



# WL12L-2B531

W12

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

| Type        | part no. |
|-------------|----------|
| WL12L-2B531 | 1047959  |

**Included in delivery:** BEF-KH-W12 (1)

Other models and accessories → [www.sick.com/W12](http://www.sick.com/W12)

### Detailed technical data

#### Features

|                                    |   |
|------------------------------------|---|
| <b>Functional principle</b>        | Photoelectric retro-reflective sensor                               |
| <b>Functional principle detail</b> | Without reflector minimum distance (autocollimation/coaxial optics) |
| <b>Sensing range max.</b>          | 0 m ... 18 m <sup>1)</sup>  |
| <b>Polarisation filter</b>         | Yes   |
| <b>Emitted beam</b>                |   |
| Light source                       | Laser <sup>2)</sup>   |
| Type of light                      | Visible red light   |
| Light spot size (distance)         | Ø 0.8 mm (300 mm)   |
| <b>Key laser figures</b>           |   |
| Laser class                        | 1 <sup>3) 4)</sup>  |
| <b>Key LED figures</b>             |   |
| Wave length                        | 650 nm  |
| <b>Adjustment</b>                  | Potentiometer   |
| <b>Special applications</b>        | Detecting small objects   |
| <b>Items supplied</b>              | 2 x clamps BEF-KH-W12, incl. screws                                 |

<sup>1)</sup> Reflector PL80A.

<sup>2)</sup> Average service life: 50,000 h at T<sub>U</sub> = +25 °C.

<sup>3)</sup> Pulse length 4 µs, max. pulse power < 5,0 mW.

<sup>4)</sup> Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

#### Safety-related parameters

|                         |           |
|-------------------------|-----------|
| <b>MTTF<sub>D</sub></b> | 404 years |
| <b>DC<sub>avg</sub></b> | 0 %       |

## Electronics

|  |  |   |
|--|--|---|
| <b>Supply voltage <math>U_B</math></b> | 10 V DC ... 30 V DC <sup>1)</sup>                      |   |
| <b>Ripple</b>                          | < 5 V <sub>pp</sub> <sup>2)</sup>                      |   |
| <b>Current consumption</b>             | 55 mA <sup>3)</sup>                                    |   |
| <b>Protection class</b>                | III  |   |
| <b>Digital output</b>                  | Type   | PNP <sup>4)</sup>   |
|  |  | NPN <sup>5)</sup>   |
|  | Switching mode   | Light switching, Dark switching <sup>4) 5)</sup>          |
|  | Switching mode selector                                | Selectable via L/D control cable                          |
|  | Signal voltage PNP HIGH/LOW                            | U <sub>v</sub> - < 2.9 V, U <sub>v</sub> V / 0 V <= 1.5 V |
|  | Signal voltage NPN HIGH/LOW                            | U <sub>v</sub> - < 2.9 V, U <sub>v</sub> V / 0 V <= 1.5 V |
|  | Output current I <sub>max.</sub>                       | ≤ 100 mA  |
| Response time                          | ≤ 500 μs <sup>6)</sup>                                 |   |
| Switching frequency                    | 1,000 Hz <sup>7)</sup>                                 |   |
| <b>Circuit protection</b>              | A <sup>8)</sup><br>C <sup>9)</sup><br>D <sup>10)</sup> |   |

<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<sub>v</sub> tolerances.

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

<sup>4)</sup> 0 V or not connected, light switching.

<sup>5)</sup> U<sub>v</sub>, dark switching.

<sup>6)</sup> Signal transit time with resistive load.

<sup>7)</sup> With light/dark ratio 1:1.

<sup>8)</sup> A = V<sub>S</sub> connections reverse-polarity protected.

<sup>9)</sup> C = interference suppression.

