



# VTB180-2N41117

V180

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

| Type           | part no. |
|----------------|----------|
| VTB180-2N41117 | 6043871  |

Other models and accessories → [www.sick.com/V180](http://www.sick.com/V180)

Detailed technical data

Features

|                                 |                                        |
|---------------------------------|----------------------------------------|
| Functional principle            | Photoelectric proximity sensor         |
| Functional principle detail     | Background suppression                 |
| Dimensions (W x H x D)          | 18 mm x 18 mm                          |
| Housing design (light emission) | Cylindrical                            |
| Thread diameter (housing)       | M18 x 1                                |
| Optical axis                    | Axial                                  |
| Sensing range max.              | 10 mm ... 350 mm <sup>1)</sup>         |
| Sensing range                   | 30 mm ... 200 mm <sup>1)</sup>         |
| Focus                           | Approx. 2.8°                           |
| Type of light                   | Visible red light                      |
| Light source                    | LED <sup>2)</sup>                      |
| Light spot size (distance)      | Ø 15 mm (300 mm)                       |
| Angle of dispersion             | Approx. 2.8°                           |
| Wave length                     | 632 nm                                 |
| Adjustment                      | Potentiometer, 4 turns (Sensing range) |

<sup>1)</sup> Object with 90% remission (based on standard white, DIN 5033).

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

## Mechanics/electronics

|                                              |                                                        |
|----------------------------------------------|--------------------------------------------------------|
| <b>Supply voltage <math>U_B</math></b>       | 10 V DC ... 30 V DC <sup>1)</sup>                      |
| <b>Ripple</b>                                | $\pm 10\%$ <sup>2)</sup>                               |
| <b>Current consumption</b>                   | 35 mA <sup>3)</sup>                                    |
| <b>Switching output</b>                      | NPN <sup>4)</sup>                                      |
| <b>Switching mode</b>                        | Light/dark switching <sup>4)</sup>                     |
| <b>Switching mode selector</b>               | Selectable via L/D control cable                       |
| <b>Signal voltage NPN HIGH/LOW</b>           | Approx. $V_S / < 1.8\text{ V}$                         |
| <b>Output current <math>I_{\max.}</math></b> | $\leq 100\text{ mA}$                                   |
| <b>Response time</b>                         | $\leq 1\text{ ms}$ <sup>5)</sup>                       |
| <b>Switching frequency</b>                   | 500 Hz <sup>6)</sup>                                   |
| <b>Connection type</b>                       | Cable, 4-wire, 2 m <sup>7)</sup>                       |
| <b>Cable material</b>                        | Plastic, PVC                                           |
| <b>Conductor cross section</b>               | 0.18 mm <sup>2</sup>                                   |
| <b>Cable diameter</b>                        | $\varnothing 3.8\text{ mm}$                            |
| <b>Circuit protection</b>                    | A <sup>8)</sup><br>B <sup>9)</sup><br>D <sup>10)</sup> |
| <b>Protection class</b>                      | III                                                    |
| <b>Weight</b>                                | 62 g                                                   |
| <b>Housing material</b>                      | Plastic, PBT/PC                                        |
| <b>Optics material</b>                       | Plastic, PMMA                                          |
| <b>Enclosure rating</b>                      | IP67                                                   |
| <b>Items supplied</b>                        | Fastening nuts (2 x)                                   |
| <b>Ambient operating temperature</b>         | -25 °C ... +55 °C                                      |
| <b>Ambient temperature, storage</b>          | -40 °C ... +70 °C                                      |

<sup>1)</sup> Limit values when operated in short-circuit protected network: max. 8 A.

<sup>2)</sup> May not fall below or exceed  $U_Y$  tolerances.

<sup>3)</sup> Without load.

<sup>4)</sup> Control wire open: light switching L.ON.

<sup>5)</sup> Signal transit time with resistive load.

<sup>6)</sup> With light/dark ratio 1:1.

<sup>7)</sup> Do not bend below 0 °C.

<sup>8)</sup> A =  $V_S$  connections reverse-polarity protected.

<sup>9)</sup> B = inputs and output reverse-polarity protected.

<sup>10)</sup> D = outputs overcurrent and short-circuit protected.

## Safety-related parameters

|                         |             |
|-------------------------|-------------|
| <b>MTTF<sub>D</sub></b> | 477.9 years |
| <b>DC<sub>avg</sub></b> | 0 %         |

## Certificates

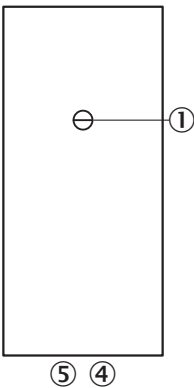
|                                       |   |
|---------------------------------------|---|
| <b>EU declaration of conformity</b>   | ✓ |
| <b>UK declaration of conformity</b>   | ✓ |
| <b>ACMA declaration of conformity</b> | ✓ |

|                                                   |   |
|---------------------------------------------------|---|
| Moroccan declaration of conformity                | ✓ |
| China-RoHS                                        | ✓ |
| cRUus certificate                                 | ✓ |
| Photobiological safety (DIN EN 62471) certificate | ✓ |

