	WL 34-V 230
WL 34-V 540	WL 34-V 530

- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Middle of optic axis, sender
- 4 Middle of optic axis, receiver
- 5 Mounting hole \varnothing 5.5 mm, for M5 hexagon nuts on both sides
- 6 M16 screw fixing or plug rotatable by 90°
- 7 Sensitivity control
- 8 Light/dark selector
- 9 NPN/PNP selector
- 10 Time control t_2 = OFF-delay
- 11 Time control t_1 = ON-delay
- 12 Time delay selector switch



Connection type

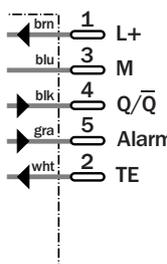
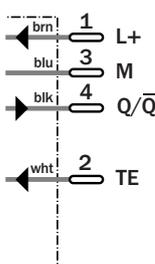
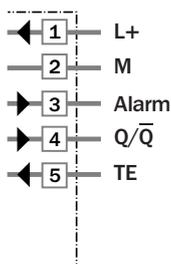
WL 34-V 230	WL 34-B 430	WL 34-V 530
WL 34-V 240	WL 34-B 440	WL 34-V 540



M16, terminals

4-pin, M12

5-pin, M12



See chapter Accessories

- Cables and connectors
- Mounting systems
- Reflectors
- Special accessories

Technical data	WL34-	V 230	V 240	B 430	B 440	V 530	V 540				
Scanning range , typ. max./on reflector	22 m/on PL 80 A										
Sensitivity	Adjustable										
Light source⁴⁾, light type	LED; red light										
Light spot diameter	Approx. 250 mm at 15 m										
Supply voltage V_S	10 to 30 V DC ²⁾										
Residual ripple ³⁾	< 5 V _{pp}										
Current consumption ⁴⁾	≤ 50 mA										
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 signalling 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	M16 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. 140 g										
Polarisation 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 flight time with ohmic load

6) With light/dark ratio 1:1

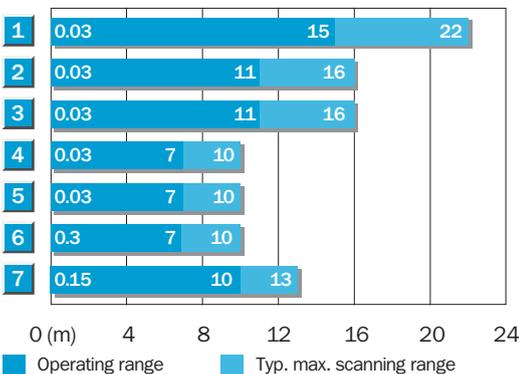
7) Withstand voltage 50 V DC

8) A = V_S connections reverse-polarity protected

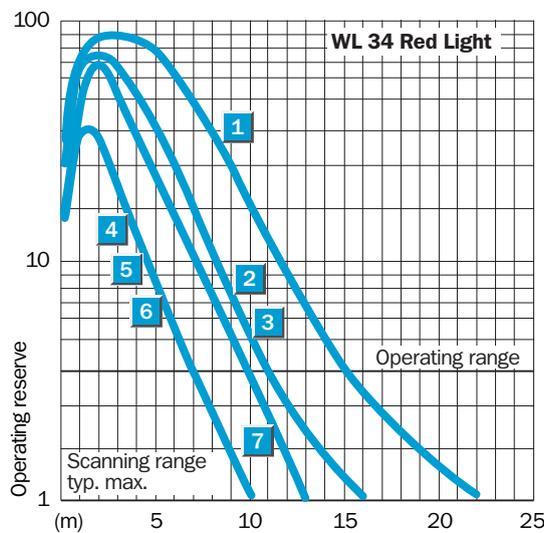
B = Outputs Q and \bar{Q} short-circuit protected

C = Interference pulse suppression

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.03 to 15 m
2 PL 50 A	0.03 to 11 m
3 PL 40 A	0.03 to 11 m
4 PL 30 A	0.03 to 7 m
5 PL 20 A	0.03 to 7 m
6 Diamond Grade (20 cm x 20 cm)	0.3 to 7 m
7 C 110	0.15 to 10 m



Order information

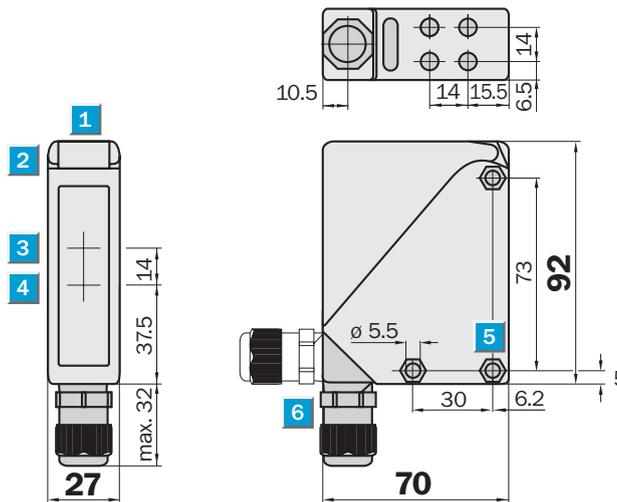
Type	Order no.
WL 34-V 230	1 019 243
WL 34-V 240	1 019 244
WL 34-B 430	1 019 245
WL 34-B 440	1 019 246
WL 34-V 530	1 019 247
WL 34-V 540	1 019 248


Scanning range
22 m

Photoelectric reflex switch

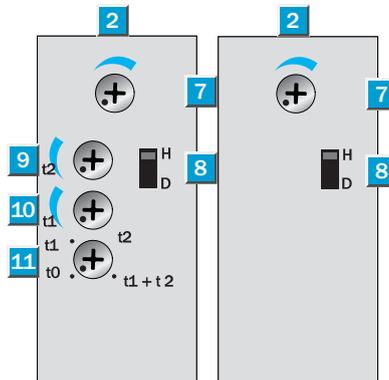
- Universal voltage
- Sturdy plastic housing
- High operating reserve in visible red light
- M16 screw fixing rotatable by 90°
- Time delay

Dimensional drawing



Adjustments possible

WL 34-R 240	WL 34-R 230
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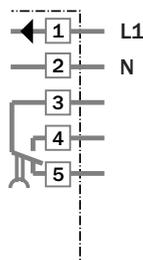
- 1 Alignment sight
- 2 Led signal strength indicator
- 3 Middle of optic axis, sender
- 4 Middle of optic axis, receiver
- 5 Mounting hole \varnothing 5.5 mm, for M5 hexagon nuts on both sides
- 6 M16 screw fixing rotatable by 90°
- 7 Sensitivity control
- 8 Light/dark selector
- 9 Time control t_2 = OFF-delay
- 10 Time control t_1 = ON-delay
- 11 Time delay selector switch

