

V180-2

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

| Type          | Part no. |
|---------------|----------|
| VL180-2P41133 | 6043832  |

Included in delivery: P250 (1)  
Other models and accessories → [www.sick.com/V180-2](http://www.sick.com/V180-2)

Detailed technical data

Features

|                                 |                                       |
|---------------------------------|---------------------------------------|
| Functional principle            | Photoelectric retro-reflective sensor |
| Functional principle detail     | Dual lens                             |
| Dimensions (W x H x D)          | 18 mm x 18 mm x 76.9 mm               |
| Housing design (light emission) | Cylindrical                           |
| Housing length                  | 76.9 mm                               |
| Optical axis                    | Radial                                |
| Sensing range max.              | 0.05 m ... 5.5 m <sup>1)</sup>        |
| Sensing range                   | 0.05 m ... 4.5 m <sup>1)</sup>        |
| Focus                           | Approx. 4.5°                          |
| Type of light                   | Visible red light                     |
| Light source                    | LED <sup>2)</sup>                     |
| Light spot size (distance)      | Ø 270 mm (4 m)                        |
| Angle of dispersion             | Approx. 4.5°                          |
| Wave length                     | 645 nm                                |
| Adjustment                      | Potentiometer, 270° (Sensitivity)     |

<sup>1)</sup> Reflector PL80A.  
<sup>2)</sup> Average service life: 100,000 h at T<sub>U</sub> = +25 °C.

Mechanics/electronics

|                |                                   |
|----------------|-----------------------------------|
| Supply voltage | 10 V DC ... 30 V DC <sup>1)</sup> |
|----------------|-----------------------------------|

<sup>1)</sup> Limit values when operated in short-circuit protected network: max. 8 A.  
<sup>2)</sup> May not exceed or fall below U<sub>V</sub> tolerances.  
<sup>3)</sup> Without load.  
<sup>4)</sup> Control wire open: dark switching D.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<sub>S</sub> connections reverse-polarity protected.  
<sup>9)</sup> B = inputs and output reverse-polarity protected.  
<sup>10)</sup> D = outputs overcurrent and short-circuit protected.

|                                              |                                                        |
|----------------------------------------------|--------------------------------------------------------|
| <b>Ripple</b>                                | $\pm 10\%$ <sup>2)</sup>                               |
| <b>Current consumption</b>                   | 30 mA <sup>3)</sup>                                    |
| <b>Switching output</b>                      | PNP <sup>4)</sup>                                      |
| <b>Switching mode</b>                        | Light/dark switching <sup>4)</sup>                     |
| <b>Signal voltage PNP HIGH/LOW</b>           | Approx. $V_S - 1.8\text{ V} / 0\text{ V}$              |
| <b>Output current <math>I_{\max.}</math></b> | $\leq 100\text{ mA}$                                   |
| <b>Response time</b>                         | $\leq 0.5\text{ ms}$ <sup>5)</sup>                     |
| <b>Switching frequency</b>                   | 1,000 Hz <sup>6)</sup>                                 |
| <b>Connection type</b>                       | Cable, 4-wire, 2 m <sup>7)</sup>                       |
| <b>Cable material</b>                        | 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>                                | 95 g                                                   |
| <b>Polarisation filter</b>                   | ✓                                                      |
| <b>Housing material</b>                      | Metal, Nickel-plated brass and PC                      |
| <b>Optics material</b>                       | Plastic, PMMA                                          |
| <b>Enclosure rating</b>                      | IP67                                                   |
| <b>Items supplied</b>                        | Reflector P250                                         |
| <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 exceed or fall below  $U_V$  tolerances.

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

<sup>4)</sup> Control wire open: dark switching D.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

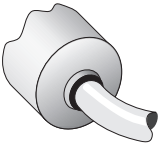
|                         |             |
|-------------------------|-------------|
| <b>MTTF<sub>D</sub></b> | 2,006 years |
| <b>DC<sub>avg</sub></b> | 0 %         |

## Classifications

|                     |          |
|---------------------|----------|
| <b>eCl@ss 5.0</b>   | 27270902 |
| <b>eCl@ss 5.1.4</b> | 27270902 |
| <b>eCl@ss 6.0</b>   | 27270902 |
| <b>eCl@ss 6.2</b>   | 27270902 |
| <b>eCl@ss 7.0</b>   | 27270902 |

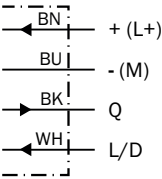
|                       |          |
|-----------------------|----------|
| <b>eCl@ss 8.0</b>     | 27270902 |
| <b>eCl@ss 8.1</b>     | 27270902 |
| <b>eCl@ss 9.0</b>     | 27270902 |
| <b>eCl@ss 10.0</b>    | 27270902 |
| <b>eCl@ss 11.0</b>    | 27270902 |
| <b>eCl@ss 12.0</b>    | 27270902 |
| <b>ETIM 5.0</b>       | EC002717 |
| <b>ETIM 6.0</b>       | EC002717 |
| <b>ETIM 7.0</b>       | EC002717 |
| <b>ETIM 8.0</b>       | EC002717 |
| <b>UNSPSC 16.0901</b> | 39121528 |

