

W 18-2: Integrated state-of-the-art technology for intelligent solutions

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



Furthermore, the devices also incorporate a large number of features that are usually only found in special versions, e.g. the test input of the WS/WE 18-2 and WL 18-2, the adjustable scanning distance with background suppression of the WTV 18-2, individual plugs, or status LEDs as signal strength indicators, alignment aids, or pre-failure signalling output.

The WTV 18-2 photoelectric proximity switch has been specially developed for and with the packaging industry. Its features include: its broad optical basis, internally adjustable optics, state-of-the-art electronics, powerful background suppression and optimised light spot geometry which together provide a previously unattainable level of immunity against ambient reflections. The detection of plastic bags on a conveyor belt, glossy and differently sized coffee packets or drinks cartons before being packed, cakes packed in plastic film on a stainless steel chain conveyor, or drinking straws attached to drinks containers – all of these tasks can be mastered without any problem with the WTV 18-2.

The W 18-2 series of photoelectric switches is ideal for handling systems as well as for packaging machines and other complex tasks. WT 18-2 photoelectric proximity switches, WL 18-2 photoelectric reflex switches, or WS/WE 18-2 through-beam photoelectric switches – thanks to their glass-fibre-reinforced and fully welded plastic housing, all of these sensors have the robustness required for industrial applications. Extremely large scanning ranges are an additional feature: up to 20 metres for the through-beam photoelectric switch, up to 7 metres for the photoelectric reflex switch and 600 mm or 700 mm for the photoelectric proximity switch (depending on whether a red light or infrared light source is used).

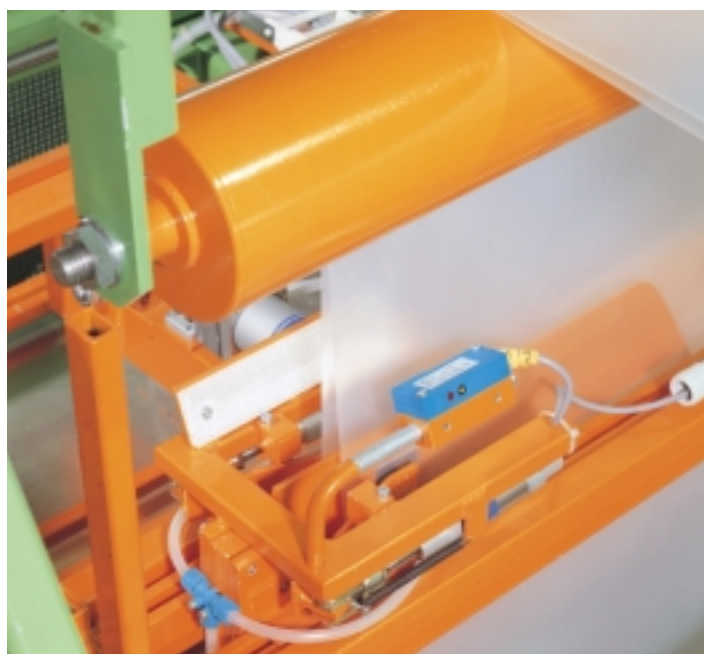


◀ WTV 18-2 sensors used to check the presence of objects along the individual lanes of a packaging line for packs of coffee.

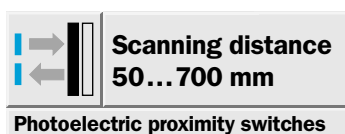
▼ Transparency poses no problems: the WL 18-2 photoelectric reflex switch monitors the edges of packaging film.



▲ Is the packaging unit complete? WT 18-2 photoelectric proximity switches provide us the answer.

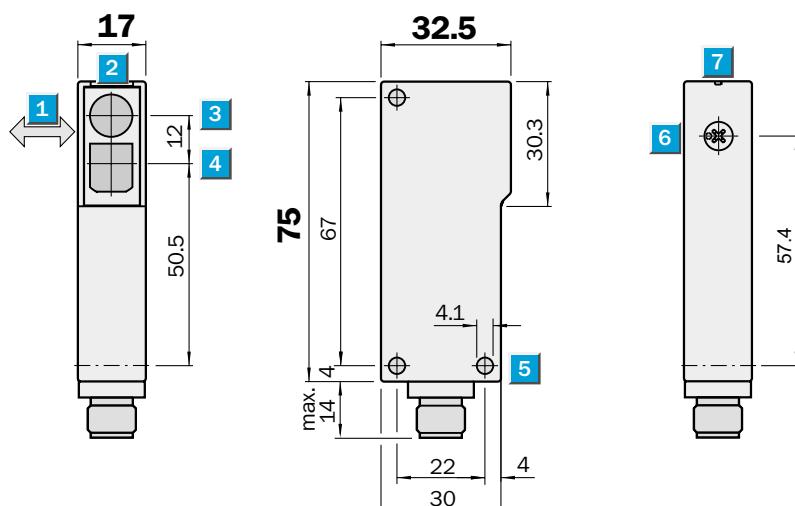


► Leak test for plastic bottles: WT 18-2 sensors used to check the presence of test objects in the automatic machine.



