



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

WTB9L-3N2491



Model Name > [WTB9L-3N2491](#)
Part No. > [1058149](#)



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 52.2 mm x 23.6 mm |
| Housing design (light emission): | Rectangular |
| Mounting hole: | M3 |
| Sensing range max.: | 25 mm ... 400 mm ¹⁾ |
| Sensing range: | 25 mm ... 400 mm ²⁾ |
| Type of light: | Visible red light |
| Light source: | Laser ³⁾ |
| Laser class: | 2 (IEC 60825-1/CDRH 21 CFR 1040.10 & 1040.11) |
| Wave length: | 650 nm |
| Adjustment: | Potentiometer, 5-turn |
| Light spot size (distance): | Ø 0.9 mm (230 mm) |

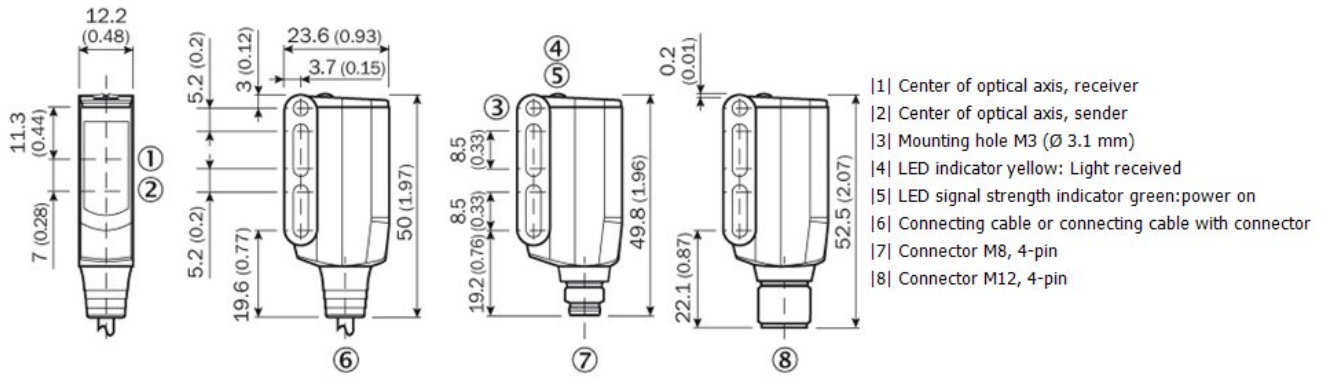
^{1) 2)} Object with 90 % reflectance (referred to standard white DIN 5033) ³⁾ Average service life 50,000 h at T_A = +25 °C

Mechanics/electronics

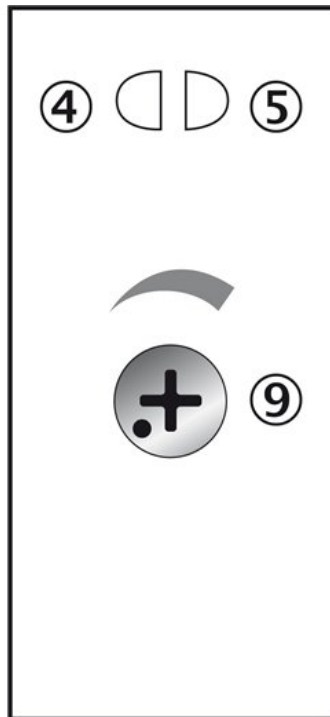
| | |
|---|---------------------------------------|
| Supply voltage: | 10 V DC ... 30 V DC ¹⁾ |
| Ripple: | < 5 Vpp |
| Power consumption: | ≤ 30 mA ²⁾ |
| Output type: | NPN ³⁾ |
| Output function: | Complementary |
| Switching mode: | Light/dark-switching ⁴⁾ |
| Output current I _{max.} : | ≤ 100 mA |
| Response time: | ≤ 1 ms ⁵⁾ |
| Switching frequency: | 500 Hz ⁶⁾ |
| Connection type: | Connector M12, 4-pin |
| Circuit protection::: | A, B, C ^{7) 8) 9)} |
| Protection class: | III |
| Weight: | 13 g |
| Housing material: | Plastic, VISTAL |
| Optics material: | PMMA |
| Enclosure rating: | IP 66 IP 67 IP 69K |
| Ambient operating temperature: | -10 °C ... 50 °C |
| Ambient storage temperature: | -30 °C ... 70 °C |
| Ambient operating temperature extended::: | -30 °C ... 55 °C ^{10) 11)} |
| MTTFd: | 423 a (EN ISO 13849-1) ¹²⁾ |

¹⁾ Limit values, operation in short-circuit protected network max. 8 A ²⁾ Without load ^{3) 4)} Q = light-switching ⁵⁾ Signal transit time with resistive load ⁶⁾ With light/dark ratio 1:1 ⁷⁾ A = V_S connections reverse-polarity protected ⁸⁾ B = inputs and output reverse-polarity protected ⁹⁾ C = interference suppression ¹⁰⁾ 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 ¹¹⁾ 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 ¹²⁾ Mode of calculation: Parts-Count-calculation

