



VL180-2F32331

V180-2

CYLINDRICAL PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

| Type          | Part no. |
|---------------|----------|
| VL180-2F32331 | 6043458  |

**Included in delivery:** P250 (1)

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

## Detailed technical data

### Features

|  |                                       |
|--|---------------------------------------|
| <b>Functional principle</b>            | Photoelectric retro-reflective sensor |
| <b>Functional principle detail</b>     | Dual lens                             |
| <b>Dimensions (W x H x D)</b>          | 18 mm x 18 mm x 70.2 mm               |
| <b>Housing design (light emission)</b> | Cylindrical                           |
| <b>Housing length</b>                  | 70.2 mm                               |
| <b>Thread diameter (housing)</b>       | M18 x 1                               |
| <b>Optical axis</b>                    | Axial                                 |
| <b>Sensing range max.</b>              | 0.05 m ... 7 m <sup>1)</sup>          |
| <b>Sensing range</b>                   | 0.05 m ... 6 m <sup>1)</sup>          |
| <b>Focus</b>                           | Approx. 4.5°                          |
| <b>Type of light</b>                   | Visible red light                     |
| <b>Light source</b>                    | LED <sup>2)</sup>                     |
| <b>Light spot size (distance)</b>      | Ø 400 mm (6 m)                        |
| <b>Angle of dispersion</b>             | Approx. 4.5°                          |
| <b>Wave length</b>                     | 645 nm                                |
| <b>Adjustment</b>                      | 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

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Supply voltage</b> | 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> Signal transit time with resistive load.

<sup>5)</sup> With light/dark ratio 1:1.

<sup>6)</sup> A = V<sub>S</sub> connections reverse-polarity protected.

<sup>7)</sup> B = inputs and output reverse-polarity protected.

<sup>8)</sup> D = outputs overcurrent and short-circuit protected.

|   |   |
|---|---|
| <b>Ripple</b>                                     | ± 10 % <sup>2)</sup>                                  |
| <b>Current consumption</b>                        | 30 mA <sup>3)</sup>                                   |
| <b>Switching output</b>                           | PNP   |
| <b>Switching mode</b>                             | Light switching                                       |
| <b>Signal voltage PNP HIGH/LOW</b>                | Approx. $V_S - 1.8 \text{ V} / 0 \text{ V}$           |
| <b>Output current <math>I_{\text{max}}</math></b> | ≤ 100 mA  |
| <b>Response time</b>                              | ≤ 0.5 ms <sup>4)</sup>                                |
| <b>Switching frequency</b>                        | 1,000 Hz <sup>5)</sup>                                |
| <b>Connection type</b>                            | Male connector M12, 4-pin                             |
| <b>Circuit protection</b>                         | A <sup>6)</sup><br>B <sup>7)</sup><br>D <sup>8)</sup> |
| <b>Protection class</b>                           | III   |
| <b>Weight</b>                                     | 47 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, fastening nuts (2 x)                  |
| <b>Ambient operating temperature</b>              | -25 °C ... +55 °C                                     |
| <b>Ambient temperature, storage</b>               | -40 °C ... +70 °C                                     |
| <b>UL File No.</b>                                | NRKH2.E300503 & NRKH8.E300503                         |

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

2) May not exceed or fall below  $U_V$  tolerances.

3) Without load.

4) Signal transit time with resistive load.

5) With light/dark ratio 1:1.

6) A =  $V_S$  connections reverse-polarity protected.

7) B = inputs and output reverse-polarity protected.

8) D = outputs overcurrent and short-circuit protected.

## Safety-related parameters

|                         |               |
|-------------------------|---------------|
| <b>MTTF<sub>D</sub></b> | 1,883.8 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 |

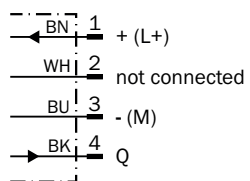
|                       |          |
|-----------------------|----------|
| <b>eCl@ss 10.0</b>    | 27270902 |
| <b>eCl@ss 11.0</b>    | 27270902 |
| <b>eCl@ss 12.0</b>    | 27270902 |
| <b>ETIM 5.0</b>       | EC002717 |
| <b>ETIM 6.0</b>       | EC002717 |
| <b>ETIM 7.0</b>       | EC002717 |
| <b>ETIM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

