

V180-2 M18 Cylindrical Photoelectric Sensor Series

A rounded concept, not only economically.

Cylindrical photoelectric switches offer the benefits of very fast commissioning and compact design. Moreover, the V180-2 series is the answer to all commercial challenges requiring the use of cylindrical photoelectric switches.

Quick selection of the appropriate version: the product range is adapted to essential market requirements. Different versions are available: photoelectric proximity switches in three different scanning distance ranges, as well as photoelectric reflex switches and through-beam photoelectric switches. The matching product range allows fast and accurate selection of the correct version for the problem.

Top performance in a universal application environment: the scanning ranges and associated operating reserves provide reliable solutions for many applications. A fast response time also enables accurate detection in dynamic processes and for objects at high speeds.


Red light and visible light spot: the innovative red light sender diode assists with fast adjustment and commissioning, even in bright ambient conditions. The light spot is homogeneous and extremely bright, making alignment of the sensors to different objects very easy and comfortable in any situation.

360° display: operational performance can be visualised using the two LEDs on the sensor, enabling fast and direct feedback even when mounted in a restricted space.



Benefits at a glance

- Fast commissioning
- Compact design
- Fast response time
- Innovative red light sender diode
- 360° LED indication

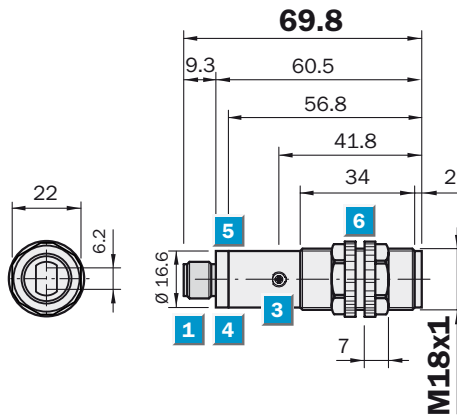
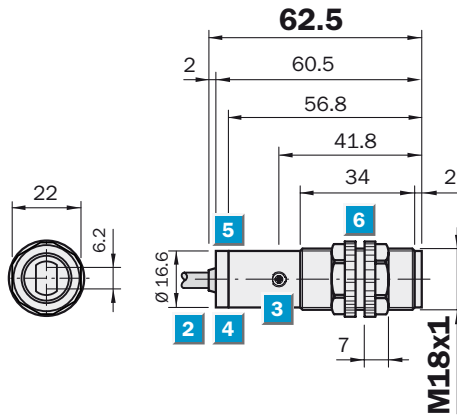
 **Scanning distance**
1 ... 140 mm

Photoelectric proximity sensor BGB

- Photoelectric proximity switches with focussed optics and background blanking (BGB)
- Red light as alignment aid
- Adjustable sensitivity
- LED indicator: switching output active and operation reserve

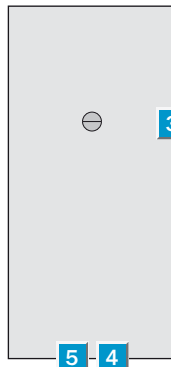


Dimensional drawing



Adjustments possible

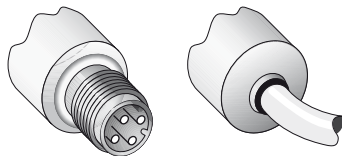
All types



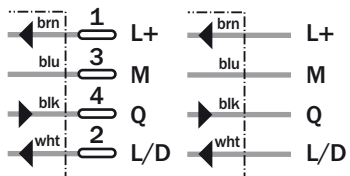
- 1** M12 plug, 4-pin
- 2** Connector cable 2 m
- 3** Sensitivity control 270°
- 4** Orange LED indicator: switching output active
- 5** Green LED indicator, Stability indicator:
 - LED lights continuously: light reception < 0.9/> 1.1
 - LED off: light reception > 0.9 ... < 1.1
- 6** Mounting nuts (2 x); SW22, PC

Connection types

VTF180-2N42417	VTF180-2N41117
VTF180-2P42417	VTF180-2P41117



4-pin, M12 4 x 0.18 mm²



Accessories

- Cables and connectors
- Mounting systems

Technical data		VTF180-2	P41117	P42417	N41117	N42417						
Scanning distance SD , typ. max. ¹⁾	1 ... 140 mm											
Operating distance SD ¹⁾	1 ... 100 mm											
Light spot diameter	Approx. 8 mm at 100 mm											
Angle of dispersion sender	Focussed approx. 7 mm at 60 mm											
Light source ²⁾ , light type	LED, red light, 645 nm											
Sensitivity adjustable	Potentiometer 270°											
Orange LED indicator	Switching output active											
Green LED indicator	Stability indicator light reception											
	LED lights continuously:											
	light reception < 0.9/> 1.1											
	LED off: light reception > 0.9 ... < 1.1											
Supply voltage V_s	10 ... 30 V DC ³⁾											
Residual ripple ⁴⁾	± 10 %											
Current consumption ⁵⁾	≤ 30 mA											
Switching outputs	Q: PNP, open collector											
Signal voltage PNP HIGH/LOW	V _s - 1.8 V _{max} /approx. 0 V											
	Q: NPN, open collector											
Signal voltage NPN HIGH/LOW	Approx. V _s / < 1.8 V											
Switching mode	Light-/dark-switching, selectable ⁶⁾											
Output current I_A max.	≤ 100 mA											
Response time ⁷⁾	≤ 0.5 ms											
Max. switching frequency ⁸⁾	1,000/s											
Connection type	Plug, M12, 4-pin											
	Cable ⁹⁾ , PVC, 2 m, 4 x 0.18 mm ² , Ø 3.8 mm											
VDE protection class	⊕											
Enclosure rating	IP 67											
Circuit protection¹⁰⁾	A, B, C											
Ambient temperature T_A	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
Weight	With plug M12, approx. 7 g											
	With cable, 2 m, approx. 90 g											
Housing material	Housing: PBT & PC											
	Optic: PMMA											

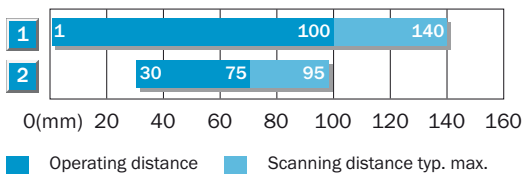
1) Object with 90 % remission (based on standard white DIN 5033); 100 x 100 mm
 2) Average service life 100,000 h at T_A = +25 °C