Connection type

WL 34-R 230
WL 34-R 240



M16, terminals



See chapter Accessories

Cables and connectors
Mounting systems
Reflectors
Special accessories

Technical data	WL34-	R 230	R 240								
Scanning range , typ. max./on reflector	22 m/on PL 80 A										
Sensitivity	Adjustable										
Light source ¹⁾, light type	LED; red light										
Light spot diameter	Approx. 250 mm at 15 m										
Supply voltage V_S	12 to 240 V DC ²⁾ , 24 to 240 V AC ³⁾										
Power consumption	< 2 VA										
Switching output	Relay SPDT isolated ⁴⁾										
Max. switching voltage	250 V AC/120 V DC										
Max. switching current	4 A/250 V AC, 4 A/100 VA DC ⁵⁾										
Max. switching capacity	1000 VA AC/100 W DC										
Response time ⁶⁾	≤ 10 ms										
Max. switching frequency ⁷⁾	10/s										
Time delay	Adjustable, 0.5 to 10 s										
Connection type	M16 screw fixing										
VDE protection class ⁸⁾	□										
Circuit protection ⁹⁾	A, C										
Enclosure rating	IP 67										
Ambient temperature	Operation -40 °C to +60 °C Storage -40 °C to +75 °C										
Weight	Approx. 140 g										
Polarisation filter											
Housing material	ABS										

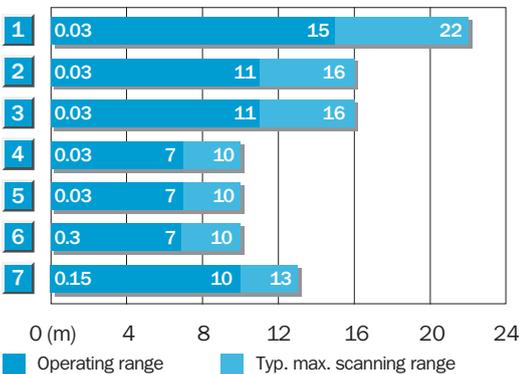
¹⁾ Average service life 100,000 h at $T_A = +25\text{ °C}$
²⁾ Limit values
³⁾ ± 10 %

⁴⁾ Provide suitable spark suppression for inductive or capacitive loads
⁵⁾ Usage category to EN 60947-1, 15 AC, 13 DC

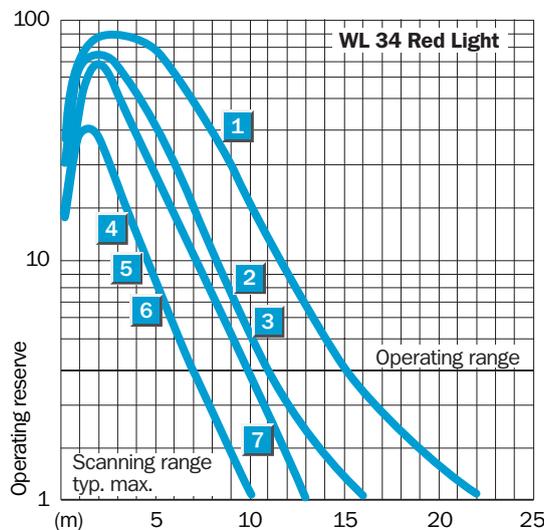
⁶⁾ Signal flight time for ohmic loads
⁷⁾ With light/dark ratio 1:1
⁸⁾ Withstand voltage 250 V UC

⁹⁾ A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.03 to 15 m
2 PL 50 A	0.03 to 11 m
3 PL 40 A	0.03 to 11 m
4 PL 30 A	0.03 to 7 m
5 PL 20 A	0.03 to 7 m
6 Diamond Grade (20 cm x 20 cm)	0.3 to 7 m
7 C 110	0.15 to 10 m



Order information

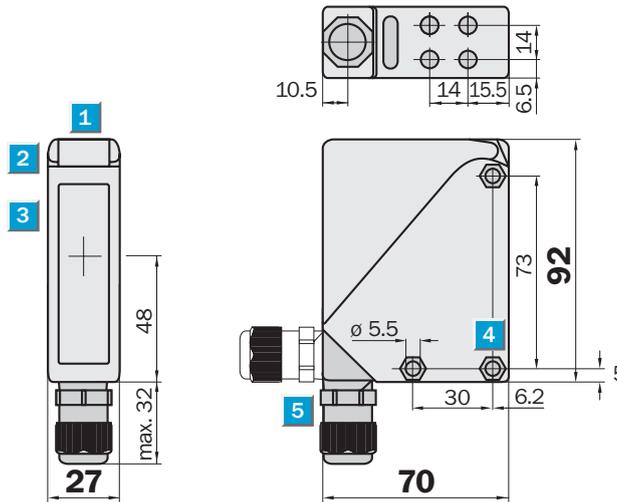
Type	Order no.
WL 34-R 230	1 019 249
WL 34-R 240	1 019 250

 **Scanning range**
0 to 60 m

Through-beam photoelectric switch

- Sturdy plastic housing
- High operating reserve in visible red light
- M16 screw fixing or equipment plug rotatable by 90°
- Time delay

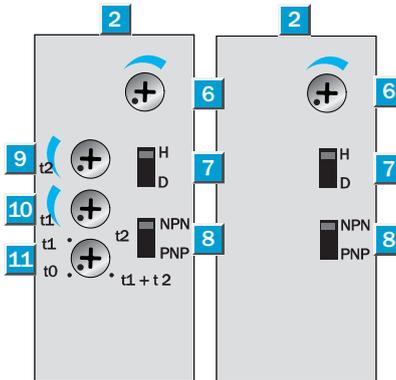
Dimensional drawing



Adjustments possible

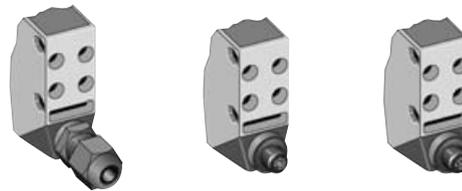
WS/WE 34-B 440	WS/WE 34-B 430
WS/WE 34-V 240	WS/WE 34-V 230
WS/WE 34-V 540	WS/WE 34-V 530

- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Middle of optic axis
- 4 Mounting hole \varnothing 5.5 mm, for M5 hexagon nuts on both sides
- 5 M16 screw fixing or plug rotatable by 90°
- 6 Sensitivity control
- 7 Light/dark selector
- 8 NPN/PNP selector
- 9 Time control t_2 = OFF-delay
- 10 Time control t_1 = ON-delay
- 11 Time delay selector switch



