



Photoelectric sensors  
W4-3, Photoelectric proximity sensor,  
Background suppression

WTB4-3P3161



**Model Name** > [WTB4-3P3161](#)  
**Part No.** > [1028097](#)



*Illustration may differ*

**At a glance**

- Intense light spot with PinPoint LED technology
- Sensor with IR light available upon request
- Sensing range of 4 - 150 mm
- Background suppression sensor available with laser-like light spot
- Adjustment either via teach-in pushbutton, 5-turn potentiometer, cable or IO-Link
- Second emitter LED designed for suppression of shiny backgrounds
- Flexible sensing ranges and hysteresis settings
- Key lock function, remote teach, quality monitoring

**Your benefits**

- Reliable detection of objects regardless of color and consistency
- Smart machine design ensures low-cost integration due to mounting flexibility in areas with limited space
- Best-in-class background suppression and a high immunity to ambient light, ensuring reliable object detection
- Rugged mounting system with M3 threaded metal inserts reduces maintenance costs due to a long service life
- Precise detection with a high level of repeat accuracy due to an intense light spot with PinPoint LED technology
- Quick and easy format adjustment
- Easy monitoring of sensor status
- Key lock function and parameter download prevent incorrect settings



**Features**

|                                  |  |
|----------------------------------|--|
| Sensor/detection principle:      | Photoelectric proximity sensor, Background suppression |
| Dimensions (W x H x D):          | 16 mm x 39.5 mm x 12 mm                                |
| Housing design (light emission): | Rectangular  |
| Sensing range max.:              | 4 mm ... 150 mm <sup>1)</sup>                          |
| Sensing range:                   | 15 mm ... 150 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 7 mm (50 mm)   |

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

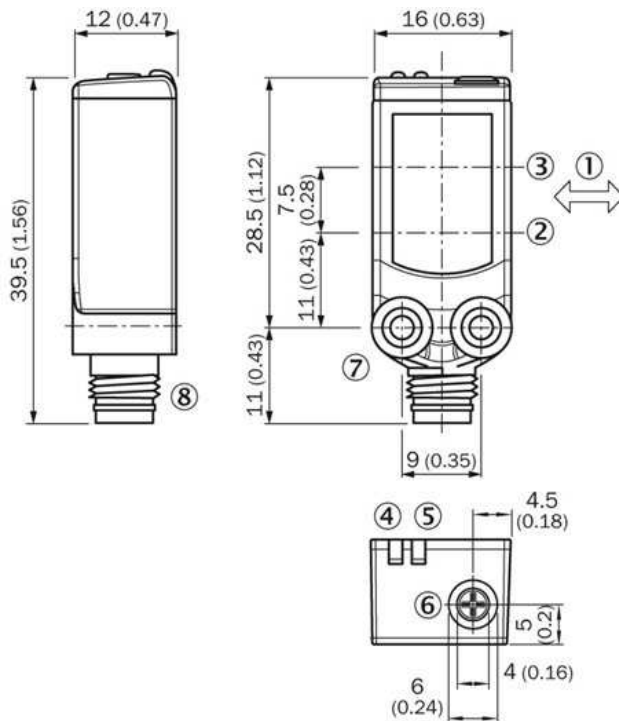
## Mechanics/electronics

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|                                    |  |
|------------------------------------|--|
| Supply voltage:                    | 10 V DC ... 30 V DC <sup>1)</sup>                    |
| Ripple::                           | < 5 Vpp <sup>2) 3)</sup>                             |
| Power consumption:                 | ≤ 20 mA <sup>4)</sup>                                |
| Output type:                       | PNP  |
| Switching mode:                    | Light switching                                      |
| Output current I <sub>max</sub> :: | ≤ 100 mA   |
| Response time:                     | < 0.5 ms <sup>5)</sup>                               |
| Switching frequency:               | 1,000 Hz <sup>6)</sup>                               |
| Connection type:                   | Cable with connector M8, 3-pin, 100 mm <sup>7)</sup> |
| Cable material:                    | PVC  |
| Conductor cross-section:           | 0.14 mm <sup>2</sup>                                 |
| Cable diameter:                    | Ø 3.4 mm   |
| Circuit protection:::              | A, C, D <sup>8) 9) 10)</sup>                         |
| Protection class:                  | III  |
| Weight:                            | 30 g   |
| Optics material:                   | PMMA   |
| Enclosure rating:                  | IP 67<br>IP 66                                       |
| Ambient operating temperature:     | -40 °C ... +60 °C                                    |
| Ambient storage temperature:       | -40 °C ... +75 °C                                    |
| UL File No.:                       | NRKH.E181493 & NRKH7.E181493                         |
| Housing material:                  | ABS, Plastic   |

