



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

WTB250-2R1541



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Model Name > [WTB250-2R1541](#)
Part No. > [6044683](#)



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 60 mm x 43.9 mm
Housing design (light emission):	Rectangular
Sensing range max.:	150 mm ... 500 mm ¹⁾
Sensing range:	150 mm ... 500 mm ²⁾
Type of light:	Visible red light
Light source:	BrightLight LED ³⁾
Angle of dispersion:	Ca. 3 °
Adjustment:	Potentiometer, 2-turn
Light spot size (distance):	Ø 30 mm (500 mm)

^{1) 2)} Object with 90 % reflectance (referred to standard white DIN 5033) ³⁾ Average service life of 100,000 h at T_A = +25 °C

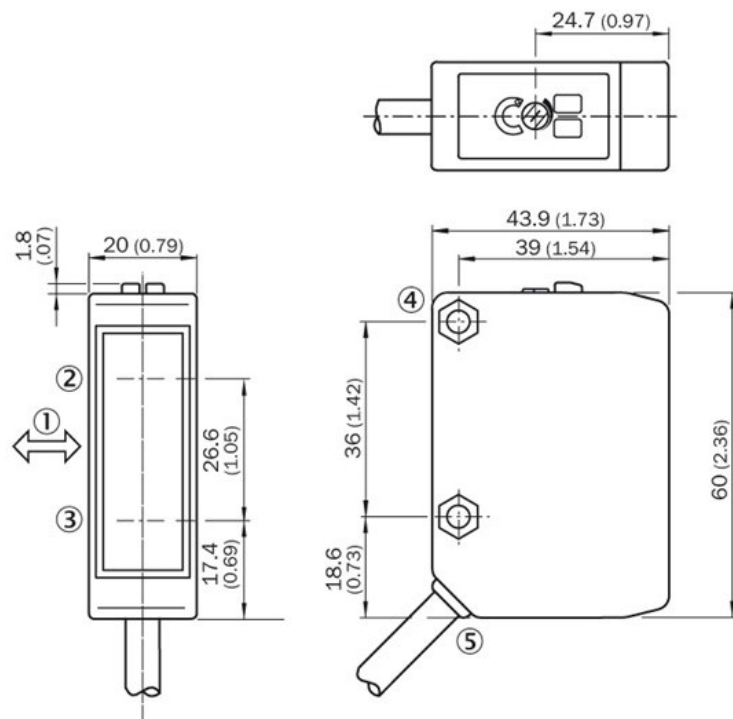
Mechanics/electronics

Supply voltage.:	24 V AC/DC ... 240 V AC/DC, 24 V DC ... 240 V DC ^{1) 2)}
Power consumption:	≤ 5 VA

Output type:	Relay ³⁾
Output function:	Change-over contacts
Switching mode:	Light switching ⁴⁾
Output characteristic:	Electrically isolated
Output current I _{max} :	≤ 100 mA
Switching current (switching voltage):	3 A (240 V AC), 3 A (30 V DC)
Response time:	≤ 15 ms
Switching frequency:	33 Hz ⁵⁾
Connection type:	Cable, 5-wire, 2 m ⁶⁾
Cable material:	PVC
Conductor cross-section:	0.76 mm ²
Cable diameter:	Ø 6.4 mm
Circuit protection:	A, C ^{7) 8)}
Protection class:	II ⁹⁾
Overvoltage category:	222
Weight:	160 g
Housing material:	ABS, Plastic
Optics material:	PMMA
Enclosure rating:	IP 67
Items supplied:	BEF-W250 mounting bracket
Usage category:	AC-15, DC-13, According to EN 60947-1
EMC:	EN 60947-5-2 ¹⁰⁾
Ambient operating temperature:	-25 °C ... 55 °C
Ambient storage temperature:	-40 °C ... 70 °C

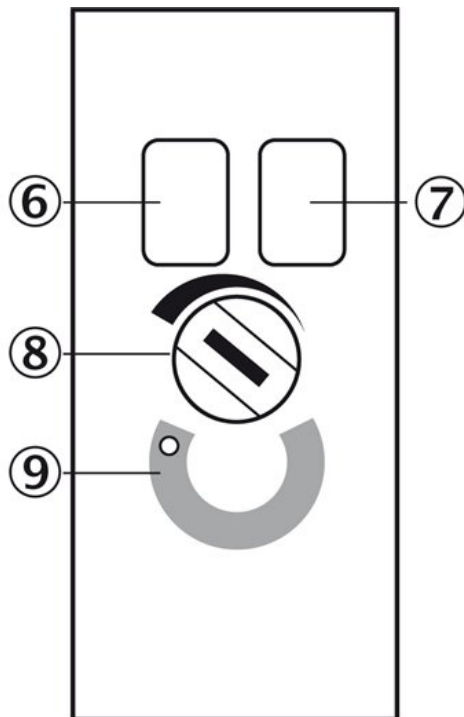
1) 2) ±10 % 3) 4) Provide suitable spark suppression for inductive or capacitive loads 5) With light/dark ratio 1:1 6) Do not bend below 0 °C 7) A = V_S connections
reverse-polarity protected 8) C = interference suppression 9) Reference voltage 250 V AC 10) The AC/DC devices meet the interference suppression 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 scanned
- |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°)

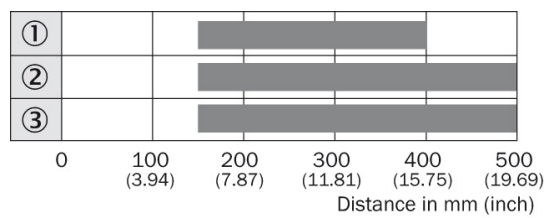
Diagram illustrating a 5-bit color space with axes L1, N, and L2. The axes are labeled with color names: L1 has 'brn' and 'wht'; N has 'blu' and 'grn'; L2 has 'blk' and 'red'. A diagonal line connects 'brn' to 'blk'.

Figure 1 is a line graph showing the percentage of sensing range (Y-axis, 0 to 30) versus distance in mm (inch) (X-axis, 0 to 500). The X-axis has major ticks at 0, 100 (3.94), 200 (7.87), 300 (11.81), 400 (15.75), and 500 (19.69). Three curves are plotted, labeled 1, 2, and 3. Curve 1 is labeled '6% / 90%' and Curve 2 is labeled '18% / 90%'. Curve 3 is labeled '90% / 90%'. All three curves start at approximately 3% sensing range at 100 mm (3.94 inch) and increase as distance increases. Curve 2 reaches 30% sensing range at 400 mm (15.75 inch). Curve 1 reaches 30% sensing range at approximately 450 mm. Curve 3 reaches 30% sensing range at approximately 500 mm (19.69 inch).

Distance (mm)	Distance (inch)	Curve 1 (% of sensing range)	Curve 2 (% of sensing range)	Curve 3 (% of sensing range)
100	3.94	3	3	3
200	7.87	6	6	3
300	11.81	12	12	4
400	15.75	24	30	8
500	19.69	30	30	30

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

Sensing range diagram



■ Sensing range

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