

# V 18: The Photoelectric Switch Series for Functions Appropriate for Applications



The models:

**V 18-3 Basic Line:** Simplest handling thanks to 3-pin technique. The third line is the switching output Q, ideal for further processing with – for example – ASI switching modules or M 12 distributor islands.

**V 18-4 Standard Line:** Minimum variants, variable handling via LON/D.ON control line.

**V 18-2 Power Line:** Alternating voltage 20...253 V AC with TRIAC switching output.

V 18-3 and V 18-4 have the same system parameter.

	<b>Photoelectric Proximity Switches</b>
	<b>Photoelectric Reflex Switches</b>
	<b>Through-beam Photoelectric Switches</b>

The V 18 photoelectric switch series with round M 18 housing is constructed modularly. You determine your needs corresponding to your requirements, and we provide the optimum sensor. For example, optionally with or without sensitivity control, metal or plastic housing, straight or integrated 90° guidance, 3-line or 4-line technique, etc.

V 18 photoelectric switches are used in almost all branches, but especially in storage and handling engineering, the packaging industry, the graphic arts industry, assembly and handling technology and in special mechanical engineering.

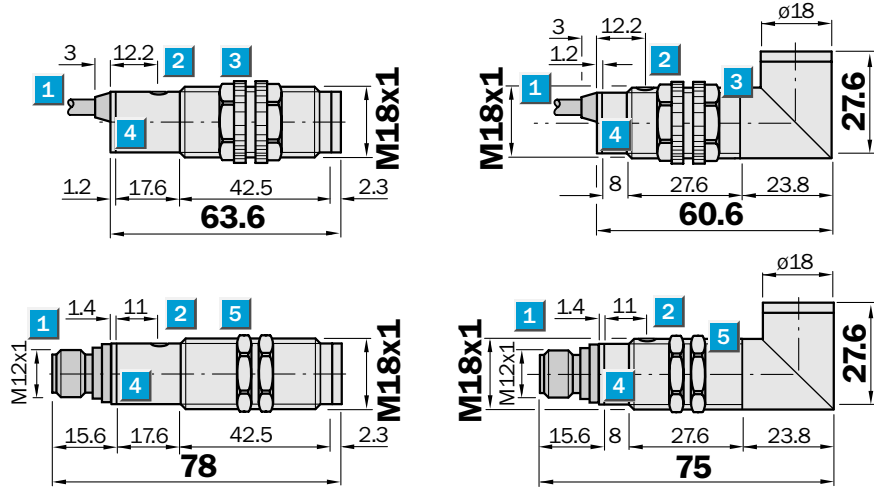
The V 18 variants:

- Photoelectric proximity switch VT 18 with focused optics (VTF 18), with energetic optics (VTE 18),
- Photoelectric reflex switch (VL 18) with polarization filter,
- Through-beam photoelectric switch (VS/VE 18).

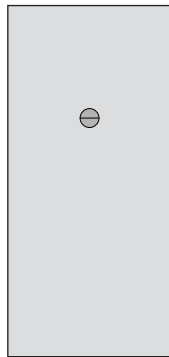
	Scanning distance
	0...50 mm/ 3...100 mm
Photoelectric proximity switches	

- Focused optics, which provide background suppression and an excellent scanning reliability
- Small, visible light spot
- 2 scanning distance options: SD 1 = 50 mm, SD 2 = 100
- Optionally VT 18-3 in 3-line model or VT 18-4 with light/dark control line
- Many other options

Dimensional drawing (mm)



Adjustments possible  
See type key on page 12, 13

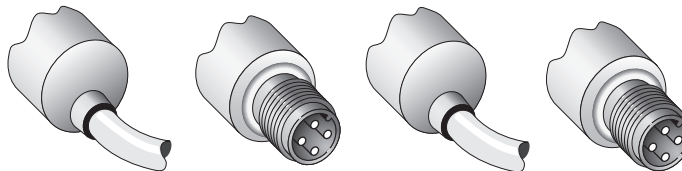


- 1 Connecting cable or plug
- 2 Sensitivity control
- 3 Fastening nut, width across 22 mm, made of plastic for equipment with plastic housing
- 4 Signal strength indicator, LED, yellow
- 5 Fastening nut, width across 24 mm, made of metal for equipment with metal housing

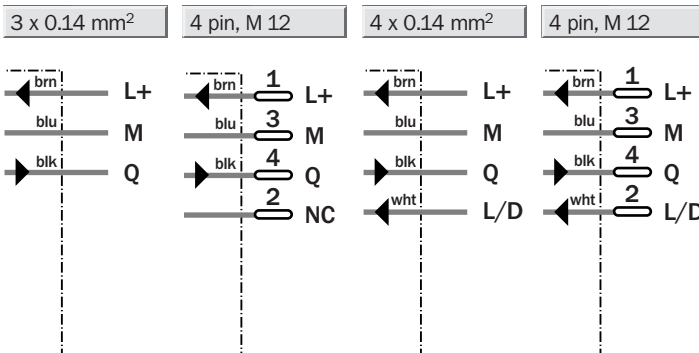
Connection types

VTF 18-3	VTF 18-4
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Variants, equipment options: see type key and alphabetical register on page 12...16 for type name and part no.



<b>Accessories</b>	page
Connectors	24
Mounting systems	25



Technical data		VTF 18-	3x5...	4x5...	3x1...	4x1...						
<b>Housing</b>	Straight											
	Angled, 90°											
<b>VTF 18 Scanning distance 50 mm</b>												
<b>Scanning distance</b> , max. typical <sup>1)</sup>	0...50 mm											
<b>Scanning distance</b> <sup>1)</sup>	0...45 mm											
Light spot diameter	Approx. 3 mm at a distance of 25 mm											
Angle of dispersion of sender	Focused, focus 25 mm											
Sensitivity, adjustable (optional)	Potentiometer 270°											
<b>VTF 18 Scanning distance 100 mm</b>												
<b>Scanning distance</b> , max. typical <sup>1)</sup>	3...100 mm											
<b>Scanning distance</b> <sup>1)</sup>	3...90 mm											
Light spot diameter	Approx. 3 mm at a distance of 50 mm											
Angle of dispersion of sender	Focused, focus 50 mm											
Sensitivity, adjustable (optional)	Potentiometer 270°											
<b>Light source</b> <sup>2)</sup> , light type	LED, infrared light											
<b>Supply voltage</b> V <sub>S</sub>	10...30 V DC <sup>3)</sup>											
Ripple <sup>4)</sup>	± 10 %											
Current consumption <sup>5)</sup>	≤ 30 mA											
<b>Switching outputs</b> (optional)	PNP/NPN											
Switching mode	Q, dark-switching											
	Q, light-switching											
via control wire <sup>6)</sup>	Q, light-/dark-switching											
	+ V <sub>S</sub> = light-switching											
	0 V = dark-switching											
Output current I <sub>A</sub> max.	100 mA											
Response time <sup>7)</sup>	≤ 2 ms											
Max. switching frequency <sup>8)</sup>	250/s											
<b>Connection types</b>												
cable 2 m <sup>9)</sup>	PVC, 3 x 0.14 mm <sup>2</sup> , ø 3.1 mm											
	PVC, 4 x 0.14 mm <sup>2</sup> , ø 5 mm											
plug	4 pin, M12											
<b>VDE protection class</b> <sup>10)</sup>	□											
<b>Circuit protection</b> <sup>11)</sup>	A, B, C, D											
<b>Enclosure rating</b>	IP 67											
<b>Ambient temperature</b> T <sub>A</sub>	-25 °C...+70 °C											
<b>Weight</b>	metal housing	Approx. 120 g										
	plastic housing	Approx. 100 g										
<b>Housing material</b>												
metal housing	Nickel-plated brass; PBT/PC											
plastic housing	PBT/PC											
optic	PMMA											

<sup>1)</sup> Object with 90 % reflectance (referred to standard white DIN 5033)

<sup>2)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C

<sup>3)</sup> Limit values

<sup>4)</sup> Must be within V<sub>S</sub> tolerances

<sup>5)</sup> Without load

<sup>6)</sup> Control wire open:  
NPN: light-switching  
PNP: dark-switching

<sup>7)</sup> With resistive load

<sup>8)</sup> With light/dark ratio 1:1

<sup>9)</sup> Do not bend below 0 °C

<sup>10)</sup> Reference voltage 50 V DC

<sup>11)</sup> A = V<sub>S</sub> connections reverse-polarity protected

B = Inputs/outputs reverse-polarity protected

C = Interference suppression

D = Outputs overcurrent and short-circuit protected

#### Order information

See on page 10 and 11 for characteristic curves.

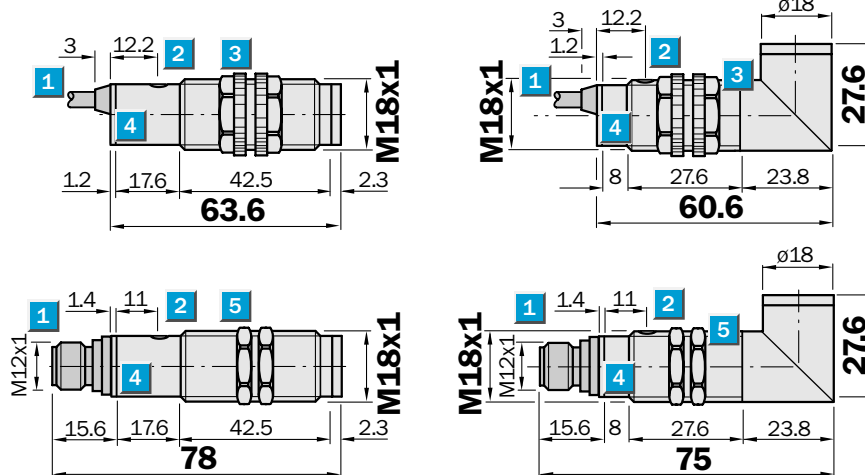
See type key on page 12 and 13.

