



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

WTB9M4L-3P3461



**Type** > [WTB9M4L-3P3461](#)  
**Part No.** > [1063663](#)

**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
- M4 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



*Illustration may differ*



**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:	M4
Sensing range max.:	25 mm ... 300 mm <sup>1)</sup>
Sensing range:	25 mm ... 300 mm <sup>2)</sup>
Type of light:	Visible red light
Light source:	Laser <sup>3)</sup>
Laser class:	1, 1 (IEC 60825-1/CDRH 21 CFR 1040.10 & 1040.11)
Wave length:	650 nm
Adjustment:	Potentiometer, 5 turns
Light spot size (distance):	Ø 1 mm (170 mm)

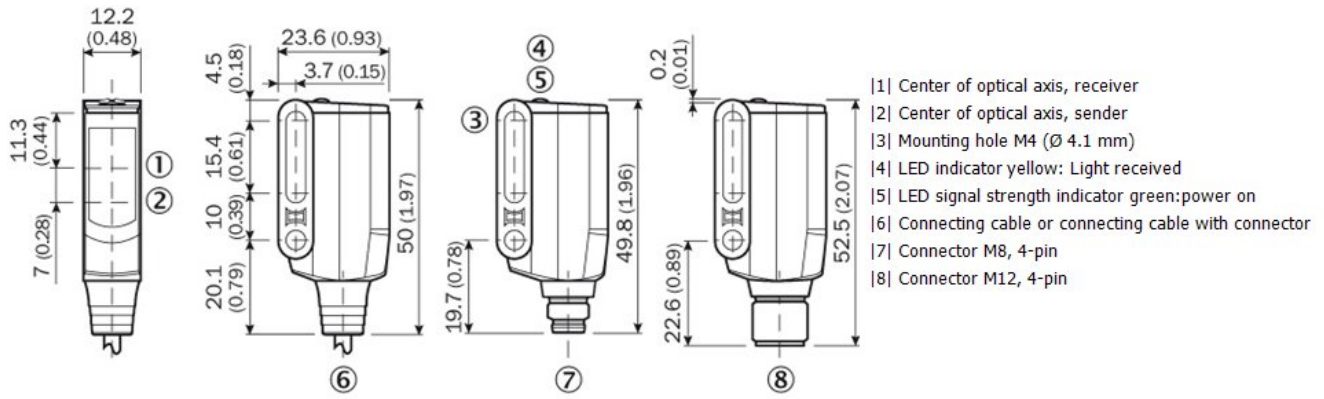
<sup>1) 2)</sup> Object with 90 % reflectance (referred to standard white, DIN 5033) <sup>3)</sup> Average service life 50,000 h at T<sub>A</sub> = +25 °C

**Mechanics/electronics**

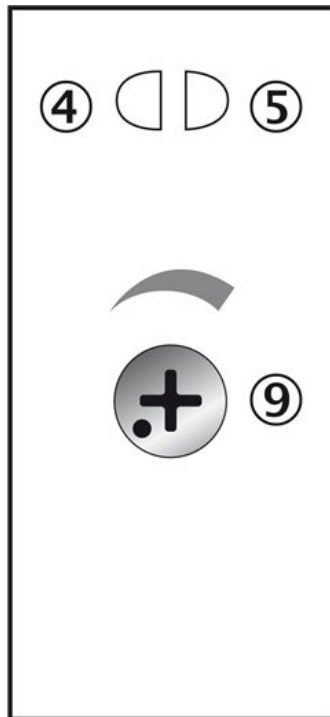
Supply voltage:	10 V DC ... 30 V DC <sup>1)</sup>
Ripple:	< 5 V <sub>pp</sub> <sup>2)</sup>
Power consumption:	≤ 30 mA <sup>3)</sup>
Output type:	PNP <sup>4)</sup>
Output function:	Complementary
Switching mode:	Light/dark switching <sup>5)</sup>
Output current I <sub>max.</sub> :	≤ 100 mA
Response time:	≤ 0.5 ms <sup>6)</sup>
Switching frequency:	1,000 Hz <sup>7)</sup>
Connection type:	Cable with connector M12, 4-pin
Circuit protection:::	A, B, C <sup>8) 9) 10)</sup>
Protection class:	III
Weight:	13 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>11) 12)</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) 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> A = V<sub>S</sub> connections reverse-polarity protected <sup>9)</sup> B = inputs and output reverse-polarity protected <sup>10)</sup> C =  
interference suppression <sup>11)</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>12)</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

