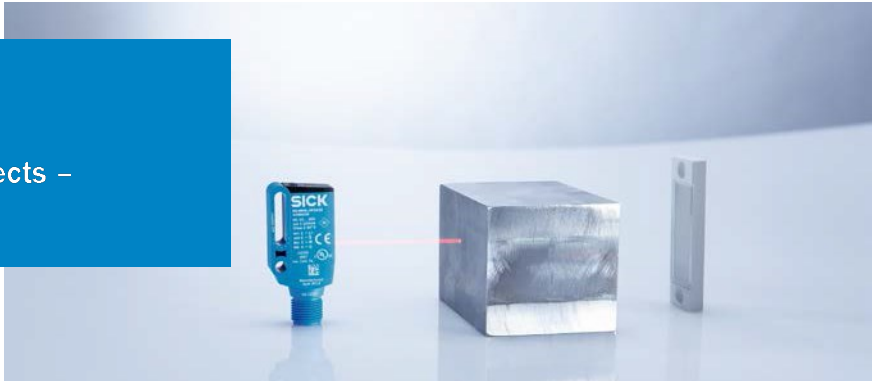


Precise detection of small objects – even close-up



**Product description**

The WL9L-3 photoelectric retro-reflective sensor offers a long sensing range with maximum precision. Thanks to its small laser light spot and autocollimation optics even the smallest objects or object features can be reliably detected,

even at close-up range. Polarizing filters enable shiny objects to be detected. The rugged VISTAL™ housing protects the latest laser technology and guarantees less machine downtime.

**At a glance**

- Tough VISTAL™ housing
- Precise laser light spot
- Laser class 1
- Autocollimation optics and polarizing filter
- Teach-in
- Optimized SICK ASIC technology
- Connections: M8 and M12 plugs, cable as well as cable with plug
- M3 hole pattern and M4 hole pattern

**Your benefits**

- Precise detection of small objects and object features
- Detection of objects even through small openings
- Less machine downtime thanks to the stable VISTAL™ housing
- The longest sensing ranges in its class
- No blind spots, also detects shiny objects
- Wide range of connection options
- Multiple mounting options
- Highly visible light spot simplifies alignment



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→ [www.mysick.com/en/WL9L-3](http://www.mysick.com/en/WL9L-3)

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

|                                  | Laser class 1  |
|----------------------------------|--|
| Sensor principle                 | Photoelectric retro-reflective sensor  |
| Detection principle              | Autocollimation  |
| Dimensions (W x H x D)           | 12.2 mm x 50 mm x 23.6 mm<br>12.2 mm x 52.2 mm x 23.6 mm<br>12.2 mm x 49.8 mm x 23.6 mm<br>(depending on type) |
| Housing design (light emission)  | Rectangular  |
| Mounting hole                    | M3 or M4 (depending on type)   |
| Sensing range max. <sup>1)</sup> | 0 m ... 12 m   |
| Sensing range <sup>1)</sup>      | 0 m ... 8 m  |
| Type of light                    | Visible red light  |
| Light source <sup>2)</sup>       | Laser  |
| Laser class                      | 1 (IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11)  |
| Wave length                      | 650 nm   |
| Light spot size (distance)       | Ø 1 mm (500 mm)  |
| Sensitivity adjustment           | Single teach-in button   |

<sup>1)</sup> PL80A.

<sup>2)</sup> Average service life 50,000 h at  $T_o = +25 \text{ }^\circ\text{C}$ .

## Mechanics/electronics

|                                   | Laser class 1  |
|-----------------------------------|--|
| Supply voltage <sup>1)</sup>      | 10 V DC ... 30 V DC  |
| Residual ripple <sup>2)</sup>     | $< 5 V_{pp}$   |
| Power consumption <sup>3)</sup>   | $\leq 30 \text{ mA}$   |
| Switching output                  | PNP, light/dark-switching, complementary <sup>4)</sup><br>NPN, light/dark-switching, complementary <sup>4)</sup><br>PNP, dark-switching <sup>5)</sup><br>(depending on type) |
| Output current $I_{max.}$         | $\leq 100 \text{ mA}$  |
| Response time <sup>6)</sup>       | $\leq 0.5 \text{ ms}$  |
| Switching frequency <sup>7)</sup> | 1,000 Hz   |
| Connection type                   | Cable with plug, 120 mm, PVC, 0.14 mm <sup>2</sup> <sup>8)</sup><br>Cable, 2 m, PVC, 0.14 mm <sup>2</sup> <sup>8)</sup><br>Connector<br>(depending on type)                  |
| Circuit protection                | A <sup>9)</sup><br>B <sup>10)</sup><br>C <sup>11)</sup>  |
| Protection class                  | ⚡  |
| Weight                            | Cable with plug, M12, 4-pin 80 g<br>Connector, M12, 4-pin 13 g<br>Connector, M8, 4-pin 13 g<br>Cable, 4-wire 80 g  |
| Polarisation filter               | ✓  |
| Housing material                  | VISTAL™<br>Plastic   |

