



Photoelectric sensors  
W9L-3, Photoelectric proximity sensor,  
Background suppression

WTB9L-3N1191



Type > [WTB9L-3N1191](#)  
Part No. > [1068515](#)



Illustration may differ

#### At a glance

- Tough VISTAL™ housing
- Precise laser light spot
- Laser classes 1 and 2 available
- Optimized SICK ASIC technology with second transmission LED
- 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 due to stable VISTAL™ housing as well as impressive suppression of optical interference

The longest sensing ranges in its class

Best-in-class background suppression

Wide range of connection options

Multiple mounting options

Highly visible light spot simplifies alignment



#### Features

|                                  |                                                        |
|----------------------------------|--------------------------------------------------------|
| Sensor/detection principle:      | Photoelectric proximity sensor, Background suppression |
| Dimensions (W x H x D):          | 12.2 mm x 49.8 mm x 23.6 mm                            |
| Housing design (light emission): | Rectangular                                            |
| Mounting hole:                   | M3                                                     |
| Sensing range max.:              | 25 mm ... 400 mm <sup>1)</sup>                         |
| Sensing range:                   | 25 mm ... 400 mm <sup>2)</sup>                         |
| Type of light:                   | Visible red light                                      |
| Light source:                    | Laser <sup>3)</sup>                                    |
| Laser class:                     | 2, 2 (IEC 60825-1/CDRH 21 CFR 1040.10 & 1040.11)       |
| Adjustment:                      | Potentiometer, 5 turns                                 |
| Light spot size (distance):      | Ø 0.9 mm (230 mm)                                      |

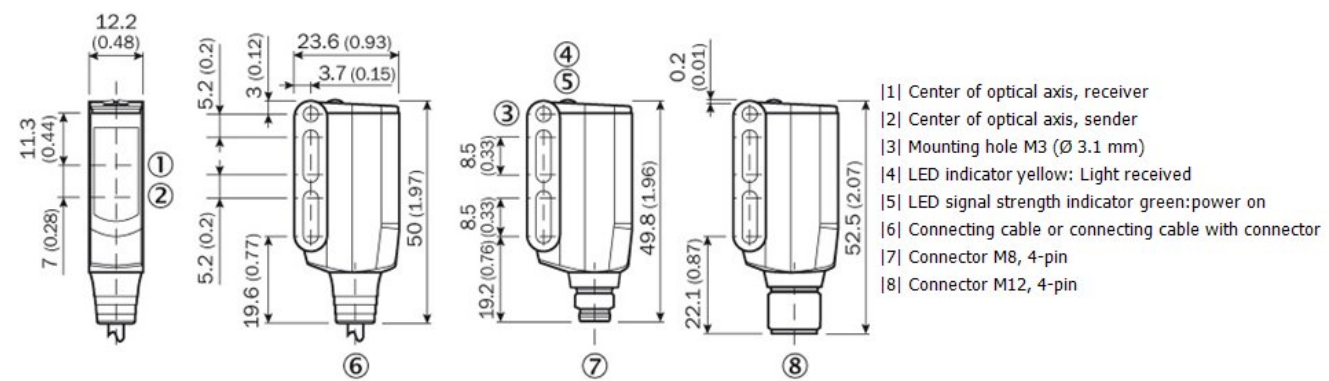
<sup>1) 2)</sup> Object with 90 % reflectance (referred to standard white, DIN 5033) <sup>3)</sup> Average service life 50,000 h at T<sub>A</sub> = +25 °C

