PRODUCT INFORMATION

V180-2
Cylindrical photoelectric sensors

Lowest-cost cylindrical photoelectric sensor on the market!

SICK
Sensor Intelligence.

V180-2

EASILY ADJUSTABLE

Emitter LED with visible red light

VARIABLE, SPACE-SAVING INSTALLATION

Axial or radial (90°) optics

EASY MOUNTING

Standard M18 housing

EASY ADJUSTMENT

Adjustment potentiometer 270°

PERFORMANCE AND RELIABILITY

- High-quality background suppression (BGS)

A WIDE RANGE OF PRODUCTS

- Complete sensor family: proximity sensors (energetic and BGS), photoelectric retro-reflective sensor and through-beam photoelectric sensor
- Axial and radial (90°) optics
- Metal and plastic housing

RUGGED

- Metal housing
- IP 67

EASY FUNCTION MONITORING

- 360° indicator LED

EASY CONNECTION

- Standard connection technology: M12 plug or cable

www.sick.com/V180-2

Lowest-cost cylindrical photoelectric sensor on the market!

Product description

The VTF180-2 photoelectric proximity sensor with background blanking provides reliable object detection.
Quick alignment and commissioning, reliable object detection, and dependable switching are achieved due to long sensing ranges, an extremely short response time, a red emitter LED and sensitivity control.

At a glance

- Lowest-cost M18 housing sensor on the market
- Sensing distance up to 140 mm
- Bright power and signal LEDs with 360° visibility
- High switching frequencies up to 1000 Hz
- Available in a metal housing for applications in harsh environments
- Optical axis selectively axial or radial (90°)
- Wide product portfolio solves a broad range of applications

Your benefits

- Lowest-cost M18 cylindrical sensor on the market reduces installation costs
- Bright red sender LED simplifies alignment and saves installation time
- Bright power and signal LEDs with 360° visibility offer quick and simple troubleshooting, reducing maintenance time and costs
- The flat and smooth lens reduces the collection of dust and dirt, ensuring safe operation with less maintenance and fewer costs

Additional information

→ **www.mysick.com/en/VTF180-2**

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

8013536/2013-04-25
Subject to change without notice

Detailed technical data

Features

Sensor principle	Photoelectric proximity sensor
Detection principle	Background blanking
Housing design (light emission)	Cylindrical, angled Cylindrical, straight (depending on type)
Housing length	62.5 mm ... 83.8 mm (depending on type)
Thread diameter (housing)	M18 x 1
Sensing range max. [1]	
Radial	1 mm ... 130 mm
Axial	1 mm ... 140 mm
Sensing range [1]	1 mm ... 100 mm
Type of light	Visible red light
Light source [2]	LED
Light spot size (distance)	Ø 8 mm (100 mm)
Wave length	645 nm
Adjustment	Potentiometer, 270 °

[1] Object with 90 % reflectance (referred to standard white DIN 5033)

[2] Average service life of 100,000 h at T_A = +25 °C .

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Residual ripple [2]	± 10 %
Power consumption [3]	≤ 30 mA
Output type	PNP, open collector [4] NPN, open collector [5] (depending on type)
Switching mode	Light switching Light/dark-switching, selectable via L/D control wire
Signal voltage PNP HIGH / LOW	Approx. V_S – 1.8 V / 0 V
Signal voltage NPN HIGH / LOW	Approx. V_S / < 1.8 V
Output current $I_{max.}$	≤ 100 mA
Response time [6]	≤ 0.5 ms
Switching frequency [7]	1,000 Hz
Connection type	Cable, 2 m [8] Connector, M12 (depending on type)
Circuit protection	A [9], B [10], D [11]
Protection class	III
Weight	
Cable, 4-wire	95 g / 62 g (depending on type)
Connector M12	47 g / 18 g (depending on type)
Housing material	
Plastic	PBT/PC
Metal	Nickel-plated brass and PC
Optics material	PMMA

Enclosure rating	IP 67
Items supplied	Fastening nuts (2 x)
Ambient operating temperature	–25 °C ... +55 °C
Ambient storage temperature	–40 °C ... +70 °C

[1] Limit values, operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load.
[4] Control wire open: dark-switching D.ON.
[5] Control wire open: light-switching L.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.
[10] B = inputs and output reverse-polarity protected.
[11] D = outputs overcurrent and short-circuit protected.

Ordering information

Other models available at www.mysick.com/en/VTF180-2

VTF180-2, Metal

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** Background blanking
- **Adjustment:** adjustable Potentiometer, 270°

Sensing range max. [1]	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
1 mm ... 130 mm	Radial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTF180-2P41114	6043805
				Connector M12, 4-pin	Cd-087	VTF180-2P42414	6043806
			Light switching	Connector M12, 3-pin	Cd-066	VTF180-2F32414	6044023
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTF180-2N41114	6043803
				Connector M12, 4-pin	Cd-087	VTF180-2N42414	6043804
1 mm ... 140 mm	Axial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTF180-2P41112	6041802
				Connector M12, 4-pin	Cd-087	VTF180-2P42412	6041803
			Light switching	Connector M12, 3-pin	Cd-066	VTF180-2F32412	6044021
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTF180-2N41112	6041799
				Connector M12, 4-pin	Cd-087	VTF180-2N42412	6041801

[1] Object with 90 % reflectance (referred to standard white DIN 5033)
[2] Control wire open: dark-switching D.ON.
[3] Control wire open: light-switching L.ON.

VTF180-2, Plastic

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** Background blanking
- **Adjustment:** adjustable Potentiometer, 270°

Sensing range max. [1]	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
1 mm ... 130 mm	Radial	PNP	Light/dark-switching [2]	Cable, 4-wire 2 m PVC	Cd-089	VTF180-2P41119	6043810
				Connector M12, 4-pin	Cd-087	VTF180-2P42419	6043811
			Light switching	Connector M12, 4-pin	Cd-066	VTF180-2F32419	6044024
		NPN	Light/dark-switching [3]	Cable, 4-wire 2 m PVC	Cd-089	VTF180-2N41119	6043807
				Connector M12, 4-pin	Cd-087	VTF180-2N42419	6043808
1 mm ... 140 mm	Axial	PNP	Light/dark-switching [2]	Cable, 4-wire 2 m PVC	Cd-089	VTF180-2P41117	6037479
				Connector M12, 4-pin	Cd-087	VTF180-2P42417	6037480
			Light switching	Connector M12, 3-pin	Cd-066	VTF180-2F32417	6044022
		NPN	Light/dark-switching [3]	Cable, 4-wire 2 m PVC	Cd-089	VTF180-2N41117	6037477
				Connector M12, 4-pin	Cd-087	VTF180-2N42417	6037478

[1] Object with 90 % reflectance (referred to standard white DIN 5033)

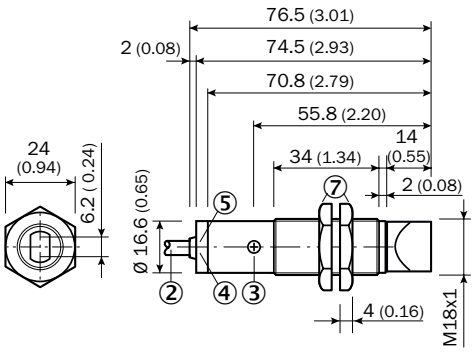
[2] Control wire open: dark-switching D.ON.

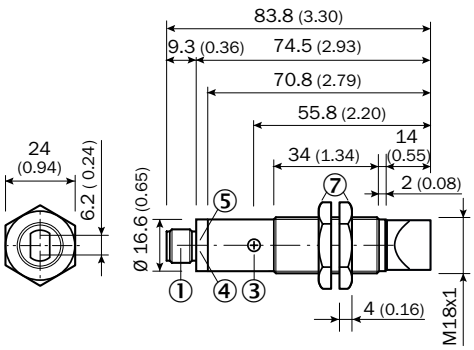
[3] Control wire open: light-switching L.ON.

Dimensional drawings

dimensions in mm (inch)

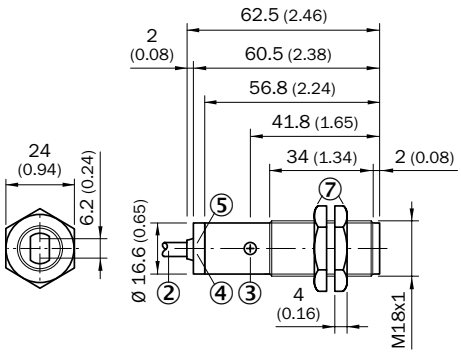
VTF180-2, metal, radial

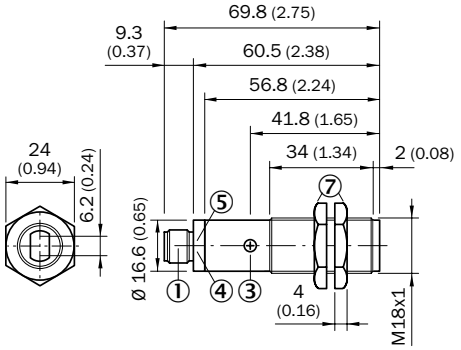




① Connector M12, 3-pin / Connector M12, 3-pin
② Connection cable 2 m
③ Sensitivity control; Potentiometer 270°
④ LED indicator orange: switching output active
⑤ LED indicator green, stability indicator: LED lights continuously = light reception < 0.9/> 1.1; LED off = light reception > 0.9 / < 1.1
⑦ Metal housing, fastening nuts (2 x); width across 24

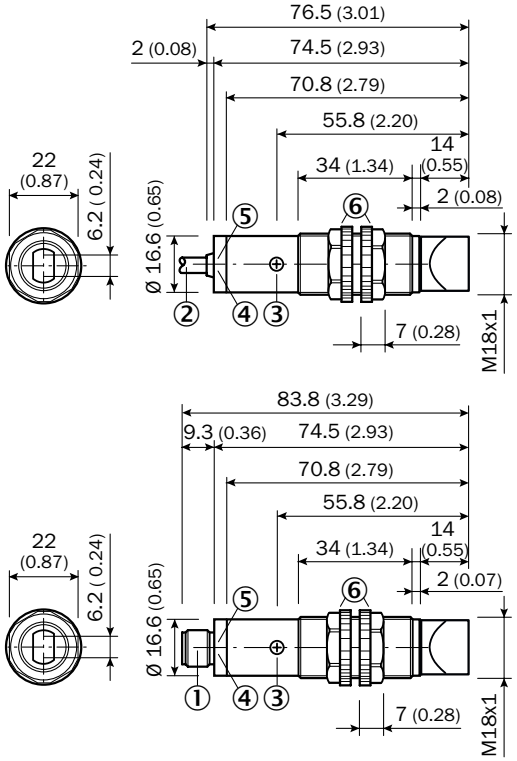
VTF180-2, metal, axial





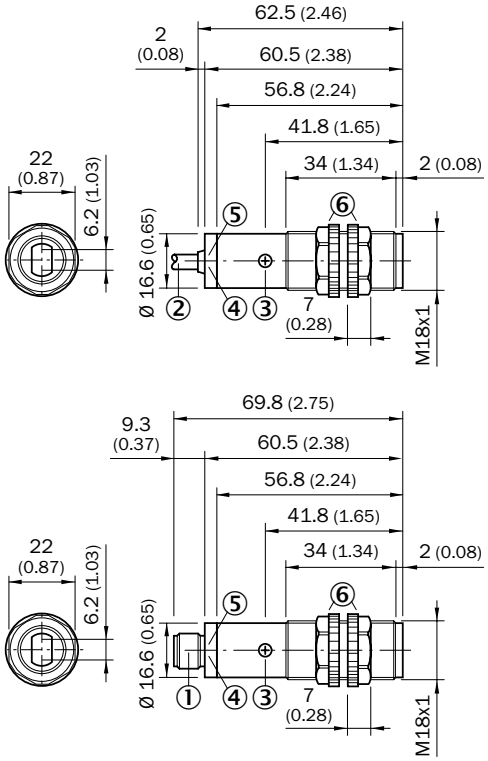
① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑦ Fastening nuts (2 x); 24 mm hex, metal

