

V18V

Photoelectric Sensors for Food & Beverage

Sensors have to be this robust and multifaceted.

Thanks to its consistent design and selection of optimized materials, the photoelectric sensor series V18V for Food & Beverage is suitable for substantial industrial loads, for example,

- Chemical cleaning processes,
- High ambient operating temperatures,
- High water pressure and high humidity,
- Corrosive media.

Certificates from independent institutes confirm:

- ECOLAB,
- JohnsonDiversey,
- Enclosure rating IP 69K according to DIN 40050.

The High-Light V18V:

Sensitivity adjustment via Touch-Teach-in. The unique patented teach-in method permits the sensor to be adapted to each application without mechanical controls. This means that all mechanical components (seals, potentiometer, etc.) are no longer needed. A sensor housing made of 100 % stainless steel 316L is all that remains.

The V18V stainless steel photoelectric sensors and their ranges in overview:

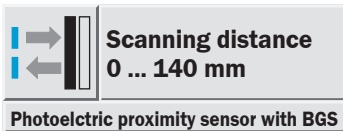
- VS/VE18V through-beam photoelectric sensors: Scanning range 25 m,
- VL18V photoelectric reflex sensor: Scanning range 5 m (PL80A),
- VL18V photoelectric reflex sensor for detecting transparent objects: Scanning range 4.5 m (PL80A),
- VT18V photoelectric proximity sensor, energetic: Scanning ranges 100 mm, 400 mm, 800 mm (90 % reflectance),
- VTB18V photoelectric proximity sensor, with background suppression and adjustable scanning distance: scanning distances 140 mm (standard) and 100 mm (small light spot), 90 % remission.

The V18V Food & Beverage can be used universally. Applications in the areas of foodstuffs production, beverage production, pharmaceuticals and corresponding packaging lines are special focal points.



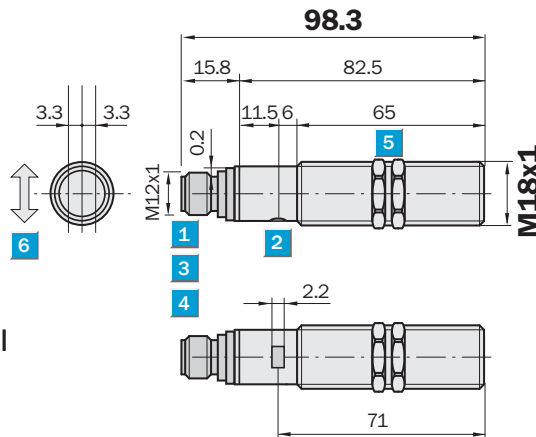
Features

- Wash-down design: resistant against detergents, humidity and temperature
- Hygienic design: Stainless steel housing & suitable, FDA certified synthetic materials



- Precise background suppression
- Patented Touch-Teach-in: Sensitivity adjustment on equipment, but without mechanical operation elements
- Transition zone between scanning distance/background suppression very small and largely independent of materials
- High switching frequency up to 1,000 Hz
- Visible emitted light red LED with small light spot

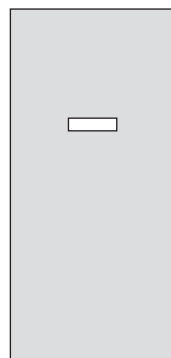
Dimensional drawing



Adjustments possible

VTB18-4P1240V

VTB18-4N1240V



- 1 Plug M12, 4-pin
- 2 Scanning distance adjuster Touch-Teach-in
- 3 Green LED indicator: signaling Touch-Teach-in
- 4 Yellow LED indicator: light received
 - lights continuously: reception signal > reserve factor 2
 - blinks: reception signal < reserve factor 2, but > switching threshold 1
- 5 Mounting nuts (2x); SW 24, stainless steel 316L (included with delivery)
- 6 Standard direction of material being scanned



ECOLAB®
JohnsonDiversey



IP 69K according to DIN 40050

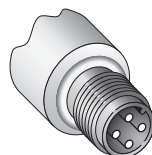
Stainless Steel



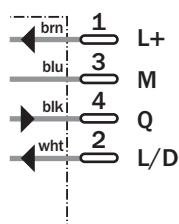
Connection type

VTB18-4P1240V

VTB18-4N1240V



M12, 4-pin



Accessories

Cables and connectors

Mounting systems

Technical data		VTB18-	4P1240V	4N1240V										
Scanning distance , typ. max. ¹⁾		0 ... 140 mm												
Operating distance, adjustable ¹⁾		Min. 20 ... 30 mm/max. 0 ... 130 mm												
Light spot diameter		Approx. 10 mm at 60 mm distance/ Approx. 15 mm at 130 mm distance												
Light source ²⁾ , light type		LED, red, 660 nm												
Scanning distance setting		Manual, via Touch-Teach-in ³⁾												
Visualizing Touch-Teach-in		LED green												
Light reception indicator		LED yellow:												
		Lights continuously: reserve factor >2												
		Blinks: reserve factor >1.0 ... <2.0												
Supply voltage V_s		10 ... 30 V DC ⁴⁾												
Residual ripple ⁵⁾		≤ 10 %												
Current consumption ⁶⁾		≤ 50 mA												
Switching outputs		Q: PNP, open collector												
		Q: NPN, open collector												
Signal voltage	PNP	Approx. V_s -2.0 V/approx. 0 V												
	NPN	Approx. V_s /≤ 2.0 V												
Switching mode		Light-/dark-switching, selectable ⁷⁾												
Output current I_A max.		≤ 100 mA												
Response time ⁸⁾		≤ 0.5 ms												
Max. switching frequency ⁹⁾		1,000/s												
Connection type		Plug M12, 4-pin ¹⁰⁾												
VDE protection class		⚡												
Enclosure rating		IP 67, IP 68, IP 69K ¹¹⁾												
Certificates ¹²⁾		ECOLAB, JohnsonDiversey												
Circuit protection ¹³⁾		A, B, C, D												
Ambient temperature	Operation	-25 °C ... +80 °C (continuous operating)												
	Operation	-25 °C ... +100 °C (max. 15 min)												
	Storage	-40 °C ... +80 °C												
Weight		Approx. 120 g												
Housing		M18												
Housing material	Housing:	Stainless steel AISI 316L/1.4404												
	Device plug:	M12, PPS (Grilamid) FDA ¹⁴⁾												
Optic:		Plan, PPS (Grilamid) FDA ¹⁴⁾												

¹⁾ Object to be detected with 90 % remission (relating to standard white in acc. with DIN 5033); 100 x 100 mm

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

³⁾ Patent number: M02007A00275
Date: 31.08.2007

⁴⁾ Limit values

⁵⁾ May not exceed or fall short of V_s tolerances

⁶⁾ Without load, at V_s 30 V DC

⁷⁾ 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

⁸⁾ Signal transit time with resistive load

⁹⁾ With light/dark ratio 1:1

¹⁰⁾ Pins gold plated

¹¹⁾ With correct mounted IP 69K connector

¹²⁾ Refer to the corresponding certificates for details

¹³⁾ A = V_s connections reverse-polarity protected

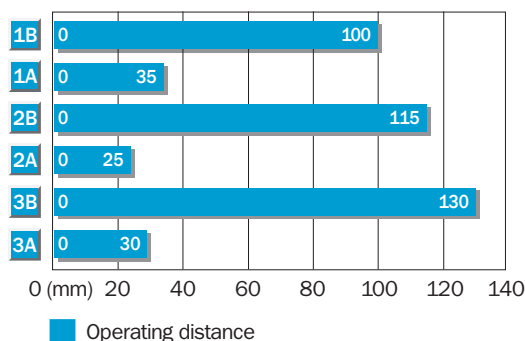
B = Inputs and output reverse-polarity protected