|  |                          |
|--|--------------------------|
| <b>Optics material</b>   | PMMA                     |
| <b>Enclosure rating</b>  | IP 66<br>IP 67<br>IP 69K |
| <b>Ambient operating temperature</b>                             | -10 °C ... +50 °C        |
| <b>Ambient operating temperature extended <sup>12) 13)</sup></b> | -30 °C ... +55 °C        |
| <b>Ambient storage temperature</b>                               | -30 °C ... +70 °C        |

<sup>1)</sup> Limit values, operation in short-circuit protected network max. 8 A.

<sup>2)</sup> May not exceed or fall short of  $V_S$ .

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

<sup>4)</sup> Q = light-switching.

<sup>5)</sup> Q = dark-switching.

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

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

<sup>8)</sup> Do not bend below 0 °C.

<sup>9)</sup> A =  $V_S$  connections reverse-polarity protected.

<sup>10)</sup> B = inputs and output reverse-polarity protected.

<sup>11)</sup> C = interference suppression.

<sup>12)</sup> As of  $T_a = 50$  °C, a max. supply voltage  $V_{max} = 24$  V and a max. load current  $I_{max} = 50$  mA is permitted.

<sup>13)</sup> Using the sensor below  $T_a = -10$  °C is possible, if the sensor is turned on at  $T_a > -10$  °C, then the environment cools down and the sensor is not disconnected from the supply voltage during the whole time. It is not allowed to turn on the sensor below  $T_a = -10$  °C.

## Ordering information

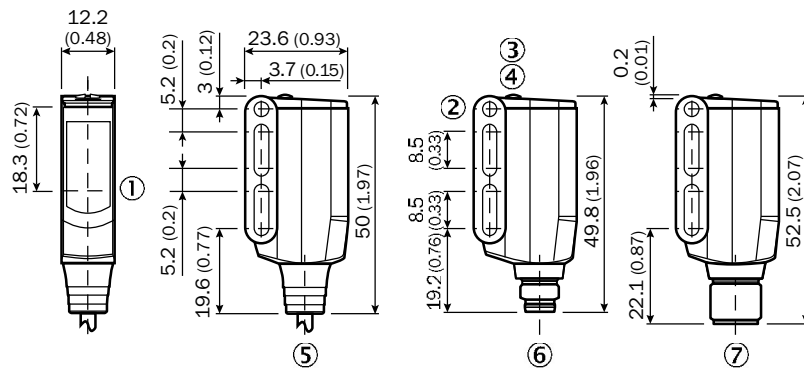
### Laser class 1

| Sensing range max. <sup>1)</sup> | Mounting hole | Output function | Switching mode       | Connection                               | Model name              | Part no.      |         |
|----------------------------------|---------------|-----------------|----------------------|--|-------------------------|---------------|---------|
| 0 m ... 12 m                     | M3            | PNP             | Light/dark-switching | Cable with plug, M12, 4-pin, 120 mm, PVC | WL9L-3P3432             | 1058176       |         |
|                                  |               |                 |                      | Connector M12, 4-pin                     | WL9L-3P2432             | 1058175       |         |
|                                  |               |                 | Dark-switching       | Connector M12, 4-pin                     | WL9L-3P2432S02          | 1058178       |         |
|                                  |               |                 |                      | Connector M12, 4-pin                     | WL9L-3P2432S01          | 1058177       |         |
|                                  |               |                 | Light/dark-switching | Connector M8, 4-pin                      | WL9L-3P2232             | 1058174       |         |
|                                  |               |                 |                      | Cable, 4-wire, 2 m, PVC                  | WL9L-3P1132             | 1058233       |         |
|                                  | M4            | PNP             | Light/dark-switching | Light/dark-switching                     | Connector M12, 4-pin    | WL9L-3N2432   | 1058173 |
|                                  |               |                 |                      |  | Connector M8, 4-pin     | WL9L-3N2232   | 1058172 |
|                                  |               |                 |                      | Light/dark-switching                     | Connector M12, 4-pin    | WL9M4L-3P2432 | 1058228 |
|                                  |               |                 |                      |  | Connector M8, 4-pin     | WL9M4L-3P2232 | 1058227 |
|                                  |               |                 |                      |  | Cable, 4-wire, 2 m, PVC | WL9M4L-3P1132 | 1058229 |