VTF180-2, plastic, radial



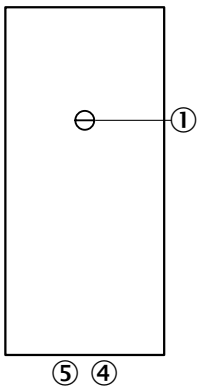
① Connector M12
② Connection cable 2 m
③ Sensitivity control; Potentiometer 270°
④ LED indicator orange: switching output active
⑤ LED indicator green, stability indicator: LED lights continuously = light reception < 0.9/> 1.1; LED off = light reception > 0.9 / < 1.1
⑥ Fastening nuts (2 x); width across 22, PC

VTF180-2, plastic, axial



① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity control (potentiometer, 270°)
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑥ Fastening nuts (2 x); width across 22, PC

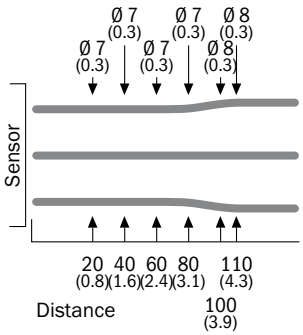
Adjustments



③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green

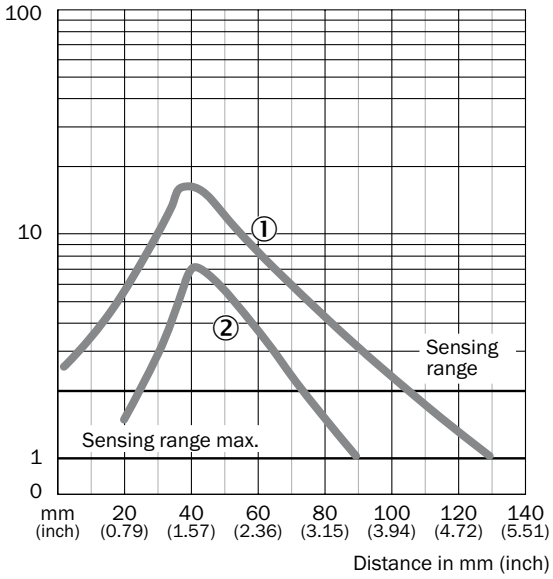
Light spot diameter

VTF180-2



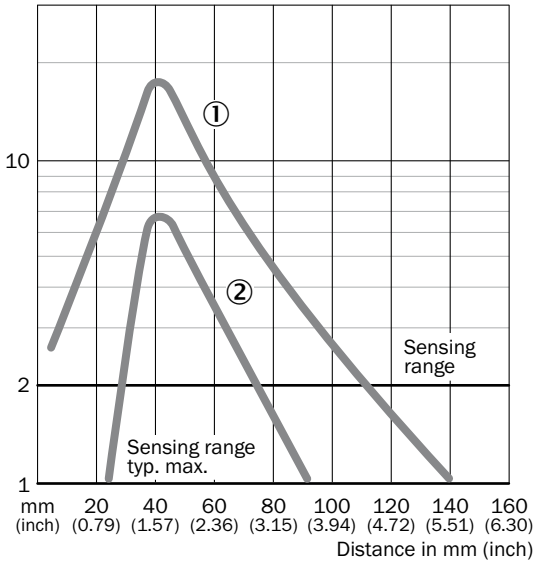
Characteristic curves

VTF180-2, 130 mm, radial



① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission

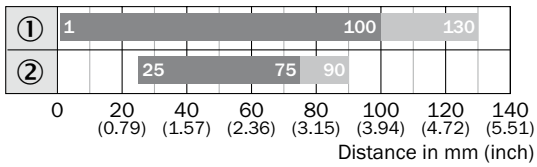
VTF180-2, 140 mm, axial



① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission

Bar diagrams

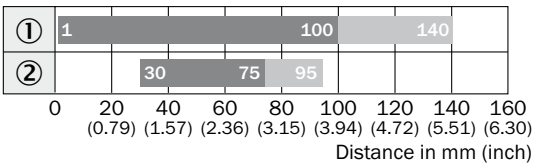
VTF180-2, 130 mm, radial



Sensing range Sensing range max.

① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission

VTF180-2, 140 mm, axial

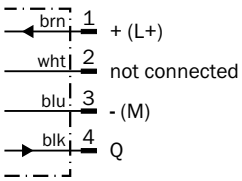


Sensing range Sensing range max.

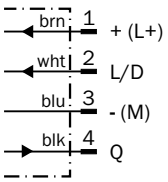
① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission

Connection diagram

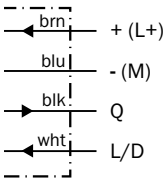
Cd-066



Cd-087



Cd-089



Lowest-cost cylindrical photoelectric sensor on the market!

Product description

The VTE180-2 photoelectric proximity sensors are available as background blanking and energetic variants. These sensors offer three different sensing ranges with a maximum range of 1,100 mm.

Quick alignment and commissioning, reliable object detection, and dependable switching are achieved due to long sensing distances, an extremely short response time, a red emitter LED and sensitivity control.

At a glance

- Lowest-cost M18 housing sensor on the market
- Long sensing distances: 100 mm, 400 mm, 800 mm (max. 1,100 mm)
- Bright power and signal LEDs with 360° visibility
- Wide product portfolio solves a broad range of applications
- High switching frequencies up to 1000 Hz
- Available in a metal housing for applications in harsh environments
- Optical axis selectively axial or radial (90°)

Your benefits

- Lowest-cost M18 cylindrical sensor on the market reduces installation costs
- Bright red sender LED simplifies alignment and saves installation time
- Bright power and signal LEDs with 360° visibility offer quick and simple troubleshooting, reducing installation and maintenance costs
- The flat and smooth lens reduces the collection of dust and dirt, ensuring safe operation with less maintenance and fewer costs

Additional information

→ **www.mysick.com/en/VTE180-2**

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Detailed technical data

Features

Sensor principle	Photoelectric proximity sensor
Detection principle	Energetic / Background blanking (depending on type)
Housing design (light emission)	Cylindrical, straight Cylindrical, angled (depending on type)
Housing length	62.5 mm ... 83.8 mm (depending on type)
Thread diameter (housing)	M18 x 1
Sensing range max.	
Long range axial	1 mm ... 1.100 mm [1] (depending on type)
Long range radial	1 mm ... 900 mm [1] (depending on type)
Mid range axial	1 mm ... 500 mm [1] (depending on type)
Mid range radial	1 mm ... 450 mm [1] (depending on type)
Sensing range	
Long range axial	1 mm ... 800 mm [1] (depending on type)
Long range radial	1 mm ... 650 mm [1] (depending on type)
Mid range axial	1 mm ... 400 mm [1] (depending on type)
Mid range radial	1 mm ... 350 mm [1] (depending on type)
Type of light	Visible red light
Light source [2]	LED
Light spot size (distance)	
Axial	Ø 30 mm (800 mm)
Radial	Ø 20 mm (400 mm)
Wave length	645 nm
Adjustment	Potentiometer, 270 °

[1] Object with 90 % reflectance (referred to standard white DIN 5033)

[2] Average service life of 100,000 h at T_A = +25 °C .

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Residual ripple [2]	± 10 %
Power consumption [3]	≤ 30 mA
Output type	PNP, open collector [4] NPN, open collector [5] (depending on type)
Switching mode	Light switching Light/dark-switching, selectable via L/D control wire (depending on type)
Signal voltage PNP HIGH / LOW	Approx. V_S – 1.8 V / 0 V
Signal voltage NPN HIGH / LOW	Approx. V_S / < 1.8 V
Output current $I_{max.}$	≤ 100 mA
Response time [6]	≤ 0.5 ms
Switching frequency [7]	± 1,000 Hz
Angle of dispersion	Approx. 1.2° / approx. 1.5° (depending on type)
Connection type	Cable, 2 m [8] Connector, M12 (depending on type)
Circuit protection	A [9], B [10], D [11]
Protection class	III

Weight	
Cable, 4-wire	95 g / 62 g (depending on type)
Connector M12	47 g / 18 g (depending on type)
Housing material	
Plastic	PBT/PC
Metal	Nickel-plated brass and PC
Optics material	PMMA
Enclosure rating	IP 67
Items supplied	Fastening nuts (2 x)
Ambient operating temperature	–25 °C ... +55 °C
Ambient storage temperature	–40 °C ... +70 °C

[1] Limit values, operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load.
[4] Control wire open: dark-switching D.ON.
[5] Control wire open: light-switching L.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.
[10] B = inputs and output reverse-polarity protected.
[11] D = outputs overcurrent and short-circuit protected.

Ordering information

Other models available at www.mysick.com/en/VTE180-2

VTE180-2, Metal, Long range

- **Detection principle:** energetic
- **Adjustment:** adjustable Potentiometer, 270°

Sensing range max. [1]	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
1 mm ... 1,100 mm	Axial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2P41182	6041810
				Connector M12, 4-pin	Cd-087	VTE180-2P42482	6041811
			Light switching	Connector M12, 3-pin	Cd-066	VTE180-2P32482	6043945
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2N41182	6041808
				Connector M12, 4-pin	Cd-087	VTE180-2N42482	6041809
1 mm ... 900 mm	Radial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2P41184	6043822
				Connector M12, 4-pin	Cd-087	VTE180-2P42484	6043823
			Light switching	Connector M12, 3-pin	Cd-066	VTE180-2F32484	6044028
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2N41184	6043820
				Connector M12, 4-pin	Cd-087	VTE180-2N42484	6043821

[1] Object with 90 % reflectance (referred to standard white DIN 5033)
[2] Control wire open: dark-switching D.ON.
[3] Control wire open: light-switching L.ON.

VTE180-2, Metal, Mid range

- **Detection principle:** Background blanking
- **Adjustment:** adjustable Potentiometer, 270°

Sensing range max. [1]	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
1 mm ... 500 mm	Axial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2P41142	6041806
				Connector M12, 4-pin	Cd-087	VTE180-2P42442	6041807
			Light switching	Connector M12, 3-pin	Cd-066	VTE180-2F32342	6042576
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2N41142	6041804
				Connector M12, 4-pin	Cd-087	VTE180-2N42442	6041805
1 mm ... 450 mm	Radial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2P41144	6043814
				Connector M12, 4-pin	Cd-087	VTE180-2P42444	6043815
			Light switching	Connector M12, 3-pin	Cd-066	VTE180-2F32444	6044025
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2N41144	6043812
				Connector M12, 4-pin	Cd-087	VTE180-2N42444	6043813

[1] Object with 90 % reflectance (referred to standard white DIN 5033)

[2] Control wire open: dark-switching D.ON.

