



Photoelectric sensors  
W250-2, Photoelectric proximity sensor,  
Background suppression

WTB250-2N1131



## Photoelectric sensors W250-2, Photoelectric proximity sensor, Background suppression

Type > [WTB250-2N1131](#)  
Part No. > [6044672](#)



*Illustration may differ*

### At a glance

- Visible red Bright Light LED
- Background suppression
- Potentiometer with an easy-to-read positioning indicator for adjusting the sensing range
- Cable or rotatable M12 connector
- Operating mode (light/dark) selectable via control wire
- Versions for 10 - 30 V DC or 24 - 240 V DC/ 24 – 240 V AC voltage supply in compact design

### Your benefits

- Visible red light Bright Light LED simplifies alignment and easy-to-read positioning indicator for simple commissioning
- Reliable object detection in difficult ambient light conditions
- Cable or rotatable M12 connector provide installation flexibility
- Operating mode (light/dark) is selectable via a control cable to reduce the number of device variants
- Variants with DC voltage and universal AC/DC voltage in the same housing provide increased flexibility



### Features

|                                  |                                                        |
|----------------------------------|--------------------------------------------------------|
| Sensor/detection principle:      | Photoelectric proximity sensor, Background suppression |
| Dimensions (W x H x D):          | 20 mm x 65 mm x 43.9 mm                                |
| Housing design (light emission): | Rectangular                                            |
| Sensing range max.:              | 100 mm ... 300 mm <sup>1)</sup>                        |
| Sensing range:                   | 100 mm ... 300 mm <sup>2)</sup>                        |
| Type of light:                   | Visible red light                                      |
| Light source:                    | BrightLight LED <sup>3)</sup>                          |
| Angle of dispersion:             | Ca. 3 °                                                |
| Adjustment:                      | Potentiometer, 2 turns                                 |
| Light spot size (distance):      | Ø 30 mm (300 mm)                                       |

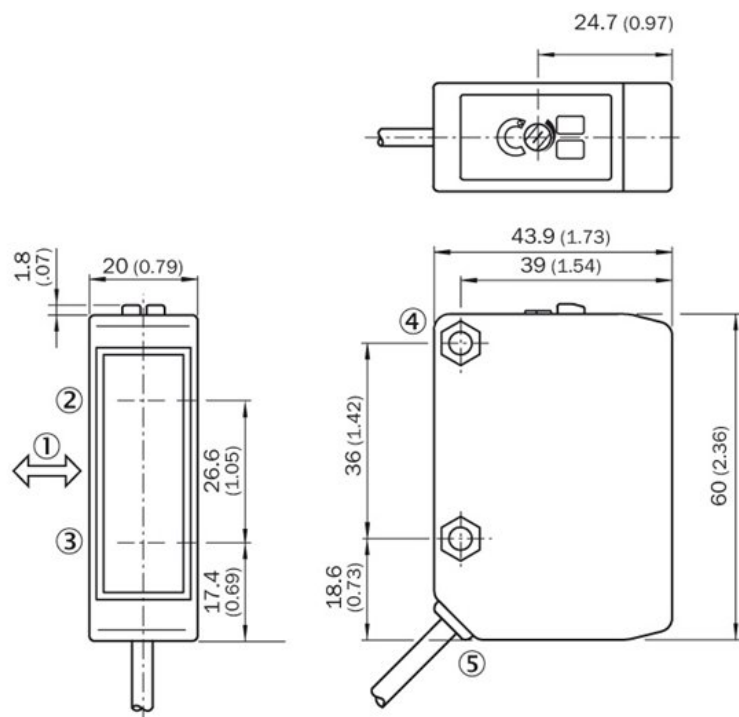
<sup>1) 2)</sup> Object with 90 % reflectance (referred to standard white, DIN 5033) <sup>3)</sup> Average service life of 100,000 h at T<sub>A</sub> = +25 °C <sup>4)</sup> With position indicator