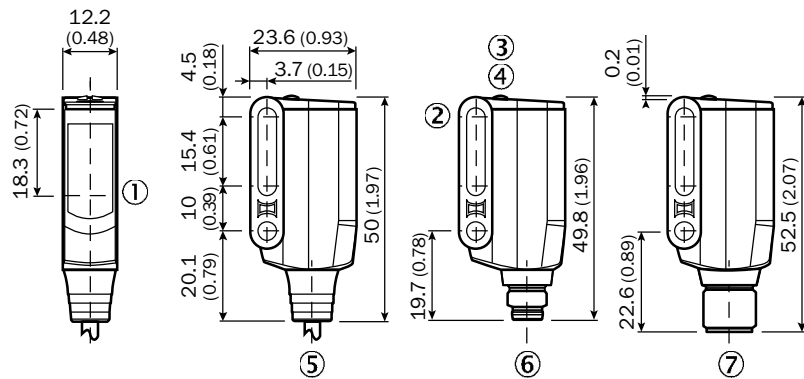
<sup>1)</sup> PL80A.

### Dimensional drawing

dimensions in mm

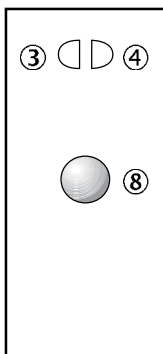


- ① Centre of optical axis, sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow: Light received
- ④ LED signal strength indicator green: power on
- ⑤ Connecting cable or connecting cable with connector
- ⑥ Connector M8, 4-pin
- ⑦ Connector M12, 4-pin



- ① Centre of optical axis, sender and receiver
- ② Mounting hole M4 (Ø 4.1 mm)
- ③ LED indicator yellow: Light received
- ④ LED signal strength indicator green: power on
- ⑤ Connecting cable or connecting cable with connector
- ⑥ Connector M8, 4-pin
- ⑦ Connector M12, 4-pin

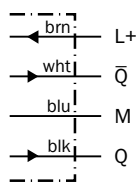
### Adjustments



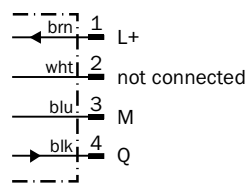
- ③ LED indicator yellow: Light received
- ④ LED signal strength indicator green: power on
- ⑧ Teach-in button