Connection type

WS/WE 34-V 230	WS/WE 34-B 430	WS/WE 34-V 530
WS/WE 34-V 240	WS/WE 34-B 440	WS/WE 34-V 540



M16, terminals

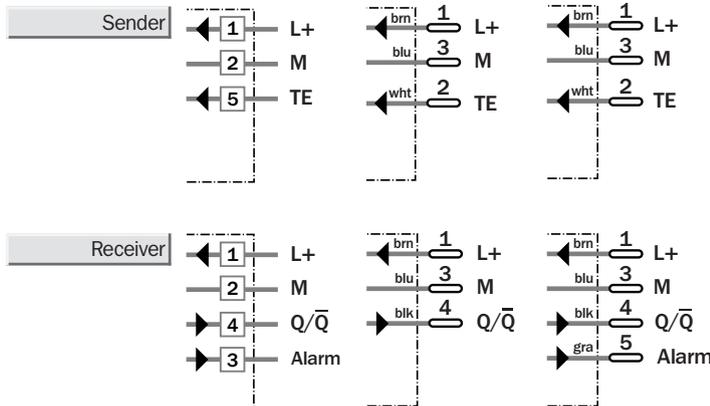
4-pin, M12

5-pin, M12



See chapter Accessories

- Cables and connectors
- Mounting systems
- Special accessories



Technical data		WS/WE 34-	V 230	V 240	B 430	B 440	V 530	V 540				
Scanning range, typ. max.	0 to 60 m											
Sensitivity	Adjustable											
Light source ¹⁾, light type	LED; red light											
Light spot diameter	Approx. 700 mm at 50 m											
Angle of dispersion/reception	1°/2.5°											
Supply voltage V_S	10 to 30 V DC ²⁾											
Residual ripple ³⁾	< 5 V _{pp}											
Current consumption ⁴⁾												
Sender	≤ 50 mA											
Receiver	≤ 40 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 signalling 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	M16 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 °											
Weight	Approx. 140 g											
Housing material	ABS											

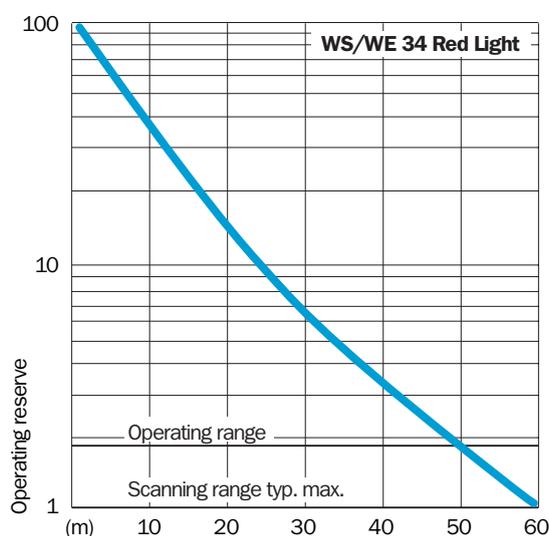
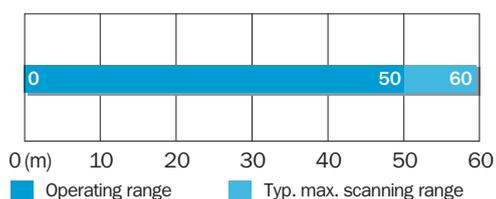
¹⁾ Average service life 100,000 h at T_A = +25 °C
²⁾ Limit values

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

⁵⁾ Signal 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

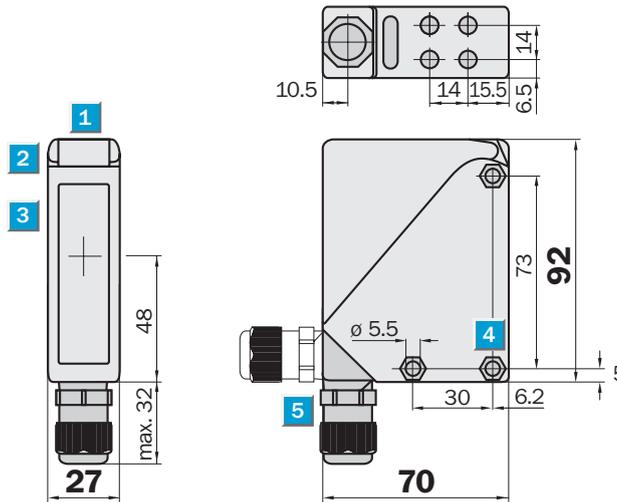
Type	Order no.
WS/WE 34-V 230	1 019 253
WS/WE 34-V 240	1 019 251
WS/WE 34-B 430	1 019 254
WS/WE 34-B 440	1 019 255
WS/WE 34-V 530	1 019 256
WS/WE 34-V 540	1 019 252

Scanning range
0 to 60 m

Through-beam photoelectric switch

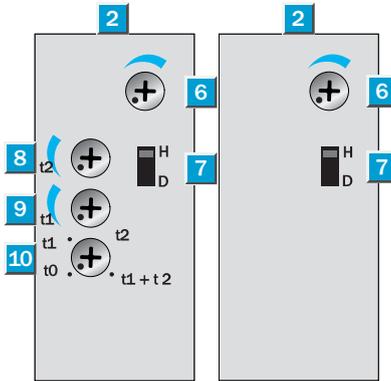
- Universal voltage
- Sturdy plastic housing
- High operating reserve in visible red light
- M16 screw fixing rotatable by 90°
- Time delay

Dimensional drawing



Adjustments possible

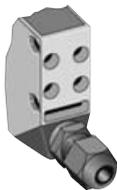
WS/WE 34-R 240	WS/WE 34-R 230
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- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Middle of optic axis
- 4 Mounting hole Ø 5.5 mm, for M5 hexagon nuts on both sides
- 5 M16 screw fixing rotatable by 90°
- 6 Sensitivity control
- 7 Light/dark selector
- 8 Time control t_2 = OFF-delay
- 9 Time control t_1 = ON-delay
- 10 Time delay selector switch

Connection type

WS/WE 34-R 230
WS/WE 34-R 240

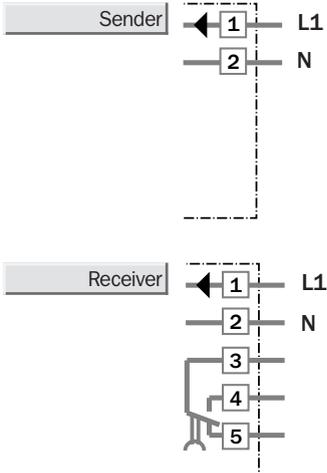


M16, terminals



See chapter Accessories

- Cables and connectors
- Mounting systems
- Special accessories



Technical data		WS/WE 34-	R 230	R 240							
Scanning range, typ. max.	0 to 60 m										
Sensitivity	Adjustable										
Light source ¹⁾, light type	LED; red light										
Light spot diameter	Approx. 700 mm at 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	< 2 VA										
Switching output	Relay SPDT isolated ⁴⁾										
Max. switching voltage	250 V AC/120 V DC										
Max. switching current	4 A/250 V AC, 4 A/100 W DC ⁵⁾										
Max. switching capacity	1000 VA AC/100 VA DC										
Response time	10 ms										
Max. switching frequency ⁶⁾	≤ 10/s										
Time delay	Adjustable, 0.5 to 10 s										
Connection type	M16 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. 140 g										
Housing material	ABS										

