



DATA SHEET

# WTB12-3P2431

W12  
Photoelectric sensors

# SICK

Sensor Intelligence

## PHOTOELECTRIC SENSORS

## WTB12-3P2431

## ORDERING INFORMATION

Type	part no.
WTB12-3P2431	1041411

Further device versions and accessories at [www.sick.com/W12](http://www.sick.com/W12)



Illustration may differ



## DETAILED TECHNICAL DATA

## FEATURES

Functional principle	Photoelectric proximity sensor	
Functional principle detail	Background suppression	
Sensing range max.	20 mm ... 350 mm <sup>1)</sup>	
Sensing range	20 mm ... 350 mm	
Emitted beam	Light source	LED <sup>2)</sup>
	Type of light	Visible red light
	Light spot size (distance)	Ø 6 mm (200 mm)
Key LED figures	Wave length	640 nm
	Adjustment	Potentiometer, 5 turns
Items supplied	2 x clamps BEF-KH-W12, incl. screws	

<sup>1)</sup> Object with 90% remission (based on standard white, DIN 5033).

<sup>2)</sup> Average service life: 100,000 h at T<sub>u</sub> = +25 °C.

## SAFETY-RELATED PARAMETERS

MTTF <sub>D</sub>	728 years
DC <sub>avg</sub>	0 %
T <sub>M</sub> (mission time)	20 years

**ELECTRONICS**

Supply voltage $U_B$	10 V DC ... 30 V DC <sup>1)</sup>												
Ripple	< 5 V <sub>pp</sub> <sup>2)</sup>												
Current consumption	45 mA <sup>3)</sup>												
Protection class	III												
Digital output	<table border="0"> <tr> <td>Type</td> <td>PNP</td> </tr> <tr> <td>Switching mode</td> <td>Light/dark switching</td> </tr> <tr> <td>Signal voltage PNP HIGH/LOW</td> <td>&gt; <math>U_V - 2,5 V</math> / ca. 0 V</td> </tr> <tr> <td>Output current <math>I_{max}</math></td> <td>≤ 100 mA</td> </tr> <tr> <td>Response time <sup>4)</sup></td> <td>≤ 330 μs</td> </tr> <tr> <td>Switching frequency <sup>5)</sup></td> <td>1,500 Hz</td> </tr> </table>	Type	PNP	Switching mode	Light/dark switching	Signal voltage PNP HIGH/LOW	> $U_V - 2,5 V$ / ca. 0 V	Output current $I_{max}$	≤ 100 mA	Response time <sup>4)</sup>	≤ 330 μs	Switching frequency <sup>5)</sup>	1,500 Hz
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Output current $I_{max}$	≤ 100 mA												
Response time <sup>4)</sup>	≤ 330 μs												
Switching frequency <sup>5)</sup>	1,500 Hz												
Output function	Complementary												
Circuit protection	A <sup>6)</sup> C <sup>7)</sup> D <sup>8)</sup>												

<sup>1)</sup> Limit values when operated in short-circuit protected network: max. 8 A.

<sup>2)</sup> May not fall below or exceed  $U_V$  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> A =  $V_V$  connections reverse-polarity protected.

<sup>7)</sup> C = interference suppression.

<sup>8)</sup> D = outputs overcurrent and short-circuit protected.

**MECHANICS**

Housing	Rectangular				
Dimensions (W x H x D)	15.6 mm x 48.5 mm x 42 mm				
Connection	Male connector M12, 4-pin				
Material	<table border="0"> <tr> <td>Housing</td> <td>Metal</td> </tr> <tr> <td>Front screen</td> <td>Plastic, PMMA</td> </tr> </table>	Housing	Metal	Front screen	Plastic, PMMA
Housing	Metal				
Front screen	Plastic, PMMA				
Weight	120 g				