See on page 14...16 for type name and part no.

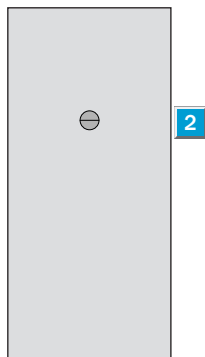
	<b>Scanning distance</b>
	3...200/5...400/ 10...800 mm
<b>Photoelectric proximity switch</b>	

- Energetic scanner, also with large scanning distances for standard applications
- 3 scanning distance options:  
SD 1 = 200 mm  
SD 2 = 400 mm  
SD 3 = 800 mm
- Optionally VT 18-3 in 3-line model or VT 18-4 with light/dark control line
- Many other options

**Dimensional drawing (mm)**



**Adjustments possible**  
See type key on page 12, 13

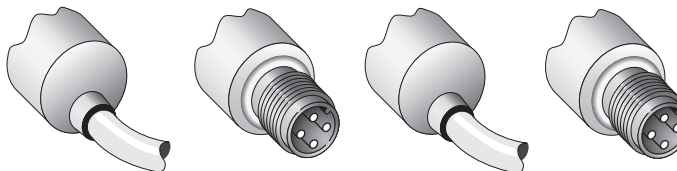


- 1 Connecting cable or plug
- 2 Sensitivity control
- 3 Fastening nut, width across 22 mm, made of plastic for equipment with plastic housing
- 4 Signal strength indicator, LED, yellow
- 5 Fastening nut, width across 24 mm, made of metal for equipment with metal housing

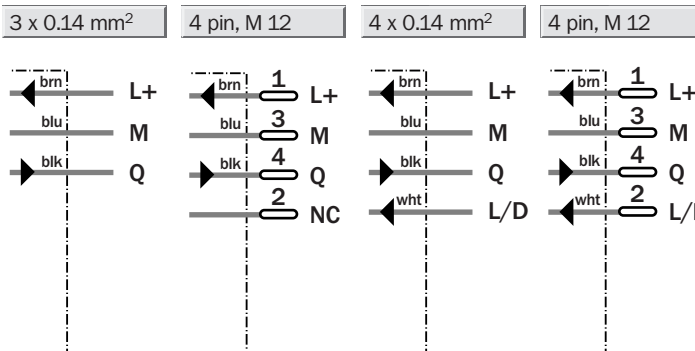
**Connection types**

VTE 18-3	VTE 18-4
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Variants, equipment options: see type key and alphabetical register on page 12...16 for type name and part no.



<b>Accessories</b>	page
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Technical data		VTE 18-	3x2...	4x2...	3x4...	4x4...	3x8...	4x8...				
<b>Housing</b>	Straight											
	Angled, 90°											
<b>VTE 18 Scanning distance 200 mm</b>												
<b>Scanning distance</b> , max. typical <sup>1)</sup>	3...200 mm											
<b>Scanning distance</b> <sup>1)</sup>	3...170 mm											
Light spot diameter	Approx. 10 mm at a dist. of 200 mm											
<b>VTE 18 Scanning distance 400 mm</b>												
<b>Scanning distance</b> , max. typical <sup>1)</sup>	5...400 mm											
<b>Scanning distance</b> <sup>1)</sup>	5...350 mm											
Light spot diameter	Approx. 20 mm at a dist. of 400 mm											
<b>VTE 18 Scanning distance 800 mm</b>												
<b>Scanning distance</b> , max. typical <sup>1)</sup>	10...800 mm											
<b>Scanning distance</b> <sup>1)</sup>	10...700 mm											
Light spot diameter	Approx. 40 mm at a dist. of 800 mm											
Sensitivity adjustable (optional)	Potentiometer 270°											
<b>Light source</b> <sup>2)</sup> , <b>light type</b>	LED, infrared light											
Angle of dispersion of sender	2.8°											
<b>Supply voltage</b> V <sub>S</sub>	10...30 V DC <sup>3)</sup>											
Ripple <sup>4)</sup>	± 10 %											
Current consumption <sup>5)</sup>	≤ 30 mA											
<b>Switching outputs</b> (optional)	PNP/NPN; open collector: Q											
Switching mode	Q, dark-switching											
	Q, light-switching											
	via control wire L/D <sup>6)</sup> Q, light-/dark-switching											
	+ V <sub>S</sub> = light-switching 0 V = dark-switching											
Output current I <sub>A</sub> max.	100 mA											
Response time <sup>7)</sup>	≤ 2 ms											
Max. switching frequency <sup>8)</sup>	250/s											
<b>Connection types</b>												
cable 2 m <sup>9)</sup>	PVC, 3 x 0.14 mm <sup>2</sup> , Ø 3.1 mm											
	PVC, 4 x 0.14 mm <sup>2</sup> , Ø 5 mm											
plug	4 pin, M12											
<b>VDE protection class</b> <sup>10)</sup>	□											
<b>Circuit protection</b> <sup>11)</sup>	A, B, C, D											
<b>Enclosure rating</b>	IP 67											
<b>Ambient temperature</b> T <sub>A</sub>	- 25 °C... + 70 °C											
<b>Weight</b>	metal housing	Approx. 120 g										
	plastic housing	Approx. 100 g										
<b>Housing material</b>												
metal housing	Nickel-plated brass; PBT/PC											
plastic housing	PBT/PC											
optic	PMMA											

1) Object with 90 % reflectance (referred to standard white DIN 5033)  
 2) Average service life 100,000 h at T<sub>A</sub> = + 25 °C  
 3) Limit values

4) Must be within V<sub>S</sub> tolerances  
 5) Without load  
 6) Control wire open:  
 NPN: light-switching  
 PNP: dark-switching

7) With resistive load  
 8) With light/dark ratio 1:1  
 9) Do not bend below 0 °C  
 10) Reference voltage 50 V DC

11) A = V<sub>S</sub> connections reverse-polarity protected  
 B = Inputs/outputs reverse-polarity protected  
 C = Interference suppression  
 D = Outputs overcurrent and short-circuit protected

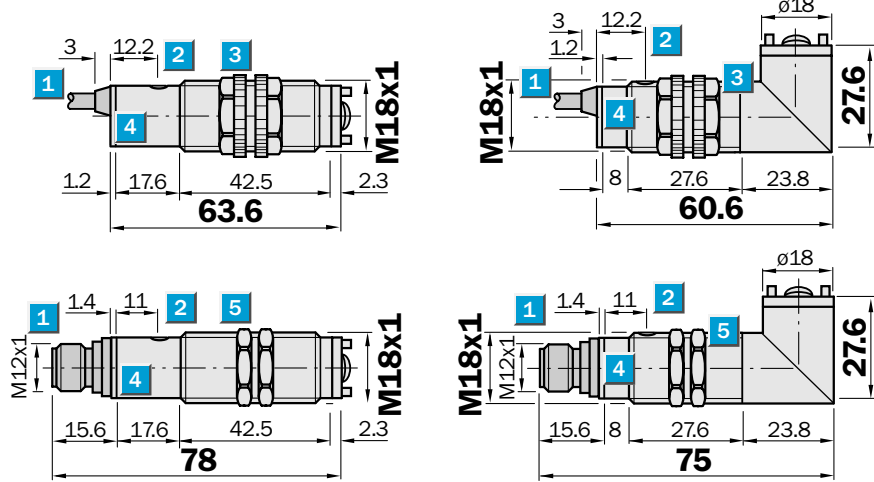
**Order information**

See on page 10 and 11 for characteristic curves.  
 See type key on page 12 and 13.  
 See on page 14...16 for type name and part no.

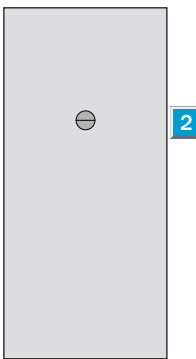
	<b>Scanning range</b> 0.05... 3.7 m
<b>Photoelectric reflex switch</b>	

- With polarizing filter, which ensures reliable detection of objects with shiny surfaces
- Also suitable for “Diamond Grade” reflective tape
- Optionally VL 18-3 3-line model or VT 18-4 with light/dark control line
- Many other options

**Dimensional drawing (mm)**



**Adjustments possible**  
See type key on page 12, 13

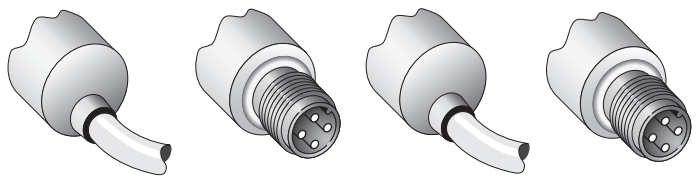


- 1** Connecting cable or plug
- 2** Sensitivity control
- 3** Fastening nut, width across 22 mm, made of plastic for equipment with plastic housing
- 4** Signal strength indicator, LED, yellow
- 5** Fastening nut, width across 24 mm, made of metal for equipment with metal housing

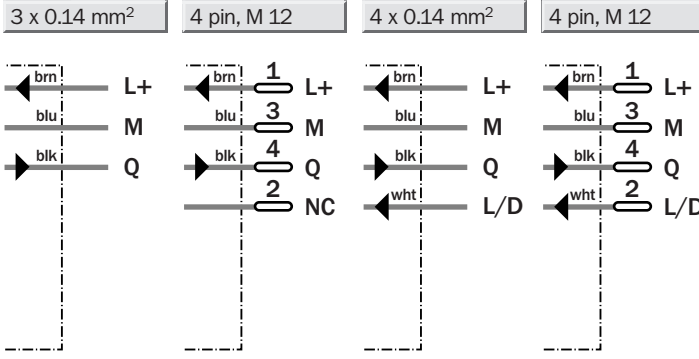
**Connection types**

VL 18-3	VL 18-4
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Variants, equipment options: see type key and alphabetical register on page 12...16 for type name and part no.