[3] Control wire open: light-switching L.ON.

VTE180-2, Plastic, Long range

- **Detection principle:** energetic
- **Adjustment:** adjustable Potentiometer, 270°

Sensing range max. [1]	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
1 mm ... 1,100 mm	Axial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2P41187	6037487
				Connector M12, 4-pin	Cd-087	VTE180-2P42487	6037488
			Light switching [2]	Connector M12, 3-pin	Cd-066	VTE180-2F32487	6044027
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2N41187	6037485
				Connector M12, 4-pin	Cd-087	VTE180-2N42487	6037486
1 mm ... 900 mm	Radial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2P41189	6043826
				Connector M12, 4-pin	Cd-087	VTE180-2P42489	6043827
			Light switching	Connector M12, 3-pin	Cd-066	VTE180-2F32489	6044029
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2N41189	6043824
				Connector M12, 4-pin	Cd-087	VTE180-2N42489	6043825

[1] Object with 90 % reflectance (referred to standard white DIN 5033)

[2] Control wire open: dark-switching D.ON.

[3] Control wire open: light-switching L.ON.

VTE180-2, Plastic, Mid range

- **Detection principle:** Background blanking
- **Adjustment:** adjustable Potentiometer, 270°

Sensing range max. [1]	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
1 mm ... 500 mm	Axial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2P41147	6037483
				Connector M12, 4-pin	Cd-087	VTE180-2P42447	6037484
			Light switching	Connector M12, 3-pin	Cd-066	VTE180-2P32447	6043946
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2N41147	6037481
				Connector M12, 4-pin	Cd-087	VTE180-2N42447	6037482
1 mm ... 450 mm	Radial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2P41149	6043818
				Connector M12, 4-pin	Cd-087	VTE180-2P42449	6043819
			Light switching	Connector M12, 3-pin	Cd-066	VTE180-2F32449	6044026
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VTE180-2N41149	6043816
				Connector M12, 4-pin	Cd-087	VTE180-2N42449	6043817

[1] Object with 90 % reflectance (referred to standard white DIN 5033)

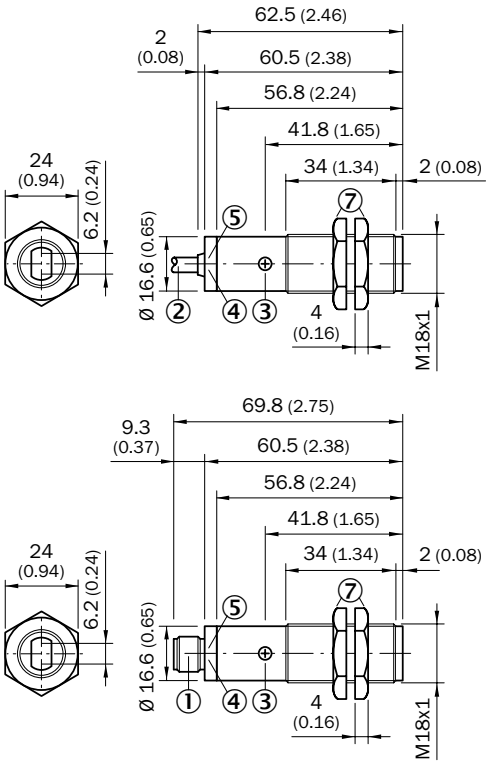
[2] Control wire open: dark-switching D.ON.

[3] Control wire open: light-switching L.ON.

Dimensional drawings

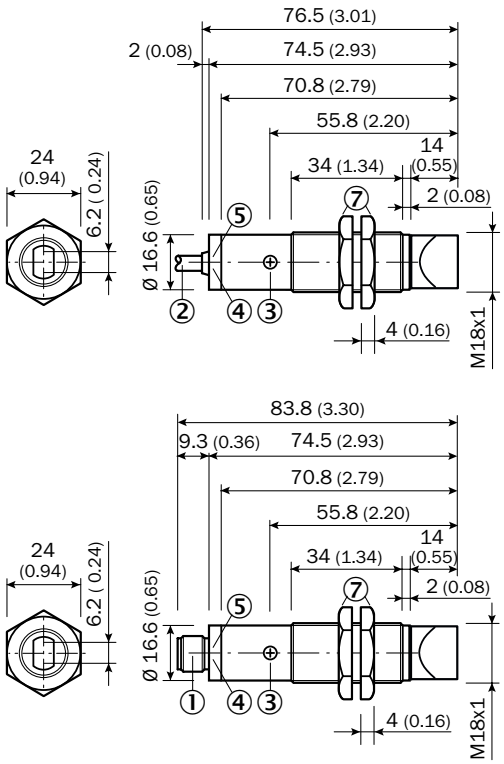
dimensions in mm (inch)

VTE180-2, metal, axial



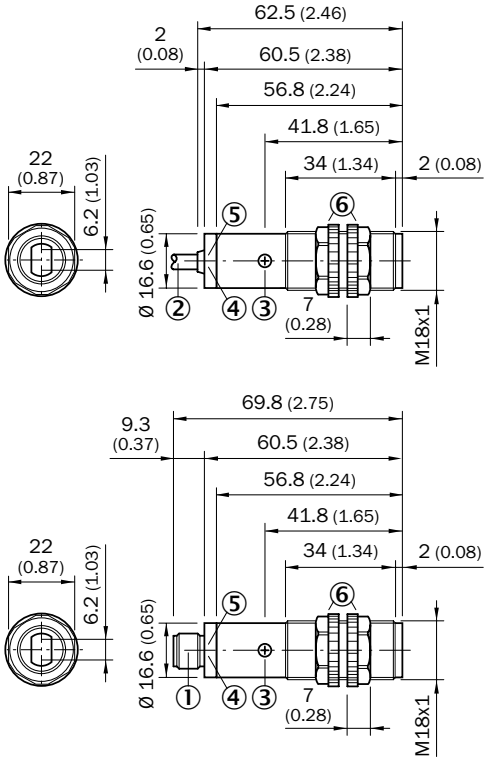
① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑦ Fastening nuts (2 x); 24 mm hex, metal

VTE180-2, metal, radial



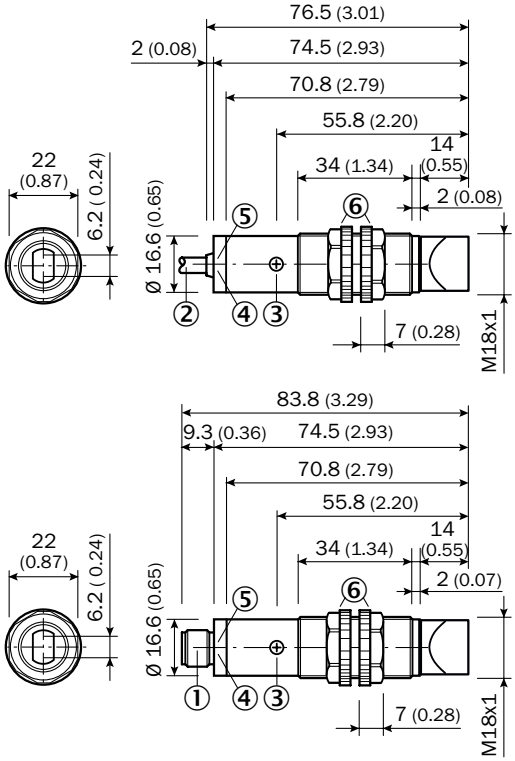
① Connector M12, 3-pin / Connector M12, 3-pin
② Connection cable 2 m
③ Sensitivity control; Potentiometer 270°
④ LED indicator orange: switching output active
⑤ LED indicator green, stability indicator: LED lights continuously = light reception < 0.9/> 1.1; LED off = light reception > 0.9 / < 1.1
⑦ Metal housing, fastening nuts (2 x); width across 24

VTE180-2, plastic, axial



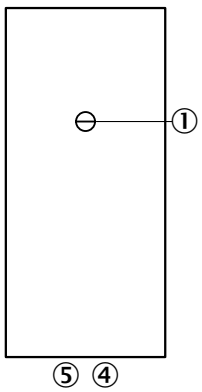
① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity control (potentiometer, 270°)
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑥ Fastening nuts (2 x); width across 22, PC

VTE180-2, plastic, radial



① Connector M12
② Connection cable 2 m
③ Sensitivity control; Potentiometer 270°
④ LED indicator orange: switching output active
⑤ LED indicator green, stability indicator: LED lights continuously = light reception < 0.9/> 1.1; LED off = light reception > 0.9 / < 1.1
⑥ Fastening nuts (2 x); width across 22, PC

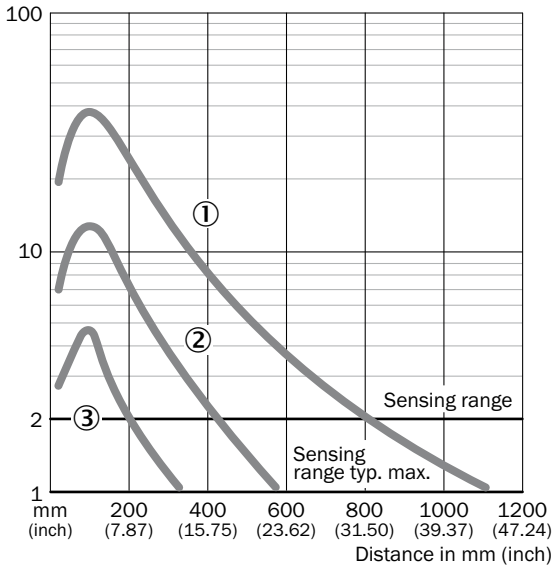
Adjustments



③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green

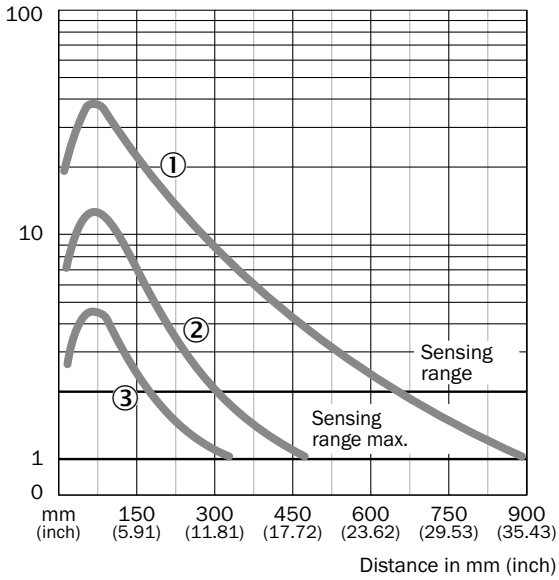
Characteristic curves

VTE180-2, 1.100 mm, axial



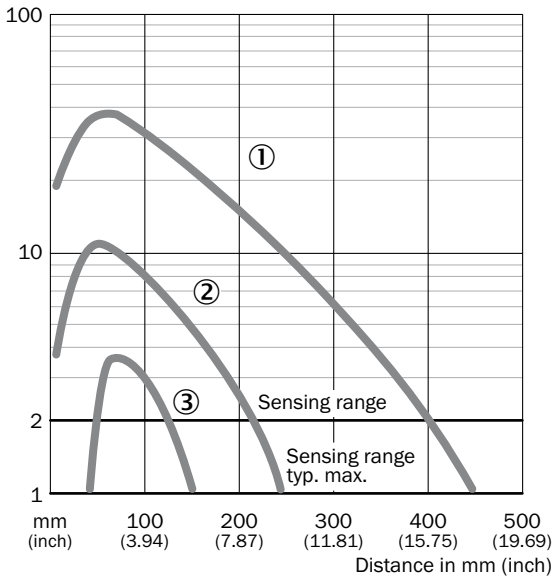
① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission
③ Sensing range on black, 6 % remission