**AMBIENT DATA**

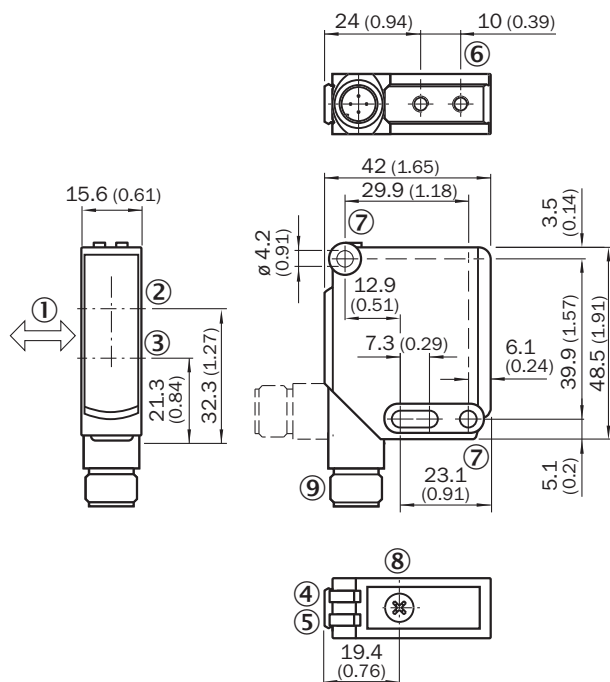
Enclosure rating	IP66 IP67 IP69K
Ambient operating temperature	-40 °C ... +60 °C
Ambient temperature, storage	-40 °C ... +75 °C
UL File No.	NRKH.E181493 & NRKH7.E181493

**CERTIFICATES**

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓

China RoHS	✓
ECOLAB certificate	✓
cULus certificate	✓
Photobiological safety (DIN EN 62471) certificate	✓

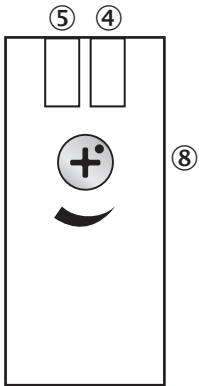
**DIMENSIONAL DRAWING WTB12-3, POTENTIOMETER**



Dimensions in mm (inch)

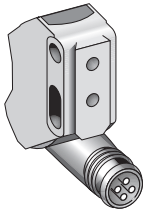
- ① Standard direction of the material being detected
- ② Optical axis, receiver
- ③ Optical axis, sender
- ④ LED indicator green: Supply voltage active
- ⑤ LED indicator yellow: Status of received light beam
- ⑥ M4 threaded mounting hole, 4 mm deep
- ⑦ Mounting hole,  $\varnothing 4.2$  mm
- ⑧ Sensing range adjustment: potentiometer
- ⑨ Connection

**ADJUSTMENTS WTB12-3, WTF12-3, POTENTIOMETER**

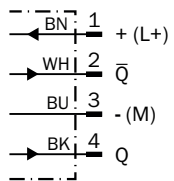


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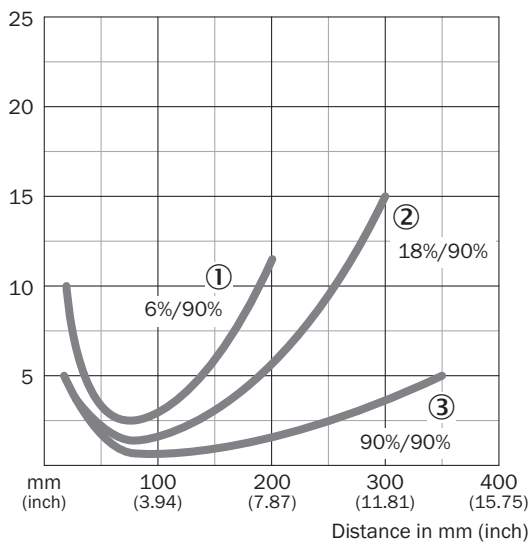
**CONNECTION TYPE**



**CONNECTION DIAGRAM CD-083**

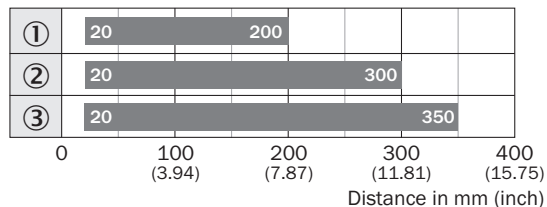


**CHARACTERISTIC CURVE WTB12-3, RED LIGHT, 350 MM**



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

**SENSING RANGE DIAGRAM WTB12-3, RED LIGHT, 350 MM**



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

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at [www.sick.com/1041411](http://www.sick.com/1041411)



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# SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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