



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

WTB9L-3P3491



**Model Name** > [WTB9L-3P3491](#)  
**Part No.** > [1058153](#)



*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 50 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)

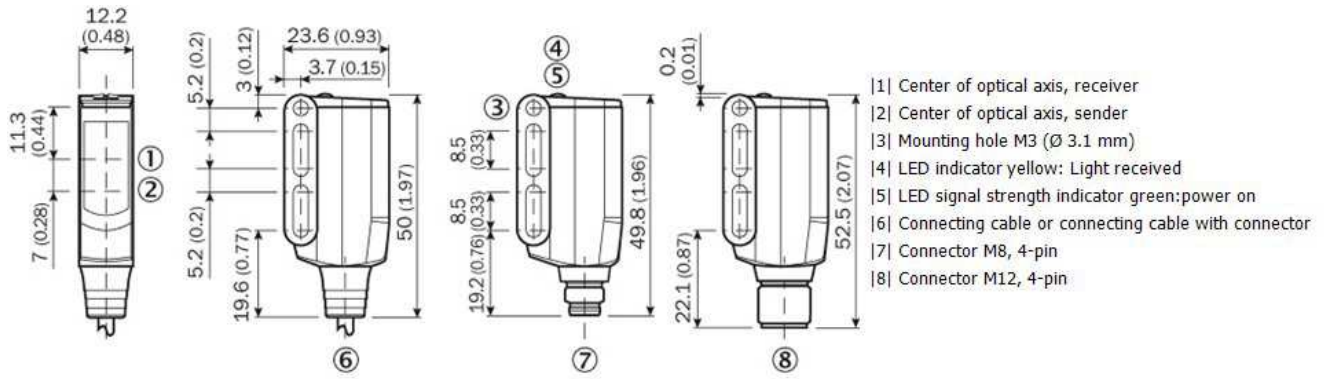
<sup>1) 2)</sup> Object with 90 % reflectance (referred to standard white, DIN 5033) <sup>3)</sup> Average service life 50,000 h at T<sub>A</sub> = +25 °C

## Mechanics/electronics

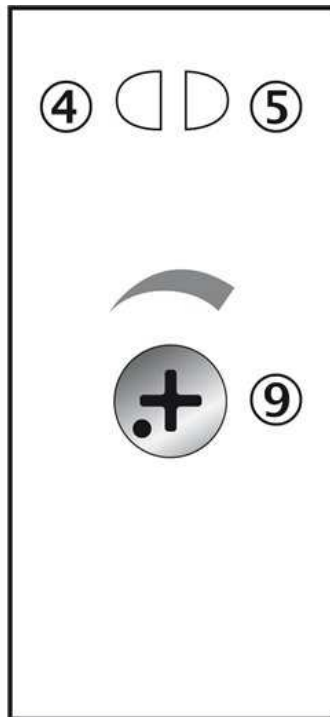
Supply voltage:	10 V DC ... 30 V DC <sup>1)</sup>
Ripple:	< 5 Vpp <sup>2)</sup>
Power consumption:	≤ 30 mA <sup>3)</sup>
Output type:	PNP <sup>4)</sup>
Output function:	Complementary
Switching mode:	Light/dark switching <sup>5)</sup>
Output current I <sub>max.</sub> :	≤ 100 mA
Response time:	≤ 1 ms <sup>6)</sup>
Switching frequency:	500 Hz <sup>7)</sup>
Connection type:	Cable with connector M12, 4-pin, 120 mm <sup>8)</sup>
Cable material:	PVC
Conductor cross-section:	0.14 mm <sup>2</sup>
Circuit protection:::	A, B, C <sup>9)</sup> <sup>10)</sup> <sup>11)</sup>
Protection class:	III
Weight:	80 g
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 <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  $V_S$  tolerances <sup>3)</sup> Without load <sup>4) 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 =  $V_S$  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

