



DATA SHEET

WTF12-3P2431

W12
Photoelectric sensors

SICK

Sensor Intelligence

PHOTOELECTRIC SENSORS

WTF12-3P2431

ORDERING INFORMATION

Type	part no.
WTF12-3P2431	1041404

Further device versions and accessories at www.sick.com/W12



Illustration may differ



DETAILED TECHNICAL DATA

FEATURES

Functional principle	Photoelectric proximity sensor	
Functional principle detail	Foreground suppression	
Sensing range max.	30 mm ... 175 mm ¹⁾	
Sensing range	30 mm ... 175 mm	
Emitted beam	Light source	LED ²⁾
	Type of light	Visible red light
	Light spot size (distance)	Ø 2 mm (60 mm)
Key LED figures	Wave length	640 nm
	Adjustment	Potentiometer, 5 turns
Special applications	Detecting flat objects	
Items supplied	2 x clamps BEF-KH-W12, incl. screws	

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

²⁾ Average service life: 100,000 h at T_u = +25 °C.

SAFETY-RELATED PARAMETERS

MTTF _D	810 years
DC _{avg}	0 %

ELECTRONICS

Supply voltage U_B	10 V DC ... 30 V DC ¹⁾												
Ripple	< 5 V _{pp} ²⁾												
Current consumption	45 mA ³⁾												
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>> $U_V - 2,5 V$ / ca. 0 V</td> </tr> <tr> <td>Output current I_{max}</td> <td>≤ 100 mA</td> </tr> <tr> <td>Response time</td> <td>≤ 330 μs ⁴⁾</td> </tr> <tr> <td>Switching frequency</td> <td>1,500 Hz ⁵⁾</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	≤ 330 μs ⁴⁾	Switching frequency	1,500 Hz ⁵⁾
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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	≤ 330 μs ⁴⁾												
Switching frequency	1,500 Hz ⁵⁾												
Output function	Complementary												
Circuit protection	A ⁶⁾ C ⁷⁾ D ⁸⁾												

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

²⁾ May not fall below or exceed U_V tolerances.

³⁾ Without load.

⁴⁾ Signal transit time with resistive load.

⁵⁾ With light/dark ratio 1:1.

⁶⁾ A = V_V connections reverse-polarity protected.

⁷⁾ C = interference suppression.

⁸⁾ 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

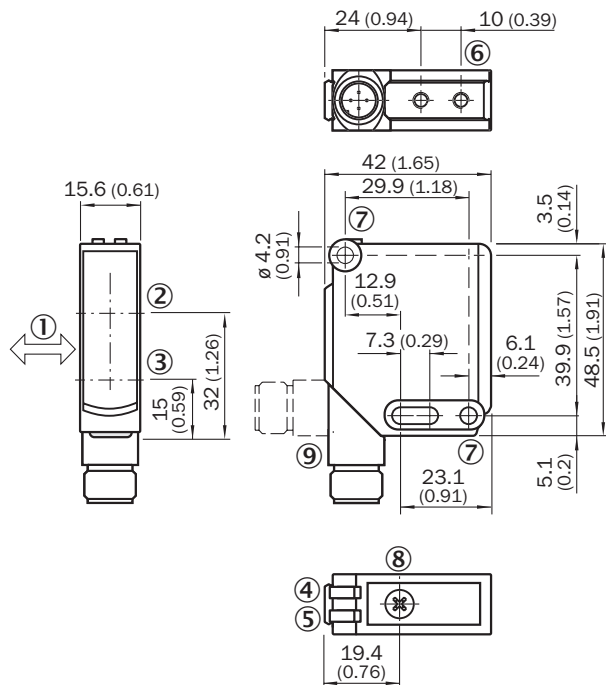
Enclosure rating	IP66 IP67 IP69K
Ambient operating temperature	-40 °C ... +60 °C
Ambient temperature, storage	-40 °C ... +75 °C
UL File No.	NRKH.E181493 & NRKH7.E181493

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	✓

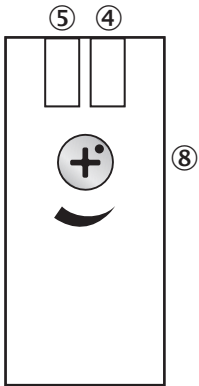
DIMENSIONAL DRAWING WTF12-3, POTENTIOMETER



Dimensions in mm (inch)

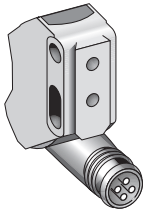
- ① Standard direction of the material being detected
- ② Optical axis, receiver
- ③ Optical axis, sender
- ④ LED indicator green: Supply voltage active
- ⑤ LED indicator yellow: Status of received light beam
- ⑥ M4 threaded mounting hole, 4 mm deep
- ⑦ Mounting hole, Ø 4.2 mm
- ⑧ Sensing range adjustment: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

ADJUSTMENTS WTB12-3, WTF12-3, POTENTIOMETER

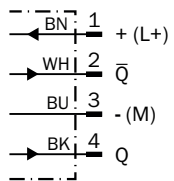


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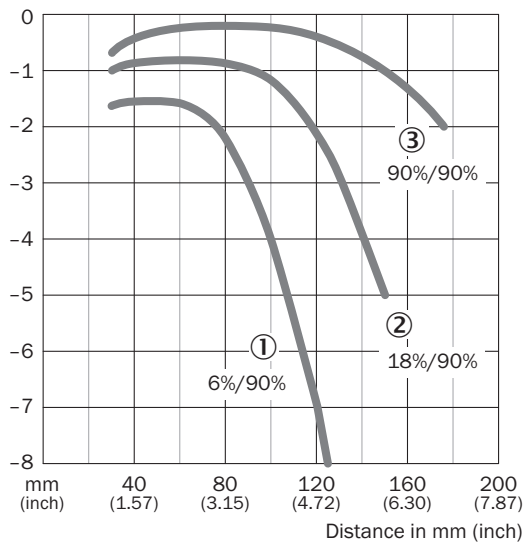
CONNECTION TYPE



CONNECTION DIAGRAM CD-083

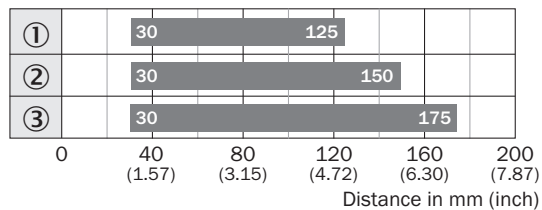


CHARACTERISTIC CURVE WTF12-3, 175 MM



- 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



■ 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/1041404



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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.

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