



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

WTB9M4L-3P2291



Type > [WTB9M4L-3P2291](#)
Part No. > [1058224](#)

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 49.8 mm x 23.6 mm
Housing design (light emission):	Rectangular
Mounting hole:	M4
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, 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)

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

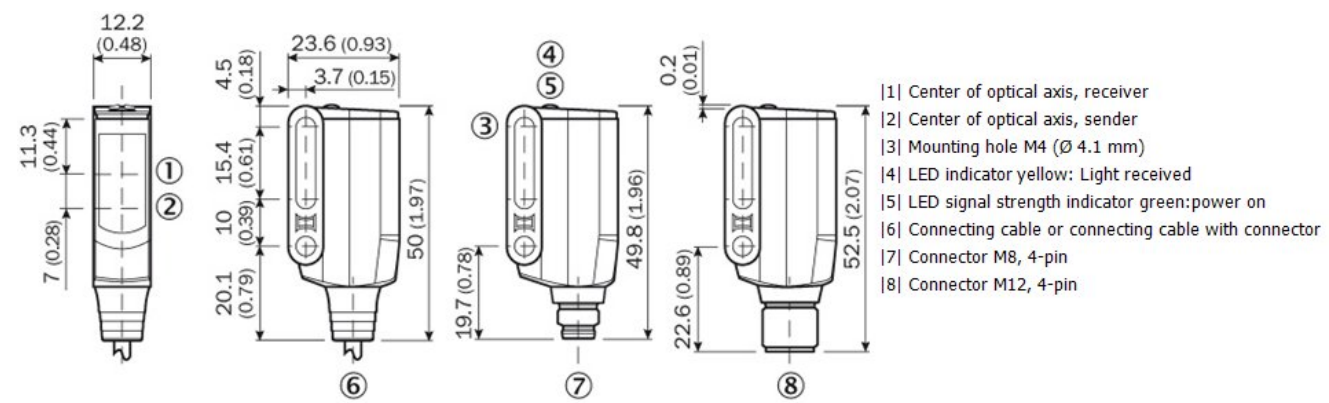
Mechanics/electronics

Supply voltage:	10 V DC ... 30 V DC ¹⁾
Ripple:	< 5 Vpp ²⁾

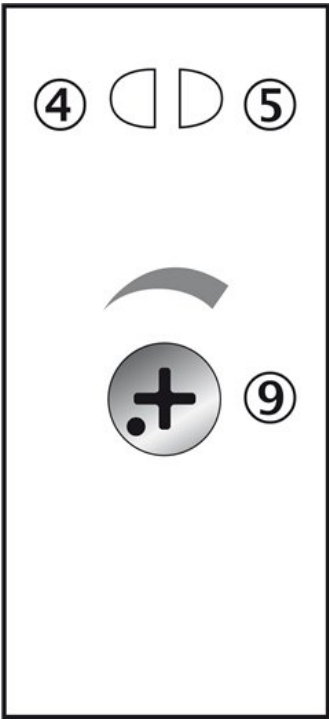
Power consumption:	$\leq 30 \text{ mA}$ ³⁾
Output type:	PNP ⁴⁾
Output function:	Complementary
Switching mode:	Light/dark switching ⁵⁾
Output current I _{max.} :	$\leq 100 \text{ mA}$
Response time:	$\leq 1 \text{ ms}$ ⁶⁾
Switching frequency:	500 Hz ⁷⁾
Connection type:	Connector M8, 4-pin
Circuit protection:::	A, B, C ^{8) 9) 10)}
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 ^{11) 12)}
UL File No.:	NRKH.E181493
Housing material:	Plastic, VISTAL

¹⁾ Limit values, operation in short-circuit protected network max. 8 A ²⁾ May not exceed or fall short of V_S tolerances ³⁾ Without load ^{4) 5)} Q = light-switching ⁶⁾ Signal
transit time with resistive load ⁷⁾ With light/dark ratio 1:1 ⁸⁾ $A = V_S$ connections reverse-polarity protected ⁹⁾ B = inputs and output reverse-polarity protected ¹⁰⁾ C =
interference suppression ¹¹⁾ As of $T_a = 50 \text{ °C}$, a max. supply voltage $V_{\text{max.}} = 24 \text{ V}$ and a max. load current $I_{\text{max.}} = 50 \text{ mA}$ is permitted ¹²⁾ Using the sensor below T_a
= -10 °C is possible, if the sensor is turned on at $T_a > -10 \text{ °C}$, 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 $T_a = -10 \text{ °C}$