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

## Mechanics

|                               |                         |               |
|-------------------------------|-------------------------|---------------|
| <b>Housing</b>                | Rectangular             |               |
| <b>Dimensions (W x H x D)</b> | 15 mm x 49 mm x 41.5 mm |               |
| <b>Connection</b>             | Plug, M12, 5-pin        |               |
| <b>Material</b>               | Housing                 | Metal         |
|                               | Front screen            | Plastic, PMMA |
| <b>Weight</b>                 | 130 g                   |               |

## Ambient data

|                                      |                              |
|--------------------------------------|------------------------------|
| <b>Enclosure rating</b>              | IP67<br>IP69K                |
| <b>Ambient operating temperature</b> | -10 °C ... +50 °C            |
| <b>Ambient temperature, storage</b>  | -25 °C ... +75 °C            |
| <b>UL File No.</b>                   | NRKH.E181493 & NRKH7.E181493 |

Certificates

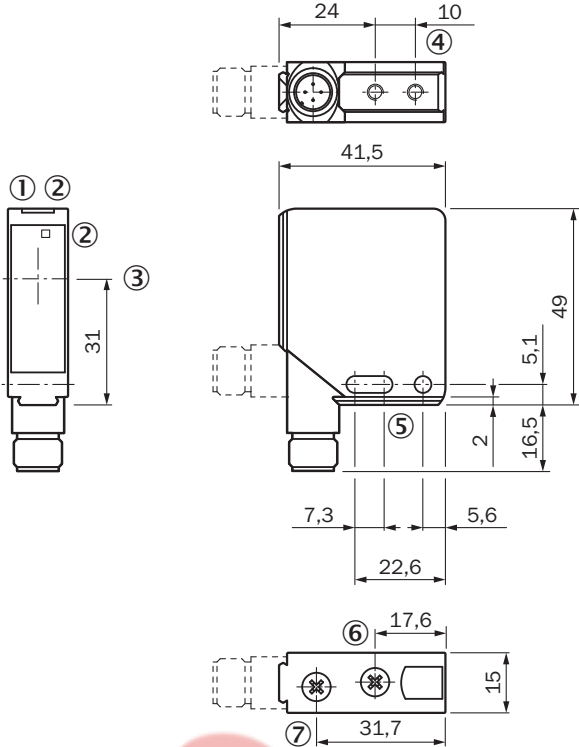
|   |   |
|---|---|
| <b>EU declaration of conformity</b>           | ✓ |
| <b>UK declaration of conformity</b>           | ✓ |
| <b>ACMA declaration of conformity</b>         | ✓ |
| <b>Moroccan declaration of conformity</b>     | ✓ |
| <b>China RoHS</b>                             | ✓ |
| <b>cULus certificate</b>                      | ✓ |
| <b>Laser safety (IEC 60825-1) certificate</b> | ✓ |

Classifications

|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270902 |
| <b>ECLASS 5.1.4</b>   | 27270902 |
| <b>ECLASS 6.0</b>     | 27270902 |
| <b>ECLASS 6.2</b>     | 27270902 |
| <b>ECLASS 7.0</b>     | 27270902 |
| <b>ECLASS 8.0</b>     | 27270902 |
| <b>ECLASS 8.1</b>     | 27270902 |
| <b>ECLASS 9.0</b>     | 27270902 |
| <b>ECLASS 10.0</b>    | 27270902 |
| <b>ECLASS 11.0</b>    | 27270902 |
| <b>ECLASS 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 |



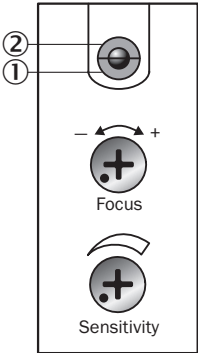
Dimensional drawing WL12L-2, WS/WE12L-2



Dimensions in mm (inch)

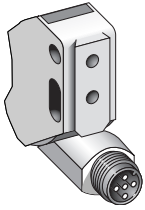
- ① Operating indicator, green
- ② LED reception indicator, yellow
- ③ Center of optical axis
- ④ M4 threaded mounting hole - 4 mm depth
- ⑤ Mounting hole, Ø 4.2 mm
- ⑥ Focal adjustment
- ⑦ sensitivity control