### Mechanics/electronics

|                                   |                                                                     |
|-----------------------------------|---------------------------------------------------------------------|
| Supply voltage:                   | 10 V DC ... 30 V DC <sup>1)</sup>                                   |
| Ripple:                           | $\leq 5 \text{ Vpp}$ <sup>2)</sup>                                  |
| Power consumption:                | $\leq 35 \text{ mA}$ <sup>3)</sup>                                  |
| Output type:                      | NPN, open collector                                                 |
| Switching mode:                   | Light/dark switching                                                |
| Switching mode selector:          | Selectable via L/D control wire                                     |
| Output current I <sub>max</sub> : | $\leq 100 \text{ mA}$                                               |
| Response time:                    | $\leq 3 \text{ ms}$ <sup>4)</sup>                                   |
| Switching frequency:              | 160 Hz <sup>5)</sup>                                                |
| Connection type:                  | Cable, 4-wire, 2 m <sup>6)</sup>                                    |
| Cable material:                   | PVC                                                                 |
| Conductor cross-section:          | 0.18 mm <sup>2</sup>                                                |
| Cable diameter:                   | Ø 3.8 mm                                                            |
| Circuit protection:::             | A, B, C, D <sup>7)</sup> <sup>8)</sup> <sup>9)</sup> <sup>10)</sup> |
| Protection class:                 | III                                                                 |
| Weight:                           | 150 g                                                               |
| Optics material:                  | PMMA                                                                |
| Enclosure rating:                 | IP 67                                                               |
| Items supplied:                   | BEF-W250 mounting bracket                                           |
| EMC:                              | EN 60947-5-2 <sup>11)</sup>                                         |
| Ambient operating temperature:    | -25 °C ... +55 °C                                                   |
| Ambient storage temperature:      | -40 °C ... +70 °C                                                   |
| UL File No.:                      | NRKH2.E300503 & NRKH8.E300503                                       |
| Housing material:                 | ABS, Plastic                                                        |

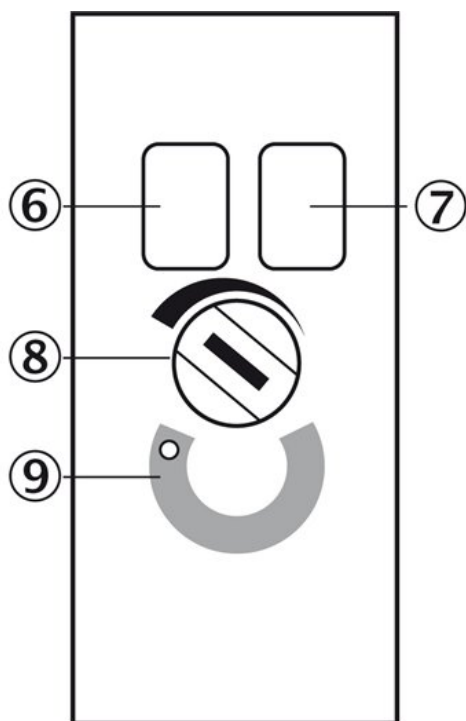
<sup>1)</sup> Limit values, operation in short-circuit protected network max. 8 A <sup>2)</sup> May not exceed or fall short of  $V_S$  tolerances <sup>3)</sup> Without load <sup>4)</sup> Signal transit time with resistive load <sup>5)</sup> With light/dark ratio 1:1 <sup>6)</sup> Do not bend below 0 °C <sup>7)</sup> A =  $V_S$  connections reverse-polarity protected <sup>8)</sup> B = inputs and output reverse-polarity protected <sup>9)</sup> C = interference suppression <sup>10)</sup> D = outputs overcurrent and short-circuit protected <sup>11)</sup> The AC/DC devices meet the interference suppression requirements for industrial use (interference suppression class A). When used in residential areas it can cause interference.