C = Interference pulse suppression

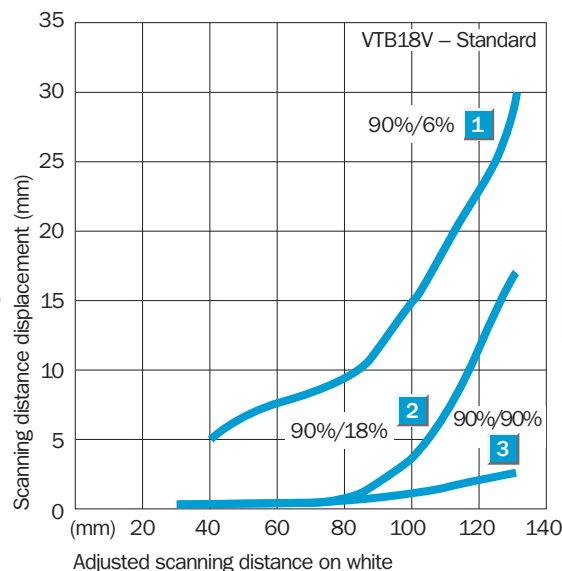
D = Outputs overload and short-circuit protected

¹⁴⁾ PPS with FDA certificate

Scanning distance

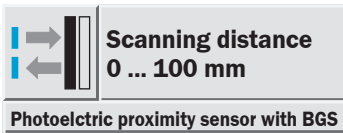


- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission
- A Scanning distance adjuster on MIN
- B Scanning distance adjuster on MAX



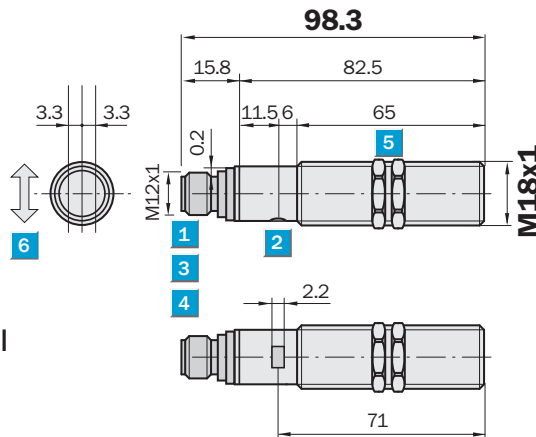
Order information

Type	Order no.
VTB18-4P1740V	6035493
VTB18-4N1740V	6035494



- Precise background suppression
- Patented Touch-Teach-in: Sensitivity adjustment on equipment, but without mechanical operation elements
- Transition zone between scanning distance/background suppression very small and largely independent of materials
- For detecting small parts
- Visible emitted light red LED with smallest light spot

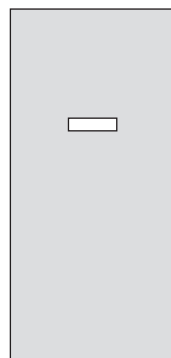
Dimensional drawing



Adjustments possible

VTB18-4P1240VS01

VTB18-4N1240VS01



- 1 Plug M12, 4-pin
- 2 Scanning distance adjuster Touch-Teach-in
- 3 Green LED indicator: signaling Touch-Teach-in
- 4 Yellow LED indicator: light received
 - lights continuously: reception signal > reserve factor 2
 - blinks: reception signal < reserve factor 2, but > switching threshold 1
- 5 Mounting nuts (2x); SW 24, stainless steel 316L (included with delivery)
- 6 Standard direction of material being scanned



IP 69K according to DIN 40050

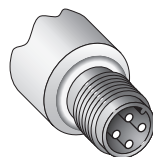
Stainless Steel



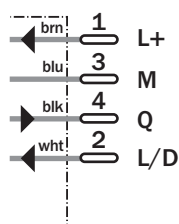
Connection type

VTB18-4P1240VS01

VTB18-4N1240VS01



M12, 4-pin



Accessories

Cables and connectors

Mounting systems

Technical data			VTB18-	4P1240V S01	4N1240V S01								
Scanning distance , typ. max. ¹⁾			0 ... 100 mm										
Operating distance, adjustable ¹⁾			Min. 0 ... 60 mm/max. 0 ... 100 mm										
Light spot diameter			Approx. 2 mm at 60 mm distance/ Approx. 3 mm at 100 mm distance										
Light source ²⁾ , light type			LED, red, 660 nm										
Scanning distance setting			Manual, via Touch-Teach-in ³⁾										
Visualizing Touch-Teach-in			LED green										
Light reception indicator			LED yellow:										
			Lights continuously: reserve factor >2										
			Blinks: reserve factor >1.0 ... <2.0										
Supply voltage V_s			10 ... 30 V DC ⁴⁾										
Residual ripple ⁵⁾			≤ 10 %										
Current consumption ⁶⁾			≤ 50 mA										
Switching outputs			Q: PNP, open collector										
			Q: NPN, open collector										
Signal voltage	PNP		Approx. V_s -2.0 V/approx. 0 V										
	NPN		Approx. V_s /≤ 2.0 V										
Switching mode			Light-/dark-switching, selectable ⁷⁾										
Output current I_A max.			≤ 100 mA										
Response time ⁸⁾			≤ 1.25 ms										
Max. switching frequency ⁹⁾			400/s										
Connection types			Plug M12, 4-pin ¹⁰⁾										
VDE protection class			⏏										
Enclosure rating			IP 67, IP 68, IP 69K ¹¹⁾										
Certificates ¹²⁾			ECOLAB, JohnsonDiversey										
Circuit protection ¹³⁾			A, B, C, D										
Ambient temperature	Operation		-25 °C ... +80 °C (continuous operating)										
	Operation		-25 °C ... +100 °C (max. 15 min)										
	Storage		-40 °C ... +80 °C										
Weight			Approx. 120 g										
Housing			M18										
Housing material	Housing:		Stainless steel AISI 316L/1.4404										
	Device plug:		M12, PPS (Grilamid) FDA ¹⁴⁾										
	Optic:		Plan, PPS (Grilamid) FDA ¹⁴⁾										

¹⁾ Object to be detected with 90 % remission (relating to standard white in acc. with DIN 5033); 100 x 100 mm

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

³⁾ Patent number: MO2007A00275
Date: 31.08.2007

⁴⁾ Limit values

⁵⁾ May not exceed or fall short of V_s tolerances

⁶⁾ Without load, at V_s 30 V DC

⁷⁾ 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

⁸⁾ Signal transit time with resistive load

⁹⁾ With light/dark ratio 1:1

¹⁰⁾ Pins gold plated

¹¹⁾ With correct mounted IP 69K connector

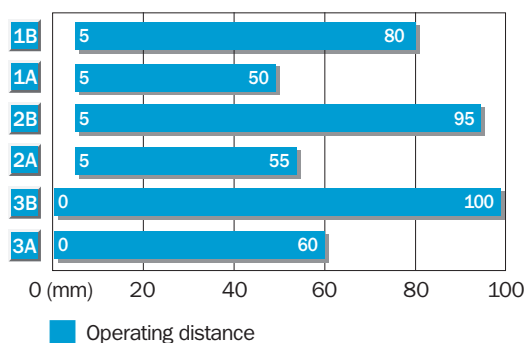
¹²⁾ Refer to the corresponding certificates for details

¹³⁾ A = V_s connections reverse-polarity protected
B = Inputs and output reverse-polarity protected

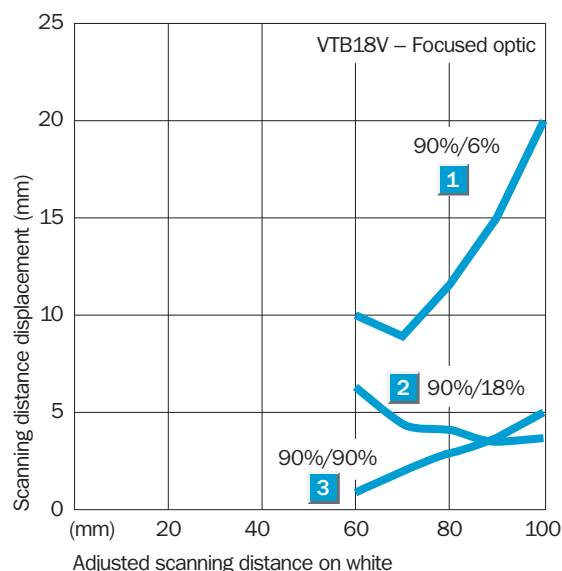
C = Interference pulse suppression
D = Outputs overload and short-circuit protected