Accessories	page
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Reflectors	25



Technical data		VL 18-	3...	4...							
<b>Housing</b>	Straight										
	Angled, 90°										
<b>Scanning range,</b> max. typical/on reflector	0.05...3.7 m/C 110										
<b>Operating range</b> (optional)	0.05...3 m/C 110										
Sensitivity adjustable (optional)	Potentiometer 270°										
<b>Light source<sup>1)</sup>, light type</b>	LED, red light with polarizing filter										
Light spot diameter	Approx. 150 mm at a distance of 3 m										
Angle of dispersion of sender	2.8°										
<b>Supply voltage V<sub>S</sub></b>	10...30 V DC <sup>2)</sup>										
Ripple <sup>3)</sup>	± 10 %										
Current consumption <sup>4)</sup>	≤ 30 mA										
<b>Switching outputs</b> (optional)	PNP/NPN; open collector: Q										
Switching mode	Q, dark-switching										
	Q, light-switching										
via control wire L/D <sup>5)</sup>	Q, light-/dark-switching										
	+ V <sub>S</sub> = light-switching										
	0 V = dark-switching										
Output current I <sub>A</sub> max.	100 mA										
Response time <sup>6)</sup>	≤ 2 ms										
Max. switching frequency <sup>7)</sup>	250/s										
<b>Connection types</b>											
cable 2 m <sup>8)</sup>	PVC, 3 x 0.14 mm <sup>2</sup> , ø 3.1 mm										
	PVC, 4 x 0.14 mm <sup>2</sup> , ø 5 mm										
plug	4 pin, M 12										
<b>VDE protection class<sup>9)</sup></b>	□										
<b>Circuit protection<sup>10)</sup></b>	A, B, C, D										
<b>Enclosure rating</b>	IP 67										
<b>Ambient temperature T<sub>A</sub></b>	- 25 °C... + 70 °C										
<b>Weight</b>	metal housing	Approx. 120 g									
	plastic housing	Approx. 100 g									
<b>Housing material</b>											
metal housing	Nickel-plated brass; PBT/PC										
plastic housing	PBT/PC										
optic	PMMA										

<sup>1)</sup> Average service life 100,000 h at T<sub>A</sub> = + 25 °C

<sup>2)</sup> Limit values

<sup>3)</sup> Must be within V<sub>S</sub> tolerances

<sup>4)</sup> Without load

<sup>5)</sup> Control wire open:  
NPN: light-switching  
PNP: dark-switching

<sup>6)</sup> With resistive load

<sup>7)</sup> With light/dark ratio 1:1

<sup>8)</sup> Do not bend below 0 °C

<sup>9)</sup> Reference voltage 50 V DC

<sup>10)</sup> A = Connections reverse-polarity protected  
B = Inputs/outputs reverse-polarity protected  
C = Interference suppression  
D = Outputs overcurrent and short-circuit protected

#### Order information

See on page 10 and 11 for characteristic curves.

See type key on page 12 and 13.

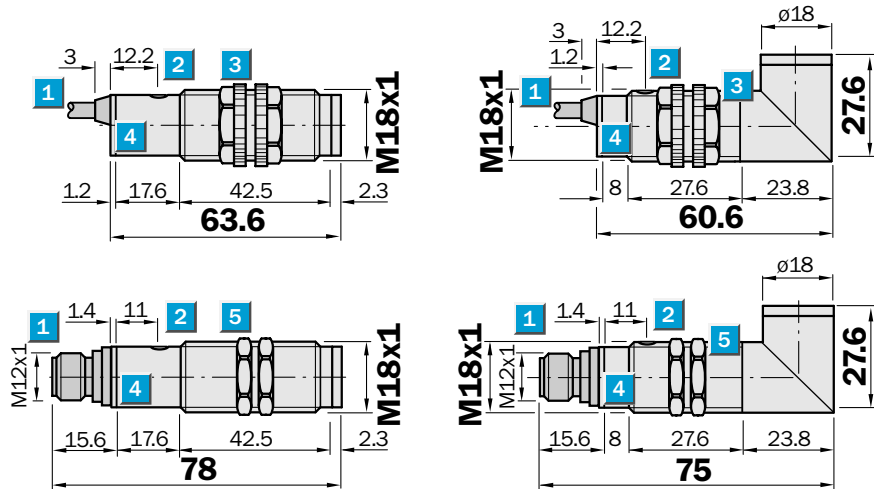
See on page 14...16 for type name and part no.

**Scanning range**  
20 m

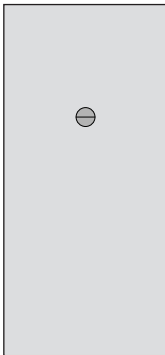
Through-beam photoelectric switch

- Large range
- Optionally VS/VE 18-3 in 3-line model or VS/VE with light/dark control line
- Many other options

**Dimensional drawing (mm)**



**Adjustments possible**  
See type key on page 12, 13

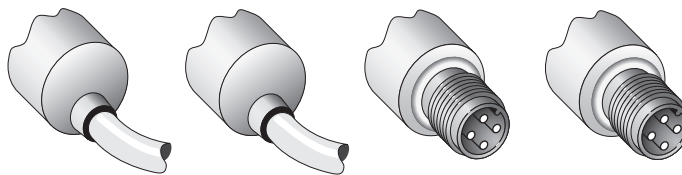


- 1 Connecting cable or plug
- 2 Sensitivity control
- 3 Fastening nut, width across 22 mm, made of plastic for equipment with plastic housing
- 4 Operating display for VS, LED, yellow  
Signal strength indicator for VE, LED, yellow
- 5 Fastening nut, width across 24 mm, made of metal for equipment with metal housing

**Connection types**

VS/VE 18-3	VS/VE 18-4	VS/VE 18-3	VS/VE 18-4
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Variants, equipment options: see type key and alphabetical register on page 12...16 for type name and part no.



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Sender	3 x 0.14 mm <sup>2</sup> VS 18-OD...	3 x 0.14 mm <sup>2</sup> VS 18-OD...	4 pin, M 12 VS 18-OD...	4 pin, M 12 VS 18-OD...
Receiver	3 x 0.14 mm <sup>2</sup> VE 18-3...	4 x 0.14 mm <sup>2</sup> VE 18-4...	4 pin, M 12 VE 18-3...	4 pin, M 12 VE 18-4...



Technical data		VS/VE 18-	3...	4...						
<b>Housing</b>	Straight									
	Angled, 90°									
<b>Scanning range</b> , max. typical	0 ... 20 m									
<b>Operating range</b>	0 ... 14 m									
Light spot diameter	Approx. 700 mm at a distance of 14 m									
Angle of dispersion of sender	2.8°									
Sensitivity adjustable (optional)	Potentiometer 270°									
<b>Light source<sup>1)</sup>, light type</b>	LED, infrared light									
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>2)</sup>									
Ripple <sup>3)</sup>	± 10 %									
Current consumption <sup>4)</sup>	≤ 30 mA									
<b>Switching outputs</b> (optional)	PNP/NPN; open collector: Q									
Switching mode	Q, dark-switching									
	Q, light-switching									
	via control wire L/D <sup>5)</sup> Q, light-/dark-switching									
	+ V <sub>S</sub> = light-switching									
	0 V = dark-switching									
Output current I <sub>A</sub> max.	100 mA									
Response time <sup>6)</sup>	≤ 2 ms									
Max. switching frequency <sup>7)</sup>	250/s									
<b>Test input "TE"</b> , VS sender off	PNP, NPN: TE to 0 V									
<b>Connection types</b>										
Cable 2 m <sup>8)</sup> sender VS 18-OD...:	PVC, 3 x 0.14 mm <sup>2</sup> , ø 3.1 mm									
	receiver VE 18...:	PVC, 3 x 0.14 mm <sup>2</sup> , ø 3.1 mm								
	PVC, 4 x 0.14 mm <sup>2</sup> , ø 5 mm									
Plug sender VS 18-OD...:	4 pin, M 12									
	receiver VE 18...:	4 pin, M 12								
<b>VDE protection class<sup>9)</sup></b>	□									
<b>Circuit protection<sup>10)</sup></b>	A, B, C, D									
<b>Enclosure rating</b>	IP 67									
<b>Ambient temperature T<sub>A</sub></b>	- 25 °C ... + 70 °C									
<b>Weight</b>	metal housing	Sender and receiver each approx. 120 g								
	plastic housing	Sender and receiver each approx. 100 g								
<b>Housing material</b>										
metal housing	Nickel-plated brass; PBT/PC									
plastic housing	PBT/PC									
optic	PMMA									

<sup>1)</sup> Average service life 100,000 h at T<sub>A</sub> = + 25 °C

<sup>2)</sup> Limit values

<sup>3)</sup> Must be within V<sub>S</sub> tolerances

<sup>4)</sup> Without load

<sup>5)</sup> Control wire open:  
NPN: light-switching

PNP: dark-switching

<sup>6)</sup> With resistive load

<sup>7)</sup> With light/dark ratio 1:1

<sup>8)</sup> Do not bend below 0 °C

<sup>9)</sup> Reference voltage 50 V DC

<sup>10)</sup> A = Connections reverse-polarity protected  
B = Inputs/outputs reverse-polarity protected  
C = Interference suppression  
D = Outputs overcurrent and short-circuit protected


#### Order information

See on page 10 and 11 for characteristic curves.