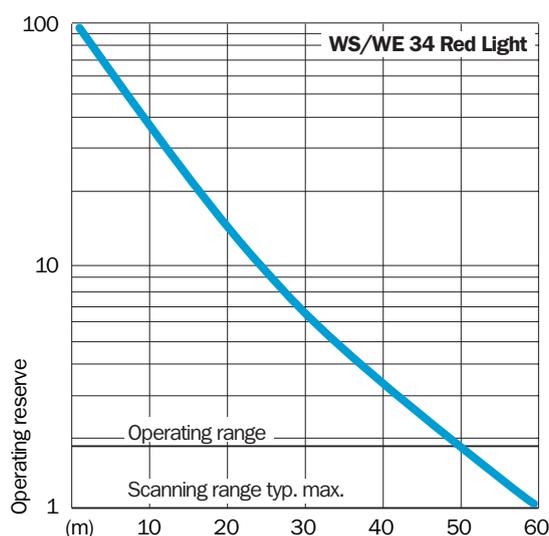
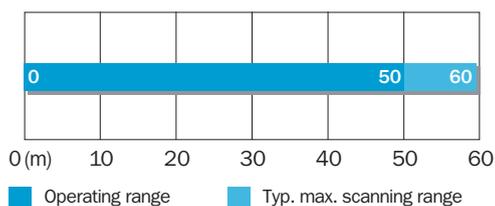
¹⁾ Average service life 100,000 h at T_A = +25 °C
²⁾ Limit values
³⁾ ± 10 %

⁴⁾ Provide suitable spark suppression for inductive or capacitive loads
⁵⁾ Usage category to EN 60947-1, 15 AC, 13 DC

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

Operating range and operating reserve



Order information

Type	Order no.
WS/WE 34-R 230	1 019 257
WS/WE 34-R 240	1 019 258

W45: Farther than the eye can see

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



In harsh environmental conditions, photoelectric switches require a large safety margin in terms of their specification and performance. The W45 series of photoelectric switches easily meets this requirement.

The absolute highlight is the through-beam photoelectric switch with a range of up to 300 m.

A signal strength indicator in conjunction with an integrated viewfinder facilitates adjustment over such long scanning ranges.

The solid metal housing can withstand flying scale in steel and rolling mills, for example, and can be used in conjunction with cooling jacket accessories in temperatures up to +120°C.

A further plus is the simplicity of operation, e.g. easily accessible terminal chamber as well as the additional functionality provided by timing elements.

The comprehensive range of accessories such as cooling plates, weather hood and dust shield means that the performance is further increased and the range of applications is further extended.

Overview of W45:

- Solid metal housing for harsh industrial applications,
- Super range of the through-beam photoelectric switch of 300 m,
- Accessories for specialist applications,
- Universal supply voltage,
- On request: specialist devices for detecting very hot surfaces (>800 °C).

Main industries:

- Steel industry,
- Plant construction,
- Crane systems,
- Transport technology.



◀ The robust design and large scanning distance are of advantage to the WT45 photoelectric proximity switch when used to check for tear-off on a paper rolling machine.



▶ A WS/WE45 through-beam photoelectric switch monitors tear-off on a paper web.



▲ Extreme operating conditions exist in steel making plants – the WT45 photoelectric proximity switch is ideal for many applications, such as detecting metal sheets before they are wound onto coils.

▶ Scale, steam and heat in a rolling mill does not affect the WT45 – here used to detect the presence of steel slabs.

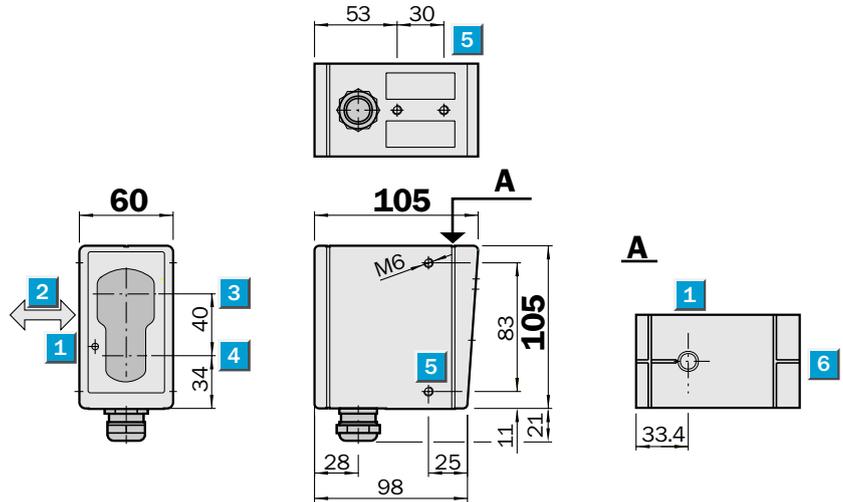


Scanning distance
400 ... 2000 mm

Photoelectric proximity switches

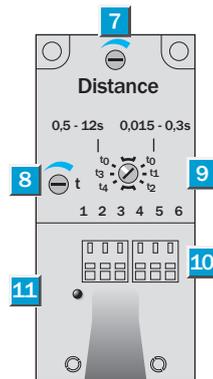
- Robust metal housing
- Infrared light, very long scanning range
- Adjustable background suppression
- Front lens heating, optional

Dimensional drawing



Adjustments possible

- WT45-P250
- WT45-P260
- WT45-N250
- WT45-N260



- 1 LED signal strength indicator
- 2 Standard direction of the material being scanned
- 3 Centre of optical axis, receiver
- 4 Centre of optical axis, sender
- 5 Threaded mounting hole M6 – 8 mm deep
- 6 Alignment sight
- 7 Scanning distance adjustment
- 8 Time adjustment
- 9 Time delay selector switch
- 10 Terminal strip
- 11 Status indicator

Switch-selectable time delay

0.5 – 12 s

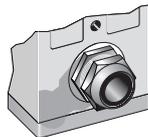
- t_0 without time delay
- t_3 ON-delay when object enters detection zone
- t_4 OFF-delay when object leaves detection zone

0.015 – 0.3 s

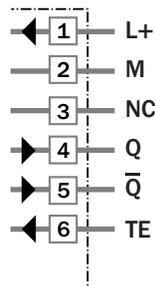
- t_0 without time delay
- t_1 ON-delay when object enters detection zone
- t_2 OFF-delay when object leaves detection zone

Connection type

- WT45-P250
- WT45-P260
- WT45-N250
- WT45-N260



PG 13.5; terminals



See chapter Accessories

- Mounting systems
- Special accessories

Technical data		WT45-	P250	P260	N250	N260						
Scanning distance	400...2000 mm, adjustable											
Light source¹⁾, light type	LED, infrared light											
Light spot diameter	Approx. 35 mm at 2000 mm											
Supply voltage V_S	10...60 V DC ²⁾											
Residual ripple ³⁾	< 5 V_{SS}											
Current consumption ⁴⁾	≤ 50 mA											
	≤ 250 mA, front lens heating											
Switching outputs	PNP, Q and \bar{Q}											
	NPN, Q and \bar{Q}											
Output current I_A max.	200 mA											
Response time ⁵⁾	6 ms											
Max. switching frequency ⁶⁾	50/s											
Test input »TE«												
Sender OFF	PNP: Test input to 0 V											
	NPN: Test input to V_S											
Connection type	Terminal connection											
VDE protection class	⊕											
Circuit protection⁷⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A⁸⁾	Operation - 25 °C...+ 55 °C											
	Storage - 40 °C...+ 70 °C											
Weight	Approx. 800 g											
Front lens heating												
Housing material	Metal housing											