Dimensional drawing



Adjustments possible

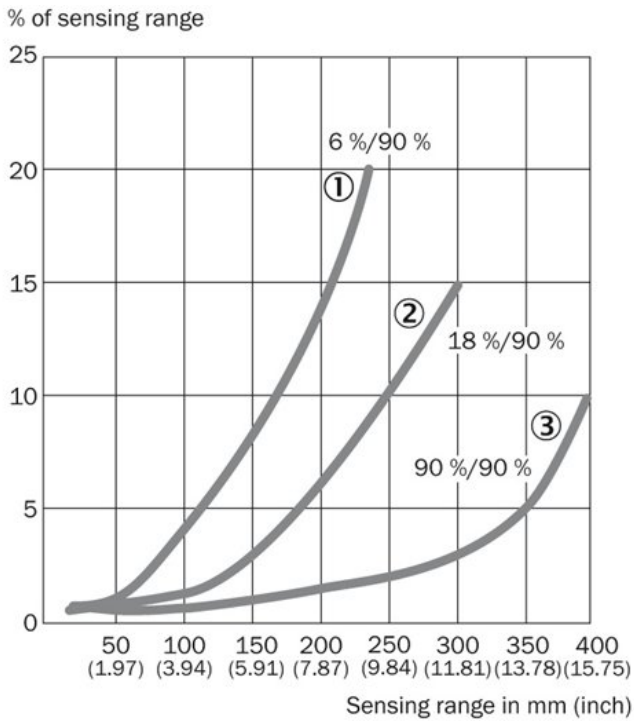


- |4| LED indicator yellow: Light received
- |5| LED signal strength indicator green: power on
- |9| Sensing range adjustment

Connection diagram



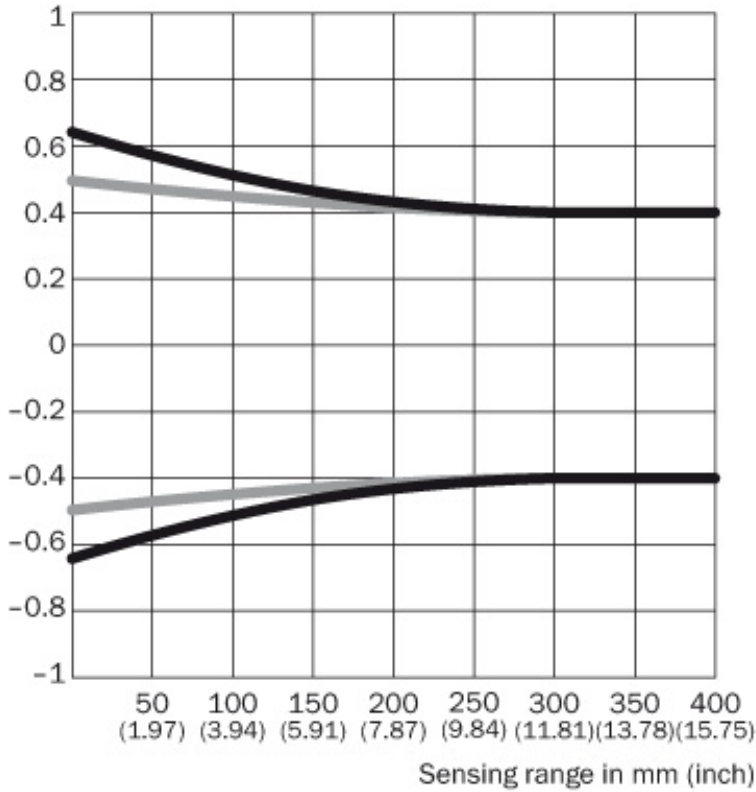
Characteristic curve



- [1] Sensing range on black, 6 % remission
- [2] Sensing range on grey, 18 % remission
- [3] Sensing range on white, 90 % remission

Light spot size

Radius in mm (inch)

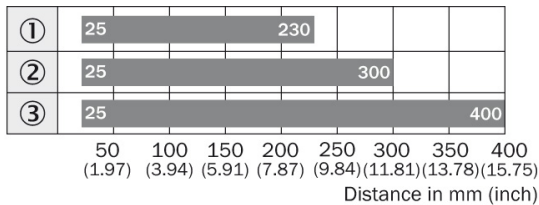


Dimensions in mm (inch)

| 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.

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

Australia

Phone +61 3 9457 0600
1800 334 802 – 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 sac@sick.com.br

Canada

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

Ceská 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 kundenservice@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 +972-4-6801000
E-Mail info@sick-sensors.com

Italia

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

Japan

Phone +81 (0)3 3358 1341
E-Mail support@sick.jp

Magyarország

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

Nederlands

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

Norge

Phone +47 67 81 50 00
E-Mail austefjord@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 admin@sicksgp.com.sg

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 8865 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