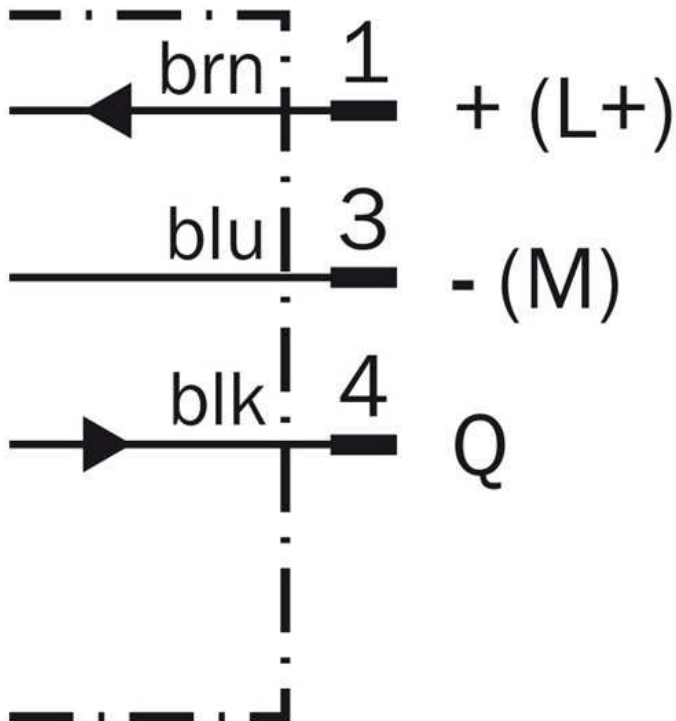
<sup>1)</sup> Limit values <sup>2) 3)</sup> May not exceed or fall short of  $V_S$  tolerances <sup>4)</sup> Without load <sup>5)</sup> Signal transit time with resistive load <sup>6)</sup> With light/dark ratio 1:1 <sup>7)</sup> Do not bend below 0 °C <sup>8)</sup> A =  $V_S$  connections reverse-polarity protected <sup>9)</sup> C = interference suppression <sup>10)</sup> D = outputs overcurrent and short-circuit protected

## Dimensional drawing

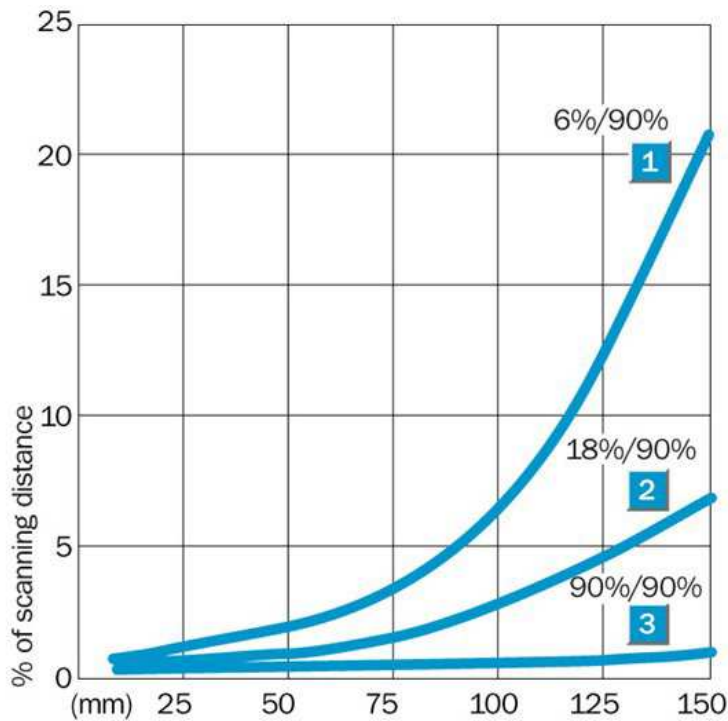


- |1| Standard direction of the material being detected
- |2| Optical axis, sender
- |3| Optical axis, receiver
- |4| Status indicator LED,  
yellow: Status of received light beam
- |5| Status indicator LED green: supply voltage on
- |6| Potentiometer
- |7| Threaded mounting hole M3
- |8| Connection

## Connection diagram

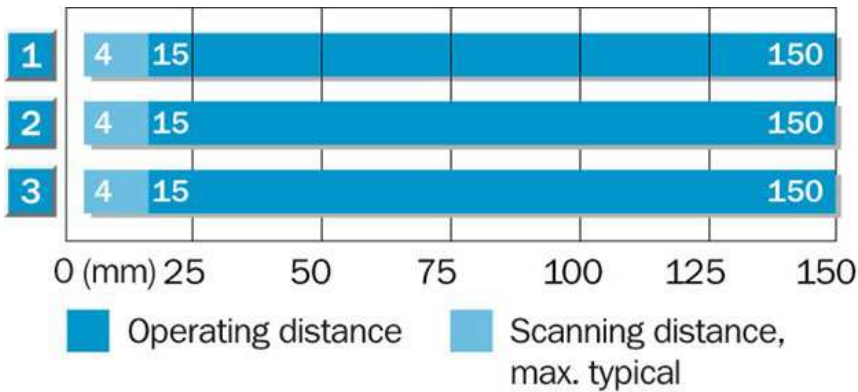


### Characteristic curve



- [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

|          |   |
|----------|---|
| <b>1</b> | Scanning range on black, 6 % remission  |
| <b>2</b> | Scanning range on grey, 18 % remission  |
| <b>3</b> | Scanning range on white, 90 % remission |

**Connection type**

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