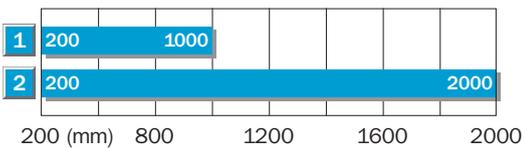
1) Average service life 100,000 h at $T_A = + 25 °C$
 2) Limit values
 3) May not exceed or fall short of V_S tolerances

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

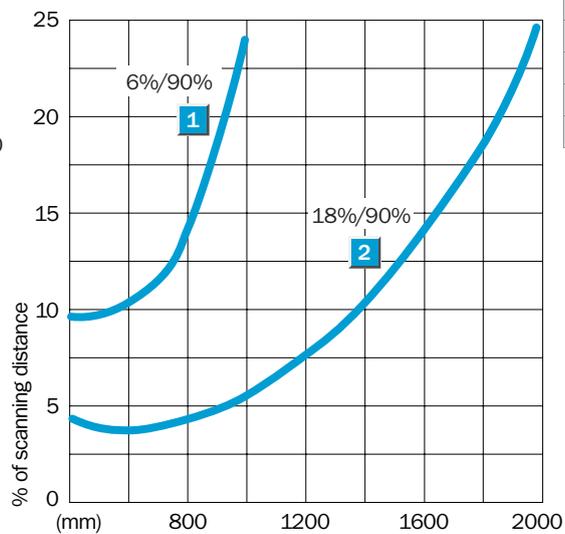
7) A = V_S connections reverse-polarity protected
 B = Output Q and \bar{Q} short-circuit protected
 C = Interference pulse suppression

8) Up to 140 °C with cooling plates (see Accessories)

Scanning distance



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



Order Information

Type	Order no.
WT45-P250	1009117
WT45-P260	1009108
WT45-N250	1009116
WT45-N260	1009109

Technical data		WT45-	R250	R260									
Scanning distance	400...2000 mm, adjustable												
Light source¹⁾, light type	LED, infrared light												
Light spot diameter	Approx. 35 mm at 2000 mm												
Supply voltage V_S	24...240 V UC (+ 10%, - 25%)												
Power consumption	≤ 3 VA												
	≤ 6 VA, front lens heating												
Switching outputs	Relay, SPDT, isolated ²⁾												
Max. switching voltage	AC: 250 V / DC: 120 V												
Switching current	4 A / 240 V AC o. 24 V DC ³⁾												
Max. switching capacity	AC: 1000 VA / DC: 100 W												
Response time	≤ 20 ms												
Max. switching frequency ⁴⁾	10/s												
Connection type	Terminal connection												
VDE protection class	⊕												
Circuit protection⁵⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature T_A	Operation - 25 °C...+ 55 °C ⁶⁾												
	Storage - 40 °C...+ 70 °C												
Weight	Approx. 800 g												
Front lens heating													
Housing material	Metal housing												

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

²⁾ Provide suitable spark suppression for inductive or capacitive loads

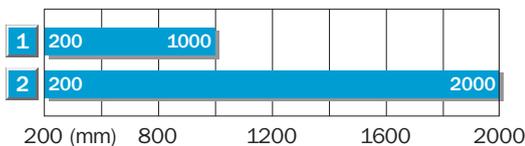
³⁾ Usage Category to EN 60947-1, 15 AC, 13 DC

⁴⁾ With light/dark ratio 1:1

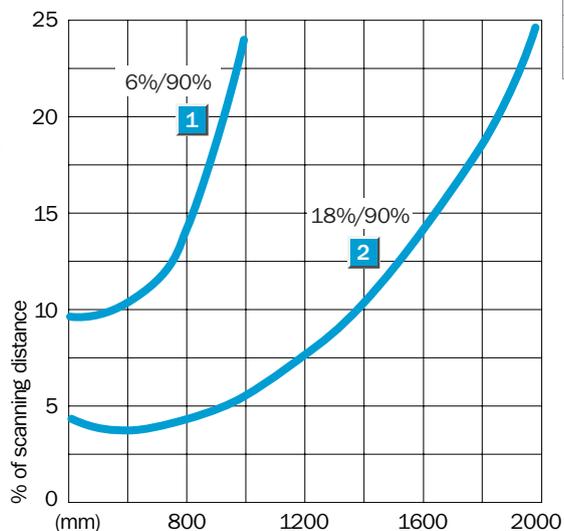
⁵⁾ A = V_S connections reverse-polarity protected
C = Interference pulse suppression

⁶⁾ Up to 140 °C with cooling plates (see Accessories)

Scanning distance



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



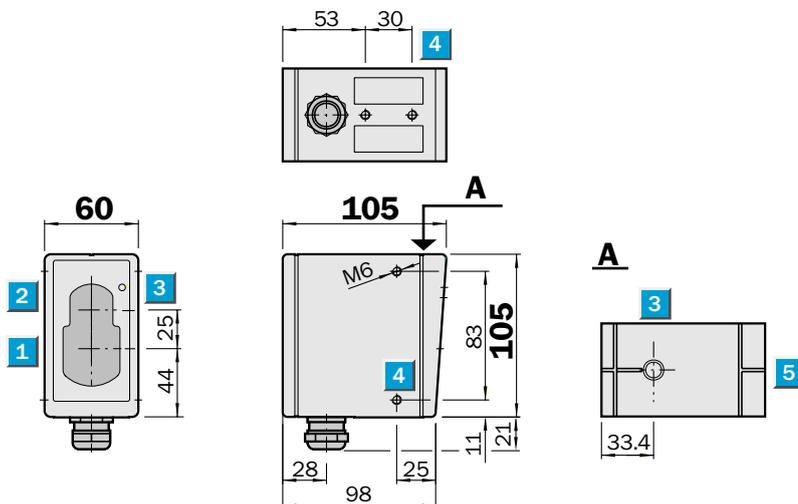
Order information

Type	Order no.
WT45-R250	1009118
WT45-R260	1009107


Scanning range
0.01 ... 55 m
 Photoelectric reflex switches

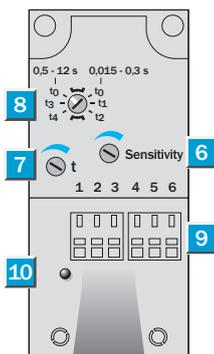
- Robust metal housing
- Red light
- Adjustable sensitivity
- Front lens heating, optional
- Pre-failure signalling output

Dimensional drawing



Adjustments possible

- WL45-P250
- WL45-P260
- WL45-N250
- WL45-N260



- 1 Centre of optical axis, sender
- 2 Centre of optical axis, receiver
- 3 LED signal strength indicator
- 4 M6 threaded mounting hole – 8 mm deep
- 5 Alignment sight
- 6 Sensitivity adjustment
- 7 Time adjustment
- 8 Time delay selector switch
- 9 Terminal strip
- 10 Status indicator

Switch-selectable time delay

0.5 – 12 s

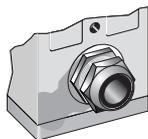
- t_0 without time delay
- t_3 ON-delay when object enters detection zone
- t_4 OFF-delay when object leaves detection zone