- Adjustable background suppression
- Insensitive to ambient light sources (HF lamps, flashing alarm lamps)
- No mutual interference if devices are installed opposite each other
- Operating temperature -40 °C...+60 °C
- Fast response time

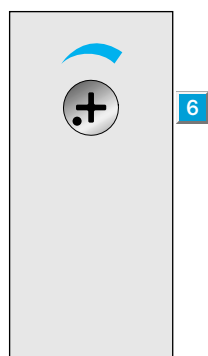
Dimensional drawing



Adjustments possible

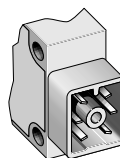
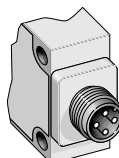
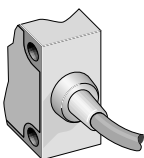
WT 18-2P 112	WT 18-2N 112
WT 18-2P 115	WT 18-2N 115
WT 18-2P 410	WT 18-2N 410
WT 18-2P 610	WT 18-2N 610

- Standard direction of the material being scanned
- LED signal strength indicator
- Optical axis, sender
- Optical axis, receiver
- Mounting hole $\varnothing$ 4.1 mm
- Scanning distance adjustment
- Alignment sight



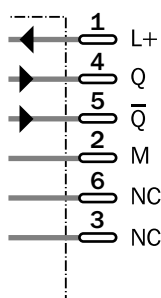
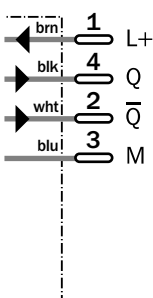
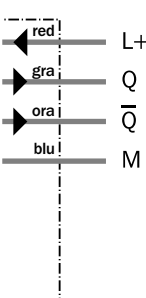
Connection types

WT 18-2P 112	WT 18-2P 410	WT 18-2P 610
WT 18-2P 115	WT 18-2N 410	WT 18-2N 610
WT 18-2N 112		
WT 18-2N 115		


4 x 2.5 mm²

4-pin, M 12

6-pin



Accessories	page
Cable receptacles	496
Mounting brackets	510

Technical data		WT 18-2	P 112	P 115	P 410	P 610	N 112	N 115	N 410	N 610		
Scanning distance , max. typical	50...700 mm, adjustable											
Light source¹⁾, light type	LED, infrared light											
Light spot diameter	20 mm at 400 mm											
Supply voltage V_S	10...30 V DC											
Ripple ³⁾	$\leq 5 V_{SS}$											
Current consumption ⁴⁾	$< 25 \text{ mA}$											
	$< 45 \text{ mA}$											
Switching outputs	PNP, Q and $\bar{Q}$											
	NPN, Q and $\bar{Q}$											
Output current I_A max.	100 mA											
PNP; signal voltage HIGH	$V_S - (< 2.9 \text{ V})$											
PNP; signal voltage LOW	Approx. 0 V											
NPN; signal voltage HIGH	Approx. V_S											
NPN; signal voltage LOW	$< 1.5 \text{ V}$											
Response time ⁵⁾	$< 700 \mu\text{s}$											
Max. switching frequency ⁶⁾	700/s											
Connection types	Cable ⁷⁾ , 2 m											
	Cable ⁷⁾ , 5 m											
	Plug											
VDE protection class⁸⁾												
Circuit protection⁹⁾	A, B, C											
Enclosure rating	IP 67											
	IP 65											
Ambient temperature T_A	Operation $-40^\circ\text{C} \dots +60^\circ\text{C}$											
	Storage $-40^\circ\text{C} \dots +75^\circ\text{C}$											
Weight	Approx. 100 g											
Housing material	ABS, acrylonitrile butadiene styrene											

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

2) Limit values

3) May not exceed or fall short
of V_S tolerances

4) Without load

5) Signal transit time with resistive load

6) With light/dark ratio 1:1

7) Do not bend below 0°C

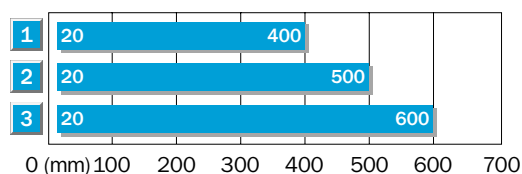
8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity
protected

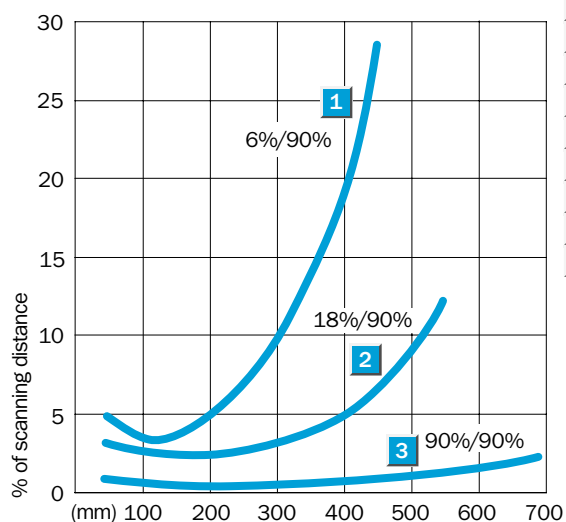
B = Output Q and $\bar{Q}$ short-circuit
protected

C = Interference pulse suppression

Scanning distance



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



Order information

Type	Part no.
WT 18-2P 112	1 012 887
WT 18-2P 115	1 012 890
WT 18-2P 410	1 012 895
WT 18-2P 610	1 012 900
WT 18-2N 112	1 012 879
WT 18-2N 115	1 012 881
WT 18-2N 610	1 012 885
WT 18-2N 410	1 015 149