Classifications

|                |          |
|----------------|----------|
| ECLASS 5.0     | 27270904 |
| ECLASS 5.1.4   | 27270904 |
| ECLASS 6.0     | 27270904 |
| ECLASS 6.2     | 27270904 |
| ECLASS 7.0     | 27270904 |
| ECLASS 8.0     | 27270904 |
| ECLASS 8.1     | 27270904 |
| ECLASS 9.0     | 27270904 |
| ECLASS 10.0    | 27270904 |
| ECLASS 11.0    | 27270904 |
| ECLASS 12.0    | 27270903 |
| ETIM 5.0       | EC002719 |
| ETIM 6.0       | EC002719 |
| ETIM 7.0       | EC002719 |
| ETIM 8.0       | EC002719 |
| UNSPSC 16.0901 | 39121528 |

Adjustments

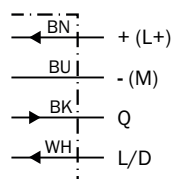


- ③ sensitivity control 270°
- ④ LED indicator orange: switching output active
- ⑤ LED indicator green

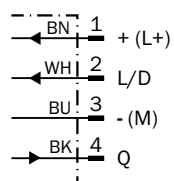
## Connection type



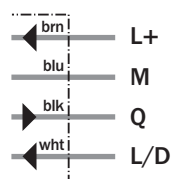
## Connection diagram Cd-089



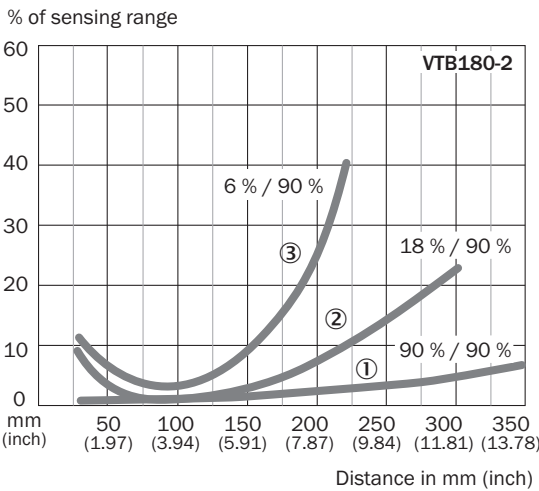
## Connection diagram Cd-087



## Connection diagram

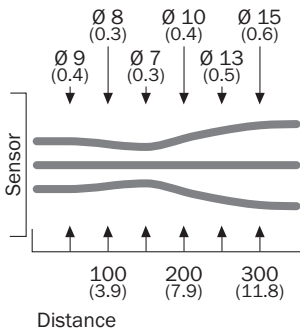


Characteristic curve VTB180-2, 350 mm

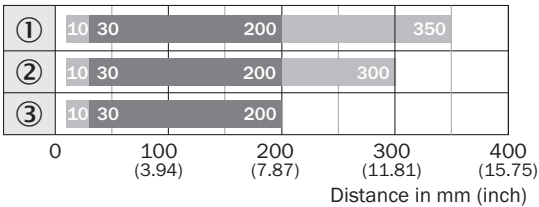


- ① Sensing range on white, 90% remission factor
- ② Sensing range on gray, 18% remission factor
- ③ Sensing range on black, 6% remission factor

Light spot size VTB180-2

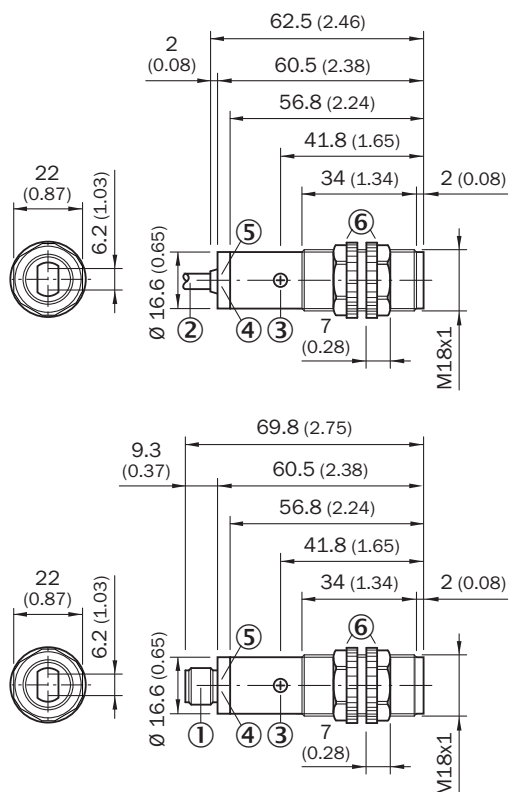


Sensing range diagram VTB180-2, 350 mm



- ① Sensing range on white, 90% remission factor
- ② Sensing range on gray, 18% remission factor
- ③ Sensing range on black, 6% remission factor

## Dimensional drawing VTF180-2, VTE180-2, VTB180-2, plastic, axial




Dimensions in mm (inch)

- ① M12 male device connector, 4-pin
- ② Connection cable 2 m
- ③ Sensitivity control (potentiometer, 270°)
- ④ LED indicator orange: switching output active
- ⑤ LED indicator green: strength indicator
- ⑥ fastening nuts (2 x); A/F 22, PC

## Recommended accessories

Other models and accessories → [www.sick.com/V180](http://www.sick.com/V180)

|                                                                                     | Brief description                                                                                                                                                                                                                                                                           | Type       | part no. |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| connectors and cables                                                               |                                                                                                                                                                                                                                                                                             |            |          |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Description:</b> Unshielded</li> <li>• <b>Connection systems:</b> Screw-type terminals</li> <li>• <b>Permitted cross-section:</b> ≤ 0.75 mm²</li> </ul> | STE-1204-G | 6009932  |

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)