0.015 – 0.3 s

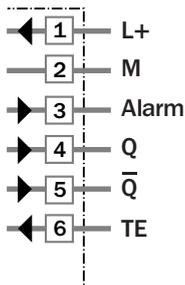
- t_0 without time delay
- t_1 ON-delay when object enters detection zone
- t_2 OFF-delay when object leaves detection zone

Connection type

- WL45-P250
- WL45-P260
- WL45-N250
- WL45-N260



PG 13.5; terminals



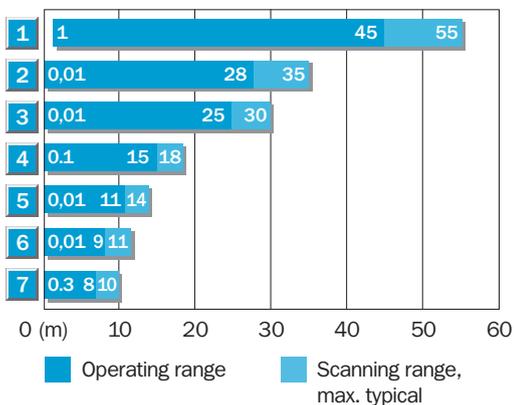
See chapter Accessories

- Mounting systems
- Reflectors
- Special accessories

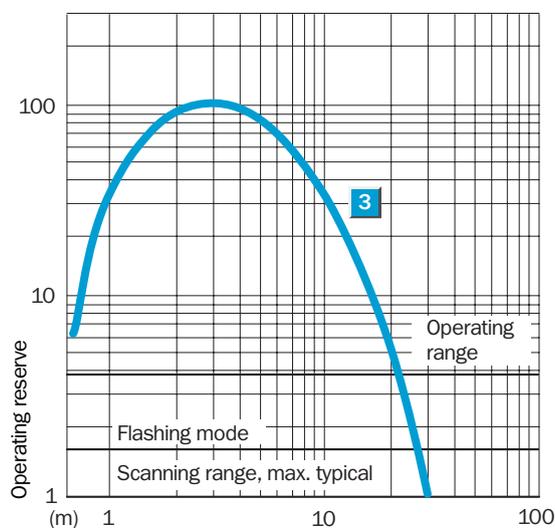
Technical data		WL45-	P250	P260	N250	N260						
Scanning range , max. typical/on refl.	0.01...55 m/OP 60											
Sensitivity	Adjustable											
Light source¹⁾, light type	LED, visible red light											
Light spot diameter	Approx. 230 mm at 16 m											
Supply voltage V_S	10...60 V DC ²⁾											
Residual ripple ³⁾	< 5 V_{SS}											
Current consumption ⁴⁾	≤ 50 mA											
	≤ 250 mA, front lens heating											
Switching outputs	PNP, Q and \bar{Q}											
	NPN, Q and \bar{Q}											
Output current I_A max.	200 mA											
Response time ⁵⁾	≤ 1.2 ms											
Max. switching frequency ⁶⁾	400/s											
Pre-failure signalling output	Alarm											
Output current I_A max.	100 mA, open collector											
Insufficient light received	Flashes at approx. 5/s, switch to V_S											
(Reserve < 50 %)												
Test input »TE«												
Sender OFF	PNP: Test input to 0 V											
	NPN: Test input to V_S											
Connection type	Terminal connection											
VDE protection class⁷⁾	⊕											
Circuit protection⁸⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A⁹⁾	Operation - 25 °C...+ 55 °C											
	Storage - 40 °C...+ 70 °C											
Weight	Approx. 800 g											
Front lens heating												
Polarising filter												
Housing material	Metal 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 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
- 9) Up to 140 °C with cooling plates (see Accessories)

Scanning range and operating reserve



Reflector type	Operating range
1 OP 60 - ∞	1 ... 45 m
2 4 x PL 80	0,01 ... 28 m
3 PL 80 A	0,01 ... 25 m
4 C 110	0,1 ... 15 m
5 PL 50	0,01 ... 11 m
6 PL 30	0,01 ... 9 m
7 Reflective tape	0,3 ... 8 m
Diamond Grade	



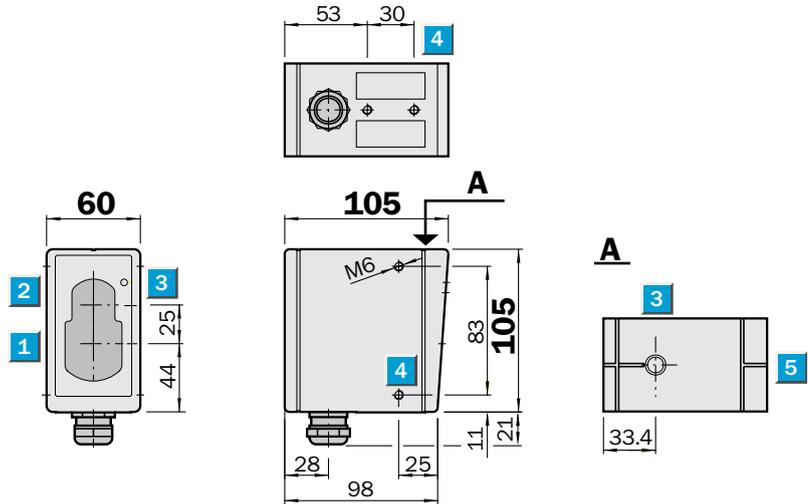
Order information

Type	Order no.
WL45-P250	1008840
WL45-P260	1008668
WL45-N250	1008839
WL45-N260	1008669


Scanning range
0.01 ... 55 m
 Photoelectric reflex switches

- Universal voltage
- Robust metal housing
- Red light
- Adjustable sensitivity
- Front lens heating, optional

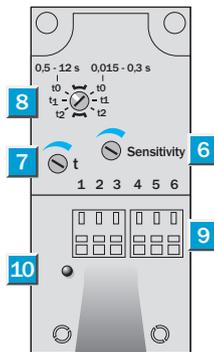
Dimensional drawing



Adjustments possible

WL45-R250

WL45-R260



- 1 Centre of optical axis, sender
- 2 Centre of optical axis, receiver
- 3 LED signal strength indicator
- 4 M6 threaded mounting hole – 8 mm deep
- 5 Alignment sight
- 6 Sensitivity adjustment
- 7 Time adjustment
- 8 Time delay selector switch
left: light-switching, right: dark-switching
- 9 Terminal strip
- 10 Status indicator