## Mechanics/electronics

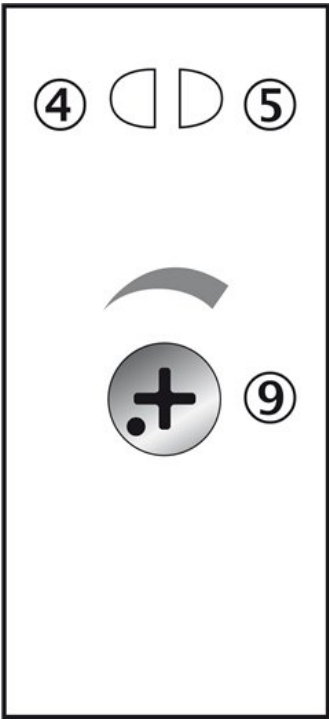
|                                          |                                                     |
|------------------------------------------|-----------------------------------------------------|
| Supply voltage:                          | 10 V DC ... 30 V DC <sup>1)</sup>                   |
| Ripple:                                  | < 5 Vpp <sup>2)</sup>                               |
| Power consumption:                       | ≤ 30 mA <sup>3)</sup>                               |
| Output type:                             | NPN <sup>4)</sup>                                   |
| Output function:                         | Complementary                                       |
| Switching mode:                          | Light/dark switching <sup>5)</sup>                  |
| Output current I <sub>max.</sub> :       | ≤ 100 mA                                            |
| Response time:                           | ≤ 1 ms <sup>6)</sup>                                |
| Switching frequency:                     | 500 Hz <sup>7)</sup>                                |
| Connection type:                         | Cable, 4-wire, 2 m <sup>8)</sup>                    |
| Circuit protection:::                    | A, B, C <sup>9)</sup> <sup>10)</sup> <sup>11)</sup> |
| Protection class:                        | III                                                 |
| Weight:                                  | 13 g                                                |
| 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>12)</sup> <sup>13)</sup>     |
| UL File No.:                             | NRKH.E181493                                        |
| Housing material:                        | Plastic, VISTAL                                     |

<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<sub>S</sub> tolerances <sup>3)</sup> Without load <sup>4)</sup> <sup>5)</sup> Q = light-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<sub>S</sub> 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<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>13)</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