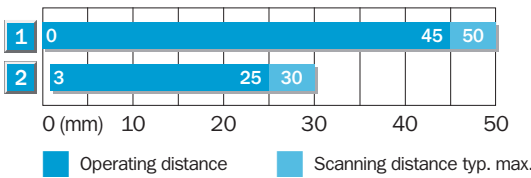
See type key on page 12 and 13.

See on page 14...16 for type name and part no.

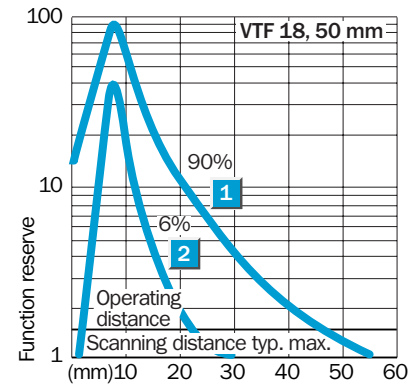
Operating distance and function reserve



**Scanning distance  
0 to 50 mm**  
 Photoelectric proximity switch

VTF 18-3, VTF 18-4 photoelectric proximity switch, focused optic

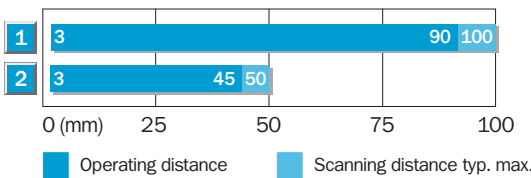


- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on black, 6 % remission

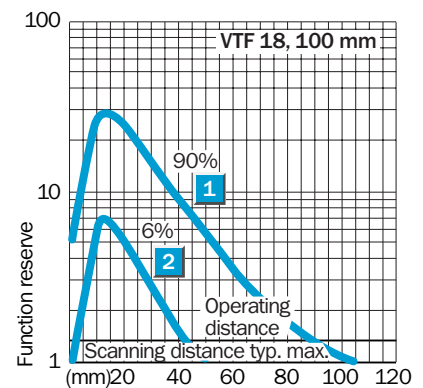




**Scanning distance  
3 to 100 mm**  
 Photoelectric proximity switch

VTF 18-3, VTF 18-4 photoelectric proximity switch, focused optic

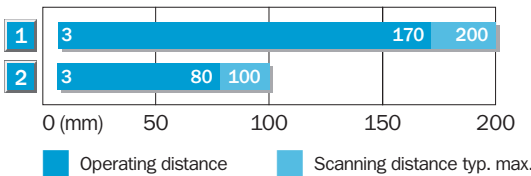


- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on black, 6 % remission

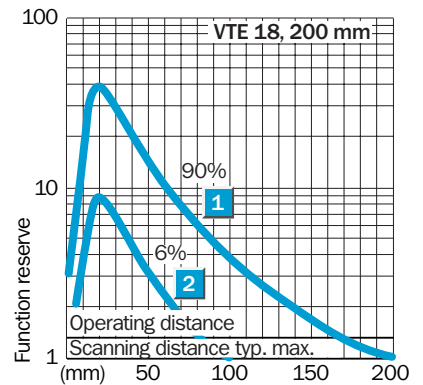




**Scanning distance  
3 to 200 mm**  
 Photoelectric proximity switch

VTE 18-3, VTE 18-4 photoelectric proximity switch, energetic

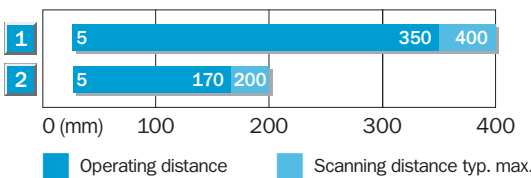


- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on black, 6 % remission

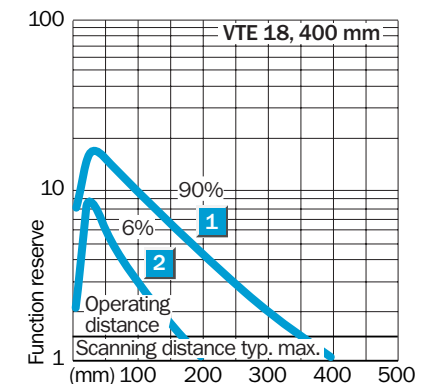



**Scanning distance  
5 to 400 mm**  
 Photoelectric proximity switch

VTE 18-3, VTE 18-4, photoelectric proximity switch, energetic



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

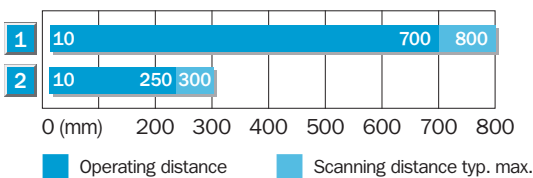


Operating distance and function reserve

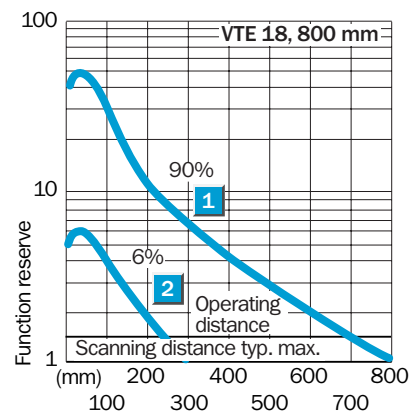
**Scanning distance**  
10 to 800 mm

Photoelectric proximity switch

VTE 18-3, VTE 18-4, photoelectric proximity switch, energetic



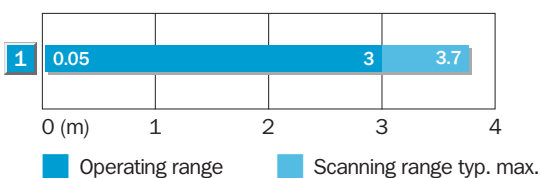
- 1 Scanning distance on white, 90 % remission
- 2 Scanning distance on black, 6 % remission



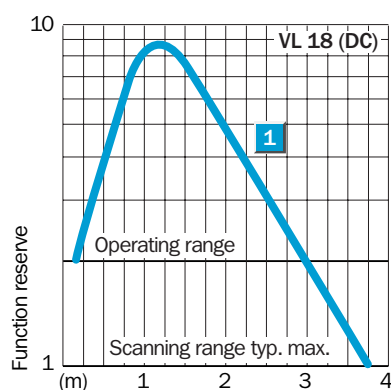
**Scanning range**  
0 to 3.7 m

Photoelectric reflex switch

VL 18-3, VL 18-4, photoelectric reflex switch, with polarizing filter



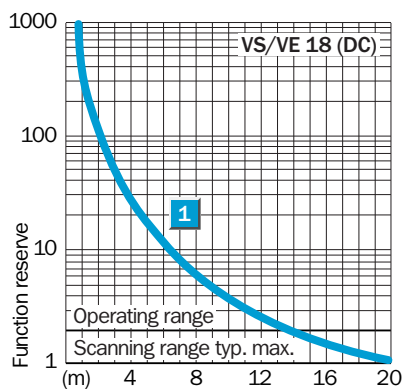
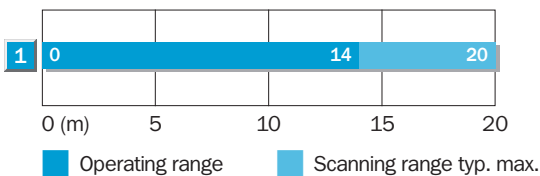
Reflector type	Operating range
1 C 110	0.05... 3 m



**Scanning range**  
20 m

Through-beam photoelectric switch

VS/VE 18-3, VS/VE 18-4, through-beam photoelectric switch, pair



Options

■ Basic Type Photoelectric Switch

- Through-beam photoelectric switch (sender only) → VS
- Through-beam photoelectric switch (receiver only) → VE
- Through-beam photoelectric switch pair (sender and receiver) → VS/VE
- Photoelectric reflex switch → VL
- Photoelectric proximity switch (F = focused) → VTF
- Photoelectric proximity switch (E = energetic) → VTE

■ Size and Series

- Housing M 18 (V 18 Series) → 18

■ Switching Outputs and Switching Modes

- Sender VS with test input → 0D
- 3 wire; Q = PNP, dark-switching (D.ON) → 3P
- 3 wire; Q = PNP, light-switching (L.ON) → 3F
- 3 wire; Q = NPN, dark-switching (D.ON) → 3N
- 3 wire; Q = NPN, light-switching (L.ON) → 3E
- 4 wire; Q = PNP, L.ON or D.ON selectable via control wire → 4P
- 4 wire; Q = NPN, L.ON oder D.ON selectable via control wire → 4N