Switch-selectable time delay

0.5 – 12 s

t_0 without time delay

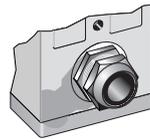
t_1 ON-delay when object enters detection zone

t_2 OFF-delay when object leaves detection zone

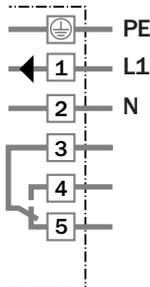
Connection type

WL45-R250

WL45-R260



PG 13.5; terminals



See chapter Accessories

Mounting systems
Reflectors
Special accessories

Technical data		WL45-	R250	R260									
Scanning range , max. typ./on reflector	0.01...55 m/OP 60												
Sensitivity	Adjustable												
Light source¹⁾, light type	LED, visible red light												
Light spot diameter	Approx. 230 mm at 16 m												
Supply voltage V_S	24...240 V UC (+ 10 %, - 25 %)												
Power consumption	≤ 3 VA												
	≤ 6 VA, front lens heating												
Switching outputs	Relay, SPDT, isolated ²⁾												
Max. switching voltage	AC: 250 V / DC: 120 V												
Switching current	4 A / 240 V AC or 24 V DC ³⁾												
Max. switching capacity	AC: 1000 VA / DC: 100 W												
Response time	≤ 20 ms												
Max. switching frequency ⁴⁾	10/s												
Connection type	Terminal connection												
VDE protection class	⊕												
Circuit protection⁵⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature T_A	Operation - 25 °C...+ 55 °C ⁶⁾												
	Storage - 40 °C...+ 70 °C												
Weight	Approx. 800 g												
Front lens heating													
Polarising filter													
Housing material	Metal housing												

- 1) Average service life 100,000 h at T_A = + 25 °C
 2) Provide suitable spark suppression for inductive or capacitive loads
 3) Usage Category to EN 60947-1, 15 AC, 13 DC
 4) With light/dark ratio 1:1
 5) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression
 6) Up to 140 °C with cooling plates (see Accessories)

Scanning range and operating reserve		Order information	
Type	WL45-R250	Order no.	1008841
	WL45-R260		1008562

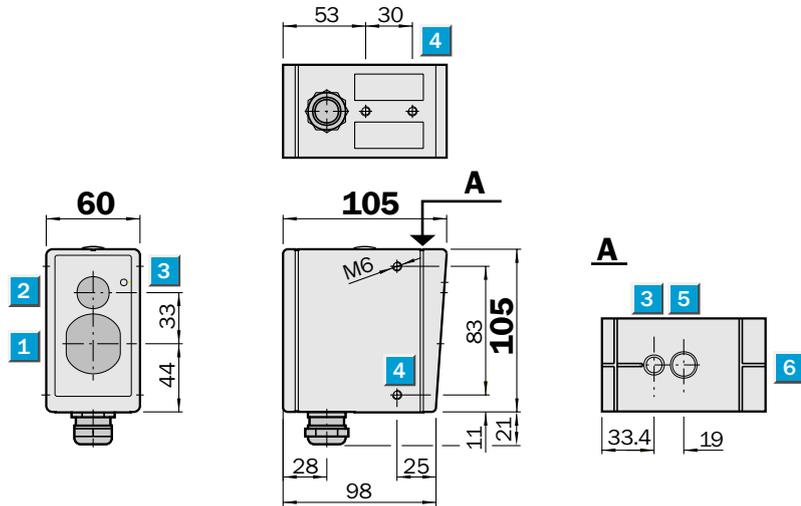
Reflector type	Operating range
1 OP 60 - ∞	1 ... 45 m
2 4 x PL 80	0,01 ... 28 m
3 PL 80 A	0,01 ... 25 m
4 C 110	0.1 ... 15 m
5 PL 50	0,01 ... 11 m
6 PL 30	0,01 ... 9 m
7 Reflective tape	0.3 ... 8 m
Diamond Grade	

Scanning range
0 ... 350 m

Through-beam photoelectric switches

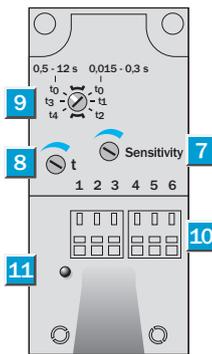
- Robust metal housing
- Red light, very long range
- Adjustable sensitivity
- Front lens heating, optional
- Pre-failure signalling output

Dimensional drawing



Adjustments possible

- WS/WE45-P250
- WS/WE45-P260
- WS/WE45-N250
- WS/WE45-N260



- 1 Centre of optical axis, sender (WS)
Centre of optical axis, receiver (WE)
- 2 View finder lens
- 3 LED signal strength indicator
- 4 M6 threaded mounting hole – 8 mm deep
- 5 Eyepiece for alignment aid
- 6 Alignment sight
- 7 Sensitivity adjustment
- 8 Time adjustment
- 9 Time delay selector switch
- 10 Terminal strip
- 11 Status indicator

Switch-selectable time delay

0.5 – 12 s	0.015 – 0.3 s
t_0 without time delay	t_0 without time delay
t_3 ON-delay when object enters detection zone	t_1 ON-delay when object enters detection zone
t_4 OFF-delay when object leaves detection zone	t_2 OFF-delay when object leaves detection zone

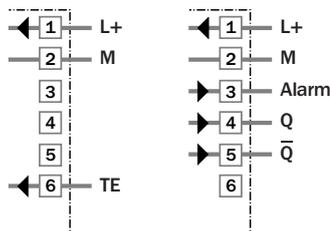
Connection type

- WS/WE45-P250
- WS/WE45-P260
- WS/WE45-N250
- WS/WE45-N260



PG 13.5; terminals

Sender Receiver



See chapter Accessories

- Mounting systems
- Special accessories

Technical data		WS/WE45-	P250	P260	N250	N260						
Scanning range, max. typical	0...350 m											
Sensitivity	Adjustable											
Light source¹⁾, light type	LED, infrared light											
Light spot diameter	Approx. 4.5 m at 300 m											
Angle of dispersion	Approx. 0.9°											
Supply voltage V_S	10...60 V DC ²⁾											
Residual ripple ³⁾	< 5 V _{SS}											
Current consumption ⁴⁾												
sender without heating	≤ 50 mA											
sender with heating	≤ 250 mA											
receiver without heating	≤ 50 mA											
receiver with heating	≤ 250 mA											
Switching outputs	PNP, Q and \bar{Q}											
	NPN, Q and \bar{Q}											
Output current I _A max.	200 mA											
Response time ⁵⁾	≤ 500 μs											
Max. switching frequency ⁶⁾	1000/s											
Pre-failure signalling output	Alarm											
Max. output current I _{Alarm}	100 mA, open collector											
Insufficient light received	Flashes at approx. 5/s, switch to V _S											
(Reserve < 50 %)												
Test input »TE«, sender OFF	PNP: Test input to 0 V											
Connection type	Terminal connection											
VDE protection class	⊕											
Circuit protection⁷⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation - 25 °C...+ 55 °C ⁸⁾											
	Storage - 40 °C...+ 70 °C											
Weight	Approx. 800 g											
Front lens heating												
Housing material	Metal housing											

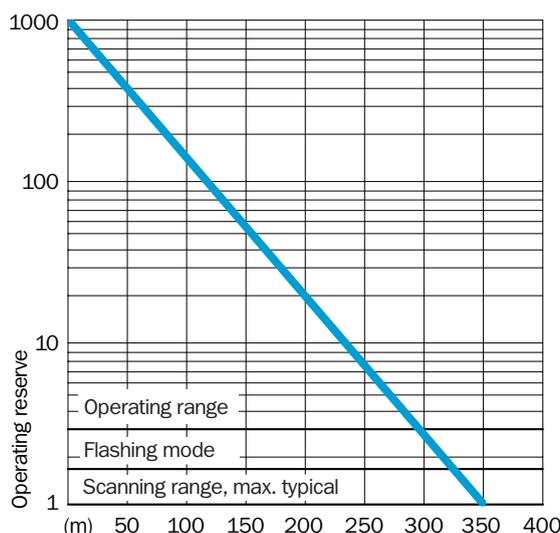
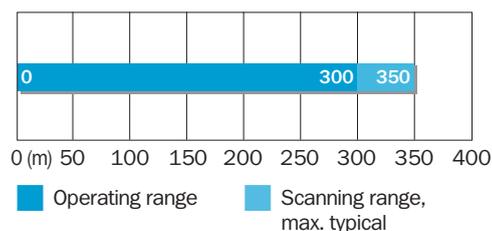
1) Average service life 100,000 h at T_A = + 25 °C
 2) Limit values
 3) May not exceed or fall short of V_S tolerances