VTE180-2, 900 mm, radial



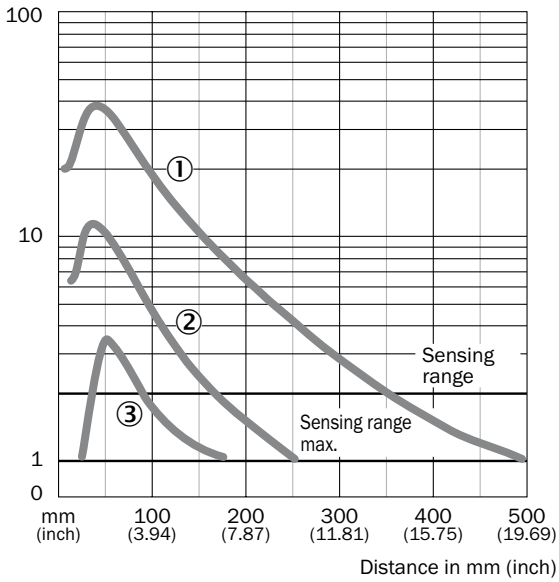
① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission
③ Sensing range on black, 6 % remission

VTE180-2, 450 mm, radial



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

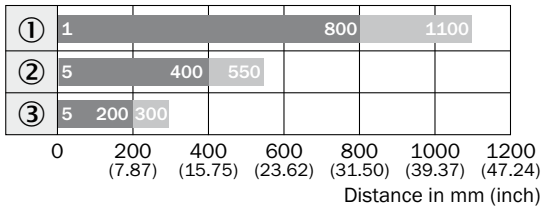
VTE180-2, 500 mm, axial



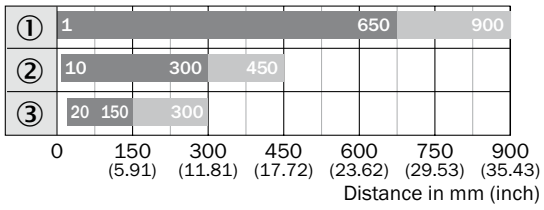
① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission
③ Sensing range on black, 6 % remission

Bar diagrams

VTE180-2, 1.100 mm, axial

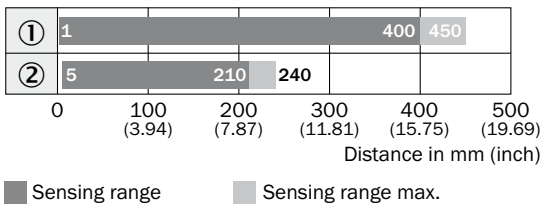


VTE180-2, 900 mm, radial



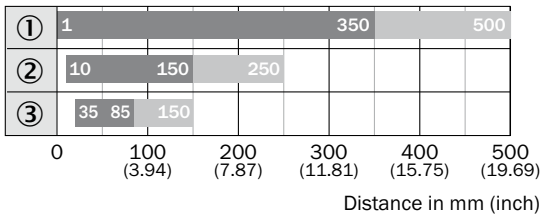
① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission
③ Sensing range on black, 6 % remission

VTE180-2, 450 mm, radial



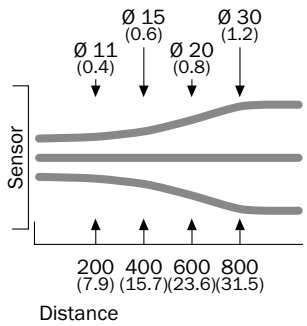
① Sensing range on white, 90 % remission
② Sensing range on grey, 18 % remission

VTE180-2, 500 mm, axial

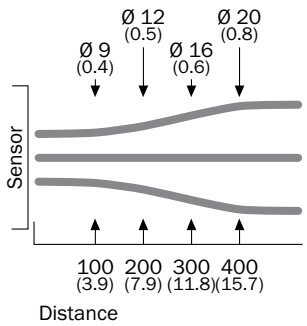


Light spot diameter

VTE180-2, 900 mm, 1.100 mm

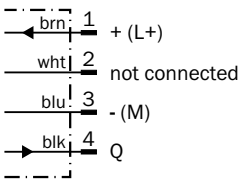


VTE180-2, 400 mm, 500 mm

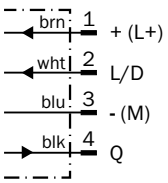


Connection diagram

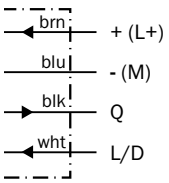
Cd-066



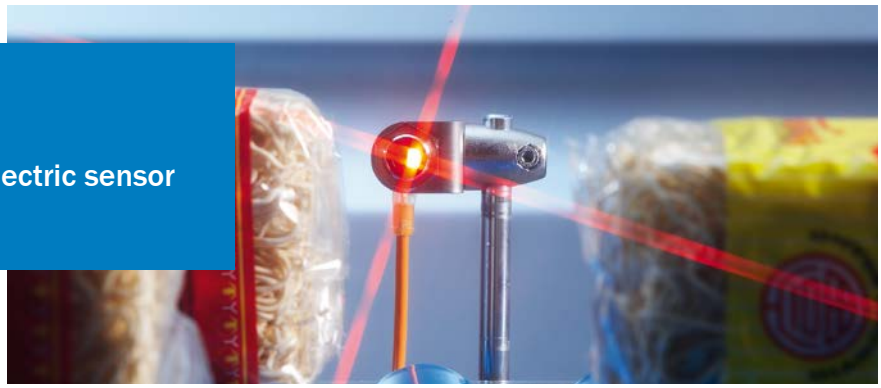
Cd-087



Cd-089



Lowest-cost cylindrical photoelectric sensor on the market!



Product description

The VTB180-2 photoelectric proximity sensors are proximity sensors with background suppression and a adjustable sensing range up to 300 mm.
Quick alignment and commissioning, reliable object detection, and dependable switching are achieved due to long sensing ranges, an extremely short response time, a red emitter LED and sensitivity control.

At a glance

Lowest-cost M18 housing sensor on the market
Sensing range up to 300 mm with background suppression
Bright power and signal LEDs with 360° visibility
Wide product portfolio solves a broad range of applications
High switching frequencies up to 500 Hz
Available in a metal housing for applications in harsh environments
Optical axis axial

Your benefits

- Lowest-cost M18 cylindrical sensor on the market reduces installation costs
- Bright red sender LED simplifies alignment and saves installation time
- Bright power and signal LEDs with 360° visibility offer quick and simple troubleshooting, reducing installation and maintenance costs
- The flat and smooth lens reduces the collection of dust and dirt, ensuring safe operation with less maintenance and fewer costs
- Sensors with background suppression for reliable detection of challenging objects

Additional information

→ **www.mysick.com/en/VTB180-2**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

8013536/2013-04-25
Subject to change without notice

Detailed technical data

Features

Sensor principle	Photoelectric proximity sensor
Detection principle	Background suppression
Housing design (light emission)	Cylindrical, straight
Thread diameter (housing)	M18 x 1
Sensing range max. [1]	10 mm ... 350 mm
Sensing range [1]	30 mm ... 200 mm
Type of light	Visible red light
Light source [2]	LED
Light spot size (distance)	Ø 15 mm (300 mm)
Wave length	632 nm

[1] Object with 90 % reflectance (referred to standard white DIN 5033)

[2] Average service life of 100,000 h at T_A = +25 °C .

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Residual ripple [2]	± 10 %
Power consumption [3]	≤ 35 mA
Output type	PNP [4] NPN, open collector [5] (depending on type)
Switching mode	Light switching Light/dark-switching, selectable via L/D control wire (depending on type)
Signal voltage PNP HIGH / LOW	Approx. V_S – 1.8 V / 0 V
Signal voltage NPN HIGH / LOW	Approx. V_S / < 1.8 V
Output current $I_{max.}$	≤ 100 mA
Response time [6]	≤ 1 ms
Switching frequency [7]	≤ 500 Hz
Angle of dispersion	Approx. 2.8 °
Connection type	Cable, 2 m [8] Connector M12 (depending on type)
Circuit protection	A [9], B [10], D [11]
Protection class	III
Weight	
Cable, 4-wire	62 g / 95 g (depending on type)
Connector M12, 4-pin	18 g / 47 g (depending on type)
Housing material	
Plastic	PBT/PC
Metal	Nickel-plated brass and PC
Optics material	PMMA

Enclosure rating	IP 67
Items supplied	Fastening nuts (2 x)
Ambient operating temperature	–25 °C ... +55 °C
Ambient storage temperature	–40 °C ... +70 °C

[1] Limit values, operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load.
[4] Control wire open: dark-switching D.ON.
[5] Control wire open: light-switching L.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.
[10] B = inputs and output reverse-polarity protected.
[11] D = outputs overcurrent and short-circuit protected.

Ordering information

Other models available at www.mysick.com/en/VTB180-2

VTB180-2, Plastic

- **Detection principle:** Background suppression
- **Sensing range max.:** 10 mm ... 350 mm (Object with 90 % reflectance (referred to standard white DIN 5033))
- **Optical axis:** axial
- **Adjustment:** adjustable, potentiometer, 4-turn

Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
PNP	Light/dark-switching [1]	Cable, 4-wire, 2 m	Cd-089	VTB180-2P41117	6043873
		Connector M12, 4-pin	Cd-087	VTB180-2P42417	6043874
	Light switching	Connector M12, 4-pin	Cd-066	VTB180-2F32417	6044020
NPN	Light/dark-switching [2]	Cable, 4-wire, 2 m	Cd-089	VTB180-2N41117	6043871
		Connector M12, 4-pin	Cd-087	VTB180-2N42417	6043872

[1] Control wire open: dark-switching D.ON.
[2] Control wire open: light-switching L.ON.

VTB180-2, Metal

- **Detection principle:** Background suppression
- **Sensing range max.:** 10 mm ... 350 mm (Object with 90 % reflectance (referred to standard white DIN 5033))
- **Optical axis:** axial
- **Adjustment:** adjustable, potentiometer, 4-turn

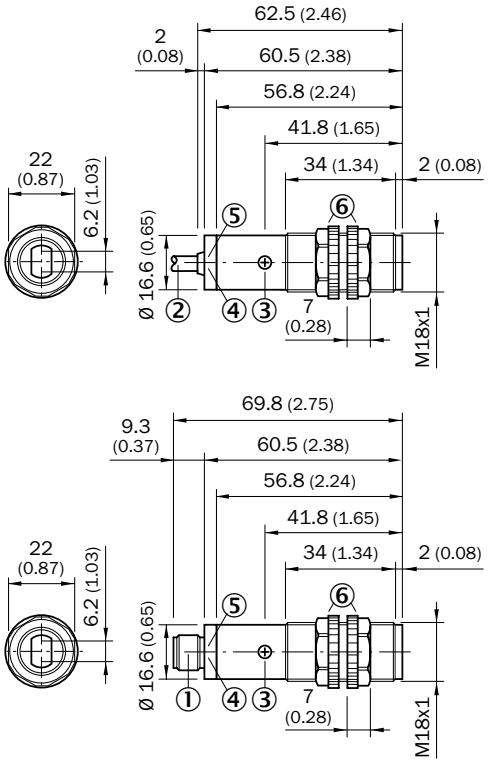
Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
PNP	Light/dark-switching [1]	Cable, 4-wire, 2 m	Cd-089	VTB180-2P41112	6043869
		Connector M12, 4-pin	Cd-087	VTB180-2P42412	6043870
	Light switching	Connector M12, 4-pin	Cd-066	VTB180-2F32412	6044019
NPN	Light/dark-switching [2]	Cable, 4-wire, 2 m	Cd-089	VTB180-2N41112	6043867
		Connector M12, 4-pin	Cd-087	VTB180-2N42412	6043868

[1] Control wire open: dark-switching D.ON.
[2] Control wire open: light-switching L.ON.