¹⁴⁾ PPS with FDA certificate

Scanning distance



1	Scanning distance on black, 6 % remission
2	Scanning distance on grey, 18 % remission
3	Scanning distance on white, 90 % remission
A	Scanning distance adjuster on MIN
B	Scanning distance adjuster on MAX



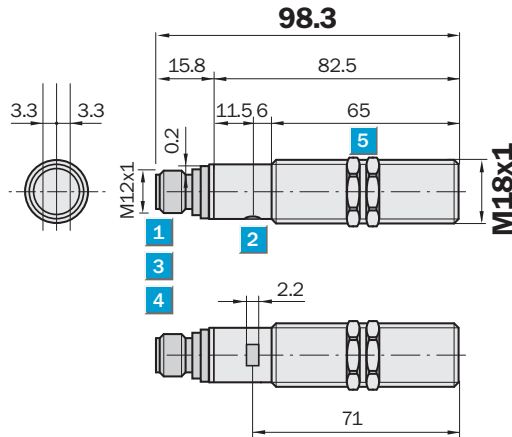
Order information

Type	Order no.
VTB18-4P1240VS01	6037754
VTB18-4N1240VS01	6037755

	Scanning distance
	0 ... 800/0 ... 400/ 0 ... 100 mm
	Photoelectric proximity sensor

- **Patented Touch-Teach-in:** scanning distance setting on equipment, but without mechanical operating elements
- **Wash-down design:** resistant against detergents, humidity and temperature

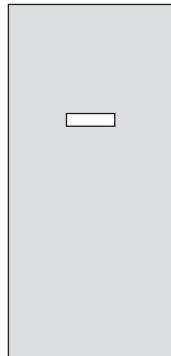
Dimensional drawing



Adjustments possible

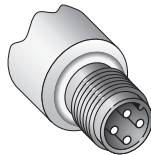
VTF18-4P1240V	VTF18-4N1240V
VTE18-4P4240V	VTE18-4N4240V
VTE18-4P8240V	VTE18-4N8240V

- 1 Plug M12, 4-pin
- 2 Scanning distance adjuster Touch-Teach-in
- 3 Green LED indicator: signaling Touch-Teach-in
- 4 Yellow LED indicator: light received
 - lights continuously
reception signal > reserve factor 2
 - blinks: reception signal < reserve factor 2, but > switching threshold 1
- 5 Mounting nuts (2x); SW 24, stainless steel 316L (included with delivery)

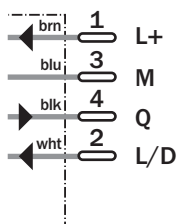


Connection type

VTF18-4P1240V	VTF18-4N1240V
VTE18-4P4240V	VTE18-4N4240V
VTE18-4P8240V	VTE18-4N8240V



M12, 4-pin



ECOLAB®
JohnsonDiversey

Touch-Teach-in
(Patent number: M02007A00275)

IP 69K according to DIN 40050

Stainless Steel



Accessories

Cables and connectors
Mounting systems

Technical data		VTF18-/VTE18-	4P8240V	4N8240V	4P4240V	4N4240V	4P1240V	4N1240V				
Scanning distance, typ. max. ¹⁾	0 ... 900 mm											
	0 ... 450 mm											
	0 ... 110 mm											
Operating distance ¹⁾	5 ... 800 mm											
	5 ... 400 mm											
	5 ... 100 mm											
Light spot diameter	Approx. 100 mm at 800 mm											
	Approx. 60 mm at 400 mm											
	Approx. 15 mm at 100 mm											
Angle of dispersion sender	Approx. 4.5°											
Light source ²⁾ , light type	LED, red, 660 nm											
	LED, infrared light, 880 nm											
Scanning distance setting	Manual, via Touch-Teach-in ³⁾											
Visualizing Touch-Teach-in	LED green											
Light reception indicator	LED yellow											
	Lights continuously: reserve factor >2											
	Blinks: reserve factor >1.0 ... <2.0											
Supply voltage V_s	10 ... 30 V DC ⁴⁾											
Residual ripple ⁵⁾	≤ 10 %											
Current consumption ⁶⁾	≤ 35 mA											
Switching outputs	Q: PNP, open collector											
	Q: NPN, open collector											
Signal voltage	PNP	Approx. V_s -2.0 V/approx. 0 V										
	NPN	Approx. V_s /≤ 2.0 V										
Switching mode	Light-/dark-switching, selectable ⁷⁾											
Output current I_A max.	≤ 100 mA											
Response time ⁸⁾	≤ 1 ms											
Max. switching frequency ⁸⁾	500/s											
Connection type	Plug M12, 4-pin ¹⁰⁾											
VDE protection class	◊											
Enclosure rating	IP 67, IP 68, IP 69K ¹¹⁾											
Certificates ¹²⁾	ECOLAB, JohnsonDiversey											
Circuit protection ¹³⁾	A, B, C, D											
Ambient temperature	Operation	-25 °C ... +80 °C (continuous operating)										
	Operation	-25 °C ... +100 °C (max. 15 min)										
	Storage	-40 °C ... +80 °C										
Weight	Approx. 120 g											
Housing	M18											
Housing material	Housing:	Stainless steel AISI 316L/1.4404										
	Device plug:	M12, PPS (Grilamid) FDA 14)										
	Optic:	Plan, PPS (Grilamid) FDA 14)										

¹⁾ Object to be detected with 90 % remission (relating to standard white in acc. with DIN 5033); 100 x 100 mm

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

³⁾ Patent number: M02007A00275
Date: 31.08.2007

⁴⁾ Limit values

⁵⁾ May not exceed or fall short of V_s tolerances

⁶⁾ Without load, at V_s 30 V DC

⁷⁾ 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

⁸⁾ Signal transit time with resistive load
⁹⁾ With light/dark ratio 1:1

¹⁰⁾ Pins gold plated

¹¹⁾ With correct mounted IP 69K connector

¹²⁾ Refer to the corresponding certificates for details

¹³⁾ A = V_s connections reverse-polarity protected
B = Inputs and output reverse-polarity protected
C = Interference pulse suppression
D = Outputs overload and short-circuit protected

¹⁴⁾ PPS with FDA certificate

Order information	
Type	Order no.
VTF18-4P1240V	6035487
VTF18-4N1240V	6035488
VTE18-4P4240V	6035489
VTE18-4N4240V	6035490
VTE18-4P8240V	6035491
VTE18-4N8240V	6035492

Sensitivity adjustable/scanning distance setting per Touch-Teach-in for photoelectric sensors V18V in stainless steel housing

Simple & Smart:

Sensitivity adjustment per Touch-Teach-in for photoelectric sensors VTF18V, VTE18V & VL18V glass. Scanning distance adjustment via Touch Teach-in for VTB18V photoelectric sensors.

Manual sensitivity adjustment

- Per Touch-Teach-in
- Simplest handling

Activate Touch-Teach-in 1x:

- Sensitivity setting completed
- Feedback: Yellow LED indicator
- Permanent storage of the “taught-in switching threshold and hysteresis,” even if power is interrupted for longer times.

Scanning distance/sensitivity adjustment, handling:

VTB18V photoelectric proximity sensor with background suppression and adjustable scanning distance:

- Always position scanned objects resp. background in nominal position,
- Align sensor directly at the target object.

VTF18V and VTE18V photoelectric proximity sensors, energetic:

- Always position object at target position,
- Align sensor directly at the target object (max. light received).

VL18V photoelectric reflex sensor:

- Always remove object,
- Align VL18V directly on the reflector (max. light reception).

Tamper protection: Touch Teach-in function can be disabled

Simple and Smart: locking/unlocking Touch Teach-in function

Handling locking Teach-in:

- Activate „Teach-in“
- VTE18V & VL18V: >11 sec
- VTB-Standard: >12 sec
- VTB18V focussed: >8 sec
- Confirmation: LED green permanently OFF

Handling release Teach-in:

- Activate „Teach-in“
- VTE18V & VL18V: >6 sec
- VTB18V: >7 sec
- Confirmation: LED green permanently ON.