Connection type



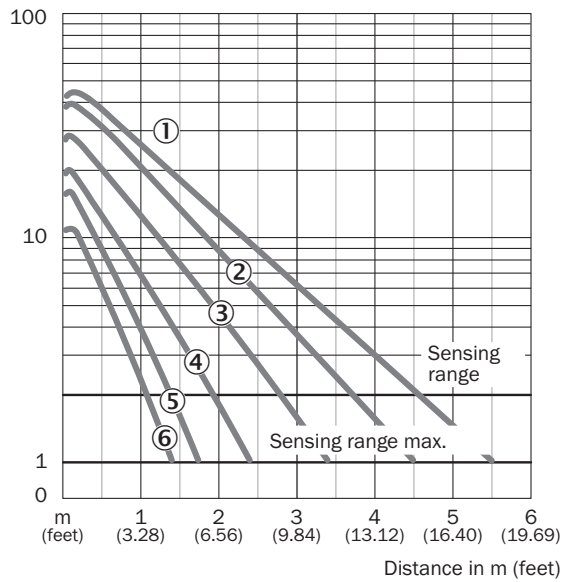
Connection diagram

Cd-089



## Characteristic curve

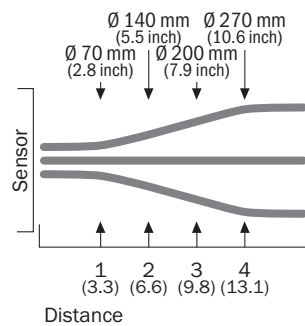
VL180-2, 5.5 m, radial



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

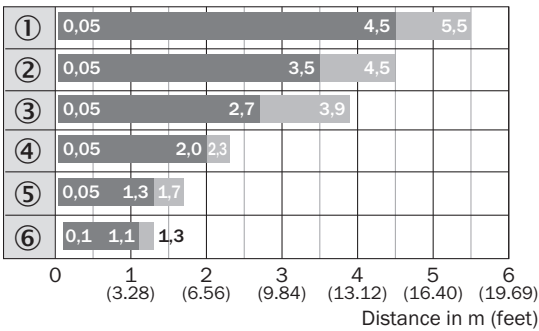
## Light spot size

VL180-2



Sensing range diagram

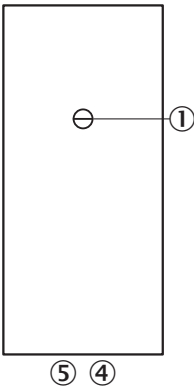
VL180-2, 5.5 m, radial



■ Sensing range    ■ Sensing range max.

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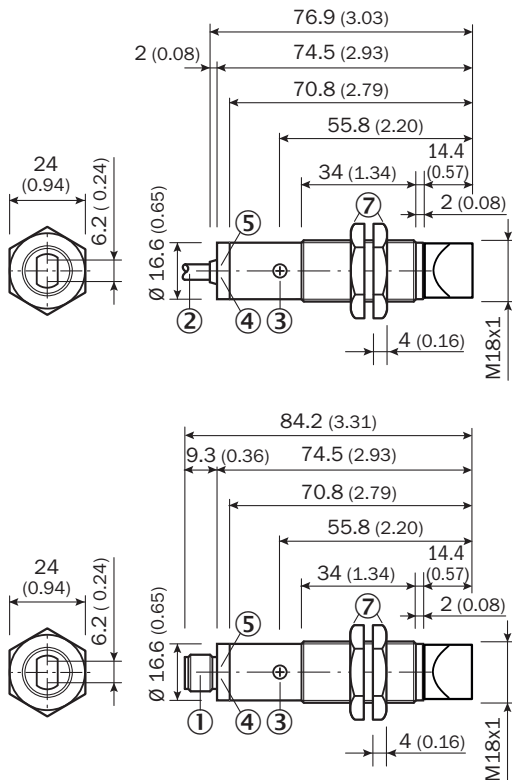
Adjustments



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

## Dimensional drawing (Dimensions in mm (inch))

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

## Recommended accessories

Other models and accessories → [www.sick.com/V180-2](http://www.sick.com/V180-2)

|                                                                                     | Brief description                                                                 | Type       | Part no. |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|----------|
| Plug connectors and cables                                                          |                                                                                   |            |          |
|  | Head A: male connector, M12, 4-pin, straight<br>Cable: unshielded                 | STE-1204-G | 6009932  |
| Reflectors                                                                          |                                                                                   |            |          |
|  | Rectangular, screw connection, 51 mm x 61 mm, PMMA/ABS, Screw-on, 2 hole mounting | P250       | 5304812  |

## 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)