## Dimensional drawing



## Adjustments possible

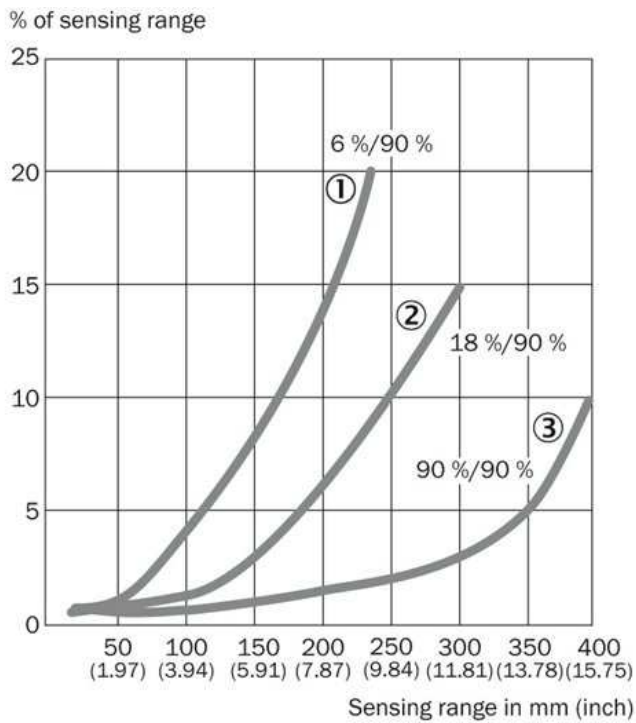


- |4| LED indicator yellow: Light received
- |5| LED signal strength indicator green:power on
- |9| Sensing range adjustment

Connection diagram



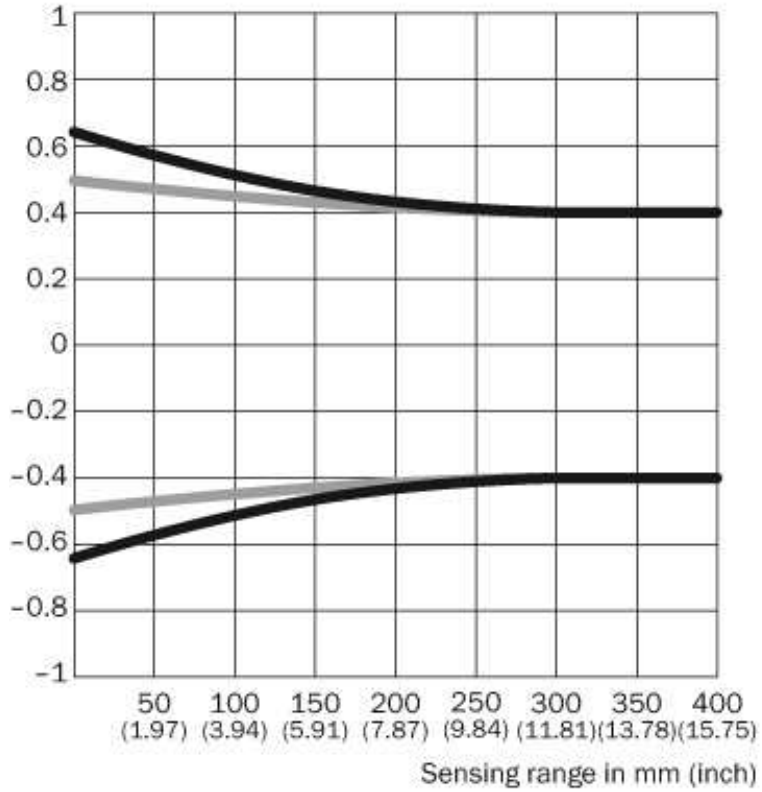
Characteristic curve



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

## Light spot size

Radius in mm (inch)

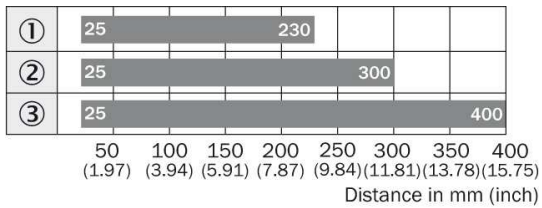


## Dimensions in mm (inch)

Sensing range	Vertical	Horizontal
<b>50 mm</b> <b>(1.97)</b>	1.2 (0.05)	1.0 (0.04)
<b>100 mm</b> <b>(3.94)</b>	1.1 (0.04)	1.0 (0.04)
<b>200 mm</b> <b>(7.87)</b>	0.9 (0.04)	0.9 (0.04)
<b>400 mm</b> <b>(15.75)</b>	0.8 (0.03)	0.8 (0.03)

Vertical  
 Horizontal

## Sensing range diagram



■ Sensing range typ. max.

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