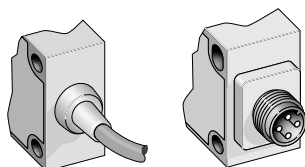
- ### Dimensional drawing



WT 18-2P 132
WT 18-2P 430
WT 18-2N 132
WT 18-2N 430

- 

WT 18-2P 132	WT 18-2P 430
WT 18-2N 132	WT 18-2N 430



4 x 0.25 mm² | 4-pin, M 12

Color	Symbol	Pin
red	L+	1
gra	Q	4
ora	$\bar{Q}$	2
blu	M	3

Technical data		WT 18-2	P 132	P 430	N 132	N 430						
Scanning distance , max. typical	50...600 mm, adjustable											
Light source¹⁾, light type	LED, red light											
Light spot diameter	15 mm at 300 mm											
Supply voltage V_S	10...30 V DC											
Ripple ³⁾	$\leq 5 V_{SS}$											
Current consumption ⁴⁾	$< 25 \text{ mA}$											
	$< 35 \text{ mA}$											
Switching outputs	PNP, Q and $\bar{Q}$											
	NPN, Q and $\bar{Q}$											
Output current I_A max.	100 mA											
PNP; signal voltage HIGH	$V_S - (< 2.9 \text{ V})$											
PNP; signal voltage LOW	Approx. 0 V											
NPN; signal voltage HIGH	Approx. V_S											
NPN; signal voltage LOW	$< 1.5 \text{ V}$											
Response time ⁵⁾	$< 700 \mu\text{s}$											
Max. switching frequency ⁶⁾	700/s											
Connection types	Cable ⁷⁾ , 2 m											
	Plug											
VDE protection class⁸⁾	□											
Circuit protection⁹⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation $-40^\circ\text{C} \dots +60^\circ\text{C}$											
	Storage $-40^\circ\text{C} \dots +75^\circ\text{C}$											
Weight	Approx. 100 g											
Housing material	ABS, acrylonitrile butadiene styrene											

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

2) Limit values

3) May not exceed or fall short
of V_S tolerances

4) Without load

5) Signal transit time with resistive load

6) With light/dark ratio 1:1

7) Do not bend below 0°C

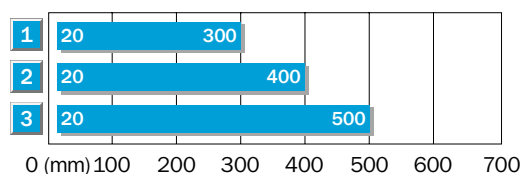
8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity
protected

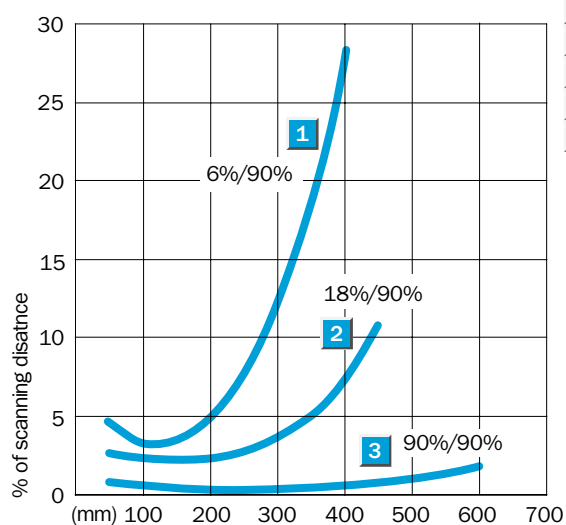
B = Output Q and $\bar{Q}$ short-circuit
protected

C = Interference pulse suppression

Scanning distance



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



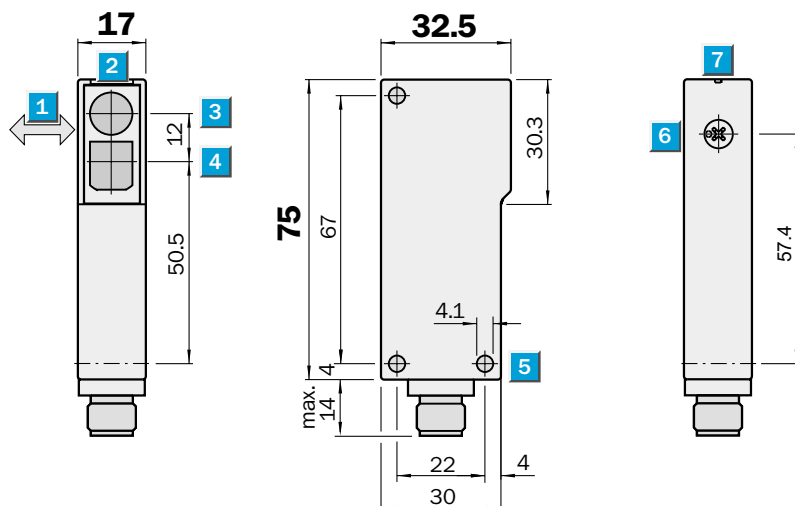
Order information

Type	Part no.
WT 18-2P 132	1 012 892
WT 18-2P 430	1 012 897
WT 18-2N 132	1 012 882
WT 18-2N 430	1 012 884

	Scanning distance 50...250 mm
Photoelectric proximity switches	

- Adjustable background suppression
- Insensitive to ambient light sources (HF lamps, flashing alarm lamps)
- No mutual interference if devices are installed opposite each other
- Operating temperature
- 40 °C...+ 60 °C
- Fast response time