Optimum sensitivity adjustment thanks to 2 easy-to-operate Touch-Teach-in options.

1 Short-Teach

1.1 Manual for VTF18V, VTE18V, VL18V glass detection variant

Sensitivity adjustment for large operating reserve (Standard setting)

1.1.1 Applications:

- For all standard applications
- High operating reserve, factor >2 above switching threshold

1.2 Manual for VTB18V

- Scanning distance adjustment directly at the target object. Observe max. adjustable scanning distance, see diagram “adjusted scanning distance/ scanning distance displacement”.

1.2.1 Applications:

- Scanned object is detected up to the adjusted scanning distance; background objects immediately behind it are suppressed.

1.3 Handling Short-Teach-in:

- Short Touch; activate „Teach-in“ >2 sec ... <6 sec
- Signalizing LED green: 1x OFF/ON
- Adjustment completed; check application.

1.4 Indication after adjustment

- Green LED indicator: lights continuously
- Yellow LED indicator: lights continuously

2. Long-Teach

2.1 Manual for VTF18V, VTE18V, VL18V glass detection variant

Sensitivity adjustment for the precise switching point

2.1.1 Applications:

- For slight differences between scanning object and background and for simple contrast detection (VTF18V, VTE18V)
- For positioning tasks
- For detecting transparent objects (VL18V glass)
- “Reduced” operating reserve, factor >1<2 above switching threshold, reduced, optimized hysteresis

2.2 Manual for VTB18V (only available for VTB18V Standard!)

- Scanning distance adjustment directly on the background object – our recommended standard setting. Observe max. adjustable scanning distance, see diagram “adjusted scanning distance/scanning distance displacement”.

2.2.1 Applications:

- Taught-in background object is suppressed and objects in the scanning range before it are detected.

2.3 Handling Long-Teach-in:

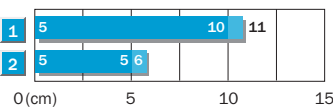
- Long Touch; activate „Teach-in“ >8 sec ... <12 sec
- Signalizing LED green: 1x OFF/ON, blinks fast
- Adjustment completed; check application.

2.4 Signalizing:

- Green LED indicator: lights continuously
- Yellow LED indicator: blinks

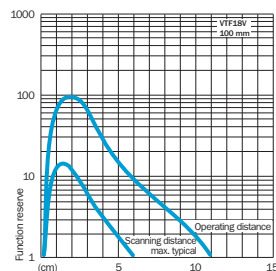
Scanning distance VTF18V & VTE18V

100 mm scanning distance VTF18V

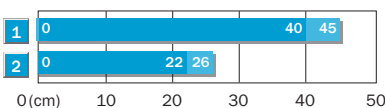


Operating distance Scanning distance, max. typical

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

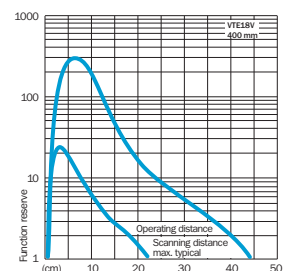


400 mm scanning distance VTE18V

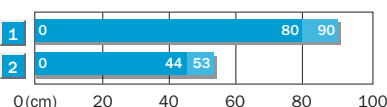


Operating distance Scanning distance, max. typical

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

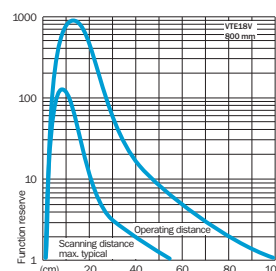


800 mm scanning distance VTE18V



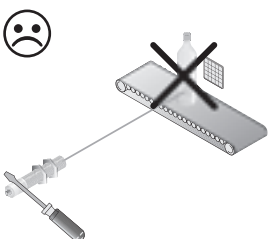
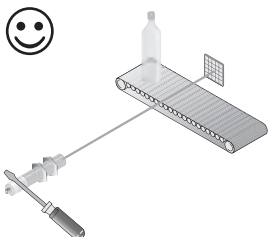
Operating distance Scanning distance, max. typical

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

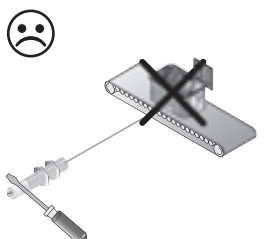
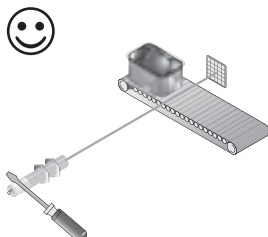


Touch-Teach-in: Sensitivity adjustable/scanning distance setting photoelectric reflex sensor V18V in stainless steel housing
Application VL18V Glass photoelectric reflex sensor

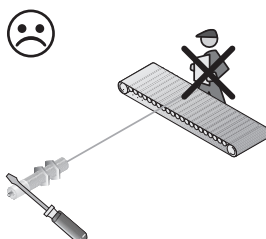
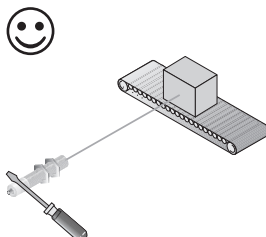
- **Substantial operating reserve**
short "Teach-in time"
 $> 2 \text{ s} \dots < 6 \text{ s}$



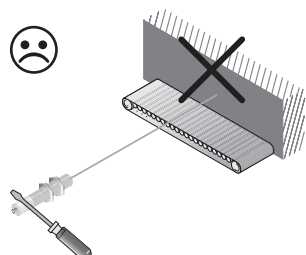
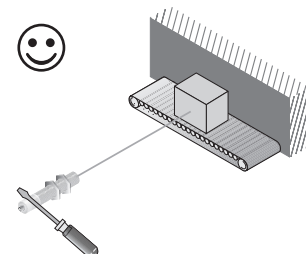
- **Precise switching point**
long "Teach-in time"
 $> 8 \text{ s} \dots < 12 \text{ s}$


Application VTF18V & VTE18V photoelectric proximity sensor, energetic

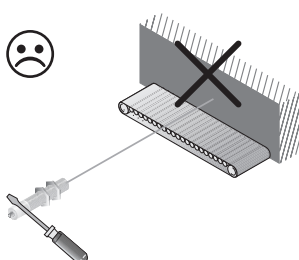
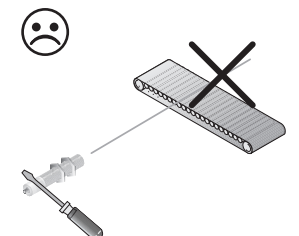
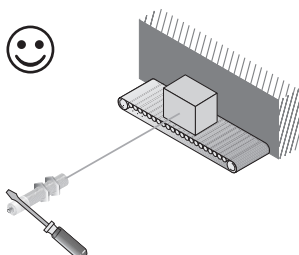
- **Substantial operating reserve**
short "Teach-in time"
 $> 2 \text{ s} \dots < 6 \text{ s}$



- **Precise switching point**
long "Teach-in time"
 $> 8 \text{ s} \dots < 12 \text{ s}$

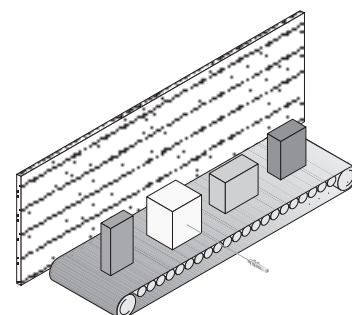
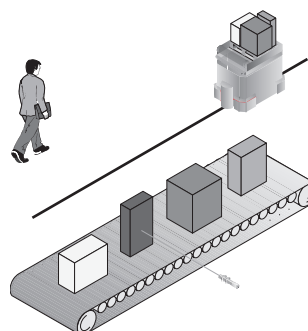
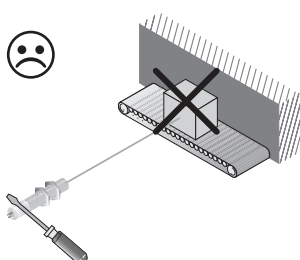
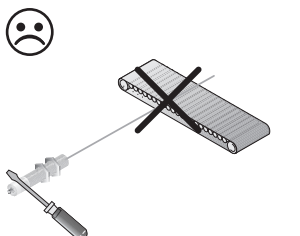
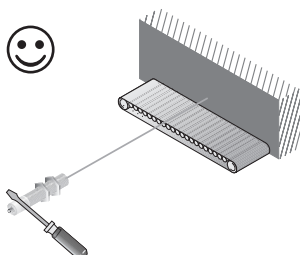