3) Limit values
 4) May not exceed or fall short of V_s tolerances
 5) Without load
 6) L/D-switching type control line:
 L/D = + V_s: light-switching L.ON
 L/D = 0 V: dark-switching D.ON

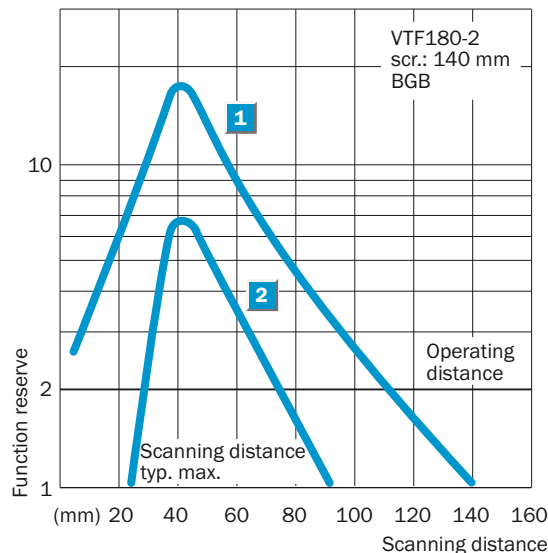
Control line open
 NPN: light-switching L.ON
 PNP: dark-switching D.ON
 7) Signal transit time with resistive load
 8) With light/dark ratio 1:1
 9) Do not bend below 0 °C

10) A = V_s connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Outputs overcurrent and short-circuit protected

Scanning distance



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



Order information

Type	Order no.
VTF180-2N41117	6037477
VTF180-2N42417	6037478
VTF180-2P41117	6037479
VTF180-2P42417	6037480

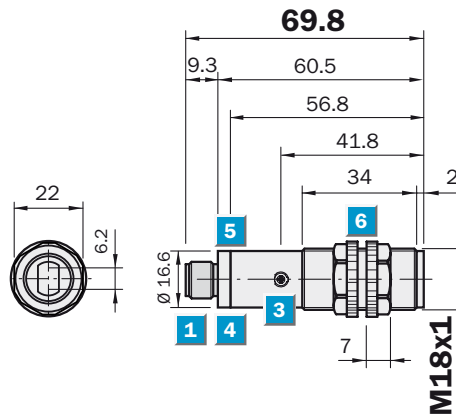
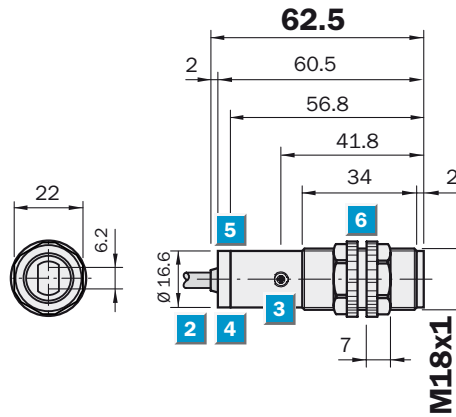
Scanning distance
1 ... 450 mm

Photoelectric proximity sensor, energetic

- Photoelectric proximity switches with focussed optics and background blanking (BGB)
- Red light as alignment aid
- Sensitivity adjustable
- LED indicator: switching output active and operation reserve

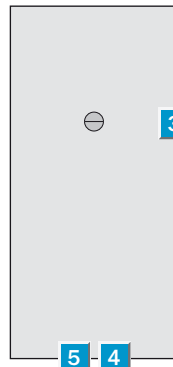


Dimensional drawing



Adjustments possible

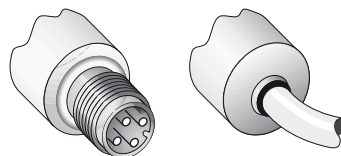
All types



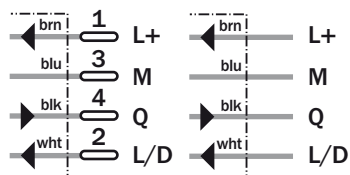
- 1** M12 plug, 4-pin
- 2** Connector cable 2 m
- 3** Sensitivity control 270°
- 4** Orange LED indicator: switching output active
- 5** Green LED indicator, Stability indicator:
 - LED lights continuously: light reception < 0.9 / > 1.1
 - LED off: light reception > 0.9 ... < 1.1
- 6** Mounting nuts (2 x); SW22, PC