Dimensional drawings

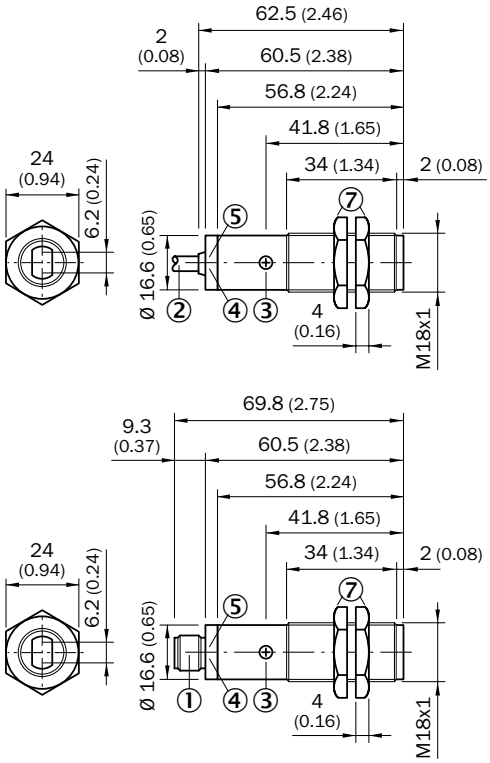
dimensions in mm (inch)

VTB180-2, plastic, axial



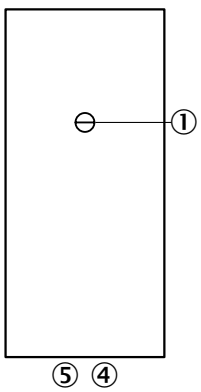
① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity control (potentiometer, 4-turn)
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑥ Fastening nuts (2 x); width across 22, PC

VTB180-2, metal, axial



① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity control (potentiometer, 4-turn)
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑦ Fastening nuts (2 x); 24 mm hex, metal

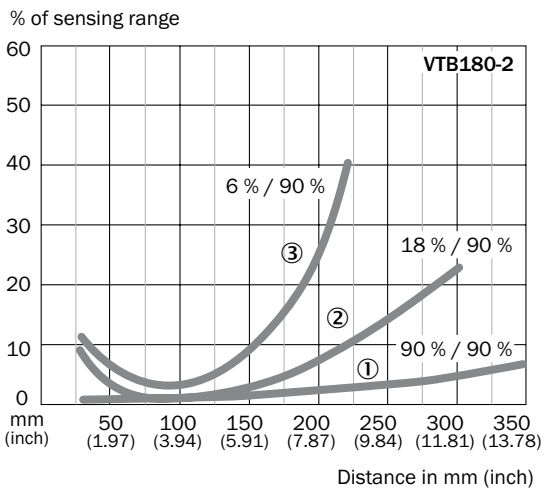
Adjustments



③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green

Characteristic curves

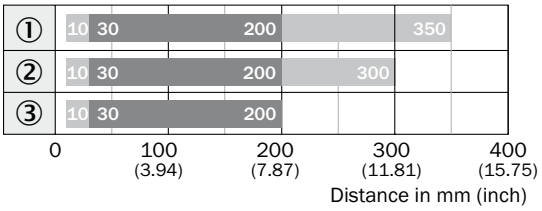
VTB180-2, 350 mm



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

Bar diagrams

VTB180-2, 350 mm

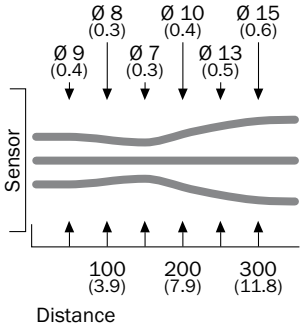


Sensing range Sensing range max.

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

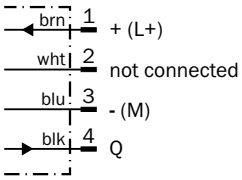
Light spot diameter

VTB180-2

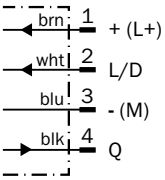


Connection diagram

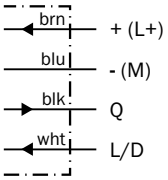
Cd-066



Cd-087



Cd-089



Lowest-cost cylindrical photoelectric sensor on the market!

Product description

The VL180-2 photoelectric retro-reflective sensor is enclosed in a cylindrical housing and is ideal for detecting reflective objects and surfaces. Depending on the reflector, the VL180-2 offers a long sensing range of up to 7 m.

Quick alignment and commissioning, reliable object detection and dependable switching are achieved due to long sensing ranges, an extremely short response time, a red light emitter LED and sensitivity control.

At a glance

- Lowest-cost M18 housing sensor on the market
- Sensing distance up to 7 m
- Polarizing filter ensures reliable detection of highly-reflective objects
- Bright power and signal LEDs with 360° visibility
- Includes reflector
- High switching frequencies up to 1000 Hz
- Available in a metal housing for applications in harsh environments
- Optical axis selectively axial or radial (90°)

Your benefits

- Lowest-cost M18 cylindrical sensor on the market reduces installation costs
- Bright red sender LED simplifies alignment and saves installation time
- Bright power and signal LEDs with 360° visibility offer quick and simple troubleshooting, reducing maintenance time and costs
- The flat and smooth lens reduces the collection of dust and dirt, ensuring safe operation with less maintenance and fewer costs
- Polarizing filter prevents false readings on reflective surfaces, reducing downtime

Additional information

→ **www.mysick.com/en/VL180-2**

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

8013536/2013-04-25
Subject to change without notice

Detailed technical data

Features

Sensor principle	Photoelectric retro-reflective sensor
Detection principle	Standard optics
Housing design (light emission)	Cylindrical, straight, cylindrical Angled (depending on type)
Housing length	62.9 mm ... 84.2 mm (depending on type)
Thread diameter (housing)	M18 x 1
Sensing range max. [1]	
Axial	0.05 m ... 7 m
Radial	0.05 m ... 5.5 m
Sensing range [1]	
Axial	0.05 m ... 6 m
Radial	0.05 m ... 4.5 m
Type of light	Visible red light
Light source [2]	LED
Light spot size (distance)	
Axial	Ø 400 mm (6 m)
Radial	Ø 270 mm (4 m)
Wave length	645 nm
Adjustment	Potentiometer, 270 °

[1] PL80A.

[2] Average service life of 100,000 h at T_A = +25 °C .

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Residual ripple [2]	± 10 %
Power consumption [3]	30
Output type	PNP, open collector [4] NPN, open collector [5] (depending on type)
Switching mode	Light switching Dark-switching Light/dark-switching (depending on type)
Switching mode selector	Selectable via L/D control wire
Signal voltage PNP HIGH / LOW	Approx. V_S – 1.8 V / 0 V
Signal voltage NPN HIGH / LOW	Approx. V_S / < 1.8 V
Output current $I_{max.}$	≤ 100 mA
Response time [6]	≤ 0.5 ms
Switching frequency [7]	1,000 Hz
Angle of dispersion	Approx. 4.5 °
Connection type	Cable, 2 m [8] Connector, M12 (depending on type)
Circuit protection	A [9], B [10], D [11]
Protection class	III

Weight	
Cable, 4-wire	95 g / 62 g (depending on type)
Connector M12	47 g / 18 g (depending on type)
Polarisation filter	✔
Housing material	
Plastic	PBT/PC
Metal	Nickel-plated brass and PC
Optics material	PMMA
Enclosure rating	IP 67
Items supplied	Reflector P250, fastening nuts (2 x)
Ambient operating temperature	–25 °C ... +55 °C
Ambient storage temperature	–40 °C ... +70 °C

[1] Limit values, operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load.
[4] Control wire open: dark-switching D.ON.
[5] Control wire open: light-switching L.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.
[10] B = inputs and output reverse-polarity protected.
[11] D = outputs overcurrent and short-circuit protected.

Ordering information

Other models available at www.mysick.com/en/VL180-2

VL180-2, Metal

- **Detection principle:** Standard optics
- **Adjustment:** adjustable Potentiometer, 270°

Sensing range max. [1]	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
0.05 m ... 7 m	Axial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VL180-2P41131	6041818
				Connector M12, 4-pin	Cd-087	VL180-2P42431	6041819
			Light switching	Connector M12, 4-pin	Cd-066	VL180-2F32331	6043458
			Dark-switching	Connector M12, 4-pin	Cd-066	VL180-2P32431	6044030
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VL180-2N41131	6041816
				Connector M12, 4-pin	Cd-087	VL180-2N42431	6041817
0.05 m ... 5.5 m	Radial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VL180-2P41133	6043832
				Connector M12, 4-pin	Cd-087	VL180-2P42433	6043834
			Dark-switching	Connector M12, 3-pin	Cd-066	VL180-2P32433	6044032
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VL180-2N41133	6043828
				Connector M12, 4-pin	Cd-087	VL180-2N42433	6043830

[1] PL80A.
[2] Control wire open: dark-switching D.ON.
[3] Control wire open: light-switching L.ON.

VL180-2, Plastic

- **Detection principle:** Standard optics
- **Adjustment:** adjustable Potentiometer, 270°

Sensing range max. [1]	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
0.05 m ... 7 m	Axial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VL180-2P41136	6037495
				Connector M12, 4-pin	Cd-087	VL180-2P42436	6037496
			Dark-switching	Connector M12, 3-pin	Cd-066	VL180-2P32436	6044031
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VL180-2N41136	6037493
				Connector M12, 4-pin	Cd-087	VL180-2N42436	6037494
0.05 m ... 5.5 m	Radial	PNP	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-089	VL180-2P41138	6043837
				Connector M12, 4-pin	Cd-087	VL180-2P42438	6043838
			Dark-switching	Connector M12, 3-pin	Cd-066	VL180-2P32438	6044033
		NPN	Light/dark-switching [3]	Cable, 4-wire, 2 m, PVC	Cd-089	VL180-2N41138	6043835
				Connector M12, 4-pin	Cd-087	VL180-2N42438	6043836

[1] PL80A.

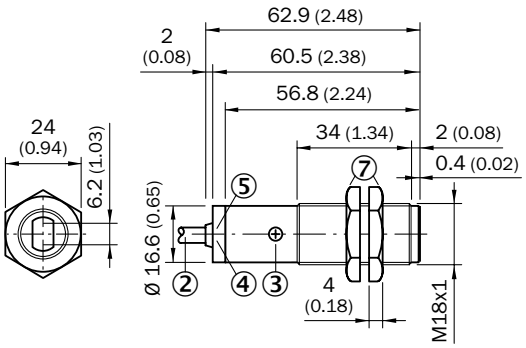
[2] Control wire open: dark-switching D.ON.