### Connection type



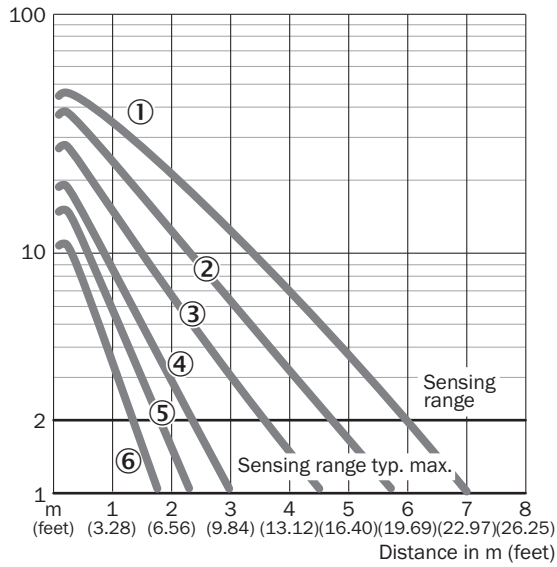
### Connection diagram

Cd-066



### Characteristic curve

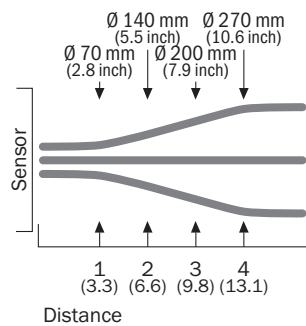
VL180-2, 7 m, axial



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

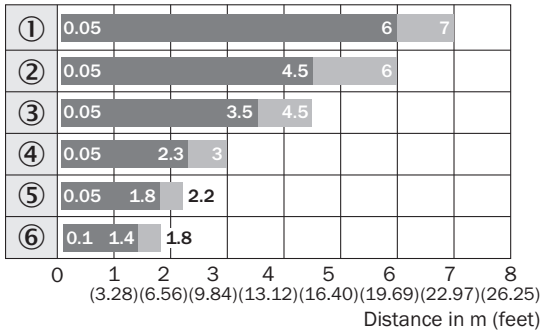
### Light spot size

VL180-2



**Sensing range diagram**

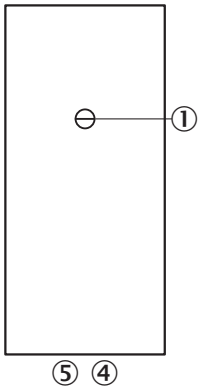
VL180-2, 7 m, axial



■ Sensing range    ■ Sensing range max.

- ① Reflector PL80A
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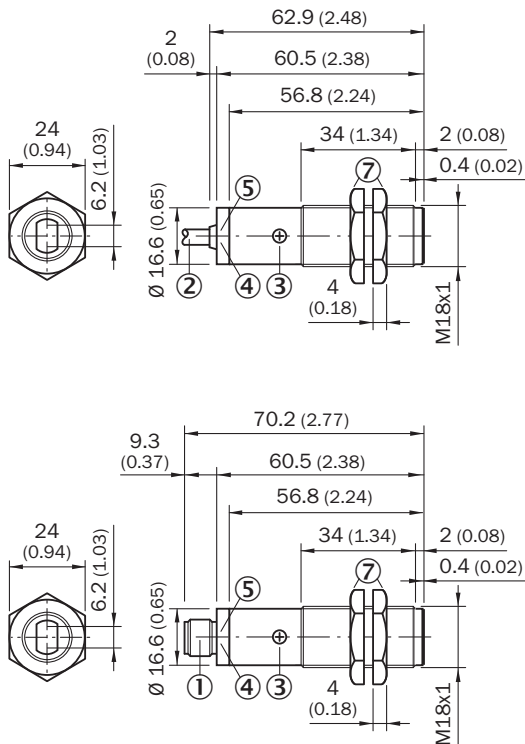
**Adjustments**



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

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




VL180-2, metal, axial



- ① M12 male device connector, 4-pin
- ② Connection cable 2 m
- ③ Sensitivity control 270°
- ④ LED indicator orange: switching output active
- ⑤ LED indicator green: strength indicator
- ⑦ Fastening nuts (2x); width across 24, metal

**Recommended accessories**

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

|   | <b>Brief description</b>  | <b>Type</b>        | <b>Part no.</b> |
|---|---|--------------------|-----------------|
| <b>Plug connectors and cables</b>   |   |                    |                 |
|  | Head A: female connector, M12, 4-pin, straight, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m | YF2A14-050VB3XLEAX | 2096235         |
|  | Head A: male connector, M12, 4-pin, straight<br>Cable: unshielded   | STE-1204-G         | 6009932         |
| <b>Reflectors</b>   |   |                    |                 |
|  | 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)