Connection types

VTE180-2N42447	VTE180-2N41147
VTE180-2P42447	VTE180-2P41147



4-pin, M12 4 x 0.18 mm²

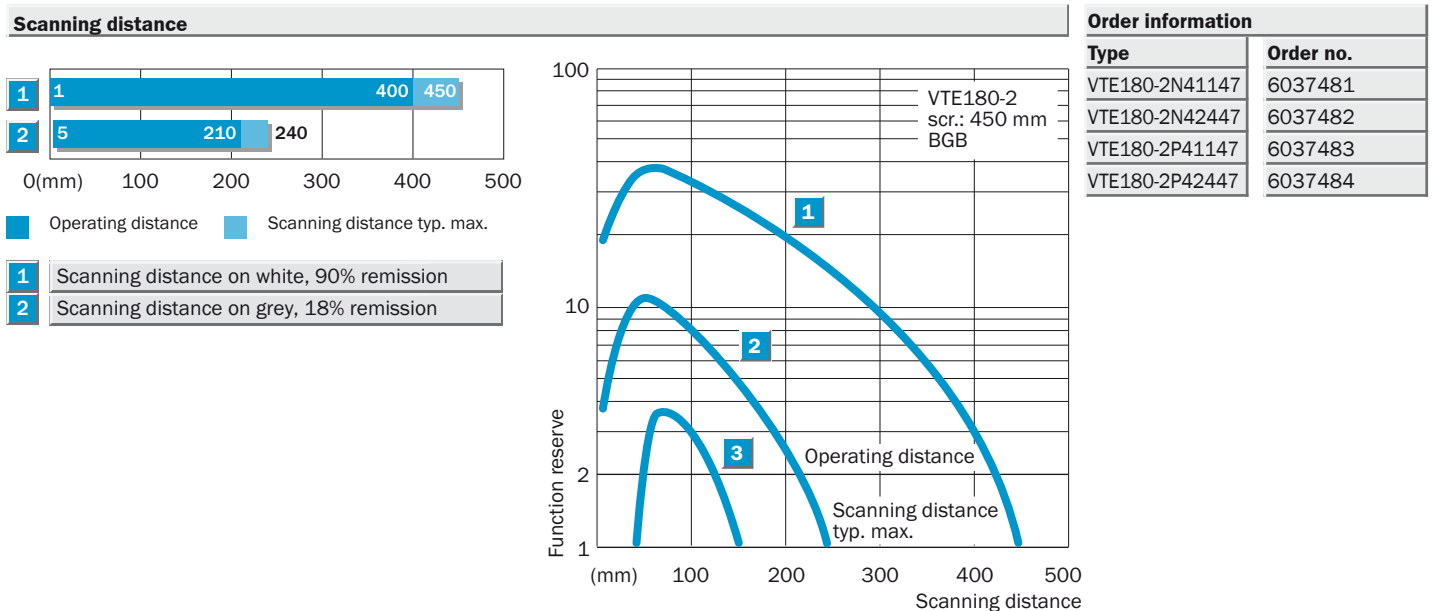


Accessories

Cables and connectors
Mounting systems

Technical data		VTE180-2	P41147	P42447	N41147	N42447						
Scanning distance SD, typ. max. ¹⁾	1 ... 450 mm											
Operating distance SD ¹⁾	1 ... 400 mm											
Light spot diameter	Approx. 20 mm at 400 mm											
Angle of dispersion sender	Approx. 1.5°											
Light source ²⁾ , light type	LED, red light, 645 nm											
Sensitivity adjustable	Potentiometer 270°											
Orange LED indicator	Switching output active											
Green LED indicator	Stability indicator light reception											
	LED lights continuously:											
	light reception < 0.9/> 1.1											
	LED off: light reception > 0.9 ... < 1.1											
Supply voltage V_s	10 ... 30 V DC ³⁾											
Residual ripple ⁴⁾	± 10 %											
Current consumption ⁵⁾	≤ 30 mA											
Switching outputs	Q: PNP, open collector											
Signal voltage PNP HIGH/LOW	V _s - 1.8 V _{max} /approx. 0 V											
	Q: NPN, open collector											
Signal voltage NPN HIGH/LOW	Approx. V _s / < 1.8 V											
Switching mode	Light-/dark-switching, selectable ⁶⁾											
Output current I_A max.	≤ 100 mA											
Response time ⁷⁾	≤ 0.5 ms											
Max. switching frequency ⁸⁾	1,000/s											
Connection type	Plug, M12, 4-pin											
	Cable ⁹⁾ , PVC, 2 m, 4 x 0.18 mm ² , Ø 3.8 mm											
VDE protection class	⊕											
Enclosure rating	IP 67											
Circuit protection¹⁰⁾	A, B, C											
Ambient temperature T_A	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
Weight	With plug M12, approx. 7 g											
	With cable, 2 m, approx. 90 g											
Housing material	Housing: PBT & PC											
	Optic: PMMA											

- 1) Object with 90 % remission (based on standard white DIN 5033); 100 x 100 mm
- 2) Average service life 100,000 h at T_A = +25 °C
- 3) Limit values
- 4) May not exceed or fall short of V_s tolerances
- 5) Without load
- 6) L/D-switching type control line: L/D = + V_s: light-switching L.ON
L/D = 0 V: dark-switching D.ON
- 7) Signal transit time with resistive load
- 8) With light/dark ratio 1:1
- 9) Do not bend below 0 °C
- 10) A = V_s connections reverse-polarity protected
B = Inputs and outputs reverse-polarity protected
C = Outputs overcurrent and short-circuit protected



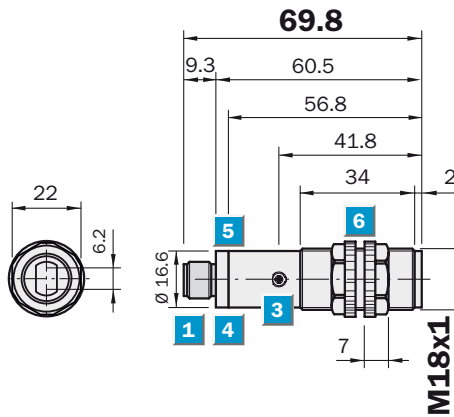
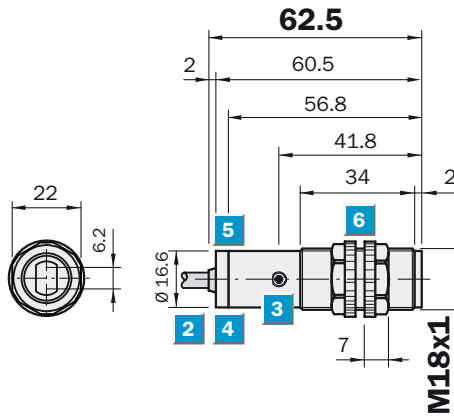
Scanning distance
1 ... 1,100 mm

Photoelectric proximity sensor, energetic

- Photoelectric proximity sensors, energetic
- Large scanning distance
- Red light as alignment aid
- Sensitivity adjustable
- LED indicator: switching output active and operation reserve

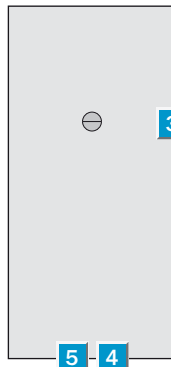


Dimensional drawing



Adjustments possible

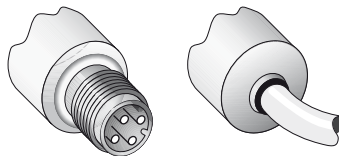
All types



- 1** M12 plug, 4-pin
- 2** Connector cable 2 m
- 3** Sensitivity control 270°
- 4** Orange LED indicator: switching output active
- 5** Green LED indicator, Stability indicator:
 - LED lights continuously: light reception < 0.9 / > 1.1
 - LED off: light reception > 0.9 ... < 1.1
- 6** Mounting nuts (2 x); SW22, PC