■ Type of Connection

- Cable, 2 m → 12
- M 12 plug, 4 pin → 40

■ Housing (Material and Form)

Sensitivity Control

- Metal, axial, without potentiometer → 1
- Metal, axial, with potentiometer → 2
- Metal, 90° offset, without potentiometer → 3
- Metal, 90° offset, with potentiometer → 4
- Plastic, axial, without potentiometer → 6
- Plastic, axial, with potentiometer → 7
- Plastic, 90° offset, without potentiometer → 8
- Plastic, 90° offset, with potentiometer → 9

■ Scanning Range and Light Source

- Sender VS: infrared light; Receiver VE for infrared light. Photoelectric reflex switch VL: red light and polarizing filter → 3
- Photoelectric proximity switch VTF: scanning distance 50 mm infrared light → 5
- Photoelectric proximity switch VTF: scanning distance 100 mm infrared light → 1
- Photoelectric proximity switch VTE: scanning distance 200 mm infrared light → 2
- Photoelectric proximity switch VTE: scanning distance 400 mm infrared light → 4
- Photoelectric proximity switch VTE: scanning distance 800 mm infrared light → 8





## V 18 Alphabetical Register

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VL 18-2T 1132	6 022 090	20	VL 18-3P 3340	6 013 563	6	VS/VE 18-3E 3840	6 013 773	8	VS/VE 18-4N 3712	6 013 756	8
VL 18-2T 1162	6 022 092	20	VL 18-3P 3412	6 013 579	6	VS/VE 18-3E 3912	6 013 789	8	VS/VE 18-4N 3740	6 013 758	8
VL 18-2T 1430	6 022 091	20	VL 18-3P 3440	6 013 581	6	VS/VE 18-3E 3940	6 013 791	8	VS/VE 18-4N 3812	6 013 774	8
VL 18-2T 1460	6 022 093	20	VL 18-3P 3612	6 013 597	6				VS/VE 18-4N 3840	6 013 776	8
VL 18-2T 2132	6 011 376	20	VL 18-3P 3640	6 013 599	6	VS/VE 18-3F 3112	6 013 672	8	VS/VE 18-4N 3912	6 013 792	8
VL 18-2T 2162	6 011 377	20	VL 18-3P 3712	6 013 615	6	VS/VE 18-3F 3140	6 013 674	8	VS/VE 18-4N 3940	6 013 794	8
VL 18-2T 2430	6 011 378	20	VL 18-3P 3740	6 013 617	6	VS/VE 18-3F 3212	6 013 690	8			
VL 18-2T 2460	6 011 379	20	VL 18-3P 3812	6 013 633	6	VS/VE 18-3F 3240	6 013 692	8	VS/VE 18-4P 3112	6 013 675	8
			VL 18-3P 3840	6 013 635	6	VS/VE 18-3F 3312	6 013 708	8	VS/VE 18-4P 3140	6 013 677	8
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VL 18-3E 3140	6 013 521	6	VL 18-3P 3940	6 013 653	6	VS/VE 18-3F 3412	6 013 726	8	VS/VE 18-4P 3240	6 013 695	8
VL 18-3E 3212	6 013 537	6				VS/VE 18-3F 3440	6 013 728	8	VS/VE 18-4P 3312	6 013 711	8
VL 18-3E 3240	6 013 539	6	VL 18-4N 3112	6 013 522	6	VS/VE 18-3F 3612	6 013 744	8	VS/VE 18-4P 3340	6 013 713	8
VL 18-3E 3312	6 013 555	6	VL 18-4N 3140	6 013 524	6	VS/VE 18-3F 3640	6 013 746	8	VS/VE 18-4P 3412	6 013 729	8
VL 18-3E 3340	6 013 557	6	VL 18-4N 3212	6 013 540	6	VS/VE 18-3F 3712	6 013 762	8	VS/VE 18-4P 3440	6 013 731	8
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VL 18-3E 3840	6 013 629	6	VL 18-4N 3712	6 013 612	6	VS/VE 18-3N 3140	6 013 662	8	VS/VE 18-4P 3940	6 013 803	8
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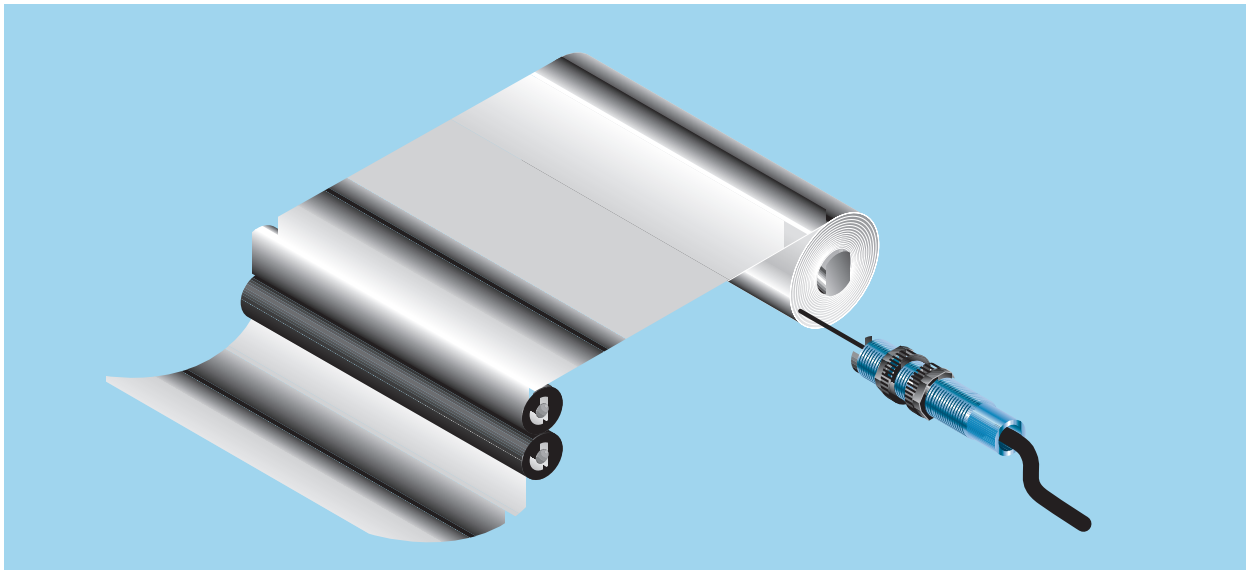
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VTE 18-3E 4712	6 013 321	4	VTE 18-3F 8440	6 013 152	4	VTE 18-3P 2312	6 013 417	4	VTE 18-4N 4212	6 013 252	4
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			VTE 18-3N 4840	6 013 338	4	VTE 18-3P 8712	6 013 183	4	VTE 18-4P 2612	6 013 459	4
VTE 18-3F 4112	6 013 240	4	VTE 18-3N 4912	6 013 354	4	VTE 18-3P 8740	6 013 185	4	VTE 18-4P 2640	6 013 461	4
VTE 18-3F 4140	6 013 242	4	VTE 18-3N 4940	6 013 356	4	VTE 18-3P 8812	6 013 201	4	VTE 18-4P 2712	6 013 477	4
VTE 18-3F 4212	6 013 258	4				VTE 18-3P 8840	6 013 203	4	VTE 18-4P 2740	6 013 479	4
VTE 18-3F 4240	6 013 260	4	VTE 18-3N 8112	6 013 084	4	VTE 18-3P 8912	6 013 219	4	VTE 18-4P 2812	6 013 495	4
VTE 18-3F 4312	6 013 276	4	VTE 18-3N 8140	6 013 086	4	VTE 18-3P 8940	6 013 221	4	VTE 18-4P 2840	6 013 497	4
VTE 18-3F 4340	6 013 278	4	VTE 18-3N 8212	6 013 102	4				VTE 18-4P 2912	6 013 513	4
VTE 18-3F 4412	6 013 294	4	VTE 18-3N 8240	6 013 104	4	VTE 18-4N 2112	6 013 378	4	VTE 18-4P 2940	6 013 515	4
VTE 18-3F 4440	6 013 296	4	VTE 18-3N 8312	6 013 120	4	VTE 18-4N 2140	6 013 380	4			
VTE 18-3F 4612	6 013 312	4	VTE 18-3N 8340	6 013 122	4	VTE 18-4N 2212	6 013 396	4	VTE 18-4P 4112	6 013 243	4
VTE 18-3F 4640	6 013 314	4	VTE 18-3N 8412	6 013 138	4	VTE 18-4N 2240	6 013 398	4	VTE 18-4P 4140	6 013 245	4
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VTE 18-3F 4812	6 013 348	4	VTE 18-3N 8640	6 013 158	4	VTE 18-4N 2412	6 013 432	4	VTE 18-4P 4312	6 013 279	4
VTE 18-3F 4840	6 013 350	4	VTE 18-3N 8712	6 013 174	4	VTE 18-4N 2440	6 013 434	4	VTE 18-4P 4340	6 013 281	4
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VTE 18-3F 4940	6 013 368	4	VTE 18-3N 8812	6 013 192	4	VTE 18-4N 2640	6 013 452	4	VTE 18-4P 4440	6 013 299	4
			VTE 18-3N 8840	6 013 194	4	VTE 18-4N 2712	6 013 468	4	VTE 18-4P 4612	6 013 315	4
VTE 18-3F 8112	6 013 096	4	VTE 18-3N 8912	6 013 210	4	VTE 18-4N 2740	6 013 470	4	VTE 18-4P 4640	6 013 317	4
VTE 18-3F 8140	6 013 098	4	VTE 18-3N 8940	6 013 212	4	VTE 18-4N 2812	6 013 486	4	VTE 18-4P 4712	6 013 333	4
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## V 18 Alphabetical Register