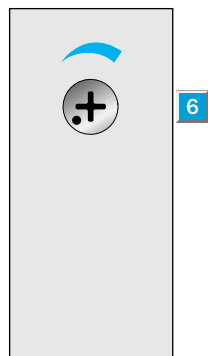
Dimensional drawing



Adjustments possible

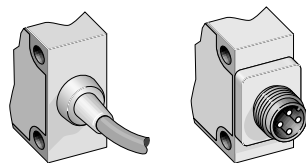
WT 18-2P 172
WT 18-2P 470
WT 18-2P 182
WT 18-2P 480

- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Optical axis, sender
- 4 Optical axis, receiver
- 5 Mounting hole $\varnothing$ 4.1 mm
- 6 Scanning distance adjustment
- 7 Alignment sight



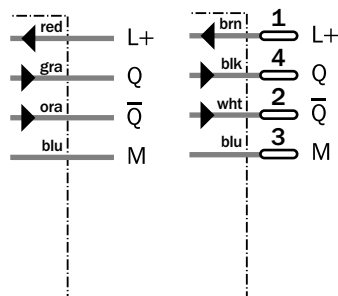
Connection types

WT 18-2P 172	WT 18-2P 470
WT 18-2P 182	WT 18-2P 480



4 x 0.25 mm²

4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510



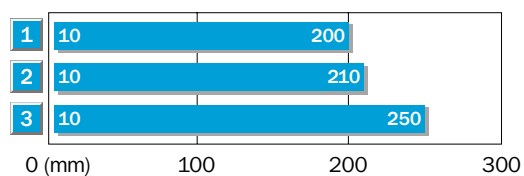
Technical data		WT 18-2	P 172	P 470	P 182	P 480						
Scanning distance	50...250 mm, adjustable											
Light source¹⁾, light type	LED, red light											
	LED, infrared light											
Light spot diameter	10 mm at 200 mm											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple ³⁾	$\leq 5 V_{SS}$											
Current consumption ⁴⁾	$< 25 \text{ mA}$											
Switching outputs	PNP, Q and $\bar{Q}$											
Output current I_A max.	100 mA											
PNP; signal voltage HIGH	$V_S - (< 2.9 \text{ V})$											
PNP; signal voltage LOW	Approx. 0 V											
Response time ⁵⁾	$< 700 \mu\text{s}$											
Max. switching frequency ⁶⁾	700/s											
Connection types	Cable ⁷⁾ , 2 m											
	Plug											
VDE protection class⁸⁾												
Circuit protection⁹⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation $-40^\circ\text{C} \dots +60^\circ\text{C}$											
	Storage $-40^\circ\text{C} \dots +75^\circ\text{C}$											
Weight	Approx. 100 g											
Housing material	ABS, acrylonitrile butadiene styrene											

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

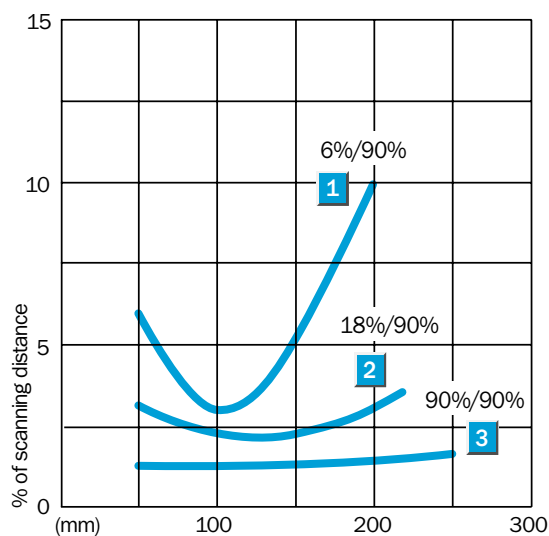
- 4) Without load
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Do not bend below 0°C
 8) Reference voltage 50 V DC

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

Scanning distance



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



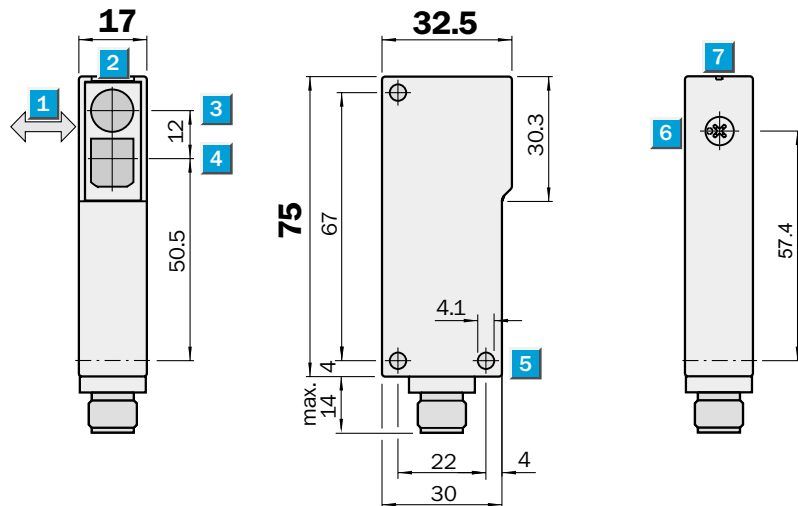
Order information

Type	Part no.
WT 18-2P 172	1 016 079
WT 18-2P 470	1 016 016
WT 18-2P 182	1 016 266
WT 18-2P 480	1 016 267