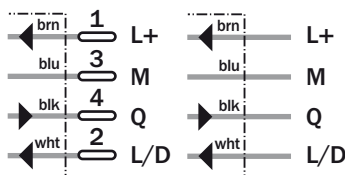
Connection types

VTE180-2N42487	VTE180-2N41187
VTE180-2P42487	VTE180-2P41187



4-pin, M12

4 x 0.18 mm²

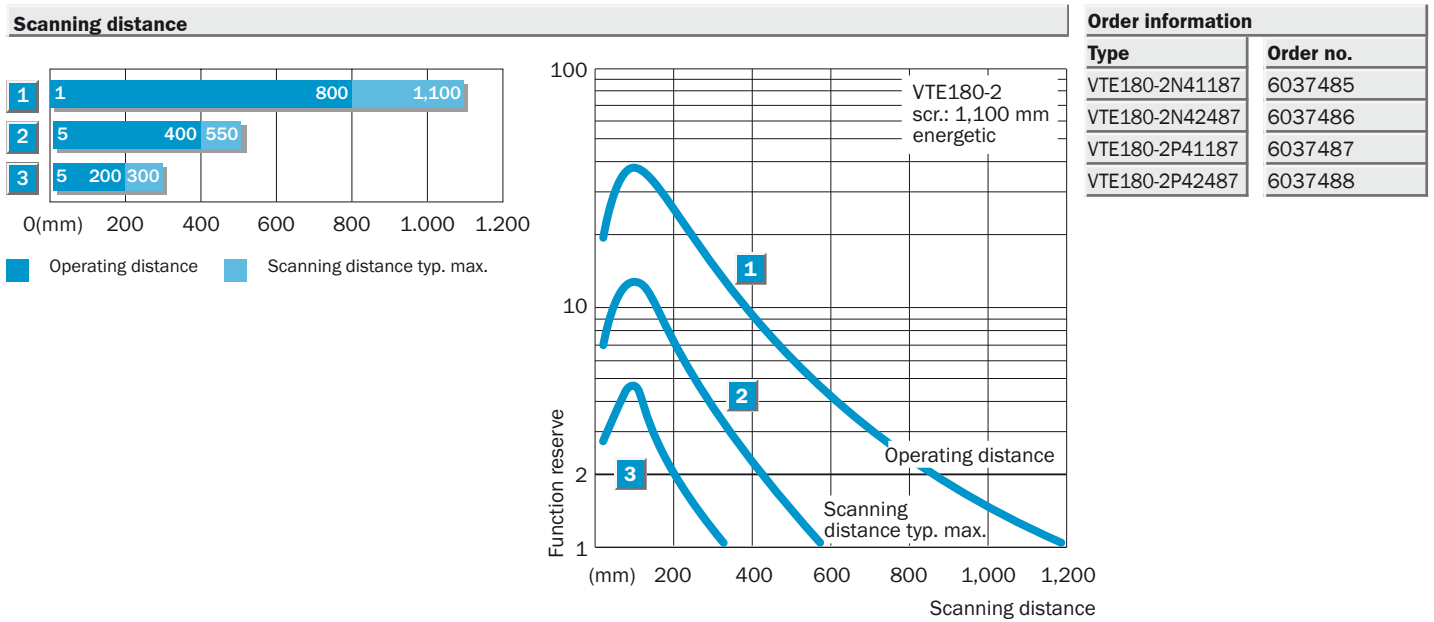


Accessories

- Cables and connectors
- Mounting systems

Technical data		VTE180-2	P41187	P42487	N41187	N42487						
Scanning distance SD , typ. max. ¹⁾	1 ... 1,100 mm											
Operating distance SD ¹⁾	1 ... 800 mm											
Light spot diameter	Approx. 30 mm at 800 mm											
Angle of dispersion sender	Approx. 1.2°											
Light source ²⁾ , light type	LED, red light, 645 nm											
Sensitivity adjustable	Potentiometer 270°											
Orange LED indicator	Switching output active											
Green LED indicator	Stability indicator light reception											
	LED lights continuously:											
	light reception < 0.9/> 1.1											
	LED off: light reception > 0.9 ... < 1.1											
Supply voltage V_S	10 ... 30 V DC ³⁾											
Residual ripple ⁴⁾	± 10 %											
Current consumption ⁵⁾	≤ 30 mA											
Switching outputs	Q: PNP, open collector											
Signal voltage PNP HIGH/LOW	V _S - 1.8 V _{max} /approx. 0 V											
	Q: NPN, open collector											
Signal voltage NPN HIGH/LOW	Approx. V _S / < 1.8 V											
Switching mode	Light-/dark-switching, selectable ⁶⁾											
Output current I_A max.	≤ 100 mA											
Response time ⁷⁾	≤ 0.5 ms											
Max. switching frequency ⁸⁾	1,000/s											
Connection type	Plug, M12, 4-pin											
	Cable ⁹⁾ , PVC, 2 m, 4 x 0.18 mm ² , Ø 3.8 mm											
VDE protection class	⊕											
Enclosure rating	IP 67											
Circuit protection¹⁰⁾	A, B, C											
Ambient temperature T_A	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
Weight	With plug M12, approx. 7 g											
	With cable, 2 m, approx. 90 g											
Housing material	Housing: PBT & PC											
	Optic: PMMA											

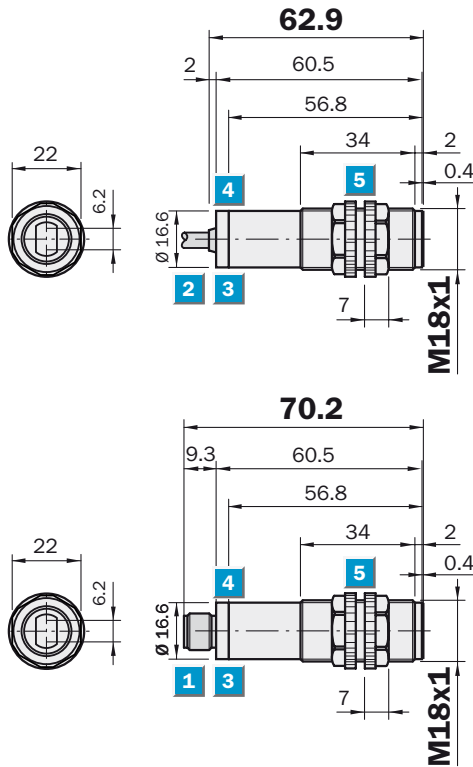
- 1) Object with 90 % remission (based on standard white DIN 5033); 100 x 100 mm
- 2) Average service life 100,000 h at T_A = +25 °C
- 3) Limit values
- 4) May not exceed or fall short of V_S tolerances
- 5) Without load
- 6) L/D-switching type control line: L/D = + V_S: light-switching L.ON
L/D = 0 V: dark-switching D.ON
- 7) Signal transit time with resistive load
- 8) With light/dark ratio 1:1
- 9) Do not bend below 0 °C
- 10) A = V_S connections reverse-polarity protected
B = Inputs and outputs reverse-polarity protected
C = Outputs overcurrent and short-circuit protected