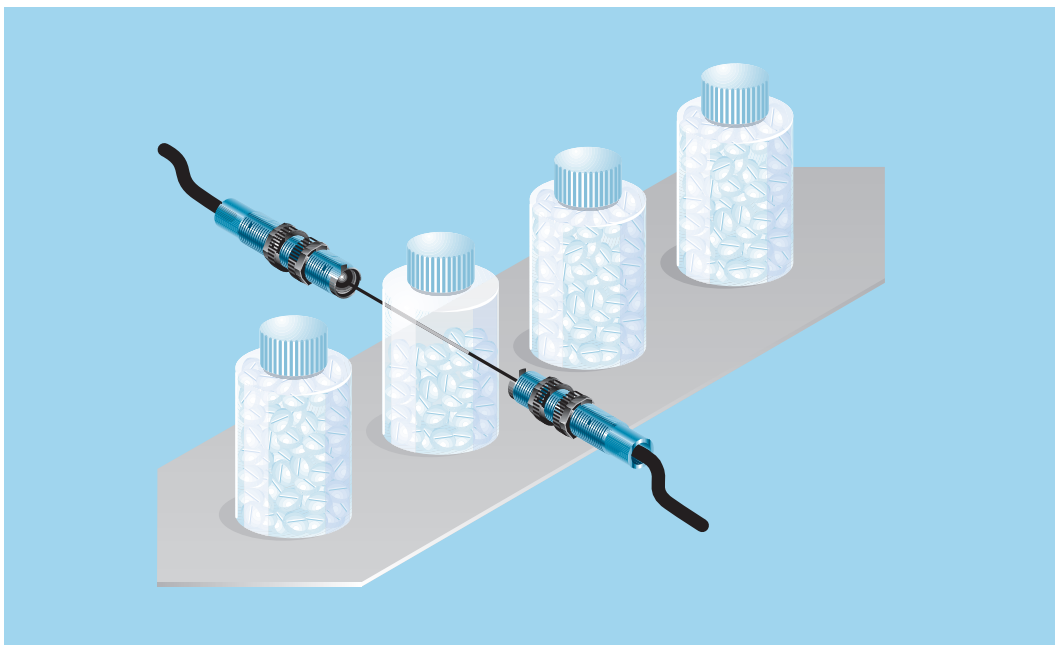
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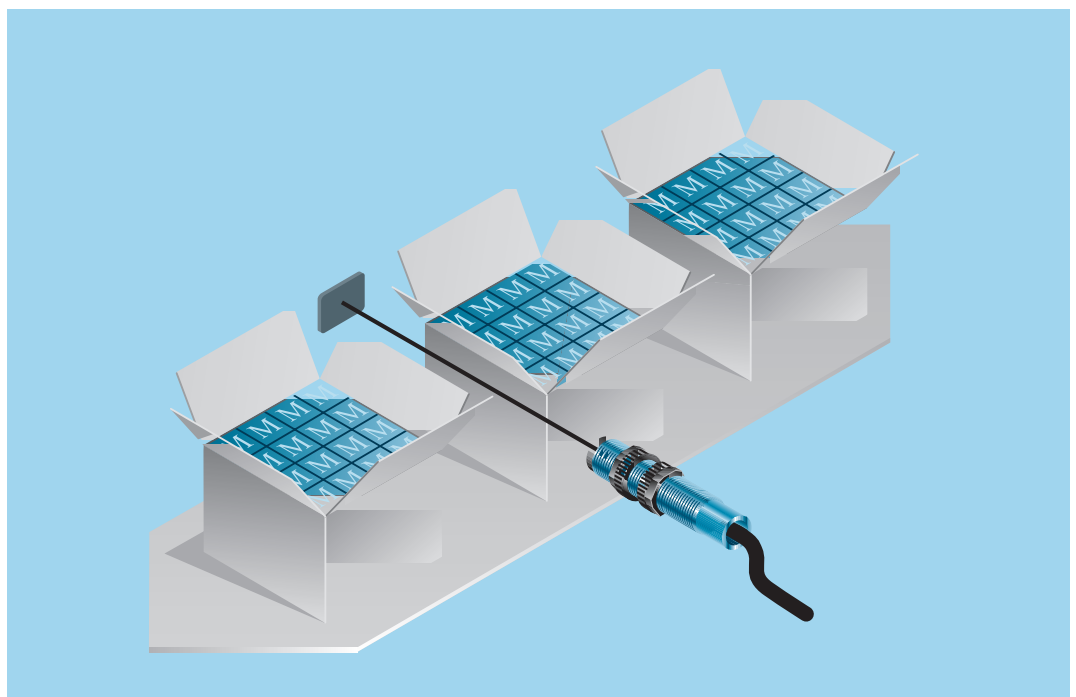
► Photoelectric proximity switches monitor the roller supply to ensure that roller changes are signaled on time in paper and film processing.



► Reliable filling level control is imperative on packaging conveyor systems. Through-beam photoelectric switches VS/VE 18 handle this job with a great deal of reliability.



► Material is detected with reliability with photoelectric reflex switches VL 18.

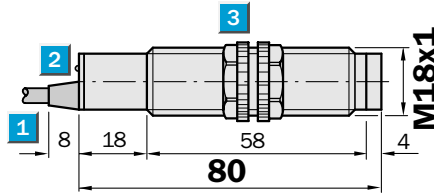


	<b>Scanning distance</b> 100/200/400 mm
<b>Photoelectric proximity switch</b>	

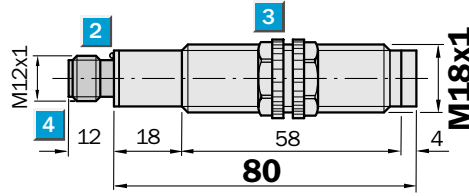
- Photoelectric proximity switch, energetic, 3 scanning ranges can be selected:  
SD = 100 mm  
SD = 200 mm  
SD = 400 mm
- Voltage supply 20...253 V AC;  
TRIAC switching output
- Cable or plug M 12, 4 pin

**Dimensional drawing (mm)**

VT 18-2T 1112
VT 18-2T 1132
VT 18-2T 1152
VT 18-2T 2112
VT 18-2T 2132
VT 18-2T 2152



VT 18-2T 1410
VT 18-2T 1430
VT 18-2T 1450
VT 18-2T 2410
VT 18-2T 2430
VT 18-2T 2450

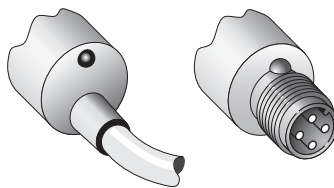


- 1 Connecting cable
- 2 Signal strength indicator
- 3 Fastening nuts, width across 22 mm (included)
- 4 Equipment plug M 12, 4 pin



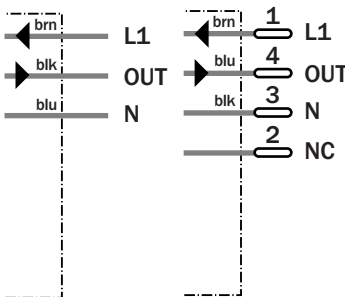
**Connection type**

- All cable types
- All plug types



<b>Accessories</b>	page
Connectors	24
Mounting systems	25

3 x 0.34 mm <sup>2</sup>	4 pin, M 12
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Technical data		VT 18-2T	1112 <sup>1)</sup>	1410 <sup>1)</sup>	1132 <sup>1)</sup>	1430 <sup>1)</sup>	1152 <sup>1)</sup>	1450 <sup>1)</sup>				
			2112 <sup>2)</sup>	2410 <sup>2)</sup>	2132 <sup>2)</sup>	2430 <sup>2)</sup>	2152 <sup>2)</sup>	2450 <sup>2)</sup>				
<b>Housing</b>	Straight											
<b>Scanning distance, typ. max.</b>	2...400 mm <sup>3)</sup>											
<b>Recommended operating distance</b>	3...360 mm <sup>3)</sup>											
Light source <sup>4)</sup>	LED, infrared light											
Light spot diameter	Approx. 48 mm at a distance of 400 mm											
Angle of dispersion, sender	Approx. 3.5°											
<b>Scanning distance, typ. max.</b>	2...200 mm <sup>3)</sup>											
<b>Recommended operating distance</b>	3...180 mm <sup>3)</sup>											
Light source <sup>4)</sup>	LED, infrared light											
Light spot diameter	Approx. 24 mm at a distance of 200 mm											
Angle of dispersion, sender	Approx. 3.5°											
<b>Scanning distance, typ. max.</b>	2...100 mm <sup>3)</sup>											
<b>Recommended operating distance</b>	3...90 mm <sup>3)</sup>											
Light source <sup>4)</sup>	LED, infrared light											
Light spot diameter	Approx. 12 mm at a distance of 100 mm											
Angle of dispersion, sender	Approx. 3.5°											
<b>Supply voltage V<sub>S</sub></b> <sup>5)</sup>	20...253 V AC /50...60 Hz											
Current consumption <sup>6)</sup>	≤ 30 mA											
<b>Switching output</b>	TRIAC											
Switching current I <sub>A</sub> max.	5...300 mA											
voltage drop	3 V max. (U = 250 V AC)											
max. switching current	6 A/10 ms; f = 10 Hz											
leakage current	Max. 1.5 mA (V <sub>s</sub> = 250 V AC)											
Switching voltage	V <sub>S</sub>											
Light receiver, switching mode <sup>1) 2)</sup>	Light-switching or dark-switching											
Response time <sup>7)</sup>	≤ 20 ms											
Switching frequency max. <sup>8)</sup>	25/s											
<b>Con. type</b>	con. cable	PVC, 2 m <sup>9)</sup> ; 3 x 0.34 mm <sup>2</sup> , Ø 4.7 mm										
	equipment plug	M 12, 4 pin										
<b>VDE protection class</b> <sup>10)</sup>		□										
<b>Circuit protection</b> <sup>11)</sup>		C										
<b>Enclosure rating</b>		IP 67										
<b>Ambient temperature</b>		-25...+70 °C										
<b>Weight</b>	with con. cable	Approx. 95 g										
	with equipment plug	Approx. 30 g										
<b>Housing material</b>		Housing : PBT/PC; optic: PMMA										