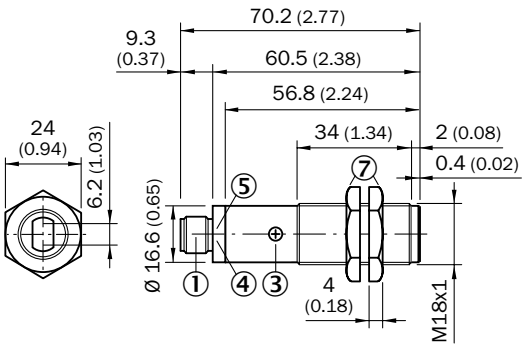
[3] Control wire open: light-switching L.ON.

Dimensional drawings

dimensions in mm (inch)

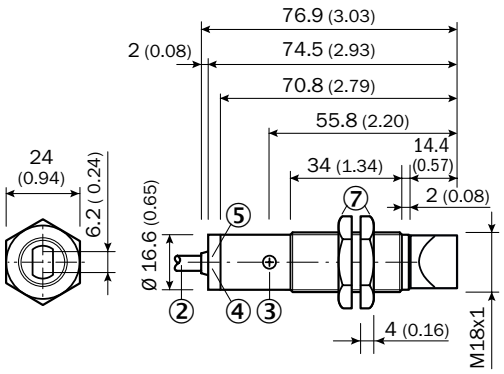
VL180-2, metal, axial

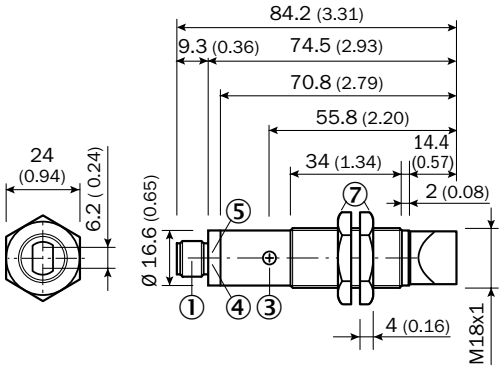




① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑦ Fastening nuts (2 x); 24 mm hex, metal

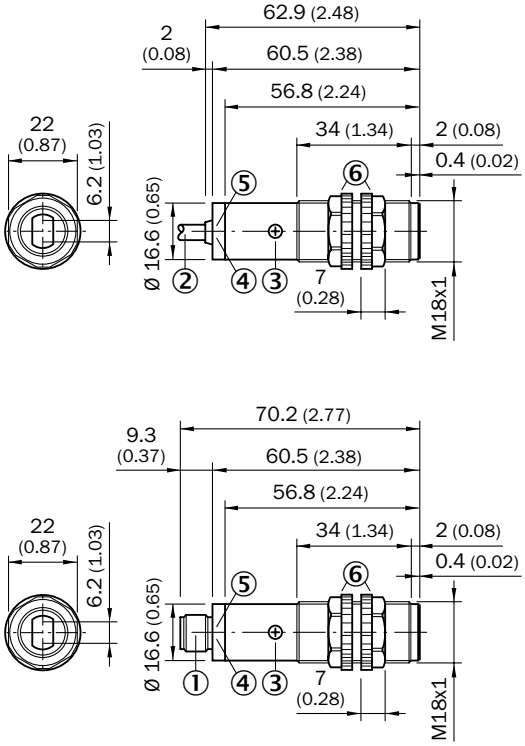
VL180-2, metal, radial





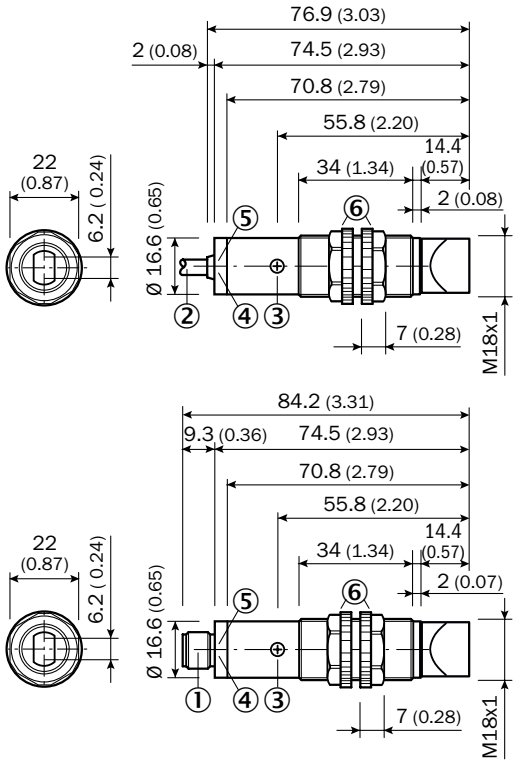
① Connector M12, 3-pin / Connector M12, 3-pin
② Connection cable 2 m
③ Sensitivity control; Potentiometer 270°
④ LED indicator orange: switching output active
⑤ LED indicator green, stability indicator: LED lights continuously = light reception < 0.9/> 1.1; LED off = light reception > 0.9 / < 1.1
⑦ Metal housing, fastening nuts (2 x); width across 24

VL180-2, plastic, axial



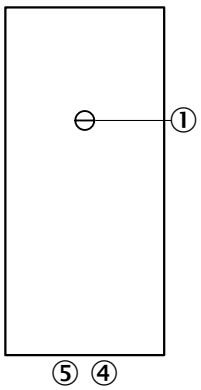
① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity control (potentiometer, 270°)
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑥ Fastening nuts (2 x); width across 22, PC

VL180-2, plastic, radial



① Connector M12
② Connection cable 2 m
③ Sensitivity control; Potentiometer 270°
④ LED indicator orange: switching output active
⑤ LED indicator green, stability indicator: LED lights continuously = light reception < 0.9/> 1.1; LED off = light reception > 0.9 / < 1.1
⑥ Fastening nuts (2 x); width across 22, PC

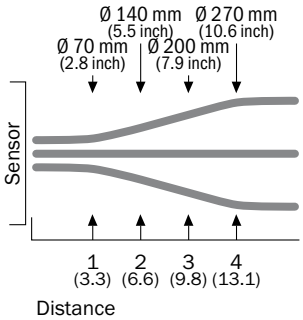
Adjustments



③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green

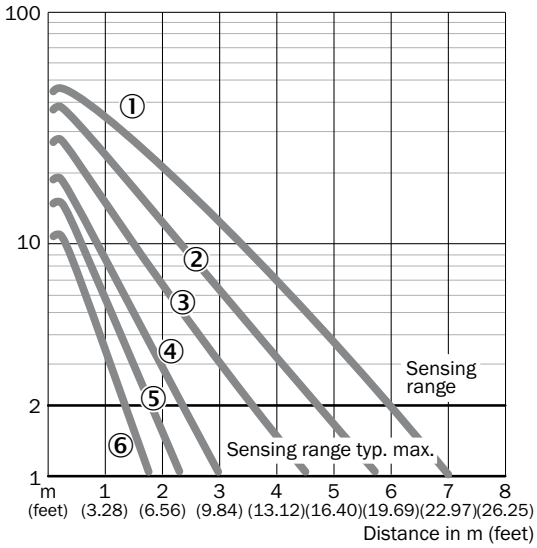
Light spot diameter

VL180-2



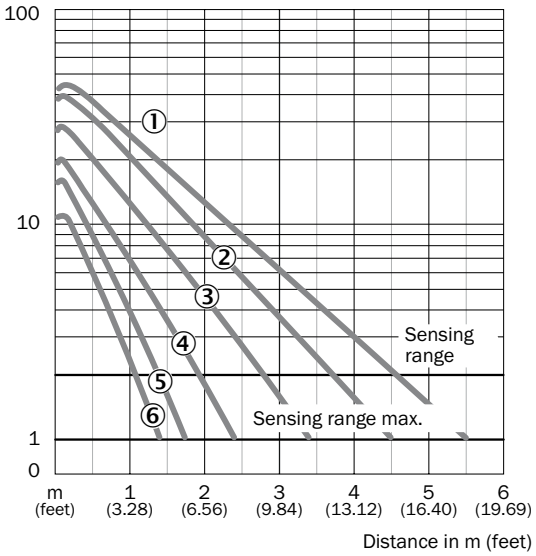
Characteristic curves

VL180-2, 7 m, axial



① PL80A
② P250, PL40A, PL50A, C110A
③ PL30A, PL31A
④ PL20A
⑤ P45
⑥ Reflective tape Diamond Grade

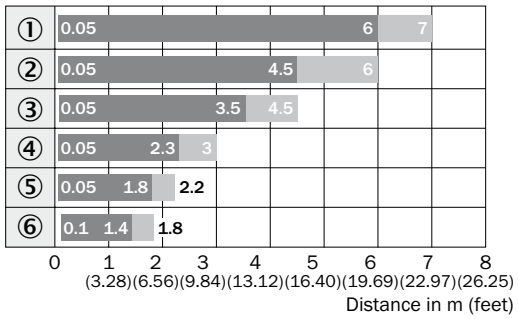
VL180-2, 5.5 m, radial



① PL80A
② P250, PL40A, PL50A, C110A
③ PL30A, PL31A
④ PL20A
⑤ P45
⑥ Reflective tape Diamond Grade

Bar diagrams

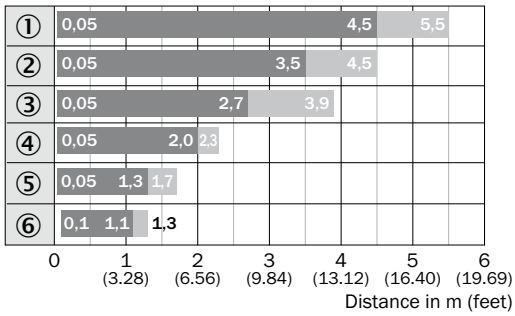
VL180-2, 7 m, axial



Sensing range Sensing range max.

① PL80A
② P250, PL40A, PL50A, C110A
③ PL30A, PL31A
④ PL20A
⑤ P45
⑥ Reflective tape Diamond Grade

VL180-2, 5.5 m, radial

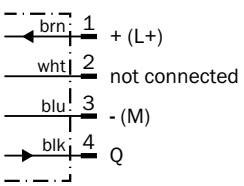


Sensing range Sensing range max.

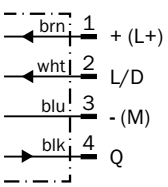
① PL80A
② P250, PL40A, PL50A, C110A
③ PL30A, PL31A
④ PL20A
⑤ P45
⑥ Reflective tape Diamond Grade

Connection diagram

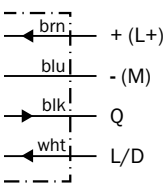
Cd-066



Cd-087



Cd-089



Lowest-cost cylindrical photoelectric sensor on the market!

Product description

The VSE180-2 photoelectric through-beam sensors offer long sensing distances up to 28 m.
Quick alignment and commissioning, reliable object detection and dependable switching are achieved due to long sensing ranges, an extremely short response time, a red light emitter LED and sensitivity control.