	Scanning range 0.05 ... 7 m (PL80A)
Photoelectric reflex sensor	

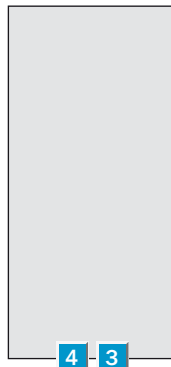
- Polarizing filter for reliable detection of shiny surfaces
- LED indicator: switching output active and operation reserve
- Large ranges
- Red light as alignment aid

Dimensional drawing



Adjustments possible

All types

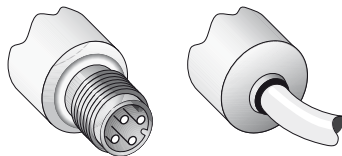


- 1** M12 plug, 4-pin
- 2** Connector cable 2 m
- 3** Orange LED indicator: switching output active
- 4** Green LED indicator, Stability indicator:
 - LED lights continuously: light reception < 0.9 / > 1.1
 - LED off: light reception > 0.9 ... < 1.1
- 5** Mounting nuts (2 x); SW22, PC



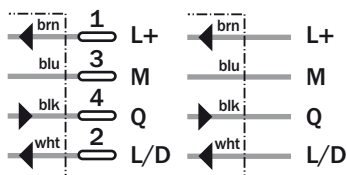
Connection types

VL180-2N42436	VL180-2N41136
VL180-2P42436	VL180-2P41136



4-pin, M12

4 x 0.18 mm²



Accessories
Cables and connectors
Mounting systems
Reflectors

Technical data	VL180-2	P41136	P42436	N41136	N42436						
Scanning range SR , typ. max./reflect.	0.05 ... 7 m (PL80A)/... 6 m (P250) ⁴⁾										
Operating range ⁴⁾	0.05 ... 6 m (PL80A)/... 6 m (P250) ⁴⁾										
Light spot diameter	Approx. 400 mm at 6 m										
Angle of dispersion sender	Approx. 4.5°										
Light source ²⁾ , light type	LED, red light, 645 nm										
Polarizing filter	Yes										
Orange LED indicator	Switching output active										
Green LED indicator	Stability indicator light reception										
	LED lights continuously:										
	light reception < 0.9/> 1.1										
	LED off: light reception > 0.9 ... < 1.1										
Supply voltage V_S	10 ... 30 V DC ³⁾										
Residual ripple ⁴⁾	± 10 %										
Current consumption ⁵⁾	≤ 30 mA										
Switching outputs	Q: PNP, open collector										
Signal voltage PNP HIGH/LOW	V _S - 1.8 V _{max} /approx. 0 V										
	Q: NPN, open collector										
Signal voltage NPN HIGH/LOW	Approx. V _S / < 1.8 V										
Switching mode	Light-/dark-switching, selectable ⁶⁾										
Output current I_A max.	≤ 100 mA										
Response time ⁷⁾	≤ 0.5 ms										
Max. switching frequency ⁸⁾	1,000/s										
Connection type	Plug, M12, 4-pin										
	Cable ⁹⁾ , PVC, 2 m, 4 x 0.18 mm ² , Ø 3.8 mm										
VDE protection class	⊕										
Enclosure rating	IP 67										
Circuit protection ¹⁰⁾	A, B, C										
Ambient temperature T_A	Operation -25 °C ... +55 °C										
	Storage -40 °C ... +70 °C										
Weight	With plug M12, approx. 7 g										
	With cable, 2 m, approx. 90 g										
Housing material	Housing: PBT & PC										
	Optic: PMMA										

1) Reflector P250 included with delivery VL180-2
 2) Average service life 100,000 h at T_A = +25 °C
 3) Limit values

4) May not exceed or fall short of V_S tolerances
 5) Without load
 6) L/D-switching type control line:
 L/D = + V_S: light-switching L.ON
 L/D = 0 V: dark-switching D.ON

Control line open
 NPN: light-switching L.ON
 PNP: dark-switching D.ON
 7) Signal transit time with resistive load
 8) With light/dark ratio 1:1
 9) Do not bend below 0 °C

10) A = V_S connections reverse-polarity protected
 B = Inputs and outputs reverse-polarity protected
 C = Outputs overcurrent and short-circuit protected

Scanning range and operating reserve		Order information	
1	0.05 ... 6.0 ... 7.0	Type	Order no.*
2	0.05 ... 4.5 ... 6.0	VL180-2N41136	6037493
3	0.05 ... 3.5 ... 4.5	VL180-2N42436	6037494
4	0.05 ... 2.3 ... 3.0	VL180-2P41136	6037495
5	0.05 ... 1.8 ... 2.2	VL180-2P42436	6037496
6	0.1 ... 1.4 ... 1.8		

Reflector type	Operating range
1 PL80A	0.05 ... 6.0 m
2 P250, PL40A, PL50A, C110A	0.05 ... 4.5 m
3 PL30A, PL31A	0.05 ... 3.5 m
4 PL20A	0.05 ... 2.3 m
5 P45	0.05 ... 1.8 m
6 Reflective tape Diamond Grade	0.1 ... 1.4 m (100 x 100 mm ²)