	Scanning distance 50...1000 mm
Photoelectric proximity switches	

- Adjustable background suppression
- Insensitive to ambient light sources (HF lamps, flashing alarm lamps)
- No mutual interference if devices are installed opposite each other
- Operating temperature
- 40 °C...+ 60 °C
- Fast response time

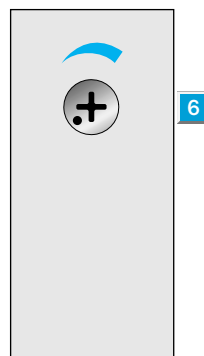
Dimensional drawing



Adjustments possible

WT 18-2P 122

WT 18-2P 420

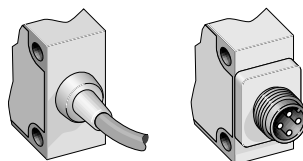


- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Optical axis, sender
- 4 Optical axis, receiver
- 5 Mounting hole $\varnothing$ 4.1 mm
- 6 Scanning distance adjustment
- 7 Alignment sight

Connection types

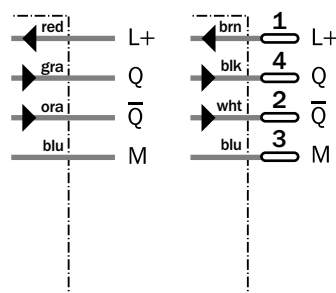
WT 18-2P 122

WT 18-2P 420



4 x 0.25 mm²

4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510



Technical data		WT 18-2	P 172	P 420								
Scanning distance	50...1000 mm, adjustable											
Light source¹⁾, light type	LED, infrared light											
Light spot diameter	30 mm at a distance of 600 mm											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple ³⁾	$\leq 5 V_{SS}$											
Current consumption ⁴⁾	$< 25 \text{ mA}$											
Switching outputs	PNP, Q and $\bar{Q}$											
Output current I_A max.	100 mA											
PNP; signal voltage HIGH	$V_S - (< 2.9 \text{ V})$											
PNP; signal voltage LOW	Approx. 0 V											
Response time ⁵⁾	$< 700 \mu\text{s}$											
Max. switching frequency ⁶⁾	700/s											
Connection types	Cable ⁷⁾ , 2 m											
	Plug											
VDE protection class⁸⁾	□											
Circuit protection⁹⁾	A, B, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Operation $-40^\circ\text{C} \dots +60^\circ\text{C}$											
	Storage $-40^\circ\text{C} \dots +75^\circ\text{C}$											
Weight	Approx. 100 g											
Housing material	ABS, acrylonitrile butadiene styrene											

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

2) Limit values

3) May not exceed or fall short of V_S tolerances

4) Without load

5) Signal transit time with resistive load

6) With light/dark ratio 1:1

7) Do not bend below 0°C

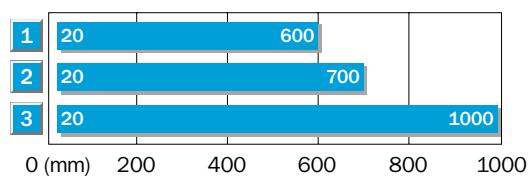
8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity protected

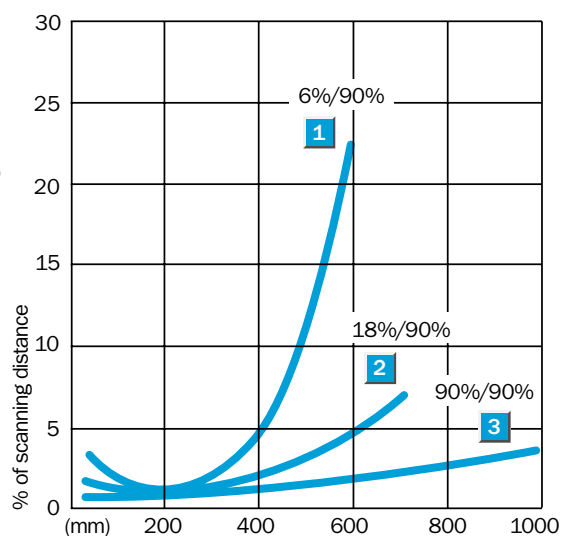
B = Output Q and $\bar{Q}$ short-circuit protected