At a glance

- Lowest-cost M18 housing sensor on the market
- Sensing distance up to 28 m
- Bright power and signal LEDs with 360° visibility
- High switching frequencies up to 1000 Hz
- Available in a metal housing for applications in harsh environments
- Optical axis selectively axial or radial (90°)
- Wide product portfolio solves a broad range of applications

Your benefits

- Lowest-cost M18 cylindrical sensor on the market reduces installation costs
- Bright red sender LED simplifies alignment and saves installation time
- Bright power and signal LEDs with 360° visibility offer quick and simple troubleshooting, reducing maintenance time and costs
- The flat and smooth lens reduces the collection of dust and dirt, ensuring safe operation with less maintenance and fewer costs

Additional information

→ **www.mysick.com/en/VSE180-2**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

8013536/2013-04-25
Subject to change without notice

Detailed technical data

Features

Sensor principle	Through-beam photoelectric sensor
Housing design (light emission)	Cylindrical, straight Cylindrical, angled (depending on type)
Housing length	62.5 mm ... 83.8 mm (depending on type)
Thread diameter (housing)	M18 x 1
Sensing range max.	
Axial	0 m ... 28 m
Radial	0 m ... 25 m
Sensing range	
Axial	0 m ... 20 m
Radial	0 m ... 19 m
Type of light	Visible red light
Light source [1]	LED
Light spot size (distance)	Ø 1,100 mm (20 m)
Wave length	645 nm
Adjustment [2]	Potentiometer, 270 °

[1] Average service life of 100,000 h at T_A = +25 °C .
[2] Receiver.

Mechanics/electronics

Supply voltage [1]	10 V DC ... 30 V DC
Residual ripple [2]	± 10 %
Power consumption, sender [3]	20 mA
Power consumption, receiver [3]	15 mA
Output type	PNP, open collector [4] NPN, open collector [5] (depending on type)
Switching mode	Dark-switching Light/dark-switching selectable via L/D control wire (depending on type)
Signal voltage PNP HIGH / LOW	Approx. V_S – 1.8 V / 0 V
Signal voltage NPN HIGH / LOW	Approx. V_S / < 1.8 V
Output current $I_{max.}$	≤ 100 mA
Response time [6]	≤ 0.5 ms
Switching frequency [7]	1,000 Hz
Angle of dispersion	Approx. 5°
Connection type	Cable, 2 m [8] Connector, M12 (depending on type)
Circuit protection	A [9], B [10], D [11]
Protection class	III
Weight	
Cable, 4-wire	62 g ... 190 g (depending on type)
Connector M12	18 g ... 94 g (depending on type)
Housing material	
Plastic	PBT/PC
Metal	Nickel-plated brass and PC

Optics material	PMMA
Enclosure rating	IP 67
Items supplied	Fastening nuts (4 x)
Ambient operating temperature	–25 °C ... +55 °C
Ambient storage temperature	–40 °C ... +70 °C

[1] Limit values, operation in short-circuit protected network max. 8 A.
[2] May not exceed or fall short of V_S tolerances.
[3] Without load.
[4] Control wire open: dark-switching D.ON.
[5] Control wire open: light-switching L.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.
[10] B = inputs and output reverse-polarity protected.
[11] D = outputs overcurrent and short-circuit protected.

Ordering information

Other models available at www.mysick.com/en/VSE180-2

VSE180-2, Metal

- **Adjustment:** adjustable Potentiometer, 270° (Receiver.)

Sensing range max.	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
0 m ... 28 m	Axial	PNP	Light/dark-switching [1]	Cable, 4-wire, 2 m, PVC	Cd-058	VSE180-2P41132	6041822
				Connector M12, 4-pin	Cd-060	VSE180-2P42432	6041823
			Dark-switching	Connector M12, 3-pin	Cd-057	VSE180-2P32432	6044034
		NPN	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-058	VSE180-2N41132	6041820
				Connector M12, 4-pin	Cd-060	VSE180-2N42432	6041821
0 m ... 25 m	Radial	PNP	Light/dark-switching [1]	Cable, 4-wire, 2 m, PVC	Cd-058	VSE180-2P41134	6043849
				Connector M12, 4-pin	Cd-060	VSE180-2P42434	6043850
			Dark-switching	Connector M12, 3-pin	Cd-057	VSE180-2P32434	6044036
		NPN	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-058	VSE180-2N41134	6043847
				Connector M12, 4-pin	Cd-060	VSE180-2N42434	6043848

[1] Control wire open: dark-switching D.ON.
[2] Control wire open: light-switching L.ON.

VSE180-2, Plastic

- **Adjustment:** adjustable Potentiometer, 270° (Receiver.)

Sensing range max.	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
0 m ... 28 m	Axial	PNP	Light/dark-switching [1]	Cable, 4-wire, 2 m, PVC	Cd-058	VSE180-2P41137	6037499
				Connector M12, 4-pin	Cd-060	VSE180-2P42437	6037500
			Dark-switching	Connector M12, 3-pin	Cd-057	VSE180-2P32437	6044035
		NPN	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-058	VSE180-2N41137	6037497
				Connector M12, 4-pin	Cd-060	VSE180-2N42437	6037498

[1] Control wire open: dark-switching D.ON.
[2] Control wire open: light-switching L.ON.

Sensing range max.	Optical axis	Output type	Switching mode	Connection	Connection diagram	Model name	Part no.
0 m ... 25 m	Radial	PNP	Light/dark-switching [1]	Cable, 4-wire, 2 m, PVC	Cd-058	VSE180-2P41139	6043853
				Connector M12, 4-pin	Cd-060	VSE180-2P42439	6043854
			Dark-switching	Connector M12, 3-pin	Cd-057	VSE180-2P32439	6044037
		NPN	Light/dark-switching [2]	Cable, 4-wire, 2 m, PVC	Cd-058	VSE180-2N41139	6043851
				Connector M12, 4-pin	Cd-060	VSE180-2N42439	6043852

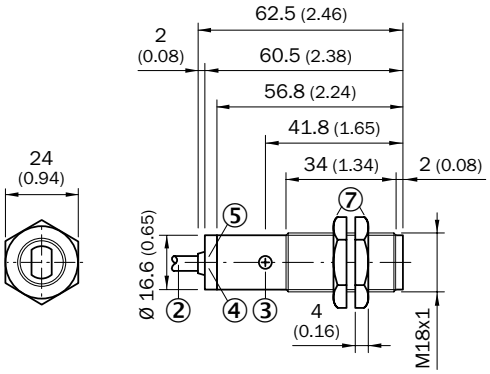
[1] Control wire open: dark-switching D.ON.

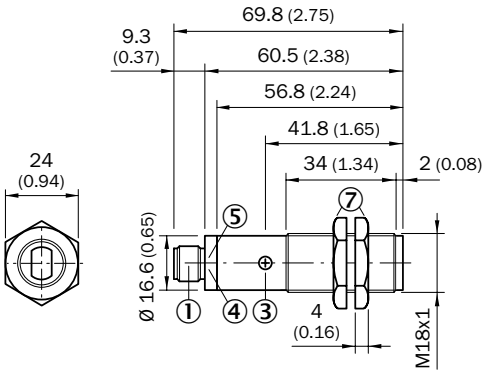
[2] Control wire open: light-switching L.ON.

Dimensional drawings

dimensions in mm (inch)

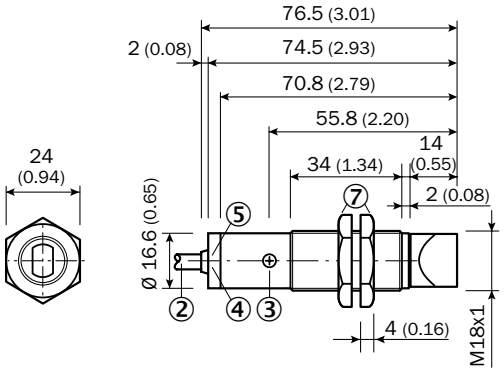
VSE180-2, metal, axial

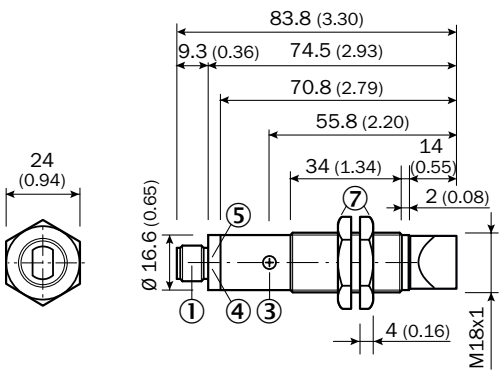




① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green: strentgh indicator
⑦ Fastening nuts (2 x); 24 mm hex, metal

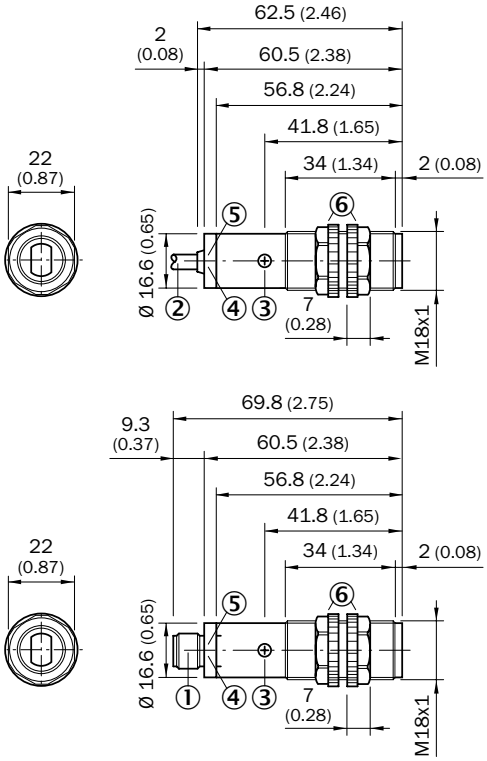
VSE180-2, metal, radial





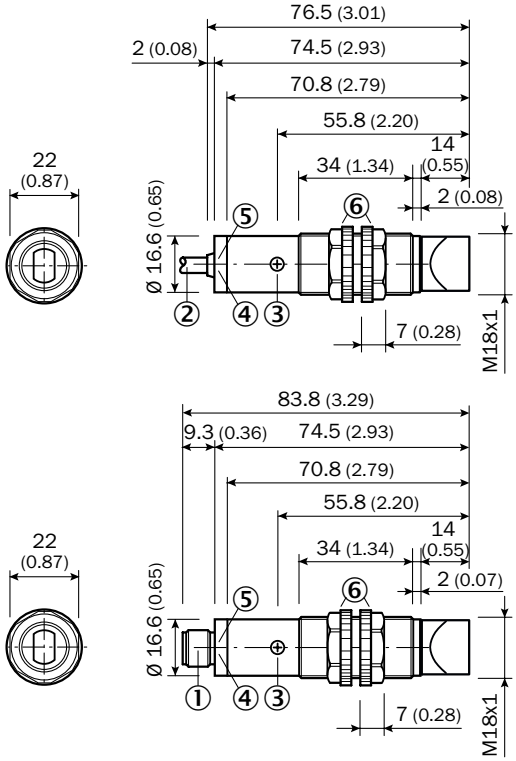
① Connector M12, 3-pin / Connector M12, 3-pin
② Connection cable 2 m
③ Sensitivity control; Potentiometer 270° (only VE)
④ LED indicator orange: switching output active (only VE)
⑤ LED indicator green, stability indicator (only VE): LED lights continuously = light reception < 0.9/> 1.1; LED off = light reception > 0.9 / < 1.1
⑦ Metal housing, fastening nuts (2 x); width across 24