Adjustments WL12L-2

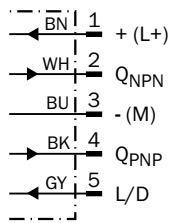


- ① Operating indicator, green
- ② LED reception indicator, yellow
- ⑥ Focal adjustment
- ⑦ sensitivity control

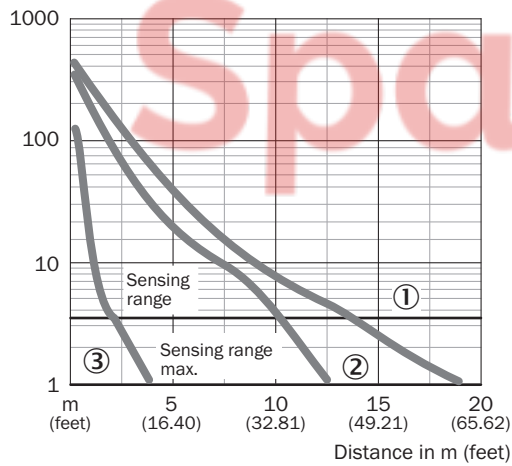
Connection type



Connection diagram Cd-145

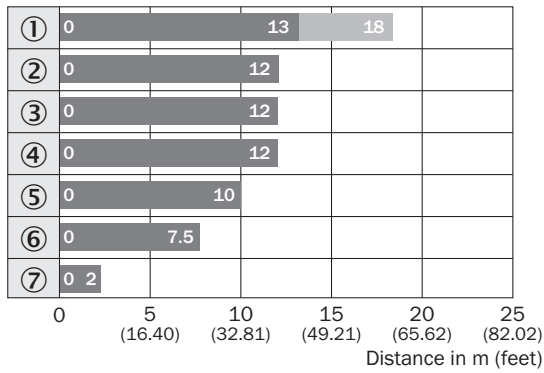


Characteristic curve WL12L-2, 18 m



- ① Reflector PL80A
- ② Reflector PL50A
- ③ Reflective tape Diamond Grade

### Sensing range diagram WL12L-2, 18 m






- Sensing range      ■ Sensing range typ. max.
- ① Reflector PL80A
  - ② Reflector PL50A
  - ③ Reflector PL40A
  - ④ Reflector P250
  - ⑤ Reflector PL30A
  - ⑥ Reflector PL20A
  - ⑦ Reflective tape Diamond Grade

### Recommended accessories

Other models and accessories → [www.sick.com/W12](http://www.sick.com/W12)

|   | Brief description  | Type        | part no. |
|---|--|-------------|----------|
| <b>Mounting systems</b>   |  |             |          |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket, large</li> <li><b>Material:</b> Stainless steel</li> <li><b>Details:</b> Stainless steel</li> <li><b>Items supplied:</b> Mounting hardware included</li> <li><b>Suitable for:</b> W11-2, W12-3, W16</li> </ul>                                    | BEF-WG-W12  | 2013942  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Universal mounting bracket for reflectors</li> <li><b>Dimensions (W x H x L):</b> 85 mm x 90 mm x 35 mm</li> <li><b>Material:</b> Steel</li> <li><b>Details:</b> Steel, zinc coated</li> <li><b>Suitable for:</b> C110A, P250, PL20, PL30A, PL40A, PL80A</li> </ul> | BEF-WN-REFX | 2064574  |
| <b>reflectors and optics</b>  |  |             |          |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Rectangular, screw connection, width across flats 48 mm</li> <li><b>Ambient operating temperature:</b> -20 °C ... +65 °C</li> </ul>   | PL50A       | 1000132  |

|   | Brief description  | Type               | part no. |
|---|--|--------------------|----------|
| connectors and cables   |  |                    |          |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 5-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>  | YF2A15-050VB5XLEAX | 2096240  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 5-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 mm<sup>2</sup></li> <li>• <b>Note:</b> For field bus technology</li> </ul>  | STE-1205-G         | 6022083  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 5-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul> | YF2A15-050UB5XLEAX | 2095618  |



## 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:

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