



## Photoelectric sensors W9L-3, Photoelectric retro-reflective sensor, autocollimation

WL9L-3N2432



**Model Name** > [WL9L-3N2432](#)  
**Part No.** > [1058173](#)



*Illustration may differ*

#### 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

#### 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



#### Features

|                                  |                                                        |
|----------------------------------|--------------------------------------------------------|
| Sensor/detection principle:      | Photoelectric retro-reflective sensor, autocollimation |
| Dimensions (W x H x D):          | 12.2 mm x 52.2 mm x 23.6 mm                            |
| Housing design (light emission): | Rectangular                                            |
| Mounting hole:                   | M3                                                     |
| Sensing range max.:              | 0 m ... 12 m <sup>1)</sup>                             |
| Sensing range:                   | 0 m ... 8 m <sup>2)</sup>                              |
| Type of light:                   | Visible red light                                      |
| Light source:                    | Laser <sup>3)</sup>                                    |
| Laser class:                     | 1 (IEC 60825-1/CDRH 21 CFR 1040.10 & 1040.11)          |
| Wave length:                     | 650 nm                                                 |
| Adjustment:                      | Single teach-in button                                 |
| Light spot size (distance):      | Ø 1 mm (500 mm)                                        |

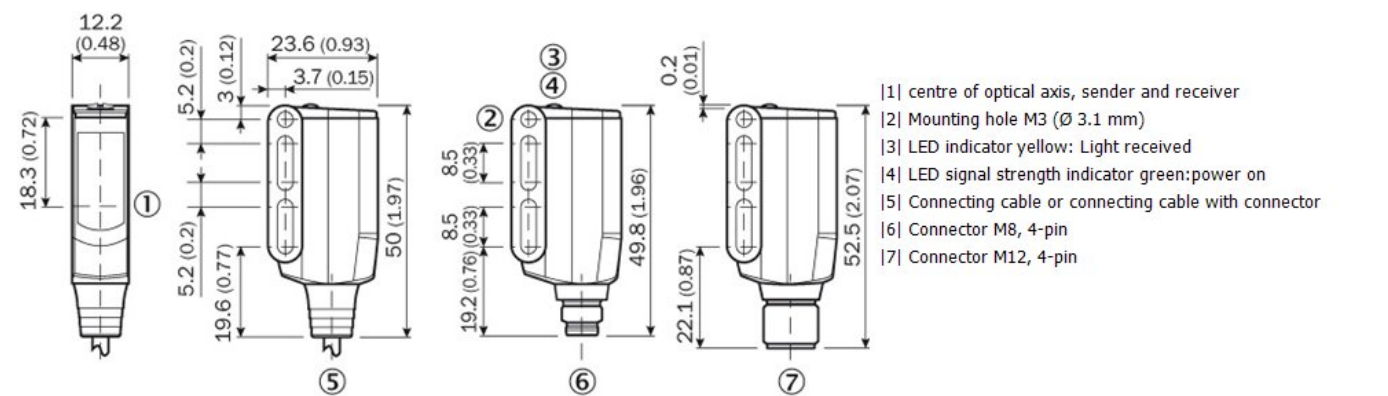
<sup>1) 2)</sup> PL80A <sup>3)</sup> Average service life 50,000 h at T<sub>A</sub> = +25 °C

## Mechanics/electronics

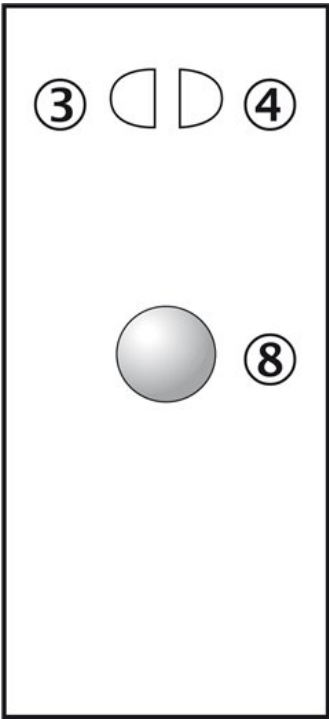
|                                          |                                       |
|------------------------------------------|---------------------------------------|
| Supply voltage:                          | 10 V DC ... 30 V DC <sup>1)</sup>     |
| Power consumption:                       | $\leq 30 \text{ mA}$ <sup>2)</sup>    |
| Output type:                             | NPN <sup>3)</sup>                     |
| Output function:                         | Complementary                         |
| Switching mode:                          | Light/dark-switching <sup>4)</sup>    |
| Output current I <sub>max.</sub> :       | $\leq 100 \text{ mA}$                 |
| Response time:                           | $\leq 0.5 \text{ ms}$ <sup>5)</sup>   |
| Switching frequency:                     | 1,000 Hz <sup>6)</sup>                |
| Connection type:                         | Connector M12, 4-pin                  |
| Circuit protection:::                    | A, B, C <sup>7) 8) 9)</sup>           |
| Protection class:                        | III                                   |
| Weight:                                  | 13 g                                  |
| Polarisation filter:                     | ✓                                     |
| Special device:                          | -                                     |
| Housing material:                        | Plastic, VISTAL                       |
| Optics material:                         | PMMA                                  |
| Enclosure rating:                        | IP 66<br>IP 67<br>IP 69K              |
| Ambient operating temperature:           | -10 °C ... 50 °C                      |
| Ambient storage temperature:             | -30 °C ... 70 °C                      |
| Ambient operating temperature extended:: | -30 °C ... 55 °C <sup>10) 11)</sup>   |
| MTTFd:                                   | 723 a (EN ISO 13849-1) <sup>12)</sup> |