Application VTB18V Photoelectric proximity sensor with BGS

- **Teach-in on object**
short "Teach-in time"
 $> 2 \text{ s} \dots < 7 \text{ s}$



- **Teach-in on background**
long "Teach-in time"
 $> 8 \text{ s} \dots < 12 \text{ s}$

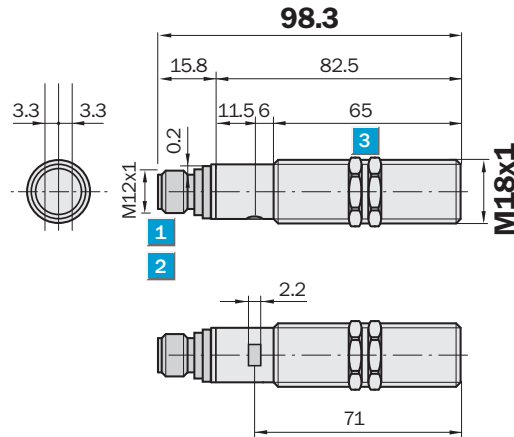
Function not possible with
VTB18V focused optics.



	Scanning range
	0.1 ... 5 m (PL80A)
Photoelectric reflex sensors	

- Wash-down design: resistant against detergents, humidity and temperature
- Hygienic design: Stainless steel housing & suitable, FDA certified synthetic materials

Dimensional drawing



- 1 Plug M12, 4-pin
- 2 Yellow LED indicator: light received
 - lights continuously: reception signal > reserve factor 2
 - blinks: reception signal < reserve factor 2, but > switching threshold 1
- 3 Mounting nuts (2x); SW 24, stainless steel 316L (included with delivery)

ECOLAB®
JohnsonDiversey 
IP 69K according to DIN 40050
Stainless Steel

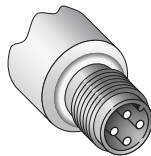


Accessories

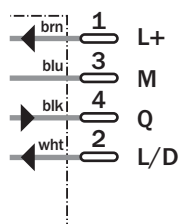
Cables and connectors
Mounting systems
Reflectors

Connection type

VL18-4P3140V
VL18-4N3140V



M12, 4-pin



Technical data		VL18-	4P3140V	4N3140V										
Scanning range SR , typ. max./Reflector		0.1 ... 5.0 m/PL80A												
Operating range		0.1 ... 4.5 m/PL80A												
Light spot diameter		Approx. 200 mm at 4.5 m												
Angle of dispersion sender		Approx. 2.5°												
Light source ¹⁾, light type		LED, red 660 nm, with polarising filter												
Light reception indicator		LED yellow												
		Lights continuously: reserve factor >2												
		Blinks: reserve factor >1.0 ... <2.0												
Supply voltage V_S		10 ... 30 V DC ²⁾												
Residual ripple ³⁾		≤ 10 %												
Current consumption ⁴⁾		≤ 35 mA												
Switching outputs		Q: PNP, open collector												
		Q: NPN, open collector												
Signal voltage	PNP	Approx. V _S -2.0 V/approx. 0 V												
	NPN	Approx. V _S / ≤ 2.0 V												
Switching mode		Light-/dark-switching, selectable ⁵⁾												
Output current I_A max.		≤ 100 mA												
Response time ⁶⁾		≤ 1 ms												
Max. switching frequency ⁷⁾		500/s												
Connection types		Plug M12, 4-pin ⁸⁾												
VDE protection class		⚡												
Enclosure rating		IP 67, IP 68, IP 69K ⁹⁾												
Certificates ¹⁰⁾		ECOLAB, JohnsonDiversey												
Circuit protection ¹¹⁾		A, B, C, D												
Ambient temperature	Operation	-25 °C ... +80 °C (continuous operating)												
	Storage	-40 °C ... +80 °C												
Weight		Approx. 120 g												
Housing		M18												
Housing material	Housing:	Stainless steel AISI 316L												
	Device plug:	M12, PPS (Grilamid) FDA ¹²⁾												
	Optic:	Plan, PMMA Surface hardened and tempered (FDA ¹²⁾)												

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⁾ Pins gold plated

⁹⁾ With correct mounted IP 69K connector

¹⁰⁾ Refer to the corresponding certificates
for details

¹¹⁾ A = V_S connections reverse-polarity
protected

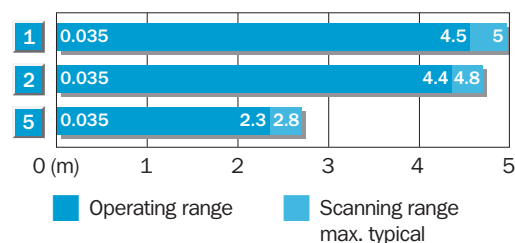
B = Inputs and output reverse-polarity
protected

C = Interference pulse suppression

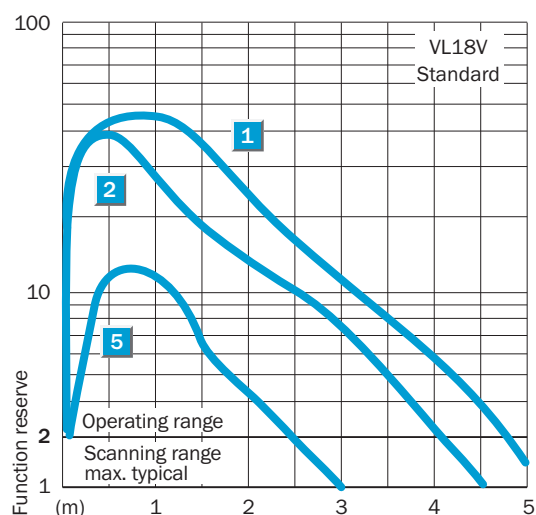
D = Outputs overload and short-circuit
protected

¹²⁾ PMMA with FDA certificate

Scanning range and function reserve



Reflector-Type	Operating range
1 PL80A	0.035 ... 4.5 m
2 C110A	0.035 ... 4.4 m
3 PL50A/PL40A PL30A/PL31A	0.035 ... 3.5 m
4 P250	0.035 ... 3.3 m
5 P250CHEM	0.035 ... 2.3 m
6 PL20CHEM	0.035 ... 1.0 m



