



DATA SHEET

# WTF12-3P2441

W12  
Photoelectric sensors

# SICK

Sensor Intelligence



Illustration may differ

PHOTOELECTRIC SENSORS

WTF12-3P2441

ORDERING INFORMATION

| Type         | part no. |
|--------------|----------|
| WTF12-3P2441 | 1041400  |

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



DETAILED TECHNICAL DATA

FEATURES

|                             |                                     |
|-----------------------------|-------------------------------------|
| Functional principle        | Photoelectric proximity sensor      |
| Functional principle detail | Foreground suppression              |
| Sensing range max.          | 30 mm ... 500 mm <sup>1)</sup>      |
| Sensing range               | 30 mm ... 500 mm                    |
| Emitted beam                |                                     |
| Light source                | LED <sup>2)</sup>                   |
| Type of light               | Visible red light                   |
| Light spot size (distance)  | Ø 7 mm (300 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> | 810 years |
| DC <sub>avg</sub> | 0 %       |

**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       | <div> <div>Type</div> <div>PNP</div> </div> <div> <div>Switching mode</div> <div>Light/dark switching</div> </div> <div> <div>Signal voltage PNP HIGH/LOW</div> <div>&gt; <math>U_V - 2,5 \text{ V}</math> / ca. 0 V</div> </div> <div> <div>Output current <math>I_{max}</math></div> <div>≤ 100 mA</div> </div> <div> <div>Response time</div> <div>≤ 330 μs <sup>4)</sup></div> </div> <div> <div>Switching frequency</div> <div>1,500 Hz <sup>5)</sup></div> </div> |
| Output function      | Complementary                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Circuit protection   | <div>A <sup>6)</sup></div> <div>C <sup>7)</sup></div> <div>D <sup>8)</sup></div>                                                                                                                                                                                                                                                                                                                                                                                        |

<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               | <div> <div>Housing</div> <div>Metal</div> </div> <div> <div>Front screen</div> <div>Plastic, PMMA</div> </div> |
| Weight                 | 120 g                                                                                                          |

**AMBIENT DATA**

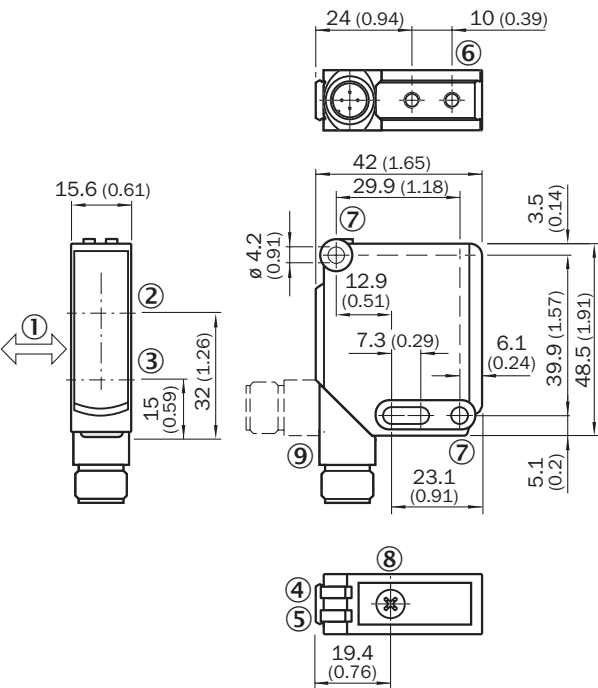
|                               |                                                  |
|-------------------------------|--------------------------------------------------|
| Enclosure rating              | <div>IP66</div> <div>IP67</div> <div>IP69K</div> |
| Ambient operating temperature | -40 °C ... +60 °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 | ✓ |

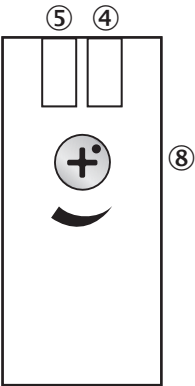
|                                                     |   |
|-----------------------------------------------------|---|
| China RoHS                                          | ✓ |
| China Compulsory Product Certification (CCC) exempt | ✓ |
| ECOLAB certificate                                  | ✓ |
| cULus certificate                                   | ✓ |
| Photobiological safety (DIN EN 62471) certificate   | ✓ |

DIMENSIONAL DRAWING WTF12-3, POTENTIOMETER



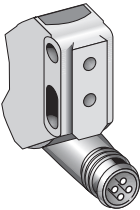
- Dimensions in mm (inch)
- ① Standard direction of the material being detected
  - ② Optical axis, receiver
  - ③ Optical axis, sender
  - ④ LED indicator green: Supply voltage active
  - ⑤ LED indicator yellow: Status of received light beam
  - ⑥ M4 threaded mounting hole, 4 mm deep
  - ⑦ Mounting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

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

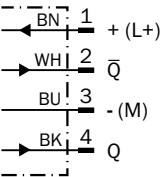


- ④ LED indicator green: Supply voltage active
- ⑤ LED indicator yellow: Status of received light beam
- ⑧ Sensing range adjustment: potentiometer

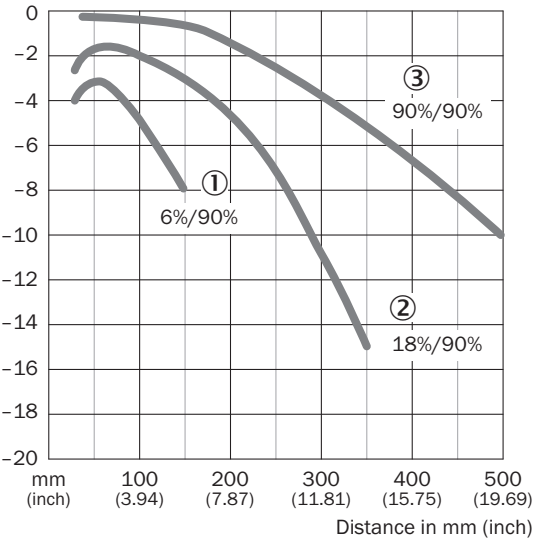
**CONNECTION TYPE**



**CONNECTION DIAGRAM CD-083**

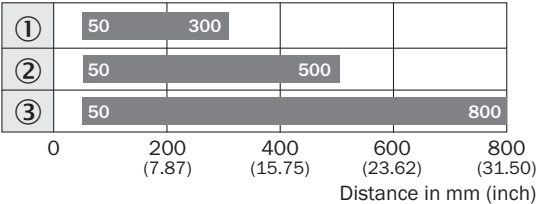


CHARACTERISTIC CURVE WTF12-3, 500 MM



- 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 WTF12-3, 500 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/1041400](http://www.sick.com/1041400)



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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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