- <sup>1)</sup> Light-switching
- <sup>2)</sup> Dark-switching
- <sup>3)</sup> Object with 90% reflectance (referred to standard white DIN 5033)
- <sup>4)</sup> Average service life 100,000 h at T<sub>U</sub> = +25 °C
- <sup>5)</sup> Limit values
- <sup>6)</sup> Without load
- <sup>7)</sup> With resistive load
- <sup>8)</sup> With light/dark ratio 1:1
- <sup>9)</sup> Do not bend cable below 0 °C
- <sup>10)</sup> Withstand voltage 250 V AC
- <sup>11)</sup> C = Interference suppression

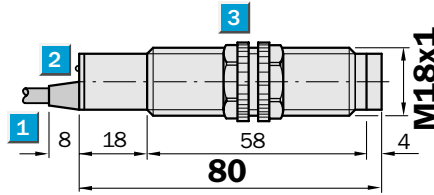
Scanning distance			Order information																										
Scanning distance 100 mm	Scanning distance 200 mm	Scanning distance 400 mm																											
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Type	Order no.																												
VT 18-2T 1112	6 011 370																												
VT 18-2T 1410	6 011 373																												
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VT 18-2T 1430	6 011 374																												
VT 18-2T 1152	6 011 372																												
VT 18-2T 1450	6 011 375																												
VT 18-2T 2112	6 022 094																												
VT 18-2T 2410	6 022 095																												
VT 18-2T 2132	6 022 096																												
VT 18-2T 2430	6 022 097																												
VT 18-2T 2152	6 022 098																												
VT 18-2T 2450	6 022 099																												

	<b>Scanning range</b> 3.5 m/5 m
<b>Photoelectric reflex switch</b>	

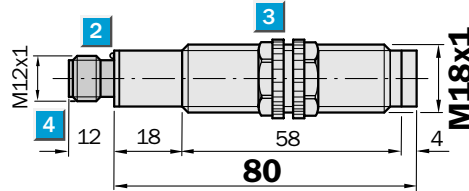
- Also with polarizing filter, which ensures reliable detection of objects with shiny surfaces
- Voltage supply 20...253 V AC; TRIAC switching output
- Cable or plug M 12, 4 pin

**Dimensional drawing (mm)**

VL 18-2T 1132
VL 18-2T 1162
VL 18-2T 2132
VL 18-2T 2162



VL 18-2T 1430
VL 18-2T 1460
VL 18-2T 2430
VL 18-2T 2460

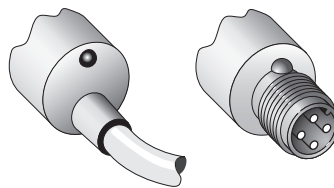


- 1 Connecting cable
- 2 Signal strength indicator
- 3 Fastening nuts, width across 22 mm (included)
- 4 Equipment plug M 12, 4 pin



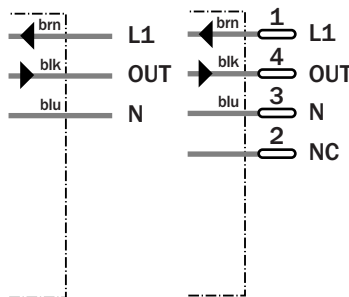
**Connection type**

- All cable types
- All plug types



Accessories	page
Connectors	24
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Reflectors	25

3 x 0.34 mm <sup>2</sup>	4 pin, M 12
--------------------------	-------------



Technical data		VL 18-2T	1162	2162	1460	2460	1132	2132	1430	2430
<b>Housing</b>	Straight									
<b>Scanning range</b> , typ. max./on reflector	<b>0.005 ... 3.5 m/C 110</b>									
<b>Operating range</b>	<b>0.01 ... 3.0 m/C 110</b>									
Light source <sup>1)</sup>	LED, red light, with polarizing filter									
<b>Scanning range</b> , typ. max./on reflector	<b>0.005 ... 5.0 m/C 110</b>									
<b>Operating range</b>	<b>0.01 ... 4.0 m/C 110</b>									
Light source <sup>1)</sup>	LED, infrared light, without polarizing filter									
Light spot diameter	Approx. 30 mm at a distance of 3.0 m									
Angle of dispersion, sender	Approx. 6°									
<b>Supply voltage</b> $V_S$ <sup>2)</sup>	20 ... 253 V AC / 50 ... 60 Hz									
Current consumption <sup>3)</sup>	≤ 30 mA									
<b>Switching output</b>	TRIAC									
Switching current $I_A$ max.	5 ... 300 mA									
voltage drop	3 V max. (U = AC 250 V)									
max. switching current	6 A/10 ms; f = 10 Hz									
leakage current	max. 1.5 mA ( $V_S = 250$ V AC)									
Switching voltage	$V_S$									
Switching mode	Light-switching									
	Dark-switching									
Response time <sup>4)</sup>	≤ 20 ms									
Switching frequency max. <sup>5)</sup>	25/s									
<b>Con. type</b>	con. cable	PVC, 2 m <sup>6)</sup> ; 3 x 0.34 mm <sup>2</sup> , Ø 4.7 mm								
	equipment plug	M 12, 4 pin								
<b>VDE protection class</b> <sup>7)</sup>		□								
<b>Circuit protection</b> <sup>8)</sup>		C								
<b>Enclosure rating</b>		IP 67								
<b>Ambient temperature</b>		-25 ... +60 °C								
<b>Weight</b>	with con. cable	Approx. 95 g								
	with equipment plug	Approx. 30 g								
<b>Housing material</b>		Housing : PBT/PC; optic: PMMA								

<sup>1)</sup> Average service life 100,000 h at  $T_U = +25$  °C

<sup>2)</sup> Limit values

<sup>3)</sup> Without load

<sup>4)</sup> With resistive load

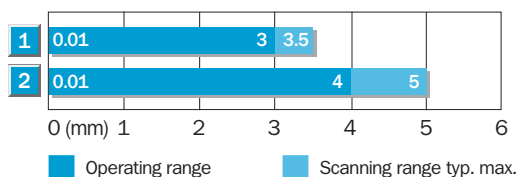
<sup>5)</sup> With light/dark ratio 1:1

<sup>6)</sup> Do not bend cable below 0 °C

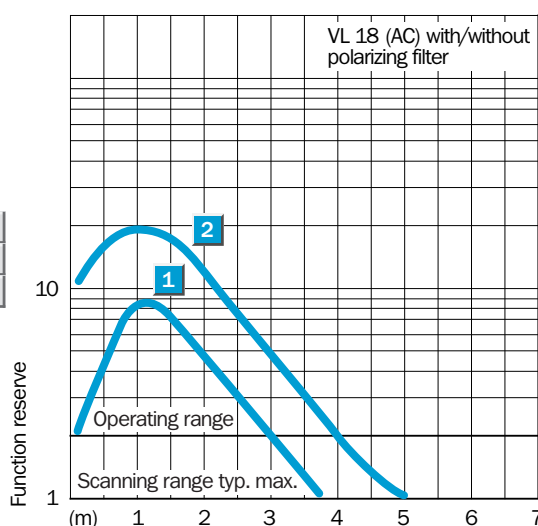
<sup>7)</sup> Withstand voltage 250 V AC

<sup>8)</sup> C = Interference suppression

**Operating range and function reserve**



	Polarizing filter	Reflector type	Operating range
1	yes	C 110	0.01 ... 3 m
2	no	C 110	0.01 ... 4 m



**Order information**

Type	Order no.
VL 18-2T 1162	6 022 092
VL 18-2T 1460	6 022 093
VL 18-2T 1132	6 022 090
VL 18-2T 1430	6 022 091
VL 18-2T 2162	6 011 377
VL 18-2T 2460	6 011 379
VL 18-2T 2132	6 011 376
VL 18-2T 2430	6 011 378

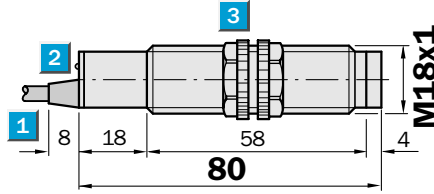
Scanning range  
22 m

Through-beam photoelectric switch

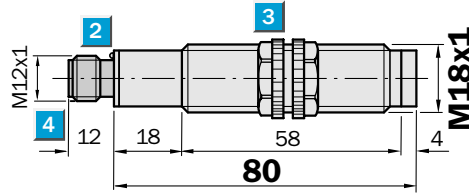
- Stable plastic housing
- Voltage supply 20...253 V AC;  
TRIAC switching output
- Cable or plug M 12, 4 pin