Dimensional drawing

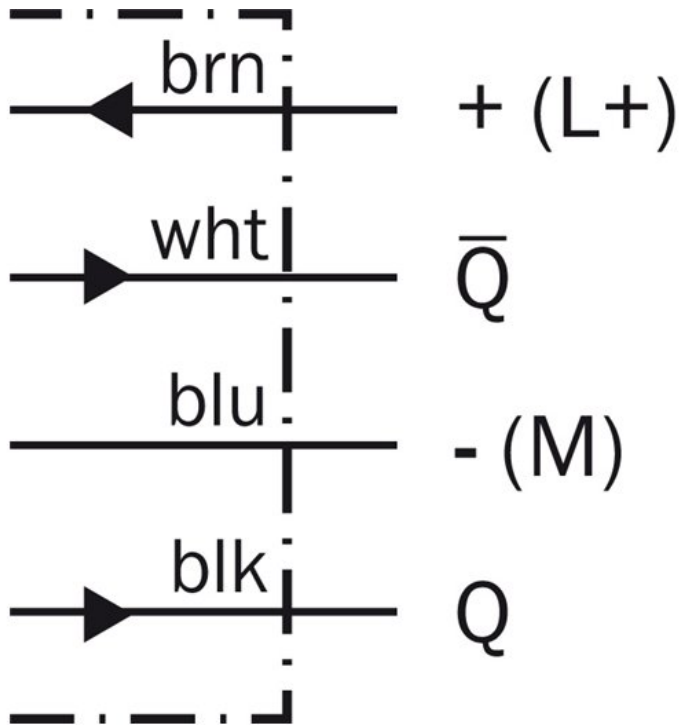


Adjustments possible

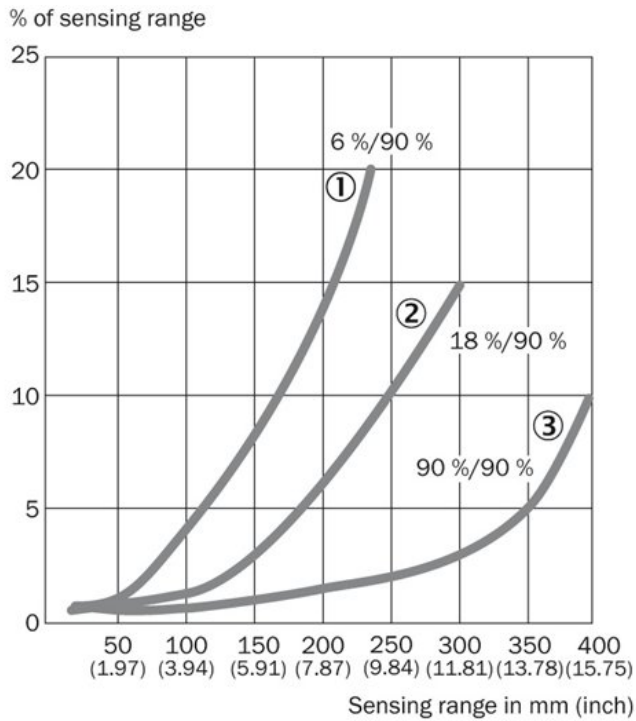


- 4| LED indicator yellow: Light received  
5| LED signal strength indicator green: power on  
9| Sensing range adjustment

## Connection diagram

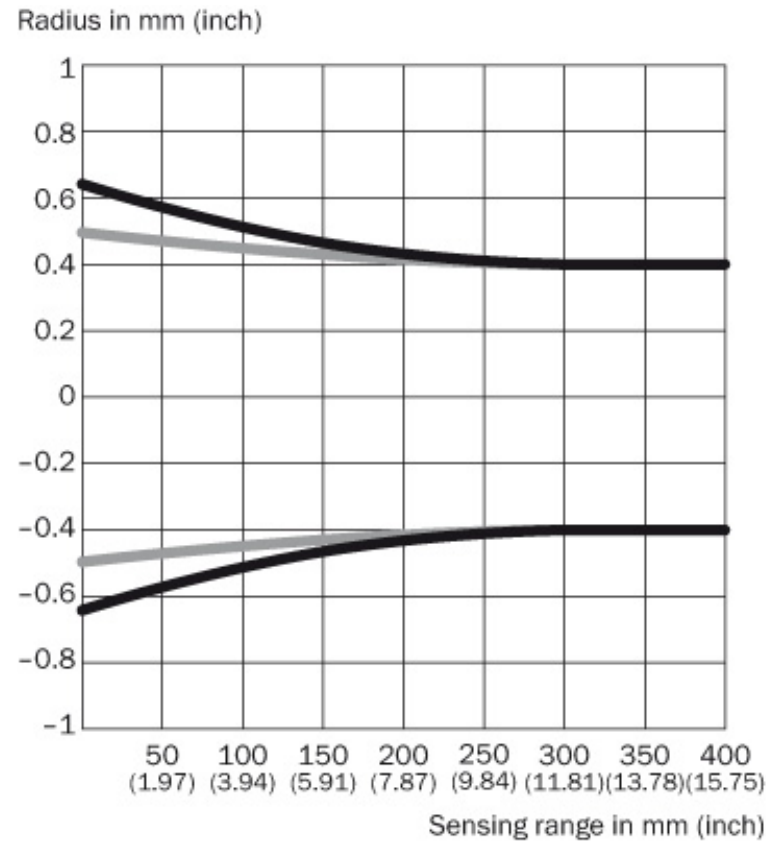


## Characteristic curve



- |1| Sensing range on black, 6 % remission
- |2| Sensing range on gray, 18 % remission
- |3| Sensing range on white, 90 % remission