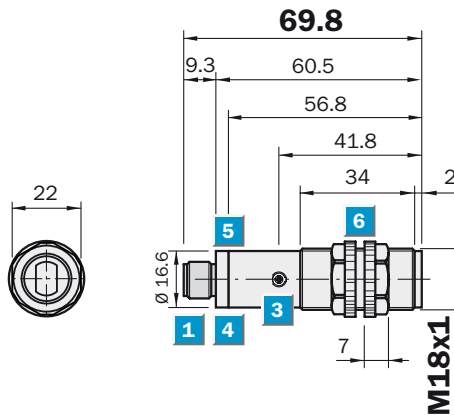
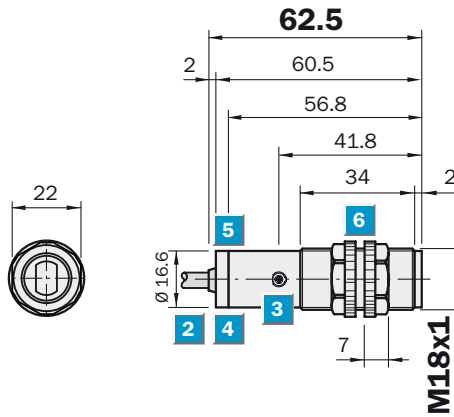
Scanning range
0 ... 28 m

Through-beam photoelectric sensor

- Very large scanning ranges
- Sensitivity adjustable
- LED indicator VE180-2: switching output active and operation reserve
- Red light as alignment aid

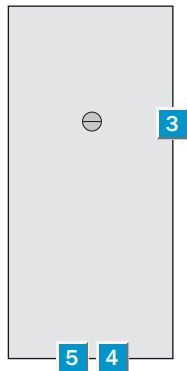


Dimensional drawing



Adjustments possible

All types



- M12 plug, 4-pin
- Connector cable 2 m
- Sensitivity control 270°, only VE180-2
- Orange LED indicator, only VE180-2: switching output active
- Green LED indicator, only VE180-2, Stability indicator:
 - LED lights continuously: light reception < 0.9 / > 1.1
 - LED off: light reception > 0.9 ... < 1.1
- Mounting nuts (2 x); SW22, PC

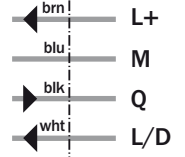
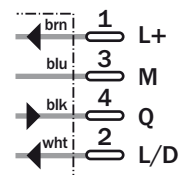
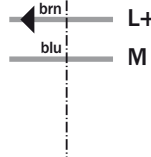
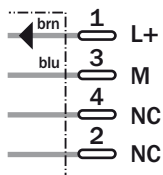
Connection types

VSE180-2N42437	VSE180-2N41137	VSE180-2N42437	VSE180-2N41137
VSE180-2P42437	VSE180-2P41137	VSE180-2P42437	VSE180-2P41137



Accessories
Cables and connectors
Mounting systems

Sender	4-pin, M12	2 x 0.18 mm ²	Receiver	4-pin, M12	4 x 0.18 mm ²
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Technical data		VSE180-2	P41137	P42437	N41137	N42437						
Scanning range SR, typ. max./reflect.	0 ... 28 m											
Operating range ¹⁾	0 ... 20 m											
Light spot diameter	Approx. 1,100 mm at 20 m											
Angle of dispersion sender	Approx. 5°											
Light source ¹⁾ , light type	LED, red light, 645 nm											
Sensitivity adjustable	Receiver VE180-2: Potentiometer 270°											
Orange LED indicator	Switching output active											
Green LED indicator	Stability indicator light reception											
	LED lights continuously:											
	light reception < 0.9/> 1.1											
	LED off: light reception > 0.9 ... < 1.1											
Supply voltage V _s	10 ... 30 V DC ²⁾											
Residual ripple ³⁾	± 10 %											
Stromaufnahme Sender ⁴⁾	≤ 20 mA											
Stromaufnahme Receiver ⁴⁾	≤ 15 mA											
Switching outputs	Q: PNP, open collector											
Signal voltage PNP HIGH/LOW	V _s - 1.8 V _{max} /approx. 0 V											
	Q: NPN, open collector											
Signal voltage NPN HIGH/LOW	Approx. V _s / < 1.8 V											
Switching mode Receiver	Light-/dark-switching, selectable ⁵⁾											
Output current I _A max.	≤ 100 mA											
Response time ⁶⁾	≤ 0.5 ms											
Max. switching frequency ⁷⁾	1,000/s											
Connection type	Plug, M12, 4-pin											
Sender	Cable ⁹⁾ , PVC, 2 m, 2 x 0.18 mm ² , Ø 3.8 mm											
Receiver	Cable ⁹⁾ , PVC, 2 m, 4 x 0.18 mm ² , Ø 3.8 mm											
VDE protection class	⊠											
Enclosure rating	IP 67											
Circuit protection ¹⁰⁾	A, B, C											
Ambient temperature T _A	Operation -25 °C ... +55 °C											
	Storage -40 °C ... +70 °C											
Weight, Sender and Receiver, each approx.	With plug M12, 10 g											
	With cable, 2 m, 100 g											
Housing material	Housing: PBT & PC											
	Optic: PMMA											

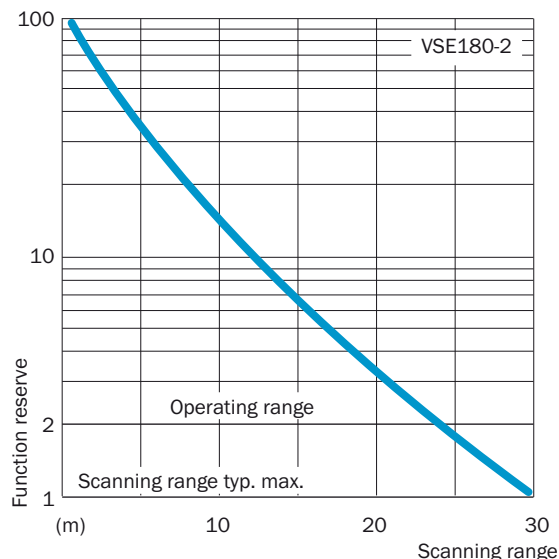
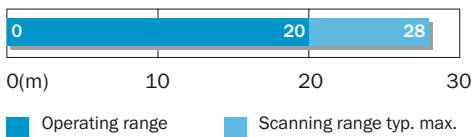
¹⁾ Average service life 100,000 h at T_A = +25 °C
²⁾ Limit values
³⁾ May not exceed or fall short of V_s tolerances
⁴⁾ Without load