Order information

Type	Order no.
VL18-4P3140V	6035495
VL18-4N3140V	6035496

-

Stainless Steel



2009-05-19

Technical data		VL18-	4P2240V	4N2240V										
Scanning range SR , typ. max./Reflector		0.035 ... 4.5 m/PL80A												
Operating range		0.035 ... 4.0 m/PL80A												
Light spot diameter		Approx. 60 mm at 1.0 m												
Angle of dispersion sender		Approx. 3°												
Detection of transparent objects														
Attenuation in light path		≥ 20%												
Attenuation difference in light path		≥ 15%												
Object attenuation difference		≥ 7.5%												
Light source ¹⁾ , light type		LED, red, 660 nm												
Sensitivity adjustable		Manual, via Touch-Teach-in ²⁾												
Visualizing Touch-Teach-in		LED green												
Light reception indicator		LED yellow												
		Lights continuously: reserve factor >2												
		Blinks: reserve factor >1.0 ... >2.0												
Supply voltage V_s		10 ... 30 V DC ³⁾												
Residual ripple ⁴⁾		≤ 10 %												
Current consumption ⁵⁾		≤ 35 mA												
Switching outputs		Q: PNP, open collector												
		Q: NPN, open collector												
Signal voltage	PNP	Approx. V_s -2.0 V/approx. 0 V												
	NPN	Approx. V_s / ≤ 2.0 V												
Switching mode		Light-/dark-switching, selectable ⁶⁾												
Output current I_A max.		≤ 100 mA												
Response time ⁷⁾		≤ 1 ms												
Max. switching frequency ⁸⁾		500/s												
Connection types		Plug M12, 4-pin ⁹⁾												
VDE protection class		⚡												
Enclosure rating		IP 67, IP 68, IP 69K ¹⁰⁾												
Certificates ¹¹⁾		ECOLAB, JohnsonDiversey												
Circuit protection ¹²⁾		A, B, C, D												
Ambient temperature	Operation	-25 °C ... +80 °C (continuous operating)												
	Operation	-25 °C ... +100 °C (max. 15 min)												
	Storage	-40 °C ... +80 °C												
Weight		Approx. 120 g												
Housing		M18												
Housing material	Housing:	Stainless steel AISI 316L/14404												
	Device plug:	M12, PPS (Grilamid) FDA ¹³⁾												
	Optic:	Plan, PPS (Grilamid) FDA ¹³⁾												

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

²⁾ Patent number: MO2007A00275
Date: 31.08.2007

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⁾ Pins gold plated

¹⁰⁾ With correct mounted IP 69K connector

¹¹⁾ Refer to the corresponding certificates for details

¹²⁾ A = V_s connections reverse-polarity protected

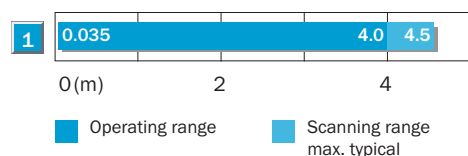
B = Inputs and output reverse-polarity protected

C = Interference pulse suppression

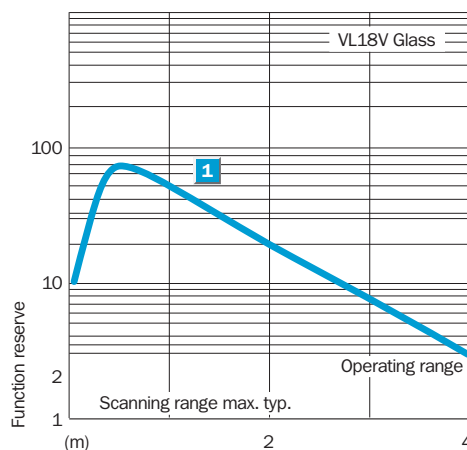
D = Outputs overload and short-circuit protected

¹³⁾ PPS with FDA certificate

Scanning range and function reserve

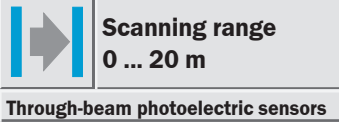


Reflector type	Operating range
1 PL80A	0.035 ... 4.0 m
2 C110A	0.035 ... 3.8 m
3 PL50A/PL40A PL30A/PL31A	0.035 ... 3.2 m
4 P250	0.035 ... 2.5 m
5 P250CHEM	0.035 ... 1.5 m
6 PL20CHEM	0.035 ... 0.8 m



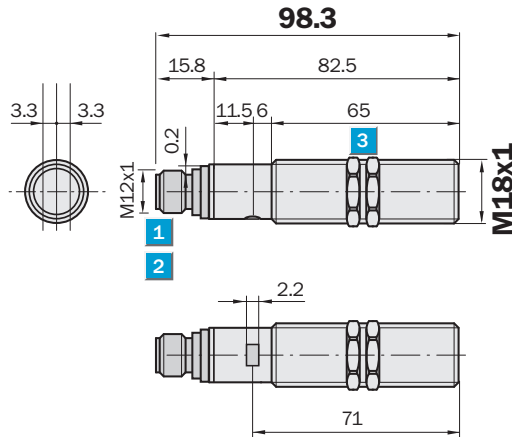
Order information

Type	Order no.
VL18-4P2240V	6035497
VL18-4N2240V	6035498



- Wash-down design: resistant against detergents, humidity and temperature
- Hygienic design: Stainless steel housing & suitable, FDA certified synthetic materials
- For $T_A +80\text{ }^{\circ}\text{C}$ (15 min: $100\text{ }^{\circ}\text{C}$)

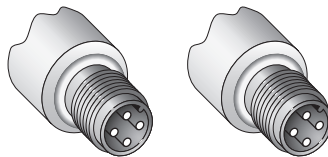
Dimensional drawing



- 1** Plug M12, 4-pin
- 2** Yellow LED indicator, (only receiver VE18V)
 - lights continuously: reception signal > reserve factor 2
 - blinks: reception signal < reserve factor 2, but > switching threshold 1
- Yellow LED indicator, (only sender VS18V)
 - lights continuously : sender active
 - does not light: sender off
- 3** Mounting nuts (2x); SW 24, stainless steel 316L (included with delivery)

Connection types

VS/VE18-4P3140V VS/VE18-4N3140V



Sender	Receiver
M12, 4-pin	M12, 4-pin
1 L+ 3 M 4 NC 2 TE	1 L+ 3 M 4 Q 2 L/D



Touch-Teach-in
(Patent number: M02007A00275)

IP 69K according to DIN 40050

Stainless Steel



Accessories
Cables and connectors
Mounting systems

Technical data		VS/VE18-	4P3140V	4N3140V									
Scanning range SR , typ. max.	0 ... 20 m												
Operating range	0 ... 18 m												
Light spot diameter	Approx. 600 mm at 15 m												
Angle of dispersion sender	Approx. 2.5°												
Angle of reception receiver	Approx. 8° (SR = max.)												
Light source ¹⁾ , light type	LED, infrared, 880 nm												
Status indicators	LED yellow (only VS18V): Sender ON												
Light reception indicator	LED yellow (only VE18V):												
	Lights continuously: reserve factor >2												
	Blinks: reserve factor >1.0 ... <2.0												
Supply voltage V_s	10 ... 30 V DC ²⁾												
Residual ripple ³⁾	≤ 10 %												
Current consumption ⁴⁾	Sender ≤ 35 mA												
	Receiver ≤ 40 mA												
Switching outputs	Q: PNP, open collector												
	Q: NPN, open collector												
Signal voltage PNP	Approx. V_s -2.0 V/approx. 0 V												
Signal voltage NPN	Approx. V_s /≤ 2.0 V												
Switching mode	Light/dark-switching, selectable ⁵⁾												
Output current I_A max.	≤ 100 mA												
Response time ⁶⁾	≤ 2 ms												
Max. switching frequency ⁷⁾	250/s												
Test input TE	0 V = Sender inactive												
Connection types	Plug M12, 4-pin ⁸⁾												
VDE protection class	⚡												
Enclosure rating	IP 67, IP 68, IP 69K ⁹⁾												
Certificates ¹⁰⁾	ECOLAB, JohnsonDiversey												
Circuit protection ¹¹⁾	A, B, C, D												
Ambient temperature	Operation	-25 °C ... +80 °C (continuous operating)											
	Operation	-25 °C ... +100 °C (max. 15 min)											
	Storage	-40 °C ... +80 °C											
Weight	Sender and receiver each approx. 120 g												
Housing	M18												
Housing material	Housing:	Stainless steel AISI 316L/1.4404											
	Device plug:	M12, PPS (Grilamid) FDA ¹²⁾											
	Optic:	Plan, PPS (Grilamid) FDA ¹²⁾											