Dimensional drawing (mm)

VE 18-2T 1132  
VE 18-2T 2132  
VS 18-2U 3132



VE 18-2T 1430  
VE 18-2T 2430  
VS 18-2U 3430



- 1 Connecting cable
- 2 Signal strength indicator (VE)
- 3 Fastening nuts, width across 22 mm (included)
- 4 Equipment plug M 12, 4 pin



Connection type

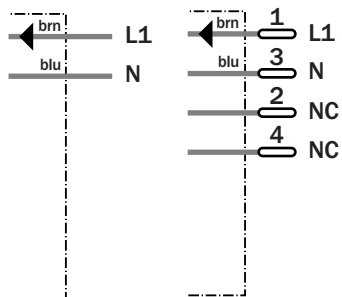
VS 18-2U 3132	VS 18-2U 3430	VE 18-2T 1132	VE 18-2T 1430
		VE 18-2T 2132	VE 18-2T 2430



<b>Accessories</b>	page
Connectors	24
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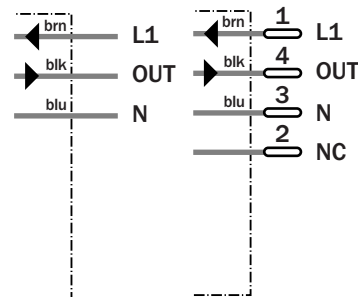
Sender VS 18-2

2 x 0.34 mm<sup>2</sup>    4 pin, M 12



Receiver VE 18-2

3 x 0.34 mm<sup>2</sup>    4 pin, M 12



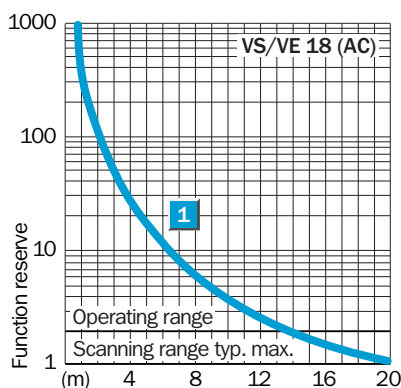
Technical data			VS/VE 18-2T	1132	2132	1430	2430						
<b>Housing</b>		Straight											
<b>Scanning range</b> , typ. max.		22 m											
<b>Recommended operating range</b>		16 m											
Light source <sup>1)</sup>		LED, infrared light											
Light spot diameter		Approx. 800 mm at a distance of 16 m											
Angle of dispersion, sender		Approx. 2.9°											
Angle of reception receiver		Approx. 20°											
<b>Supply voltage V<sub>S</sub></b> <sup>2)</sup>		20...253 V AC/50...60 Hz											
Current consumption <sup>3)</sup>	sender	≤ 30 mA											
	receiver	≤ 15 mA											
<b>Switching output</b>		TRIAC											
Switching current I <sub>A</sub> max.		5...300 mA											
	voltage drop	3 V max. (U = AC 250 V)											
	max. switching current	6 A/10 ms; f = 10 Hz											
	leakage current	Max. 1.5 mA (V <sub>S</sub> = AC 250 V)											
Switching voltage		V <sub>S</sub>											
Light receiver, switching mode		Light-switching											
		Dark-switching											
Response time <sup>4)</sup>		≤ 20 ms											
Switching frequency max. <sup>5)</sup>		25/s											
<b>Con. type</b>	con. cable	PVC, 2 m <sup>6)</sup>											
		Sender VS: 2 x 0.34 mm <sup>2</sup> , Ø 4.7 mm											
		Receiver VE: 3 x 0.34 mm <sup>2</sup> , Ø 4.7 mm											
	equipment plug	M 12, 4 pin											
<b>VDE protection class</b> <sup>7)</sup>		□											
<b>Circuit protection</b> <sup>8)</sup>		C											
<b>Enclosure rating</b>		IP 67											
<b>Ambient temperature</b>		-25...+70 °C											
<b>Weight</b>	with con. cable	Sender: approx. 95 g; receiver: approx. 95 g											
	with equipment plug	Sender: approx. 30 g; receiver: approx. 30 g											
<b>Housing material</b>		Housing : PBT/PC; optic: PMMA											

1) Average service life 100000 h at T<sub>J</sub> = +25 °C  
 2) Limit values

3) Without load  
 4) With resistive load  
 5) With light/dark ratio 1:1

6) Do not bend cable below 0 °C  
 7) Withstand voltage 250 V AC  
 8) C = Interference suppression

Operating range and function reserve



Order information

Type	Order no.
VS/VE 18-2T 1132	6 021 162
VS/VE 18-2T 1430	6 021 163
VS/VE 18-2T 2132	6 011 380
VS/VE 18-2T 2430	6 011 381

Dimension illustration and order informations

■ Pin assignment to EN 50044

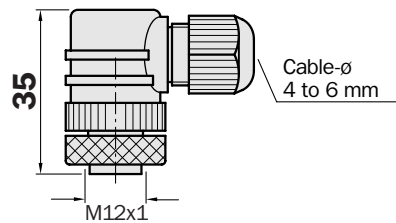
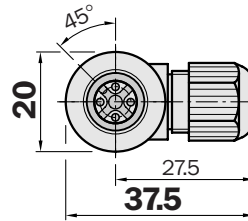
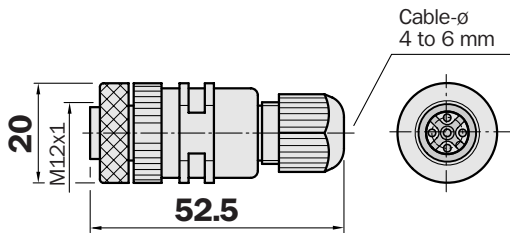
SENSICK circular screw system M 12, 4 pin, enclosure rating IP 67

M 12 cable receptacle, 4 pin, straight

Type	Order no.	Pins
DOS-1204-G	6 007 302 DC	4

M 12 cable receptacle, 4 pin, angled

Type	Order no.	Pins
DOS-1204-W	6 007 303 DC	4

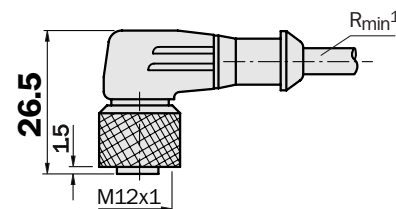
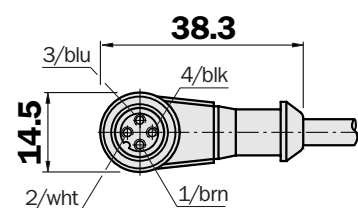
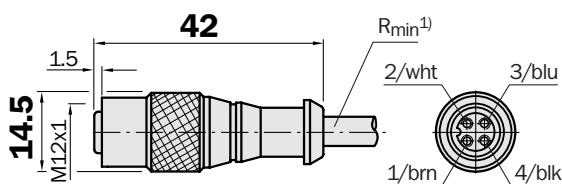


M 12 cable receptacle, 4 pin, straight

Type	Order no.	Pins	Cable length
DOL-1204-G02M	6 009 382	4	2 m
DOL-1204-G05M	6 009 866	4	5 m
DOL-1204-G10M	6 010 543	4	10 m

M 12 cable receptacle, 4 pin, angled

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

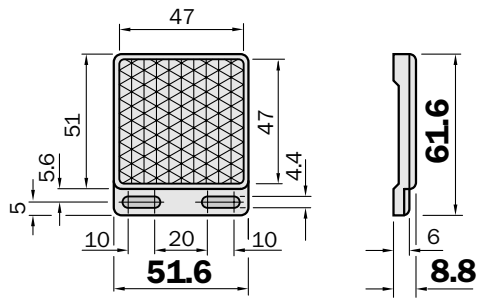


<sup>1)</sup> Minimum bending radius during dynamic use  
 $R_{min} = 20 \times \text{Cable diameter}$



**Reflector**

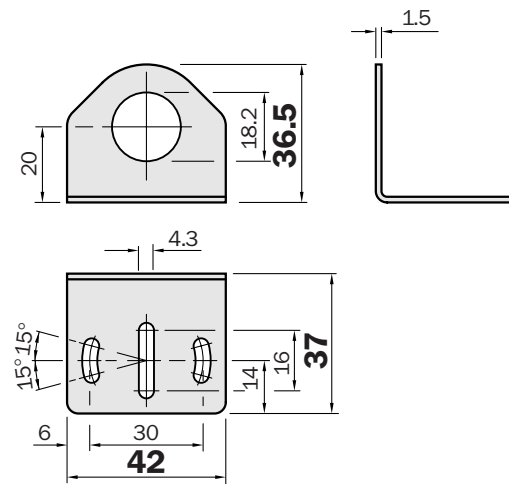
Type	Order no.
P 250	5 304 812



Included with VL 18.

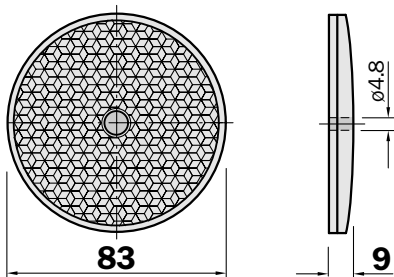
**Mounting bracket**

Type	Order no.
BEF-M18	5 308 446



**Reflector ø 83 mm, middle-hole fastening**

Type	Order no.
C 110	5 304 549



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