<sup>1)</sup> Limit values, operation in short-circuit protected network max. 8 A <sup>2)</sup> Without load <sup>3) 4)</sup> Q = light-switching <sup>5)</sup> Signal transit time with resistive load <sup>6)</sup> With light/dark ratio 1:1 <sup>7)</sup> A = V<sub>S</sub> connections reverse-polarity protected <sup>8)</sup> B = inputs and output reverse-polarity protected <sup>9)</sup> C = interference suppression <sup>10)</sup> As of T<sub>a</sub> = 50 °C, a max. supply voltage V<sub>max.</sub> = 24 V and a max. load current I<sub>max.</sub> = 50 mA is permitted <sup>11)</sup> Using the sensor below T<sub>a</sub> = -10 °C is possible, if the sensor is turned on at T<sub>a</sub> > -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<sub>a</sub> = -10 °C <sup>12)</sup> Mode of calculation: Parts-Count-calculation

Dimensional drawing

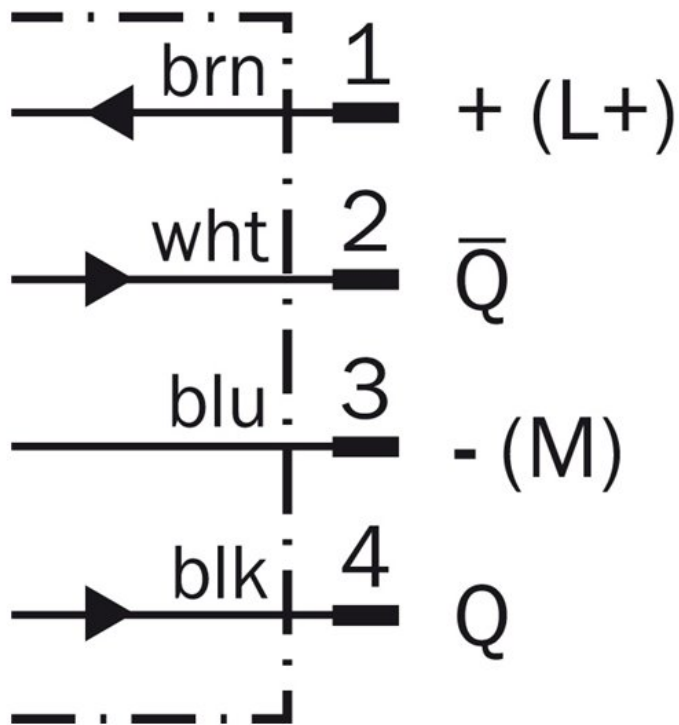