C = Interference pulse suppression

Scanning distance



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



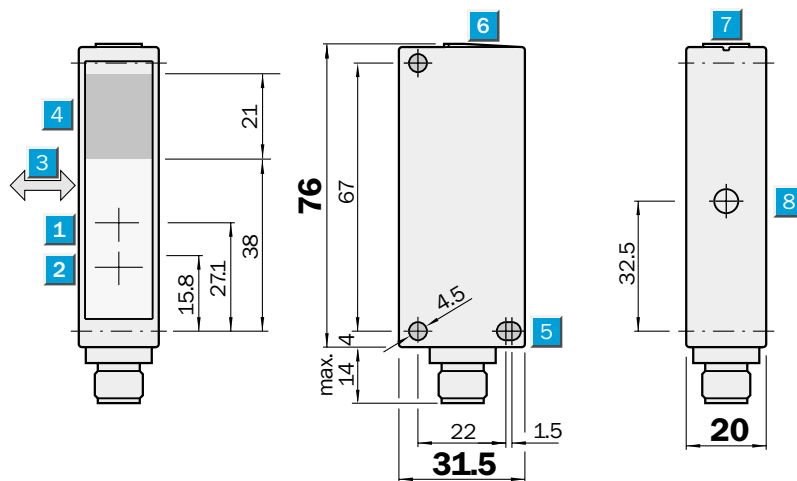
Order information

Type	Part no.
WT 18-2P 122	1 012 921
WT 18-2P 420	1 012 919

	Scanning distance
	60...120 mm
	100...200 mm
Photoelectric proximity switches	

- Adjustable background suppression
- Detection of objects with shiny surfaces
- Insensitive to ambient light sources (HF lamps, flashing alarm lamps)
- No mutual interference if devices are installed opposite each other
- Operating temperature
- 40 °C...+ 60 °C

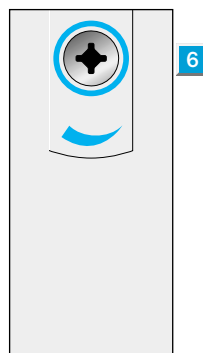
Dimensional drawing



Adjustments possible

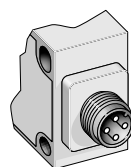
WTV 18-2P 410
WTV 18-2P 420

- Centre of optical axis, sender, WTV 18-2P 410
- Centre of optical axis, sender, WTV 18-2P 420
- Standard direction of the material being scanned
- Receiving range
- Mounting hole $\varnothing$ 4.5 mm
- Scanning distance adjustment
- Alignment sight
- Status indicator

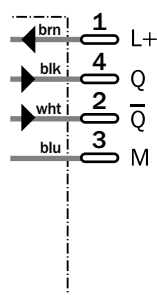


Connection type

WTV 18-2P 410
WTV 18-2P 420



4-pin, M 12



Accessories	page
Cable receptacles	496
Mounting brackets	510

Technical data		WTV 18-2	P 410	P 420										
Scanning distance	60...120 mm, adjustable													
	100...200 mm, adjustable													
Light source¹⁾, light type	LED, infrared light													
Light spot diameter	8 mm at 120 mm													
	8 mm at 200 mm													
Supply voltage V_S	10...30 V DC ²⁾													
Ripple ³⁾	$\leq 5 V_{SS}$													
Current consumption ⁴⁾	$< 30 \text{ mA}$													
Switching outputs	PNP, Q and $\bar{Q}$													
Output current I_A max.	100 mA													
PNP; signal voltage HIGH	$V_S - (< 1.5 \text{ V})$													
NP; signal voltage LOW	Approx. 0 V													
Response time ⁵⁾	2 ms													
Max. switching frequency ⁶⁾	250/s													
Connection type	Plug													
VDE protection class⁷⁾	□													
Circuit protection⁸⁾	A, B, C													
Enclosure rating	IP 67													
Ambient temperature T_A	Operation $-25^\circ\text{C} \dots +60^\circ\text{C}$													
	Storage $-25^\circ\text{C} \dots +75^\circ\text{C}$													
Weight	Approx. 100 g													
Housing material	ABS, acrylonitrile butadiene styrene													

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

2) Limit values

3) May not exceed or fall short
of V_S tolerances

4) Without load

5) Signal transit time with resistive load

6) With light/dark ratio 1:1

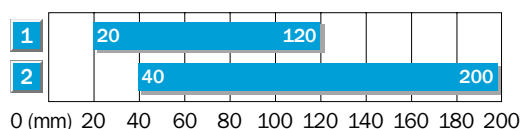
7) Reference voltage 50 V DC

8) A = V_S connections reverse-polarity
protected

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

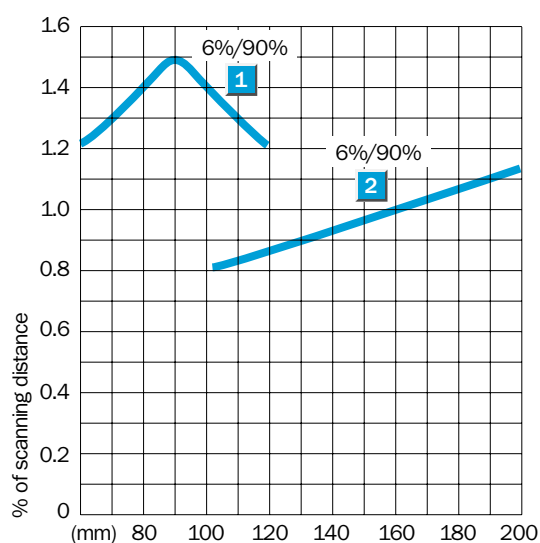
C = Interference pulse suppression

Scanning distance



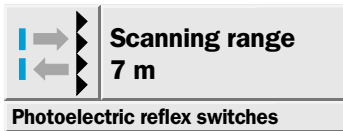
1 Scanning distance on black,
6 % remission with P 410

