



Photoelectric sensors  
W12-3, Photoelectric proximity sensor,  
Background suppression

WTB12-3N2431



**Model Name** > [WTB12-3N2431](#)  
**Part No.** > [1041416](#)



*Illustration may differ*

**At a glance**

- State of the art technology provides precise background suppression
- Withstands harsh environments
- PinPoint LED technology with highly visible light spot; variants available with IR LED for highly critical applications
- Rugged die-cast zinc housing, with optional Teflon® coating
- Versatile mounting options due to dovetail mounting - mounting holes and oblong holes
- Flexible sensing ranges and hysteresis settings
- Key lock function, remote teach, quality monitoring
- Diagnostics messages (contamination and short-circuit)

**Your benefits**

State of the art technology, e.g. OES3 provides precise background suppression and reliable detection of challenging objects

High immunity to ambient light, optical reflections and crosstalk ensures fewer false readings and less downtime

PinPoint LED technology provides a highly visible light spot that enables quick and easy sensor alignment

Highly visible status LEDs simplify sensing distance adjustments and reduce installation time

A rugged metal housing withstands high-pressure cleaners and cleaning agents, reducing downtime

Complementary outputs in one housing reduce inventory and procurement costs  
IO-Link enables quick remote diagnostics and maintenance (optional)

Easy installation using SICK accessories



**Features**

Sensor/detection principle:	Photoelectric proximity sensor, Background suppression
Dimensions (W x H x D):	15.6 mm x 48.5 mm x 42 mm
Housing design (light emission):	Rectangular
Sensing range max.:	20 mm ... 350 mm <sup>1)</sup>
Sensing range:	20 mm ... 350 mm
Type of light:	Visible red light

Light source: LED <sup>2)</sup>  
 Wave length: 640 nm  
 Adjustment: Potentiometer, 5-turn  
 Light spot size (distance): Ø 6 mm (200 mm)

<sup>1)</sup> Object with 90 % reflectance (referred to standard white DIN 5033) <sup>2)</sup> Average service life of 100,000 h at  $T_A = +25\text{ °C}$

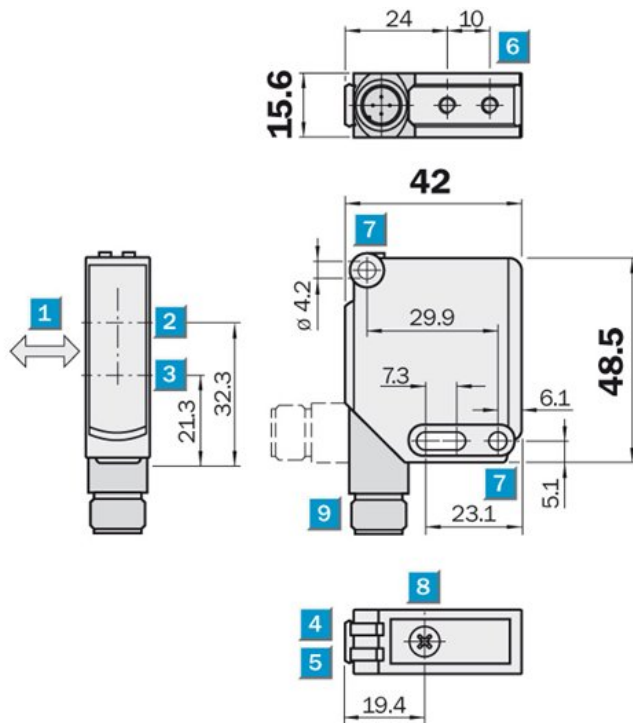
### Mechanics/electronics

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Supply voltage: 10 V DC ... 30 V DC <sup>1)</sup>  
 Ripple:  $\leq 5\text{ Vpp}$  <sup>2)</sup>  
 Power consumption:  $\leq 45\text{ mA}$  <sup>3)</sup>  
 Output type: NPN  
 Output function: Complementary  
 Switching mode: Light/dark-switching  
 Signal voltage NPN HIGH/LOW: Approx.  $V_S / < 2.5\text{ V}$   
 Output current  $I_{max.}$ : 100 mA  
 Response time:  $\leq 330\text{ }\mu\text{s}$  <sup>4)</sup>  
 Switching frequency: 1,500 Hz <sup>5)</sup>  
 Connection type: Connector M12, 4-pin  
 Circuit protection::: A, C, D <sup>6) 7) 8)</sup>  
 Protection class: II  
 Weight: 120 g  
 Special device: -  
 Housing material: Metal  
 Enclosure rating: IP 66  
 IP 67  
 IP 69K  
 Ambient operating temperature: -40 °C ... 60 °C  
 Ambient storage temperature: -40 °C ... 75 °C  
 UL File No.: NRKH.E181493 & NRKH7.E181493