⁵⁾ L/D-switching type control line:
 L/D = + V_s: light-switching L.ON
 L/D = 0 V: dark-switching D.ON
 Control line open
 NPN: light-switching L.ON
 PNP: dark-switching D.ON

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 and outputs reverse-polarity protected
 C = Outputs overcurrent and short-circuit protected

Scanning range and operating reserve



Order information

Type	Order no. ¹⁰⁾
VSE180-2N41137	6037497
VSE180-2N42437	6037498
VSE180-2P41137	6037499
VSE180-2P42437	6037500

¹⁰⁾ Order no. includes sender and receiver (pair)

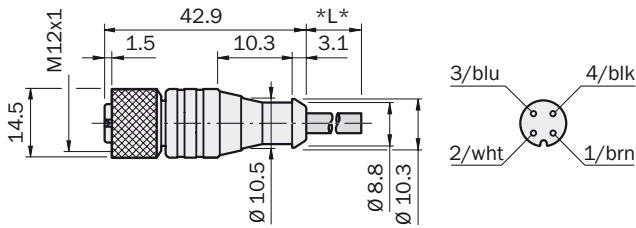
Dimensional drawings and order information

SENSICK screw-in system M12, 4-pin, Enclosure rating IP 67

Female connector M12, 4-pin, straight¹⁾

Cable diameter 5 mm, 4 x 0.25 mm², sheath PVC

Type	Order no.	Contacts	Cable length *L*
DOL-1204-G02M	6009382	4	2 m
DOL-1204-G05M	6009866	4	5 m
DOL-1204-G10M	6010543	4	10 m
DOL-1204-G15M	6010753	4	15 m

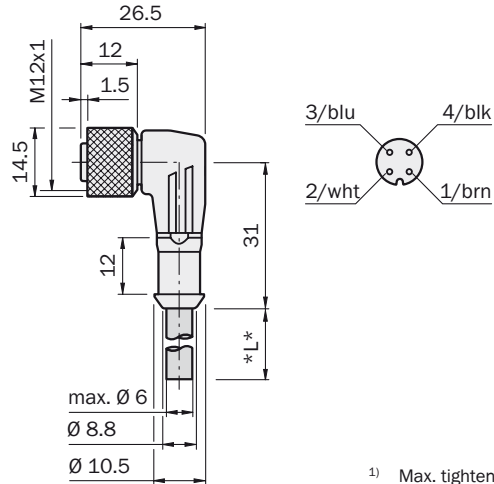


¹⁾ Max. tightening torque 0.5 Nm

Female connector M12, 4-pin, angled¹⁾

Cable diameter 5 mm, 4 x 0.25 mm², sheath PVC

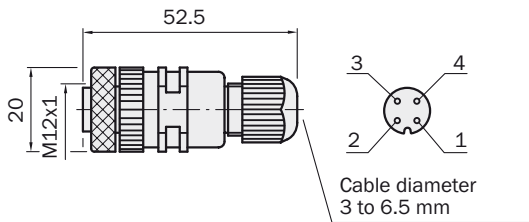
Type	Order no.	Contacts	Cable length *L*
DOL-1204-W02M	6009383	4	2 m
DOL-1204-W05M	6009867	4	5 m
DOL-1204-W10M	6010541	4	10 m



¹⁾ Max. tightening torque 0.5 Nm

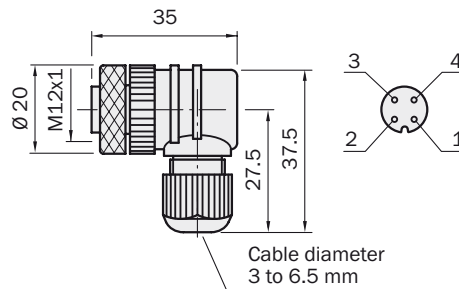
Female connector M12, 4-pin, straight²⁾

Type	Order no.	Contacts	Can be adapted for cables Ø 4.5 to 6.5 mm
DOS-1204-G	6007302	4	



Female connector M12, 4-pin, angled²⁾

Type	Order no.	Contacts	Can be adapted for cables Ø 4.5 to 6.5 mm
DOS-1204-W	6007303	4	

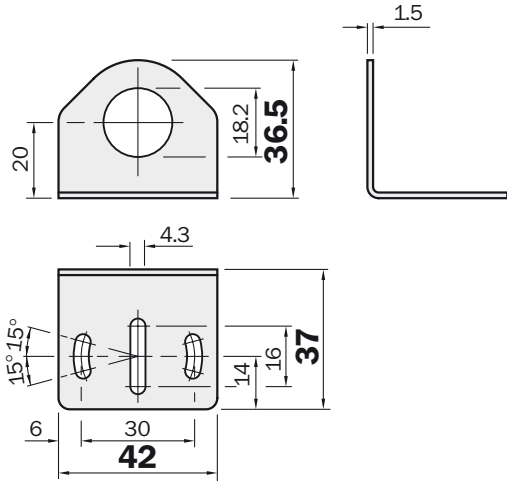


Dimensional drawings and order information

Mounting systems

Mounting bracket

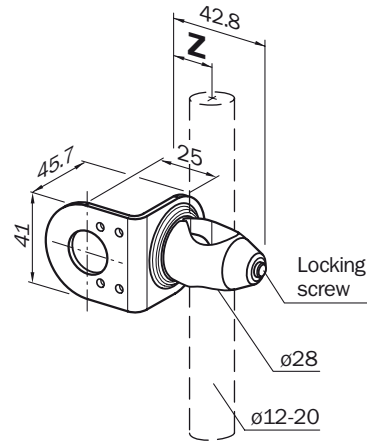
Type	Order no.
BEF-WN-M18	5308446



Universal bracket (rod mounting) for sensors

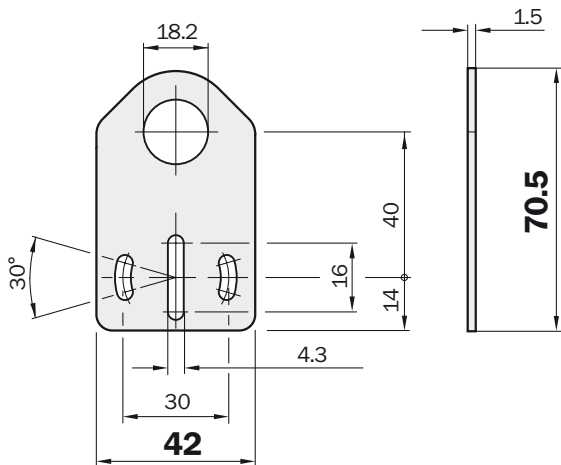
Distance Z: bar centre - inner plate surface

