



## Photoelectric sensors W9-3, Photoelectric proximity sensor, Background suppression

WTB9-3N3461



Type > [WTB9-3N3461](#)  
Part No. > [1070769](#)



Illustration may differ

#### At a glance

- High-performance proximity sensing in ultra-rugged VISTAL™ housing
- PinPoint LED for highly visible and precise light spot
- Two emitter LEDs for best-in-class background suppression
- Variable mounting with M3 or M4 hole pattern
- Wide range of connection options

#### Your benefits

- Rugged VISTAL™ housing provides reliable installation and operation
- Reliable object detection in all situations using best-in-class technology
- Quick and easy alignment with reliable object detection due to the highly visible PinPoint light spot
- M3 slotted hole mounting for multiple mounting possibilities
- One housing with a wide range of options makes machine integration easy
- Variety of accessories for quick and easy mounting



#### 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.:              | 20 mm ... 350 mm <sup>1)</sup>                         |
| Sensing range:                   | 20 mm ... 200 mm <sup>2)</sup>                         |
| Type of light:                   | Visible red light                                      |
| Light source:                    | PinPoint LED <sup>3)</sup>                             |
| Wave length:                     | 650 nm                                                 |
| Adjustment:                      | Potentiometer, 5 turns                                 |
| Light spot size (distance):      | Ø 4.5 mm (75 mm)                                       |

<sup>1)</sup> Object with 90 % reflectance (referred to standard white, DIN 5033) <sup>2)</sup> Object with 6 % reflectance (referred to standard white, DIN 5033) <sup>3)</sup> Average service life of 100,000 h at T<sub>A</sub> = +25 °C

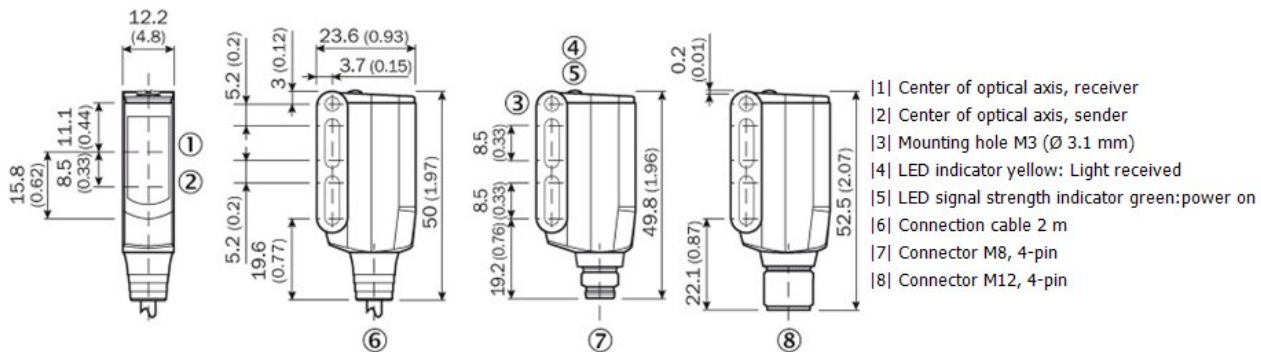
#### Mechanics/electronics

|                    |                                   |
|--------------------|-----------------------------------|
| 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:       | NPN <sup>4)</sup>                 |

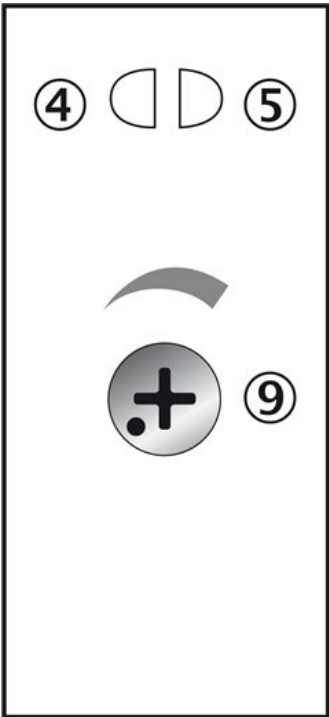
|                                   |                                                       |
|-----------------------------------|-------------------------------------------------------|
| Output function:                  | Complementary                                         |
| Switching mode:                   | Light/dark switching <sup>5)</sup>                    |
| Output current I <sub>max</sub> : | ≤ 100 mA <sup>6)</sup>                                |
| Response time:                    | < 0.333 ms <sup>7)</sup>                              |
| Switching frequency:              | 1,500 Hz <sup>8)</sup>                                |
| Connection type:                  | Cable with connector M12, 4-pin, 120 mm <sup>9)</sup> |
| Cable material:                   | PVC                                                   |
| Conductor cross-section:          | 0.14 mm <sup>2</sup>                                  |
| Circuit protection:::             | A, B, C <sup>10)</sup> <sup>11)</sup> <sup>12)</sup>  |
| Protection class:                 | III                                                   |
| Weight:                           | 80 g                                                  |
| Polarisation filter:              | -                                                     |
| Optics material:                  | PMMA                                                  |
| Enclosure rating:                 | IP 66<br>IP 67<br>IP 69K                              |
| Ambient operating temperature:    | -40 °C ... +60 °C                                     |
| Ambient storage temperature:      | -40 °C ... +75 °C                                     |
| 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> As of  
 Tu 50 °C, a max. load current I<sub>max</sub> = 50 mA is permitted    <sup>7)</sup> Signal transit time with resistive load    <sup>8)</sup> With light/dark ratio 1:1    <sup>9)</sup> Do not bend below 0 °C    <sup>10)</sup> A = V<sub>S</sub>  
 connections reverse-polarity protected    <sup>11)</sup> B = inputs and output reverse-polarity protected    <sup>12)</sup> C = interference suppression