## Dimensional drawing



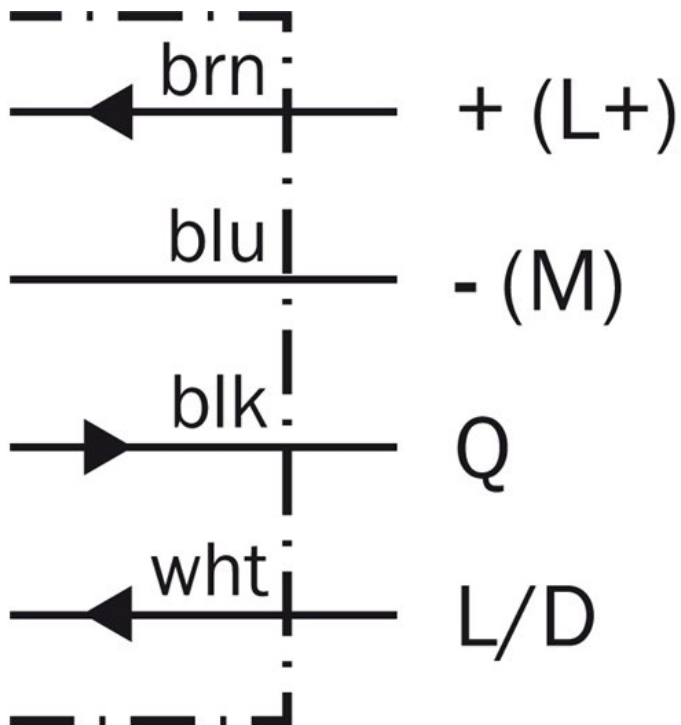
- |1| Standard direction of the material being detected
- |2| Axis of sender
- |3| axis of receiver
- |4| Mounting hole  $\varnothing$  4.2 mm,  
for M4 hexagon nut on both sides
- |5| Connection cable

## Adjustments possible

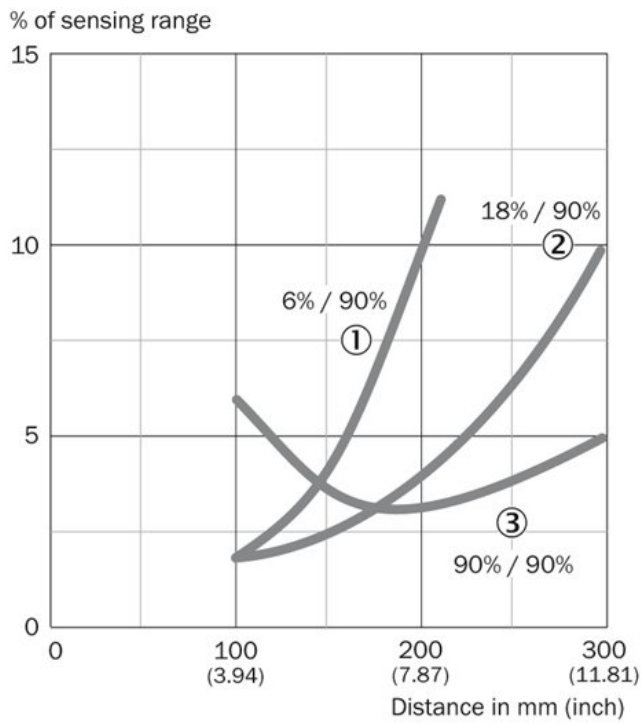


- |6| LED indicator green: Stability indicator
- |7| Status indicator LED,  
yellow: Status of received light beam
- |8| Sensing range adjustment: potentiometer
- |9| Position indicator for sensitivity setting (270°)

## Connection diagram

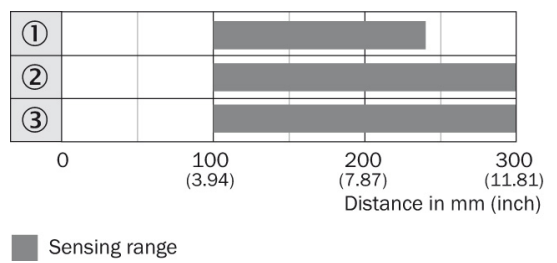


## Characteristic curve



- [1] Sensing range on black, background white
- [2] Sensing range on gray, background white
- [3] Sensing range on white, background white

Sensing range diagram



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