### Connection diagram

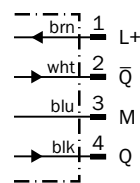
**WL9xxL-3x1xxx**  
Cable



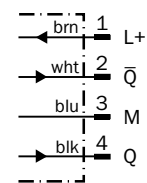
**WL9L-3P2432S02**  
Connector



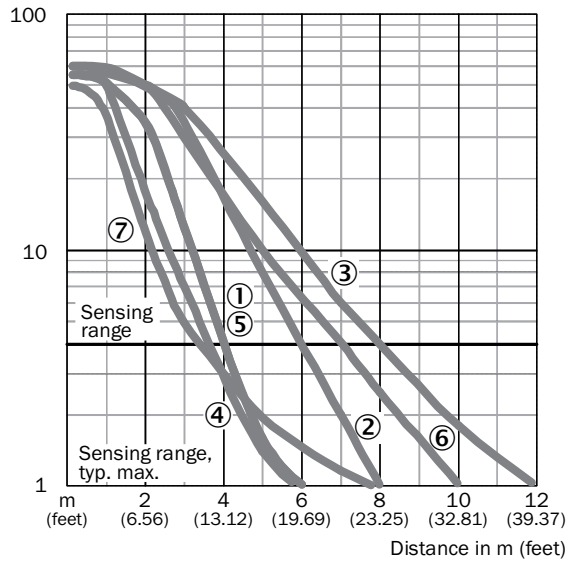
**WL9xxL-3x2xxx**  
Connector



**WL9xxL-3x3xxx**  
Cable with plug

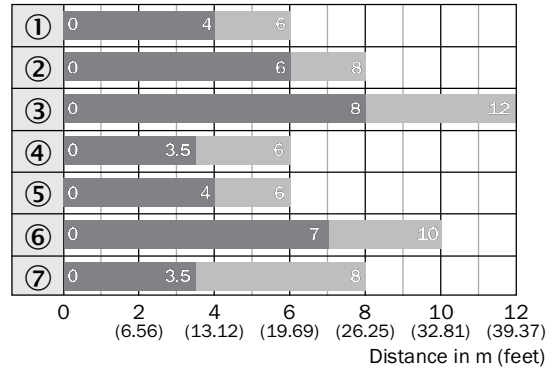


### Operating reserve



- ① PL20A
- ② PL40A
- ③ PL80A
- ④ PL10F
- ⑤ PL20F
- ⑥ P250F
- ⑦ REF-AC1000

### Sensing range

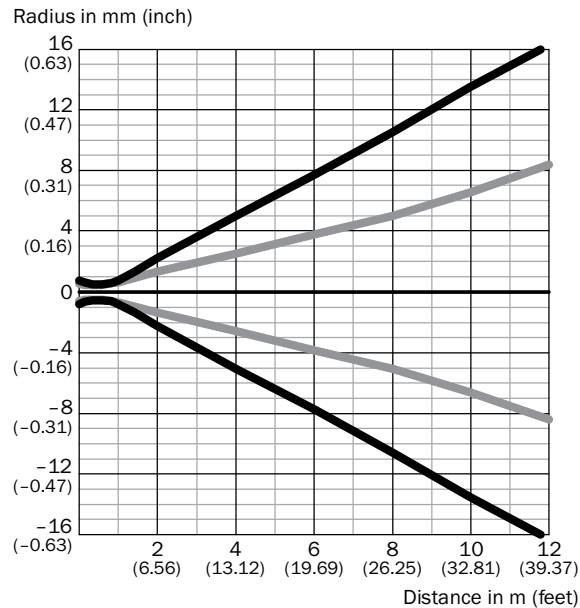


### Reflector type

- ① PL20A
- ② PL40A
- ③ PL80A
- ④ PL10F
- ⑤ PL20F
- ⑥ P250F
- ⑦ REF-AC1000

### Light spot size

#### Overview

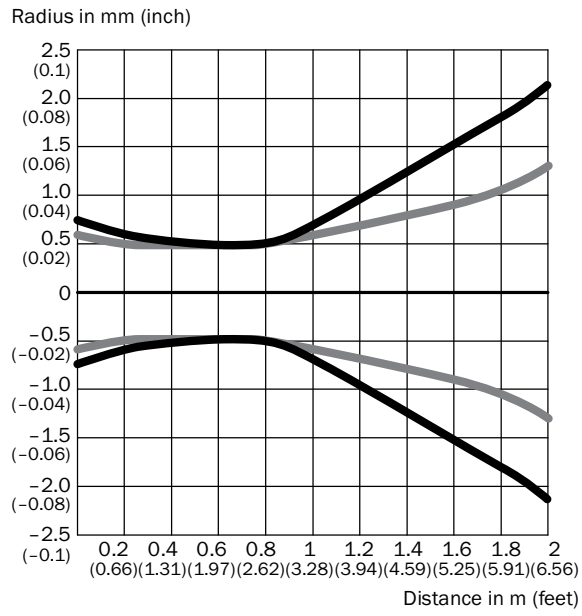


- Vertical
- Horizontal

#### Dimensions in mm (inch)

| Sensing range                      | Vertical        | Horizontal      |
|------------------------------------|-----------------|-----------------|
| <b>0.5 m</b><br><b>(1.64 feet)</b> | < 1.0<br>(0.04) | < 1.0<br>(0.04) |
| <b>1 m</b><br><b>(3.28 feet)</b>   | 1.5<br>(0.06)   | 1.2<br>(0.05)   |
| <b>6 m</b><br><b>(19.69 feet)</b>  | 15.2<br>(0.60)  | 7.6<br>(0.30)   |
| <b>12 m</b><br><b>(39.37 feet)</b> | 32.4<br>(1.28)  | 16.4<br>(0.65)  |

**Close up**



- Vertical
- Horizontal