Adjustments possible

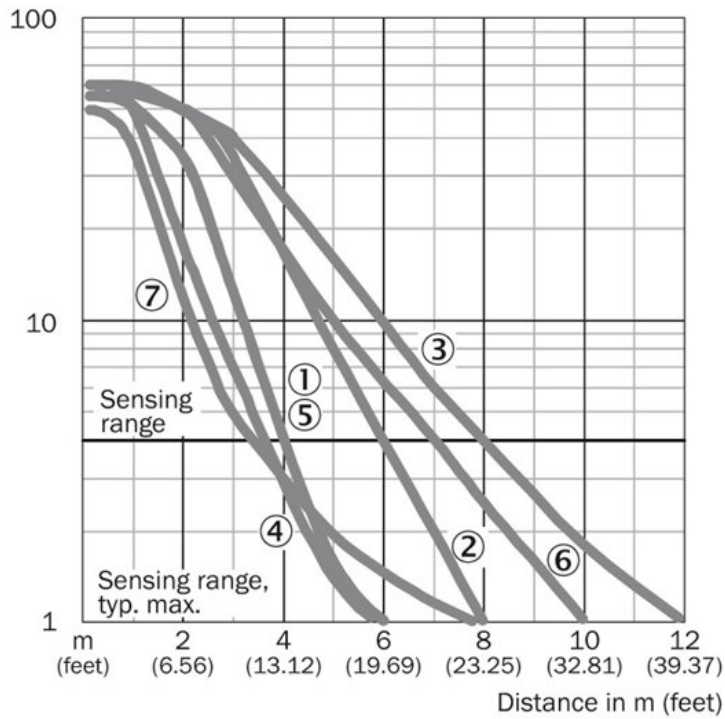


- |3| LED indicator yellow: Light received
- |4| LED signal strength indicator green:power on
- |8| Teach-in button

## Connection diagram

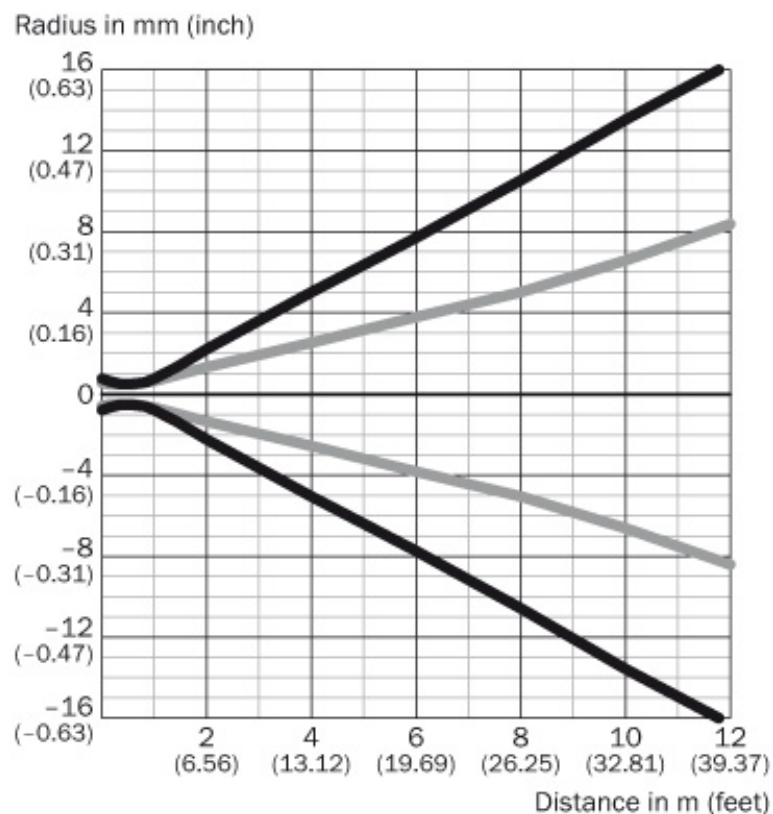


## Characteristic curve



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

## Light spot size

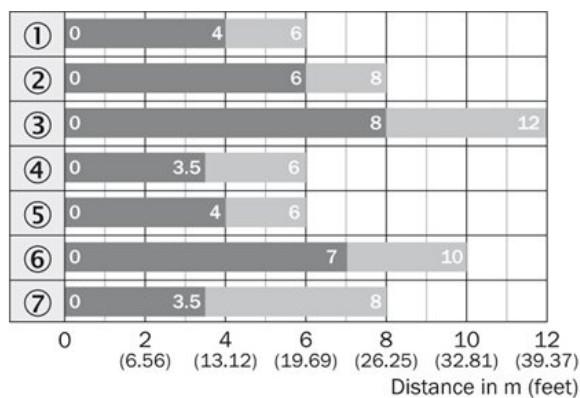


## Dimensions in mm (inch)

| 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)  |

— Vertical  
— Horizontal

## Sensing range diagram



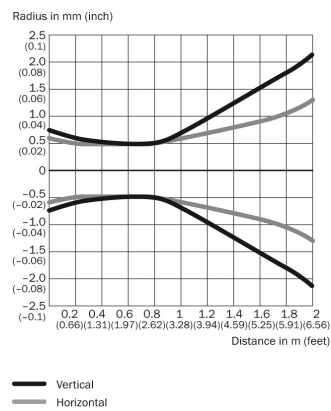
[1] PL20A  
[2] PL40A  
[3] PL80A  
[4] PL10F  
[5] PL20F  
[6] P250F  
[7] REF-AC1000

■ Sensing range    ■ Sensing range typ. max.

## Reflector type

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

Lichtfleckgröße (Detailansicht)



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