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⁾ Pins gold plated

⁹⁾ With correct mounted IP 69K connector

¹⁰⁾ Refer to the corresponding certificates for details

¹¹⁾ A = V_s connections reverse-polarity protected

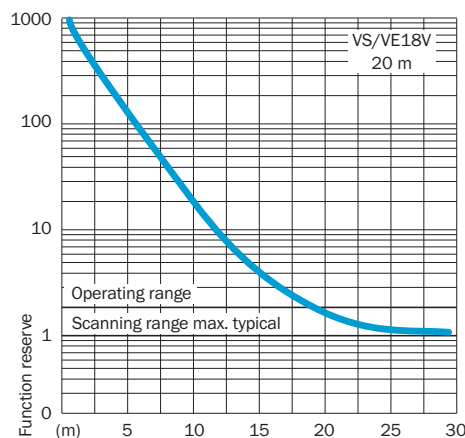
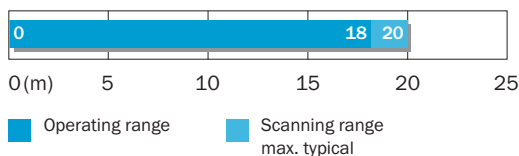
B = Inputs and output reverse-polarity protected

C = Interference pulse suppression

D = Outputs overload and short-circuit protected

¹²⁾ PPS with FDA certificate

Scanning range and function reserve



Order information

Type	Order no.
VS/VE18-4P3140V	6035499
VS/VE18-4N3140V	6035500

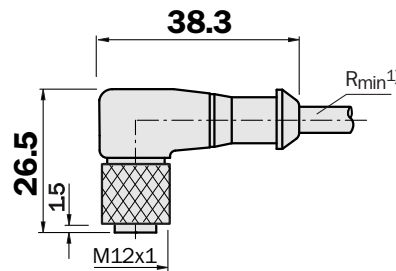
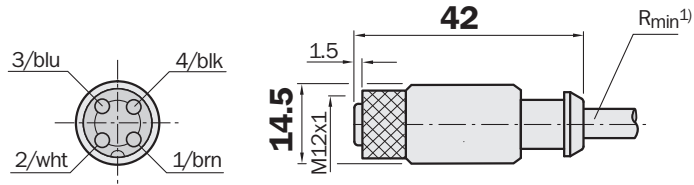
Connecting cables "Food & Beverage"

Round connectors

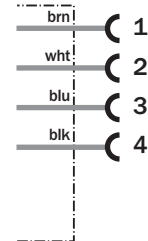
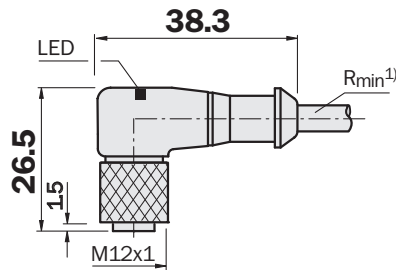
- Especially suitable for use in the "Food & Beverage" branch
- Gold plated pins
- Improved resistance to chemicals, acids and cleaning agent
- Enclosure rating IP 69K (only in fully locked position with its plugs)
- Stainless steel locking nut (V4A)

Dimensional drawings

DOL-12...



DOL-1204-L...



Contacts	Wire colour
1	brown
2	white
3	blue
4	black

1) Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$



Technical data

Nominal voltage U_b	250 V AC/300 V DC (M12, 4-pin, connector)
	10 ... 30 V DC (M12, LED indicator)
Contact resistance	$\leq 5 \text{ m}\Omega$
Nominal power	4 A (CSA = 3 A)
Test voltage	2.0 kV eff./60 s. (4-pin)
Insulation group	C acc. VDE 0110
Insulation resistance	$> 10^9 \Omega$
Temperature range	In fixed position $-25^\circ\text{C} \dots +90^\circ\text{C}$
	In flexible position $+5^\circ\text{C} \dots +90^\circ\text{C}$
Bending radius	$> 10 \times$ diameter of cable
Contact	CuZn, 0.3 μm gold plated
Locking nut	Stainless steel V4A
Cable	PVC, colour orange
Conductor diameter	$4 \times 0.25 \text{ mm}^2$
Connector	PVC, colour orange
Enclosure rating	IP 69K (only when in fully screwed-in position with corresponding counterparts. Breakaway torque 0.7 Nm)

Order information

Round connectors M12 connecting cable "Food & Beverage"

Type	Order no.	Description	Contacts	Cable length [m]
DOL-1204-G02MN	6028128	Female connector straight	4	2
DOL-1204-G05MN	6028130	Female connector straight	4	5
DOL-1204-G10MN	6028132	Female connector straight	4	10
DOL-1204-G25MN	6028134	Female connector straight	4	25
DOL-1204-W02MN	6028129	Female connector angled	4	2
DOL-1204-W05MN	6028131	Female connector angled	4	5
DOL-1204-W10MN	6028133	Female connector angled	4	10
DOL-1204-W25MN	6028135	Female connector angled	4	25
DOL-1204-L02MN	6028136	Female connector angled LED (PNP)	4	2
DOL-1204-L05MN	6028137	Female connector angled LED (PNP)	4	5
DOL-1204-L10MN	6028138	Female connector angled LED (PNP)	4	10
DOL-1204-L25MN	6028139	Female connector angled LED (PNP)	4	25

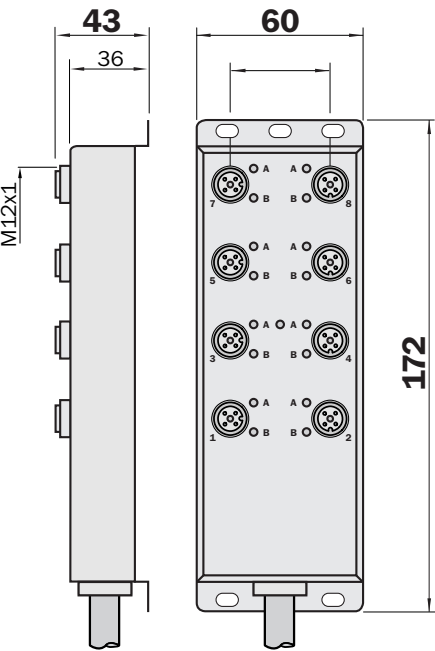
**“Food & Beverage”
IP 69K, V4A**

Sensor splitter-box

- Enclosure rating IP 69K (only in fully locked position with its plugs or dust covers)
- Housing & thread material: stainless steel V4A
- Especially suitable for use in the “Food & Beverage” branch
- Improved resistance to chemicals, acids and cleaning agent

Dimensional drawing

SNL-08...



M12-Contacts	Wire colour	Signal/outlet
1	brown	+
3	blue	-
2	grey/pink	1
	red/blue	2
	white/green	3
	brown/green	4
	white/yellow	5
	yellow/brown	6
	white/grey	7
	grey/brown	8
4	white	1
	green	2
	yellow	3
	grey	4
	pink	5
	red	6
	black	7
	violett	8
5	green/yellow	PE



Technical data

Temperature range	0 °C ... +60 °C
Materials	
Housing	V4A stainless steel
Moulded body	PVC
Contact	CuZn, pre-nickel and 0.8 µm gold plated
Threaded sleeve	V4A stainless steel
O-Ring	EPDM
Mechanical data	
Enclosure rating	IP 69K (only in fully locked position with its plugs, breakaway torque 0.5 Nm)
Electrical data	
Contact resistance	≤ 5 mΩ
Nominal power	4 A via outlet/11 A max. total at 30 °C (refer to correction factors EN 60204-1)
Nominal voltage U_b	10 ... 30 V DC
Reference voltage	32 V ~ eff.
Insulation resistance	> 10 ⁹ Ω
Pollution grade	2 acc. VDE 0110
Cable	PVC, colour black, 3 x 1.0 mm ² /16 x 0.5 mm ² (appropriate for drag cable use)
Accessories	4 dust covers for unused sockets

Order information**Sensor splitter-box "Food & Beverage", IP 69K, V4A (1.4404/316 L), M12 x 1 mm (5-pin), 8 female connector, connection types cable**