Dimensional drawing



Adjustments possible

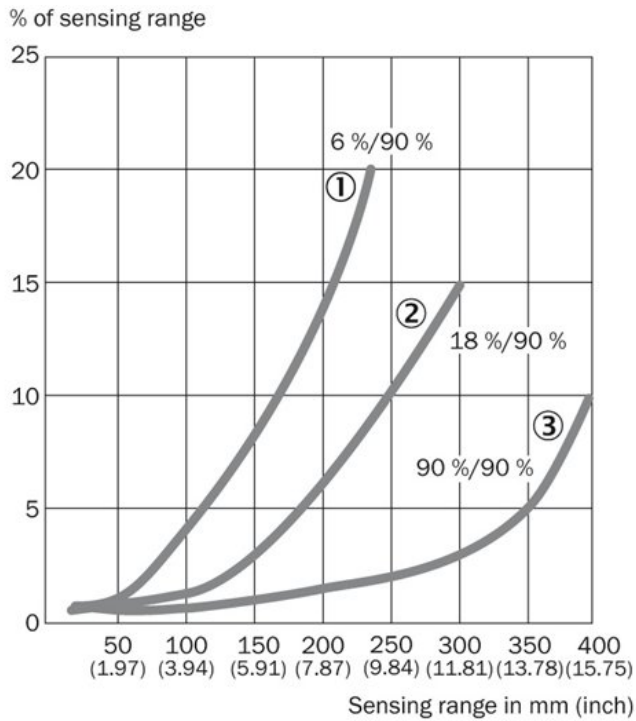


- ④ LED indicator yellow: Light received
- ⑤ LED signal strength indicator green:power on
- ⑨ Sensing range adjustment

Connection diagram

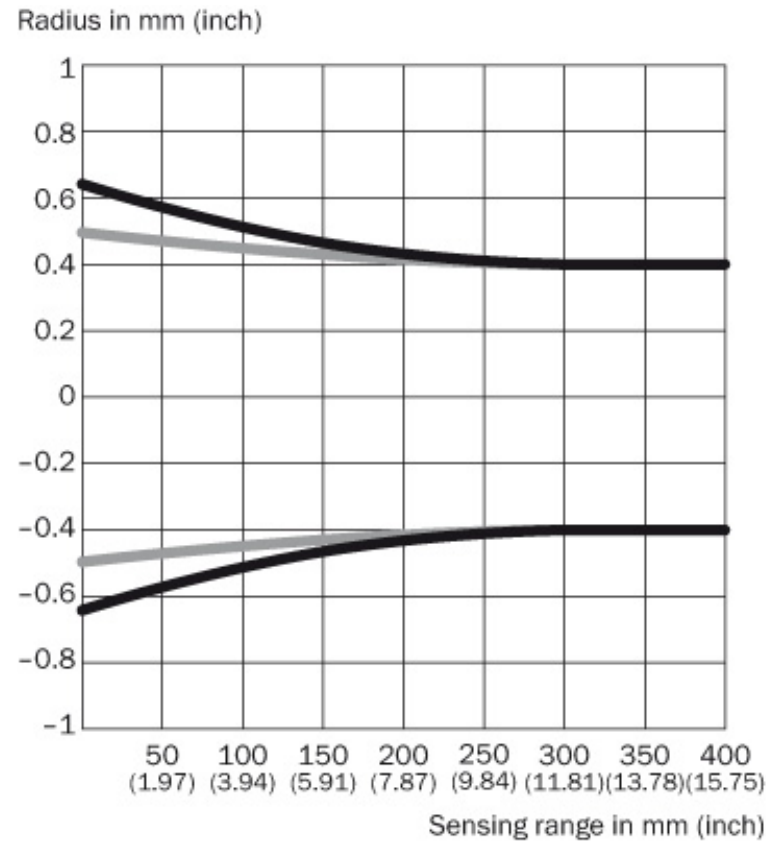


Characteristic curve



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

Light spot size



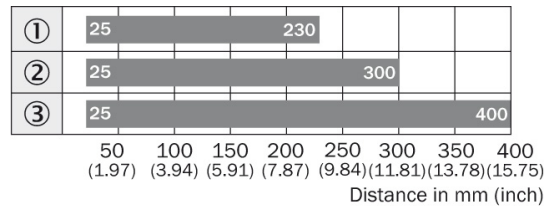
Dimensions in mm (inch)

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.

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