VSE180-2, plastic, axial



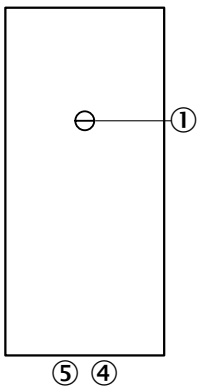
① Connector M12, 4-pin
② Connection cable 2 m
③ Sensitivity adjustment 270°
④ LED indicator orange
⑤ LED indicator green: strentgh indicator
⑥ Fastening nuts (2 x); width across 22, PC

VSE180-2, plastic, radial



① Connector M12
② Connection cable 2 m
③ Sensitivity control; Potentiometer 270° (only VE)
④ LED indicator orange: switching output active (only VE)
⑤ LED indicator green, stability indicator (only VE): LED lights continuously = light reception < 0.9/> 1.1; LED off = light reception > 0.9 / < 1.1
⑥ Fastening nuts (2 x); width across 22, PC

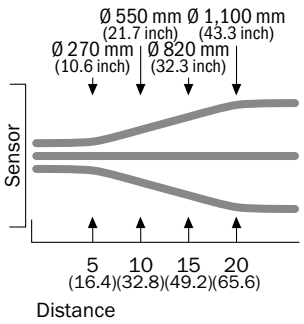
Adjustments



③ Sensitivity adjustment 270°
④ LED indicator orange: switching output active
⑤ LED indicator green

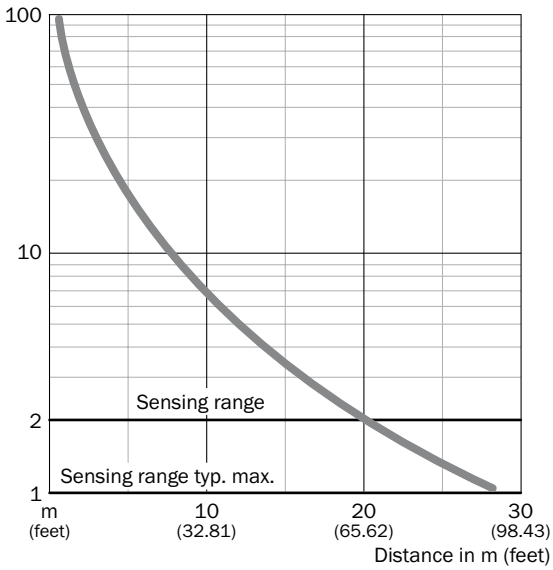
Light spot diameter

VSE180-2, 28 m, axial

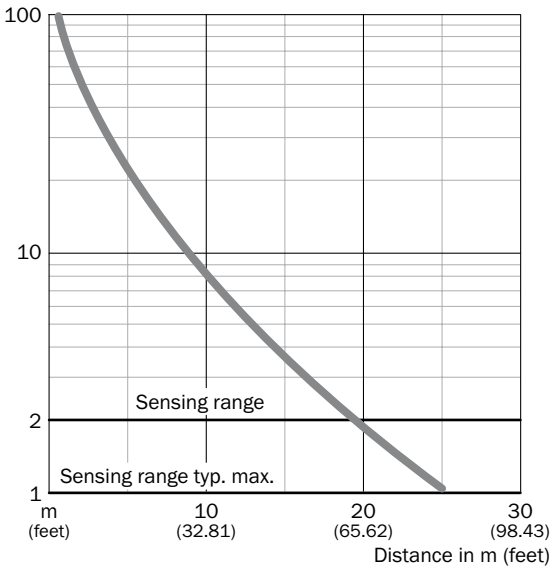


Characteristic curves

VSE180-2, 28 m, axial

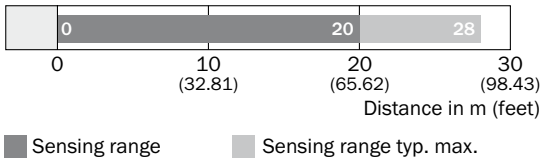


VSE180-2, 25 m, radial

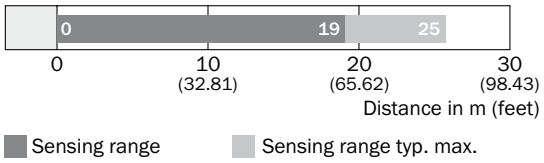


Bar diagrams

VSE180-2, 28 m, axial

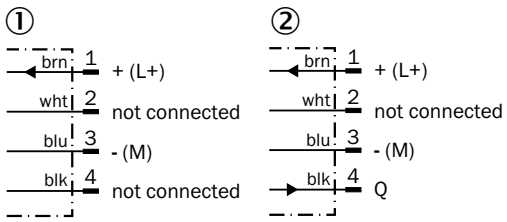


VSE180-2, 25 m, radial



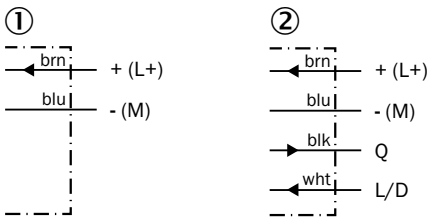
Connection diagram

Cd-057



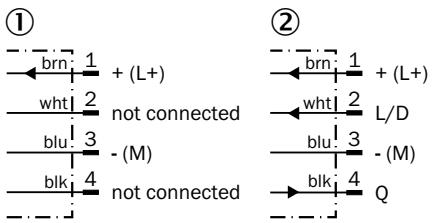
① Sender
② Receiver

Cd-058



① Sender
② Receiver

Cd-060



① Sender
② Receiver

Accessories

Mounting brackets/plates

Mounting brackets

Figure	Description	Material	Model name	Part no.
	Mounting plate for M18 sensors	Steel, zinc coated	BEF-WG-M18	5321870
	Mounting bracket, M18 thread	Steel, zinc coated	BEF-WN-M18	5308446

Mounting plates

Figure	Description	Material	Model name	Part no.
	Mounting plate for M18 housing	Stainless steel	BEF-WG-M18N	5320948
	Mounting bracket	Stainless steel	BEF-WN-M18N	5320947

Plug connectors and cables

Connecting cable (female connector-open) M12, 4-pin, PVC

- **Enclosure rating:** IP 67

Figure	Connection type head A	Connection type head B	Cable length	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable	2 m	DOL-1204-G02M	6009382
			5 m	DOL-1204-G05M	6009866
			10 m	DOL-1204-G10M	6010543
			15 m	DOL-1204-G15M	6010753
			20 m	DOL-1204-G20M	6034401
	Female connector, M12, 4-pin, angled	Cable	2 m	DOL-1204-W02M	6009383
			5 m	DOL-1204-W05M	6009867
			10 m	DOL-1204-W10M	6010541
			15 m	DOL-1204-W15M	6036474
			20 m	DOL-1204-W20M	6033559

Female connector (ready to assemble) M12, 4-pin

- **Enclosure rating:** IP 67

Figure	Connection type head A	Connection type head B	Model name	Part no.
	Female connector, M12, 4-pin, straight	-	DOS-1204-G	6007302
	Female connector, M12, 4-pin, angled	-	DOS-1204-W	6007303

Reflectors

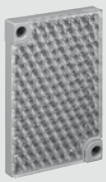
Reflective tape

Figure	Description	Dimensions	Model name	Part no.
	Self-adhesive	50 mm x 60 mm	REF-IRF-56	5314244
	Self-adhesive, customizable length by roll	5 cm x 22.8 m [1]	REF-PLUS-50-K	4051185
	Self-adhesive, roll	50 mm x 22.8 m	REF-PLUS-R50	5319981

Round

Figure	Description	Material	Diameter	Model name	Part no.
	Round, screw connection	PMMA/ABS	80 mm	C110A	5304549

Angular

Figure	Description	Material	Dimensions	Model name	Part no.
	Rectangular, screw connection	PMMA/ABS	47 mm x 47 mm	P250	5304812
			38 mm x 15 mm	PL20A	1012719
			56 mm x 28 mm	PL30A	1002314
			37 mm x 56 mm	PL40A	1012720
	Rectangular, screw connection, wrench size 48 mm	PMMA/ABS	–	PL50A	1000132
	Rectangular, screw connection	PMMA/ABS	80 mm x 80 mm	PL80A	1003865

Terminal and alignment brackets

Alignment brackets

Figure	Description	Material	Model name	Part no.
	Mounting bracket with ball-and-socket	Plastic	BEF-WN-M18-ST02	5312973

Terminal brackets

Figure	Description	Material	Model name	Part no.
	Clamping block for round sensors M18, without fixed stop	Plastic (PA12), glass-fiber reinforced	BEF-KH-M18	2051481
	Clamping block for round sensors M18, with fixed stop	Plastic (PA12), glass-fiber reinforced	BEF-KHF-M18	2051482
	Mounting ring	Stainless steel	BEF-WN-MH15-2V	4053358

Universal bar clamp systems

Figure	Description	Material	Model name	Part no.
	Universal bar clamp for mounting bars with 12 mm diameter	Zinc diecast	BEF-KHS-KH3	5322626
	Plate N06 for universal clamp bracket	Zinc plated steel (sheet), Diecast zinc (clamp)	BEF-KHS-N06	2051612
	Plate N06N for universal clamp bracket, M18	Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp)	BEF-KHS-N06N	2051622
	Mounting bar, straight, 200 mm	Steel, zinc coated	BEF-MS12G-A	4056054
	Mounting bar, straight, 300 mm	Steel, zinc coated	BEF-MS12G-B	4056055
	Mounting bar, L-shaped, 150 mm x 150 mm	Steel, zinc coated	BEF-MS12L-A	4056052
	Mounting bar, L-shaped, 250 x 250 mm	Steel, zinc coated	BEF-MS12L-B	4056053
	Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm	Steel, zinc coated	BEF-MS12Z-A	4056056
	Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm	Steel, zinc coated	BEF-MS12Z-B	4056057
	Bar clamp for bar diameter of 12 mm (fixing the mounting rod)	Aluminum	BEF-RMC-D12	5321878

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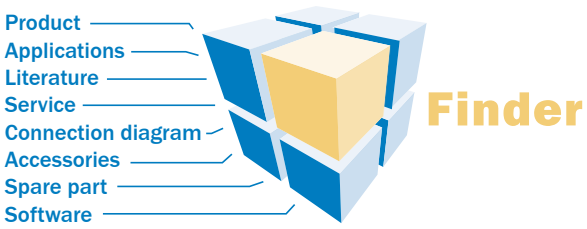

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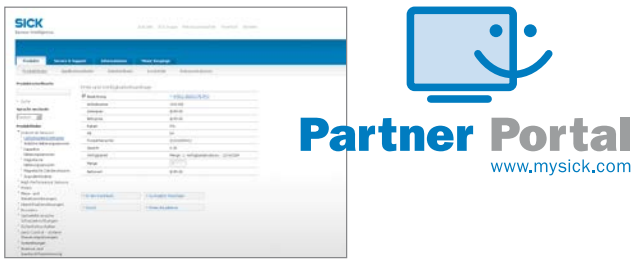

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