Type	Order no.	Bar-Ø (mm)	Distance Z (mm)
BEF-KHS-H01	2022465	12	15.0
		14	16.4
		15	17.1
		18	19.2
		20	20.7

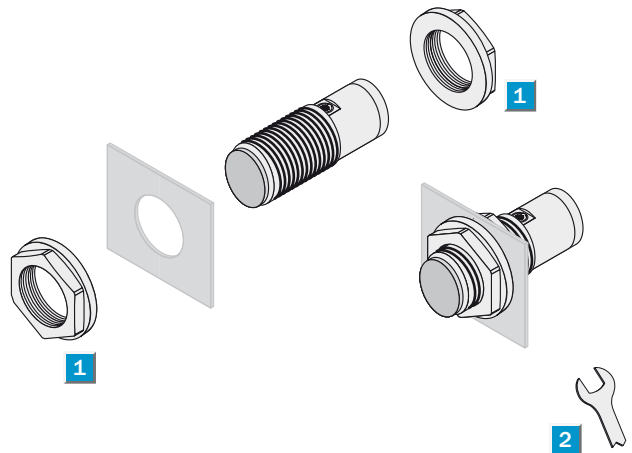


Mounting plate, steel, galvanised

Type	Order no.
BEF-WG-M18	5321870



Mounting kit for V180-2 (included with delivery)



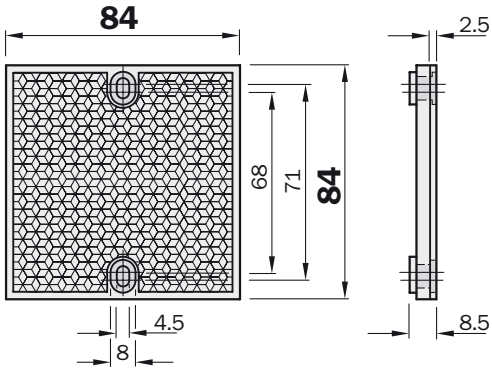
- 1 2 x locknuts, RDL M18x1 (SW22) (4040270) supplied with V180-2
- 2 Maximum torque 1.5 Nm

Dimensional drawings and order information

Reflectors for V180-2, plastic design for temperatures up to 65 °C

Reflector 80 x 80 mm, screwable

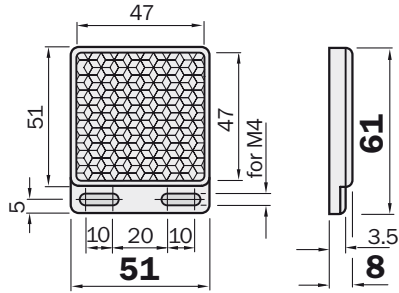
Type	Order no.
PL80A	1003865



Reflector 47 x 47 mm, screwable

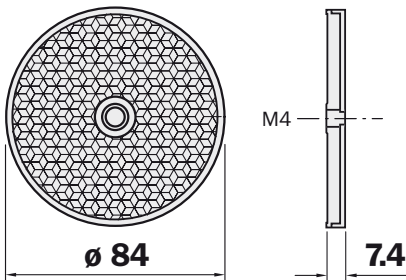
Type	Order no.
P250	5304812*

* included with delivery VL180-2



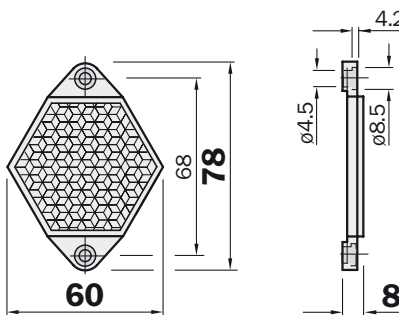
Reflector, diameter 83 mm, center hole mounting

Type	Order no.
C110A	5304549



Reflector, 6-sided, width across flats 48 mm

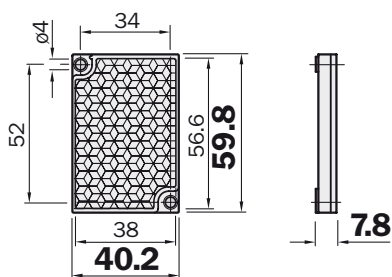
Type	Order no.
PL50A	1000132



Also available in heatable model:
 Permanent heating: PL50HK,
 Order no. 1001545
 Controlled heating: PL50HS
 Order no. 1009871

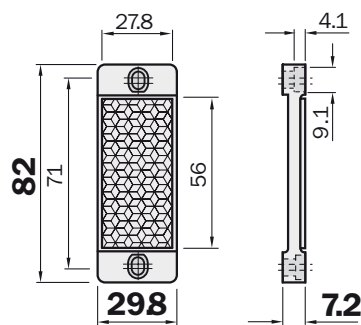
Reflector 38 x 56 mm, screwable

Type	Order no.
PL40A	1012720



Reflector 28 x 56 mm, screwable

Type	Order no.
PL30A	1002314

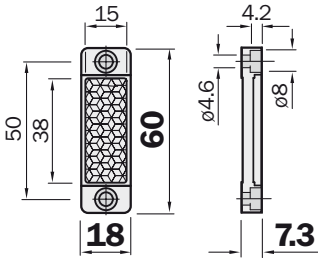


Dimensional drawings and order information

Reflectors for V180-2, plastic design for temperatures up to 65 °C

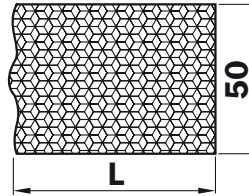
Reflector 15 x 38 mm, screwable

Type	Order no.
PL20A	1012719



Reflective tape

Type	Order no.	
REF-Plus-R50	5319981	Roll: 50 mm x 22.8 m
REF-Plus-R50-K	4051185	Cut to size: 50 mm x L (mm)



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