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

WTB9L-3N2261

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Sensor Intelligence.

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Model Name	**> WTB9L-3N2261**
Part No.	**> 1062523**

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

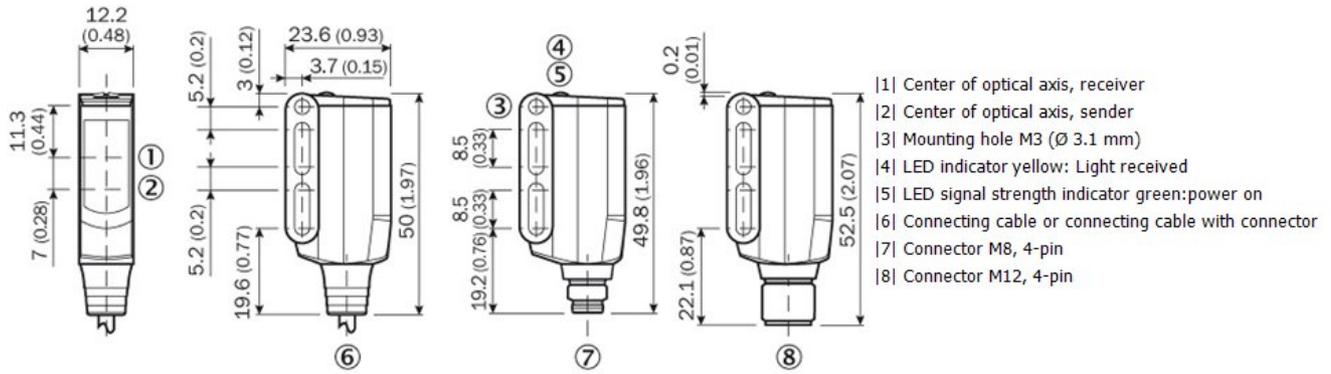|	
Sensor/detection principle:	Photoelectric proximity sensor, Background suppression
Dimensions (W x H x D):	12.2 mm x 49.8 mm x 23.6 mm
Housing design (light emission):	Rectangular
Mounting hole:	M3
Sensing range max.:	25 mm ... 300 mm [1]
Sensing range:	25 mm ... 300 mm [2]
Type of light:	Visible red light
Light source:	Laser [3]
Laser class:	1 (IEC 60825-1∕CDRH 21 CFR 1040.10 & 1040.11)
Wave length:	650 nm
Adjustment:	Potentiometer, 5-turn
Light spot size (distance):	Ø 1 mm (170 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
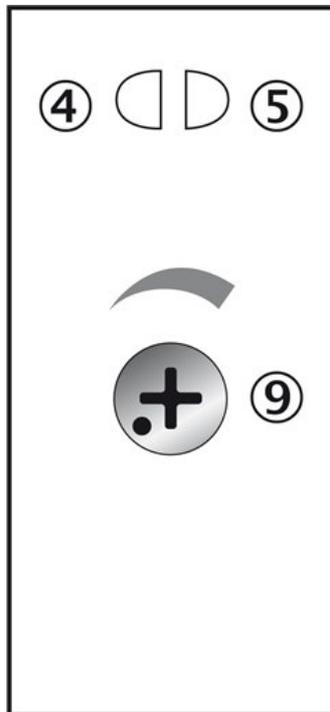
Mechanics/electronics

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 Imax.:	≤ 100 mA
Response time:	≤ 0.5 ms [5]
Switching frequency:	1,000 Hz [6]
Connection type:	Connector M8, 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

|1| Center of optical axis, receiver
|2| Center of optical axis, sender
|3| Mounting hole M3 (Ø 3.1 mm)
|4| LED indicator yellow: Light received
|5| LED signal strength indicator green: power on
|6| Connecting cable or connecting cable with connector
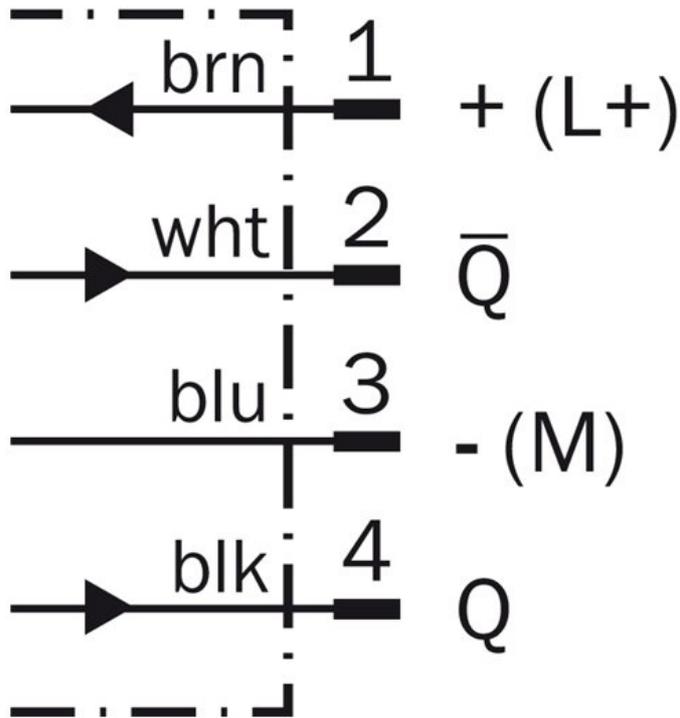|7| Connector M8, 4-pin
|8| Connector M12, 4-pin