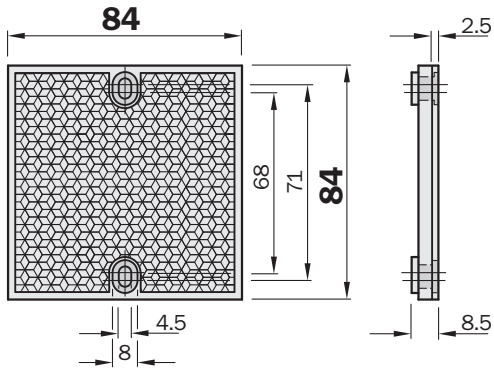
Type	Order no.	Connecting cable		
		Length [m]	Lead [mm ²]	Cable
SNL-08D12-KA05	6027586	5	3 x 1.0/16 x 0.5	PVC black
SNL-08D12-KA10	6027587	10	3 x 1.0/16 x 0.5	PVC black
SNL-08D12-KA15	6027588	15	3 x 1.0/16 x 0.5	PVC black

Dimensional drawings and order information

Reflectors for VL18V plastic design, angular for temperatures up to 65 °C

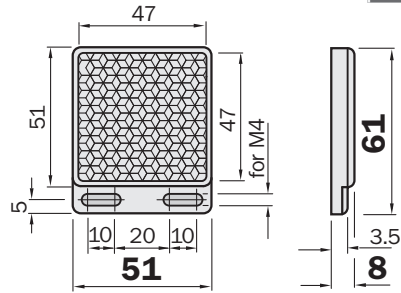
Reflector 80 x 80 mm

Type	Order no.
PL80A	1003865



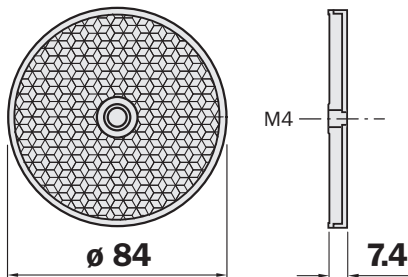
Reflector 47 x 47 mm

Type	Order no.	Applications
P250	5304812	Standard
P250H	5315124	Heat-resistant to +110 °C
P250CHEM	5321097	Increased chemical durability, -20 °C ... +80 °C



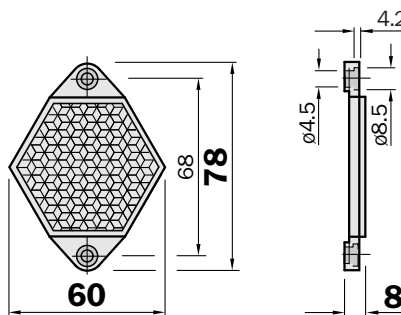
Reflector, Ø 83 mm, centre hole mounting

Type	Order no.
C110A	5304549



Reflector, 6-sided, width across flats 48 mm

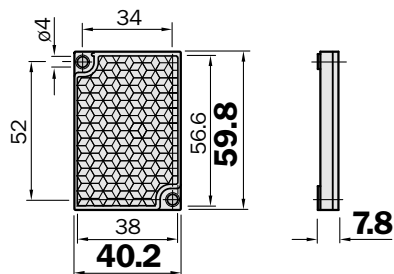
Type	Order no.
PL50A	1000132



Also available in heatable model:
Continuous heating: PL50HK,
Order no. 1001545
Regulated heating: PL50HS,
Order no. 1009871

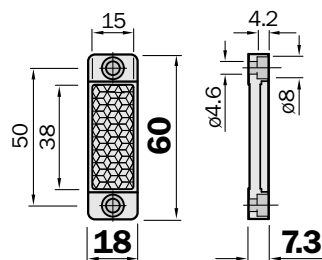
Reflector 38 x 56 mm

Type	Order no.
PL40A	1012720



Reflector 20 x 40 mm

Type	Order no.	Applications
PL20A	1012719	Standard
PL20CHEM	5321089	Increased chemical durability, -20 °C ... +80 °C

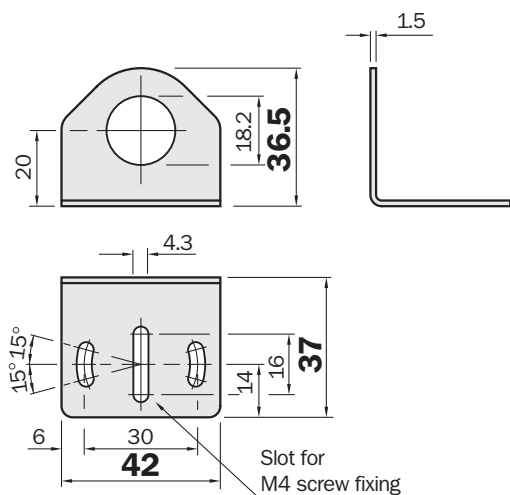


Dimensional drawings and order information

Mounting systems

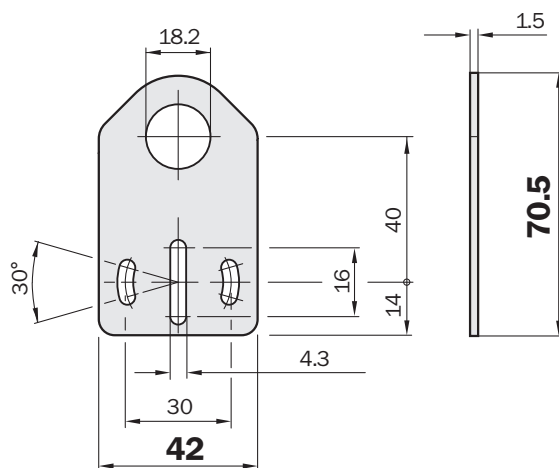
Mounting bracket, material stainless steel 1.4404

Type	Order no.
BEF-WN-M18N	5320947



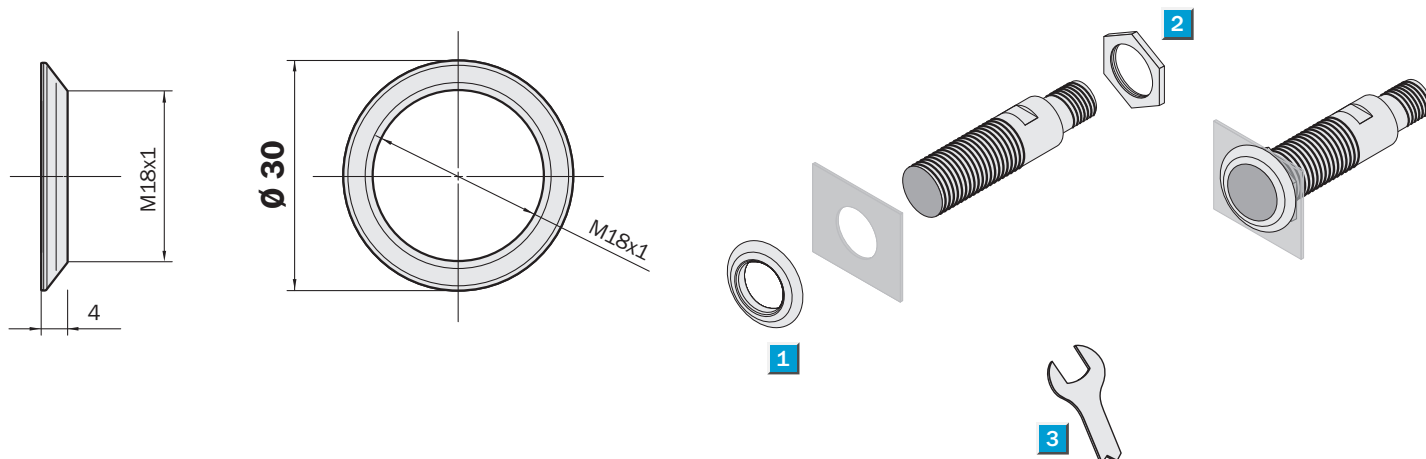
Mounting bracket, material stainless steel 1.4404

Type	Order no.
BEF-WG-M18N	5320948



Mounting ring for V18V, material stainless steel 1.4404

Type	Order no.
BEF-WN-MH15-2V	4053358



- 1 Mounting ring BEF-WN-MH15-2V (4053358) for flush mounting
- 2 2 x M18x1/V4A (4053361) nuts provided with the V18V scope of supply
- 3 Max. breakaway torque 15 Nm

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