Light spot size



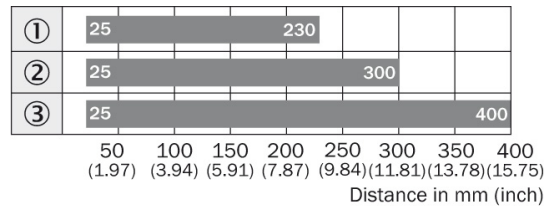
Dimensions in mm (inch)

| Sensing range  | Vertical   | Horizontal |
|----------------|------------|------------|
| 50 mm (1.97)   | 1.2 (0.05) | 1.0 (0.04) |
| 100 mm (3.94)  | 1.1 (0.04) | 1.0 (0.04) |
| 200 mm (7.87)  | 0.9 (0.04) | 0.9 (0.04) |
| 400 mm (15.75) | 0.8 (0.03) | 0.8 (0.03) |

Vertical

Horizontal

Sensing range diagram



Sensing range typ. max.

**Australia**

Phone +61 3 9457 0600  
1800 33 48 02 – tollfree  
E-Mail sales@sick.com.au

**Belgium/Luxembourg**

Phone +32 (0)2 466 55 66  
E-Mail info@sick.be

**Brasil**

Phone +55 11 3215-4900  
E-Mail marketing@sick.com.br

**Canada**

Phone +1 905 771 14 44  
E-Mail information@sick.com

**Česká republika**

Phone +420 2 57 91 18 50  
E-Mail sick@sick.cz

**China**

Phone +86 4000 121 000  
E-Mail info.china@sick.net.cn  
Phone +852-2153 6300  
E-Mail ghk@sick.com.hk

**Danmark**

Phone +45 45 82 64 00  
E-Mail sick@sick.dk

**Deutschland**

Phone +49 211 5301-301  
E-Mail info@sick.de

**España**

Phone +34 93 480 31 00  
E-Mail info@sick.es

**France**

Phone +33 1 64 62 35 00  
E-Mail info@sick.fr

**Great Britain**

Phone +44 (0)1727 831121  
E-Mail info@sick.co.uk

**India**

Phone +91-22-4033 8333  
E-Mail info@sick-india.com

**Israel**

Phone +972-4-6881000  
E-Mail info@sick-sensors.com

**Italia**

Phone +39 02 27 43 41  
E-Mail info@sick.it

**Japan**

Phone +81 (0)3 5309 2112  
E-Mail support@sick.jp

**Magyarország**

Phone +36 1 371 2680  
E-Mail office@sick.hu

**Nederland**

Phone +31 (0)30 229 25 44  
E-Mail info@sick.nl

**Norge**

Phone +47 67 81 50 00  
E-Mail sick@sick.no

**Österreich**

Phone +43 (0)22 36 62 28 8-0  
E-Mail office@sick.at

**Polska**

Phone +48 22 837 40 50  
E-Mail info@sick.pl

**România**

Phone +40 356 171 120  
E-Mail office@sick.ro

**Russia**

Phone +7-495-775-05-30  
E-Mail info@sick.ru

**Schweiz**

Phone +41 41 619 29 39  
E-Mail contact@sick.ch

**Singapore**

Phone +65 6744 3732  
E-Mail sales.gsg@sick.com

**Slovenija**

Phone +386 (0)1-47 69 990  
E-Mail office@sick.si

**South Africa**

Phone +27 11 472 3733  
E-Mail info@sickautomation.co.za

**South Korea**

Phone +82 2 786 6321/4  
E-Mail info@sickkorea.net

**Suomi**

Phone +358-9-25 15 800  
E-Mail sick@sick.fi

**Sverige**

Phone +46 10 110 10 00  
E-Mail info@sick.se

**Taiwan**

Phone +886 2 2375-6288  
E-Mail sales@sick.com.tw

**Türkiye**

Phone +90 (216) 528 50 00  
E-Mail info@sick.com.tr

**United Arab Emirates**

Phone +971 (0) 4 88 65 878  
E-Mail info@sick.ae

**USA/México**

Phone +1(952) 941-6780  
1 (800) 325-7425 – tollfree  
E-Mail info@sickusa.com

More representatives and agencies  
at [www.sick.com](http://www.sick.com)