## Dimensional drawing

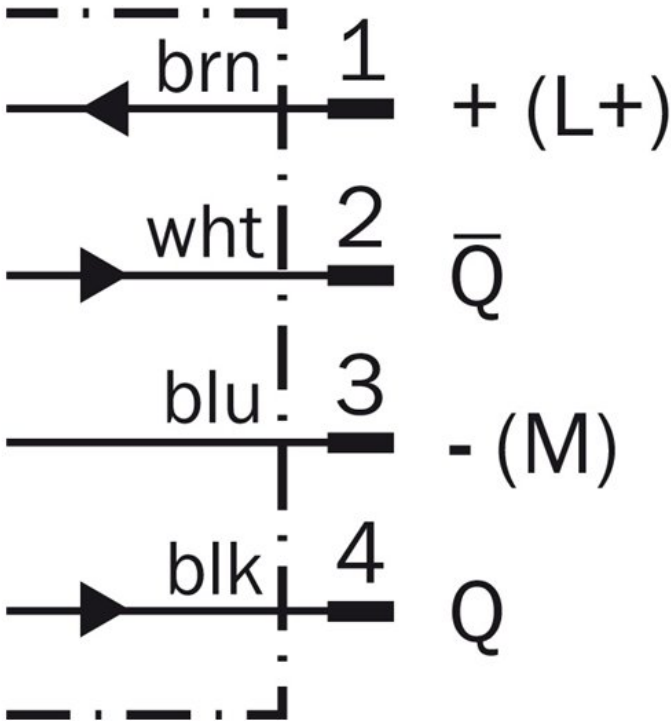


Adjustments possible

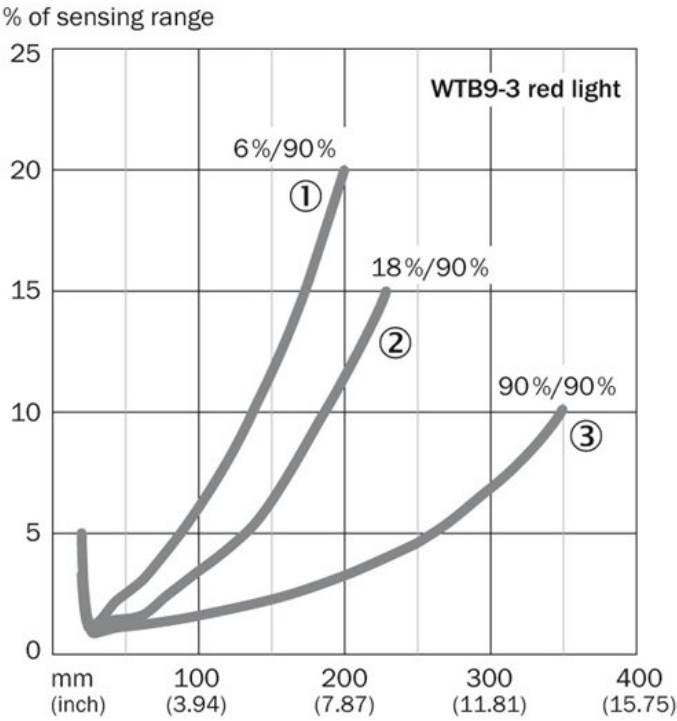


- |4| LED indicator yellow: Light received
- |5| LED signal strength indicator green:power on
- |9| Sensing range adjustment

Connection diagram

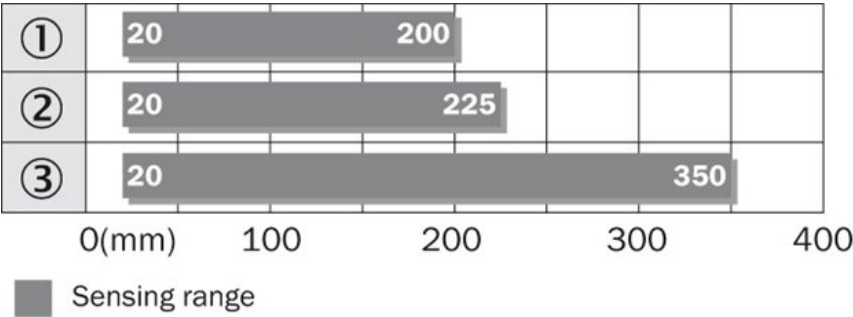


Characteristic curve



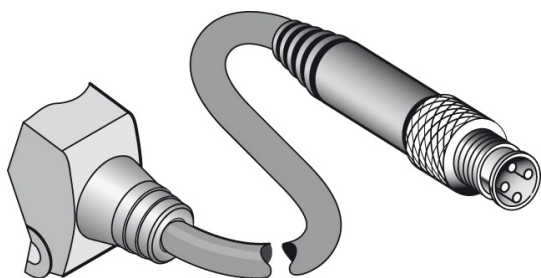
- |1| Sensing range on black, 6 % remission
- |2| Sensing range on gray, 18 % remission
- |3| Sensing range on white, 90 % remission

Sensing range diagram

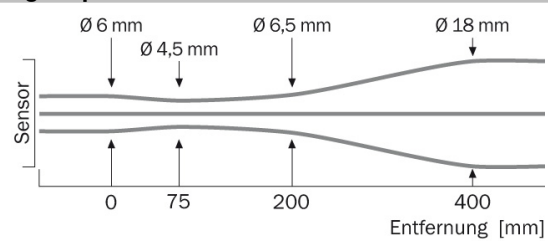


- |1| Sensing range on black, 6 % remission
- |2| Sensing range on gray, 18 % remission
- |3| Sensing range on white, 90 % remission

## Connection type



## Light spot size



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