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

8) Up to 140 °C with cooling plates (see Accessories)

Scanning range and operating reserve



Order information

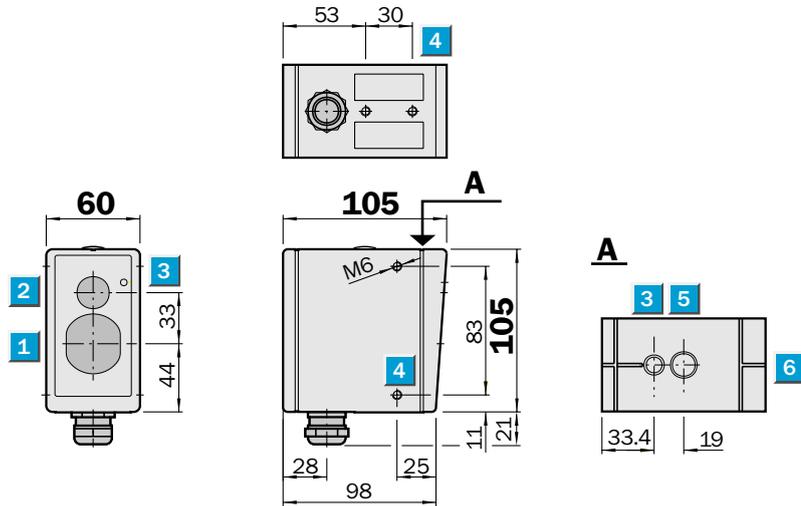
Type	Order no.
WS/WE45-P250	1010983
WS/WE45-P260	1010985
WS/WE45-N250	1010982
WS/WE45-N260	1010984

Scanning range
0 ... 350 m

Through-beam photoelectric switches

- Robust metal housing
- Red light, very long range
- Adjustable sensitivity
- Front lens heating, optional

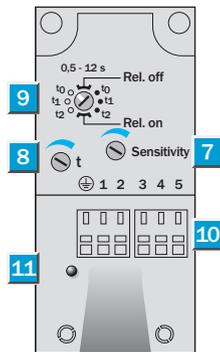
Dimensional drawing



Adjustments possible

WS/WE45-R250

WS/WE45-R260



- 1 Centre of optical axis, sender (WS)
Centre of optical axis, receiver (WE)
- 2 View finder lens
- 3 LED signal strength indicator
- 4 M6 threaded mounting hole – 8 mm deep
- 5 Eyepiece for alignment aid
- 6 Alignment sight
- 7 Sensitivity adjustment
- 8 Time adjustment
- 9 Time delay selector switch
left: light-switching, right: dark-switching
- 10 Terminal strip
- 11 Status indicator

Switch-selectable time delay

0.5 – 12 s

t_0 without time delay

t_1 ON-delay when object enters detection zone

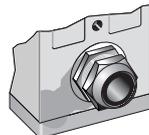
t_2 OFF-delay when object leaves detection zone



Connection type

WS/WE45-R250

WS/WE45-R260



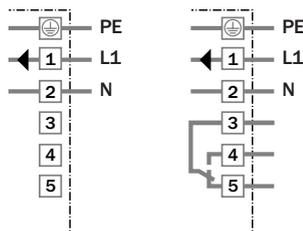
See chapter Accessories

Mounting systems

Special accessories

PG 13.5; terminals

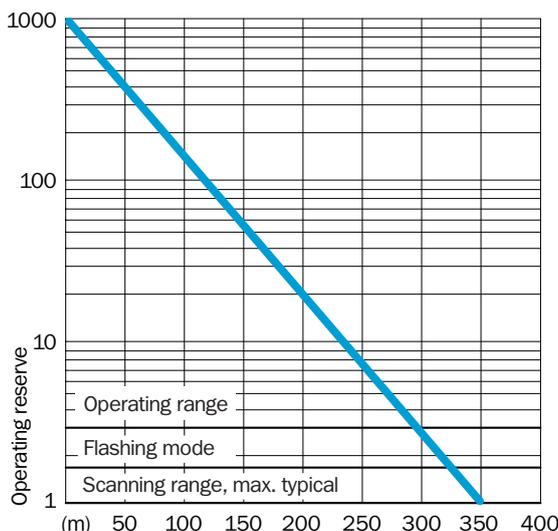
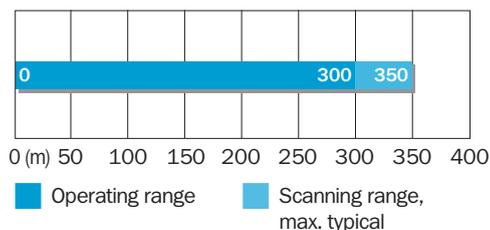
Sender Receiver



Technical data		WS/WE45-	R250	R260								
Scanning range, max. typical	0...350 m											
Sensitivity	Adjustable											
Light source¹⁾, light type	LED, infrared light, pulsating											
Light spot diameter	Approx. 4.5 m at 300 m											
Angle of dispersion	Approx. 0.9°											
Supply voltage V_S	24...240 V UC (+ 10 %, - 25 %)											
Power consumption												
sender without heating	≤ 3 VA											
sender with heating	≤ 6 VA											
receiver without heating	≤ 3 VA											
receiver with heating	≤ 6 VA											
Switching outputs	Relay, SPDT, isolated ²⁾											
Max. switching voltage	AC: 250 V / DC: 120 V											
Switching current	4 A / 240 V AC o. 24 V DC ³⁾											
Max. switching capacity	AC: 1000 VA / DC: 100 W											
Response time	≤ 10 ms											
Max. switching frequency ⁴⁾	10/s											
Connection type	Terminal connection											
VDE protection class	⊕											
Circuit protection⁵⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation - 25 °C...+ 55 °C ⁶⁾											
	Storage - 40 °C...+ 70 °C											
Weight	Approx. 800 g											
Front lens heating												
Housing material	Metal housing											

- 1) Average service life 100,000 h at T_A = + 25 °C
- 2) Provide suitable spark suppression for inductive or capacitive loads
- 3) Usage Category to EN 60947-1, 15 AC, 13 DC
- 4) With light/dark ratio 1:1
- 5) A = V_S connections reverse-polarity protected
C = Interference pulse suppression
- 6) Up to 140 °C with cooling plates (see Accessories)

Scanning range and operating reserve



Order information

Type	Order no.
WS/WE45-R250	1010994
WS/WE45-R260	1010995