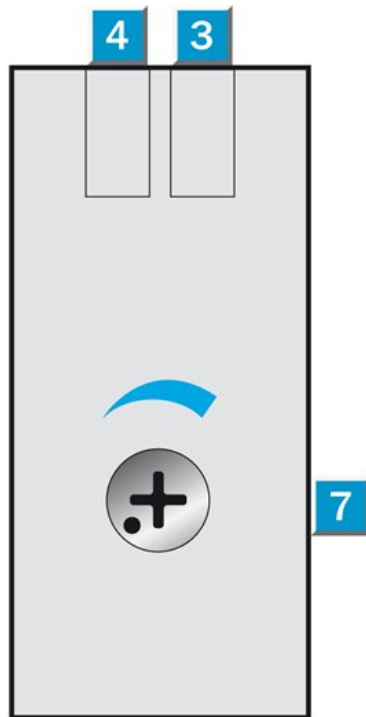
<sup>1)</sup> Limit values, operation in short-circuit protected network max. 8 A <sup>2)</sup> May not exceed or fall short of  $V_S$  tolerances <sup>3)</sup> Without load <sup>4)</sup> Signal transit time with resistive load <sup>5)</sup> With light/dark ratio 1:1 <sup>6)</sup> A =  $V_S$  connections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

## Dimensional drawing



- |1| Standard direction of the material being scanned
- |2| Optical axis, receiver
- |3| Optical axis, sender
- |4| Status indicator LED green: power on
- |5| Status indicator LED,  
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 possible

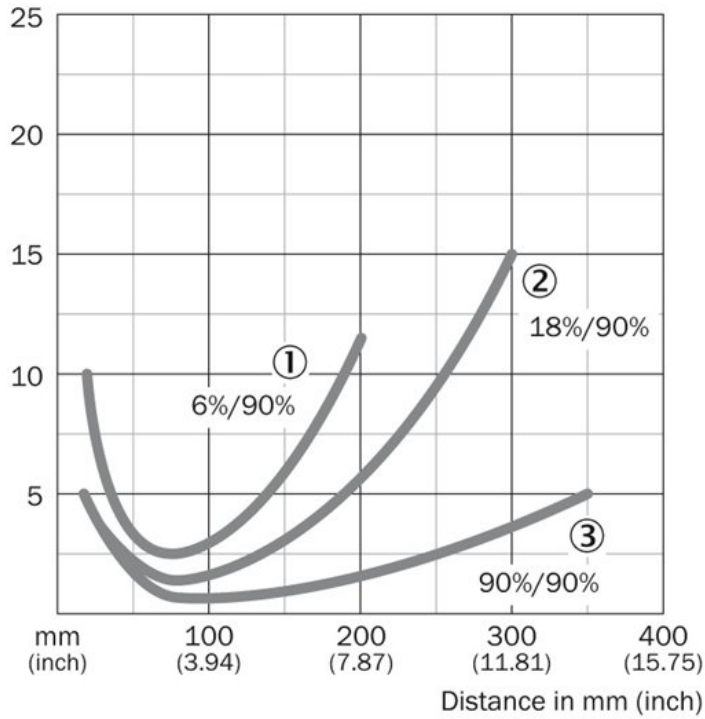


- |4| Green LED indicator: supply voltage active
- |5| LED indicator yellow: Light received
- |8| Sensing range adjustment: potentiometer

Connection diagram

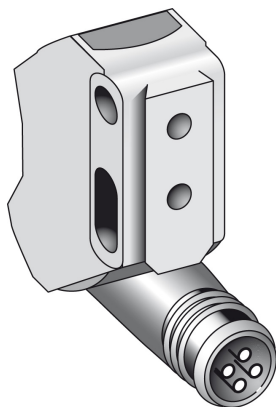


Characteristic curve

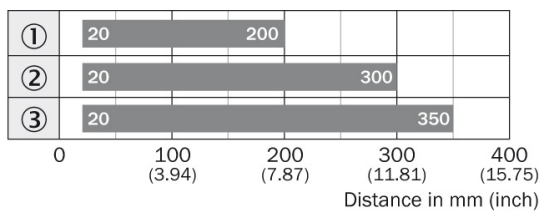


- [1] Sensing range on black, 6 % remission
- [2] Sensing range on grey, 18 % remission
- [3] Sensing range on white, 90 % remission

## Connection type



## Sensing range diagram



■ Sensing range

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

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