2 Scanning distance on black,
6 % remission with P 420



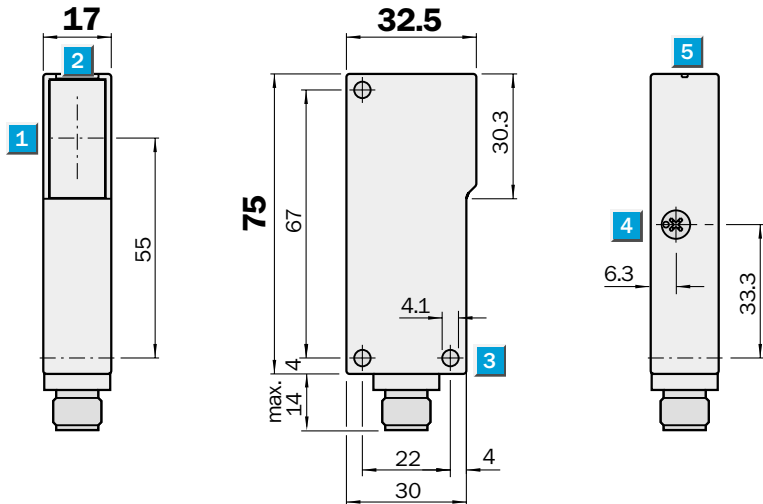
Order information

Type	Part no.
WTV 18-2P 410	1 016 198
WTV 18-2P 420	1 016 243



- Insensitive to ambient light sources (HF lamps, flashing alarm lamps)
- No mutual interference if devices are installed opposite each other
- Operating temperature -40 °C...+60 °C
- Fast response time
- Test input for system diagnosis, optional
- Autocollimation system

Dimensional drawing

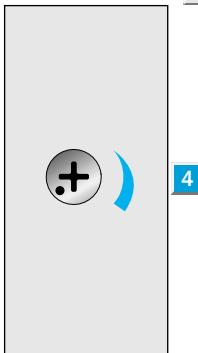


Adjustments possible

WL 18-2P 132
WL 18-2P 135
WL 18-2P 430

WL 18-2N 132
WL 18-2N 135
WL 18-2N 430
WL 18-2N 630

- 1 Centre of optical axis
- 2 LED signal strength indicator
- 3 Mounting hole $\varnothing$ 4.1 mm
- 4 Sensitivity adjustment
- 5 Alignment sight

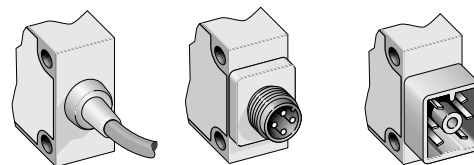


Connection types

WL 18-2P 132
WL 18-2P 135
WL 18-2N 132
WL 18-2N 135

WL 18-2P 430
WL 18-2N 430

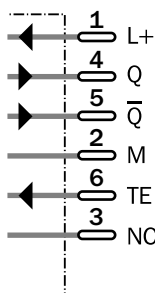
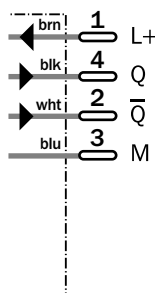
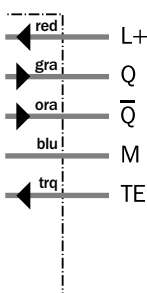
WL 18-2P 630
WL 18-2N 630



5 x 0.25 mm²

4-pin, M 12

6-pin



Accessories	page
Cable receptacles	496
Mounting brackets	510
Reflectors	520

Technical data		WL 18-2	P 132	P 135	P 430	P 630	N 132	N 135	N 430	N 630		
Scanning range , max. typ./on reflector	7 m/PL 80 A											
Sensitivity	adjustable											
Light source ¹⁾ , light type	LED, red light											
Light spot diameter	40 mm at 2 m											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple ³⁾	$\leq 5 V_{SS}$											
Current consumption ⁴⁾	< 25 mA											
Switching outputs	PNP, Q and $\bar{Q}$											
	NPN, Q and $\bar{Q}$											
Output current I_A max.	100 mA											
PNP; signal voltage HIGH	$V_S - (< 2.9 \text{ V})$											
PNP; signal voltage LOW	Approx. 0 V											
NPN; signal voltage HIGH	Approx. V_S											
NPN; signal voltage LOW	< 1.5 V											
Response time ⁵⁾ /Max. switching freq. ⁶⁾	< 500 μs ; 1000/s											
Test input "TE"												
PNP, sender OFF	Test input to 0											
NPN, sender OFF	Test input to V_+											
Connection types	Cable ⁷⁾ , 2 m											
	Cable ⁷⁾ , 5 m											
	Plug											
VDE protection class ⁸⁾	□											
Circuit protection ⁹⁾	A, B, C											
Enclosure rating	IP 67											
	IP 65											
Ambient temperature T_A	Operation -40 °C...+60 °C											
	Storage -40 °C...+75 °C											
Weight	Approx. 100 g											
Polarising filter												
Housing material	ABS, acrylonitrile butadiene styrene											