Adjustments possible
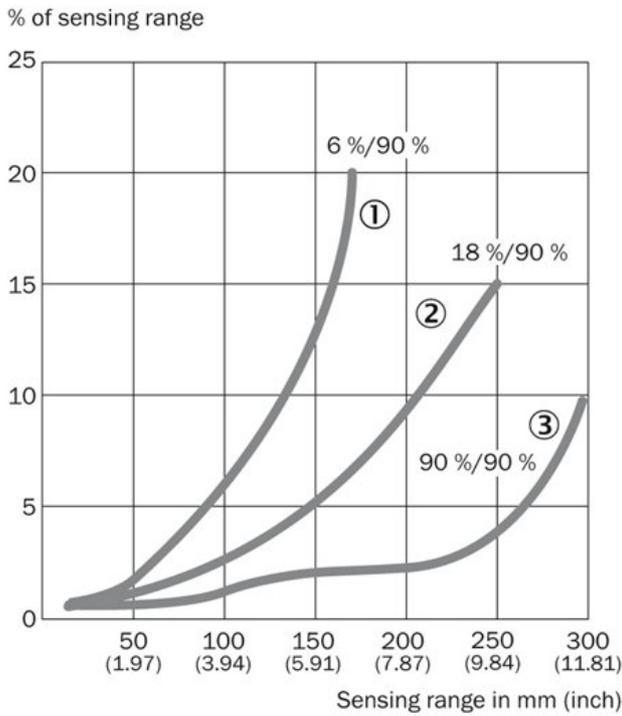

|4| LED indicator yellow: Light received
|5| LED signal strength indicator green: power on
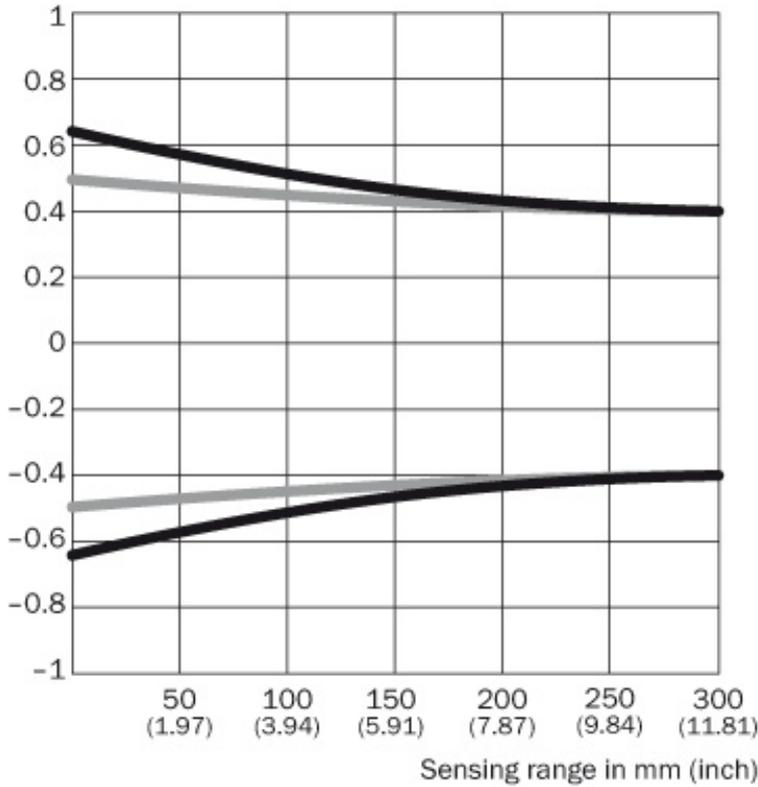|9| Sensing range adjustment

Connection diagram

Color	Pin	Function
brn	1	+ (L+)
wht	2	$\overline{Q}$
blu	3	- (M)
blk	4	Q

Characteristic curve

% of sensing range

6 %/90 %
①
18 %/90 %
②
③
90 %/90 %

Sensing range in mm (inch)

|1| Sensing range on black, 6 % remission
|2| Sensing range on grey, 18 % remission
|3| Sensing range on white, 90 % remission
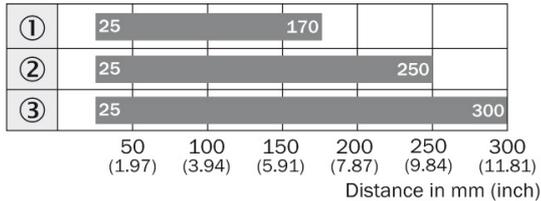
Light spot size

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)
300 mm (11.81)	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

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