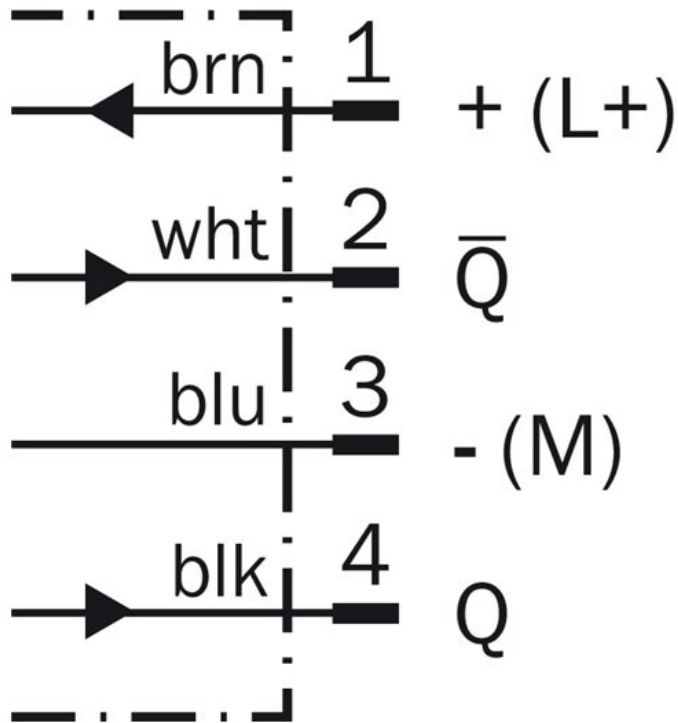


## Adjustments possible

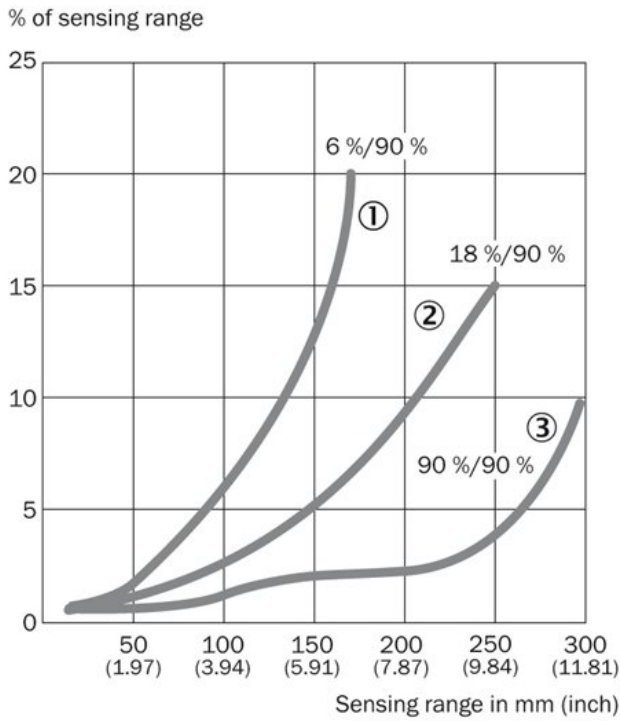


- ④ | LED indicator yellow: Light received
- ⑤ | LED signal strength indicator green: power on
- ⑨ | Sensing range adjustment

Connection diagram



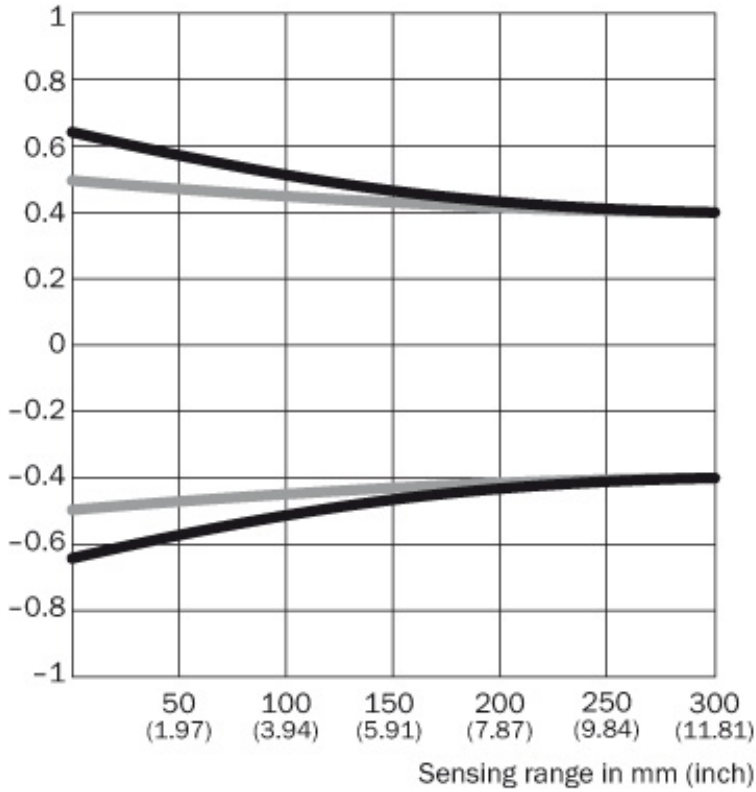
Characteristic curve



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

**Light spot size**

Radius in mm (inch)

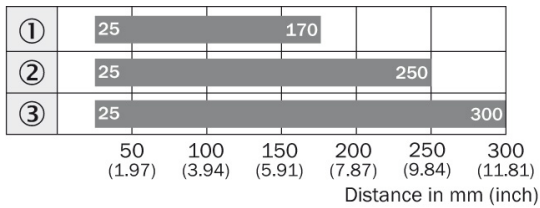


**Dimensions in mm (inch)**

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>300 mm</b> <b>(11.81)</b>	0.8 (0.03)	0.8 (0.03)

Vertical  
 Horizontal

**Sensing range diagram**



■ Sensing range typ. max.

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