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) Do not bend below 0 °C

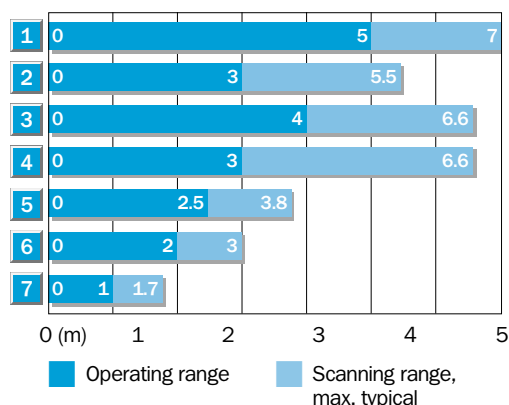
8) Reference voltage 50 V DC

9) A = V_S connections reverse-polarity
protected

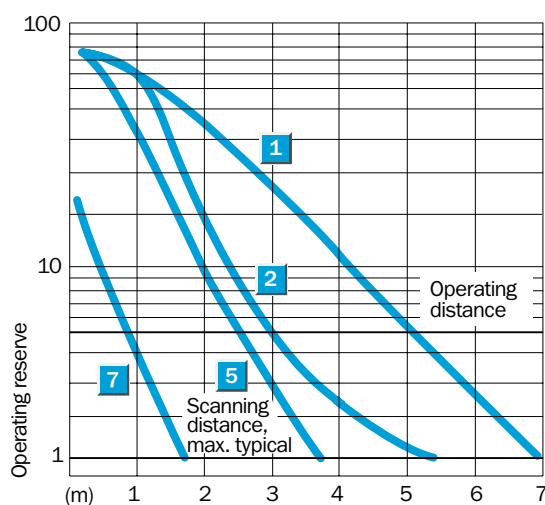
B = Output Q and $\bar{Q}$ short-circuit
protected

C = Interference pulse suppression

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0...5.0 m
2 C 110	0...3.0 m
3 PL 50	0...4.0 m
4 PL 40 A	0...3.0 m
5 PL 30 A	0...2.5 m
6 PL 20 A	0...2.0 m
7 Reflective tape	0...1.0 m
Diamond Grade	



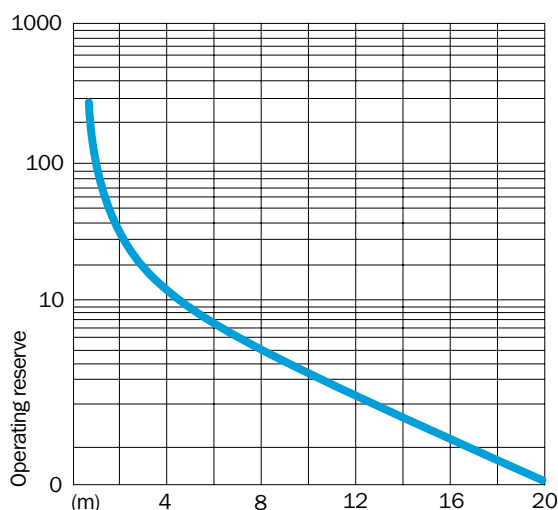
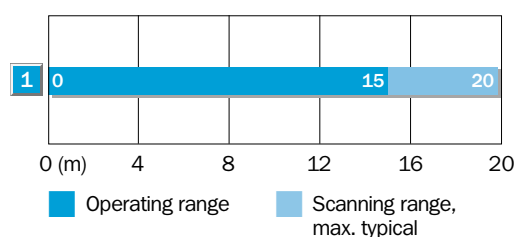
Order information

Type	Part no.
WL 18-2P 132	1 012 906
WL 18-2P 135	1 012 907
WL 18-2P 430	1 012 908
WL 18-2P 630	1 012 912
WL 18-2N 132	1 012 903
WL 18-2N 135	1 012 911
WL 18-2N 630	1 012 904
WL 18-2N 430	1 016 205

Technical data		WS/WE 18-2	P 132	P 430	P 630	N 132	N 630						
Scanning range , max. typical	0...20 m												
Sensitivity	adjustable												
Light source ¹⁾ , light type	LED, red light												
Light spot diameter	Approx. 450 mm at 15 m												
Angle of dispersion	Approx. 1.5°												
Supply voltage V_S	10...30 V DC ²⁾												
Ripple ³⁾	$\leq 5 V_{SS}$												
Current consumption ⁴⁾	< 60 mA												
sender without heating	< 35 mA												
receiver without heating	< 25 mA												
Switching outputs	PNP, Q and $\bar{Q}$												
	NPN, Q and $\bar{Q}$												
Output current I_A max.	100 mA												
PNP; signal voltage HIGH	$V_S - (< 2.9 \text{ V})$												
PNP; signal voltage LOW	Approx. 0 V												
NPN; signal voltage HIGH	Approx. V_S												
NPN; signal voltage LOW	< 1.5 V												
Response time ⁵⁾	500 μs												
Max. switching frequency ⁶⁾	1000/s												
Test input "TE" sender OFF	Test input to 0 V												
Connection type	Cable ⁷⁾ , 2 m												
	Plug												
VDE protection class ⁸⁾													
Circuit protection ⁹⁾	A, B, C												
Enclosure rating	IP 67												
	IP 65												
Ambient temperature T_A	Operation - 40 °C...+ 60 °C												
	Storage - 40 °C...+ 75 °C												
Weight	Approx. 100 g												
Housing material	ABS, acrylonitrile butadiene styrene												

1) Average service life 100,000 h at $T_A = +25^\circ\text{C}$
 2) Limit values
 3) May not exceed or fall short of V_S tolerances
 4) Without load
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Do not bend below 0 °C
 8) Reference voltage 50 V DC
 9) A = V_S connections reverse-polarity protected
 B = Output Q and $\bar{Q}$ short-circuit protected
 C = Interference pulse suppression

Scanning range and operating reserve



Order information

Type	Part no.
WS/WE 18-2P 132	1 012 915
WS/WE 18-2P 430	1 012 916
WS/WE 18-2P 630	1 012 918
WS/WE 18-2N 132	1 012 914
WS/WE 18-2N 630	1 012 917