



DATA SHEET

WTB4SP-31312220ZZZ

W4
Photoelectric sensors

SICK

Sensor Intelligence

PHOTOELECTRIC SENSORS

WT-
B4SP-31312220ZZZ

ORDERING INFORMATION

| Type | part no. |
|--------------------|-------------------------|
| WTB4SP-31312220ZZZ | 1139072 |

Further device versions and accessories at www.sick.com/W4



Illustration may differ

DETAILED TECHNICAL DATA

FEATURES

| | | |
|--|---|---|
| Functional principle | Photoelectric proximity sensor | |
| Functional principle detail | Background suppression, NarrowBeam | |
| Sensing range | Sensing range min. | 4 mm |
| | Sensing range max. | 130 mm |
| Adjustable switching threshold for background suppression | 10 mm ... 130 mm | |
| | Reference object | Object with 90% remission factor (complies with standard white according to DIN 5033) |
| Minimum distance between set sensing range and background (black 6% / white 90%) | 0.5 mm, At 70 mm distance | |
| Recommended sensing range for the best performance | 20 mm ... 90 mm | |
| Emitted beam | Light source | PinPoint LED |
| | Type of light | Visible red light |
| | Shape of light spot | Point-shaped |
| | Light spot size (distance) | 1.8 mm (70 mm) |
| | Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle) | < +/- 1.5° (at T ₀ = +23 °C) |
| Focus position | 70 mm | |
| Key LED figures | Normative reference | EN 62471:2008-09 IEC 62471:2006, modified |
| | LED risk group marking | Free group |
| | Wave length | 635 nm |
| | Average service life | 100,000 h at T _a = +25 °C |
| Smallest detectable object (MDO) typ. | 0.1 mm, At 70 mm distance | |

| | | |
|--|----------------|------------------|
| Length of cable (L) | 77 mm | |
| Material | Housing | Plastic, VISTAL® |
| | Front screen | Plastic, PMMA |
| | Cable | Plastic, PVC |
| | Male connector | Plastic, VISTAL® |
| Maximum tightening torque of the fixing screws | 0.4 Nm | |

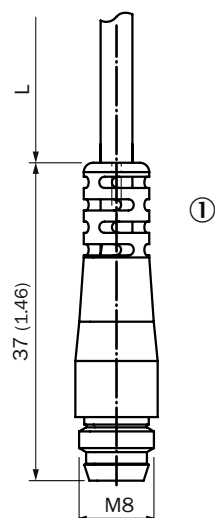
AMBIENT DATA

| | |
|-------------------------------------|---|
| Enclosure rating | IP66 (EN 60529) IP67 (EN 60529) |
| Ambient operating temperature | -40 °C ... +60 °C |
| Ambient temperature, storage | -40 °C ... +75 °C |
| Typ. Ambient light immunity | Artificial light: ≤ 50,000 lx Sunlight: ≤ 50,000 lx |
| Shock resistance | 30 g, 11 ms (3 positive and 3 negative shocks along X, Y, Z axes, 18 total shocks (EN60068-2-27)) |
| Vibration resistance | 10 Hz ... 1,000 Hz (Amplitude 1 mm, 3 x 30 min (EN60068-2-6)) |
| Air humidity | 35 % ... 95 %, relative humidity (no condensation) |
| Electromagnetic compatibility (EMC) | EN 60947-5-2 |
| Resistance to cleaning agent | ECOLAB |
| UL File No. | NRKH.E181493 & NRKH7.E181493 |

CERTIFICATES

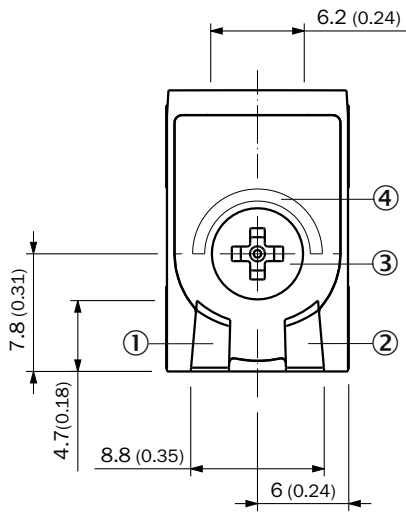
| | |
|------------------------------------|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |
| ACMA declaration of conformity | ✓ |
| Moroccan declaration of conformity | ✓ |
| China RoHS | ✓ |
| cULus certificate | ✓ |

DIMENSIONAL DRAWING, CONNECTION



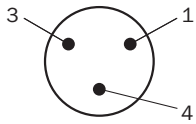
Dimensions in mm (inch)
 For length of cable (L), see technical data
 ① cable with connector M8

DISPLAY AND ADJUSTMENT ELEMENTS

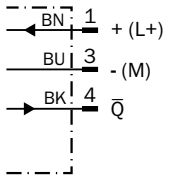


- ① LED green
- ② LED yellow
- ③ Teach-Turn adjustment
- ④ LED blue

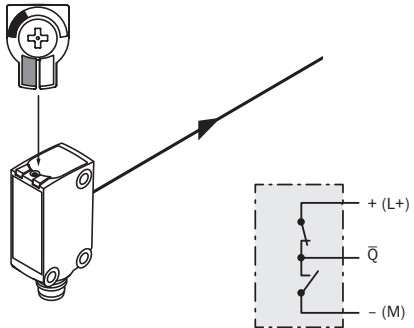
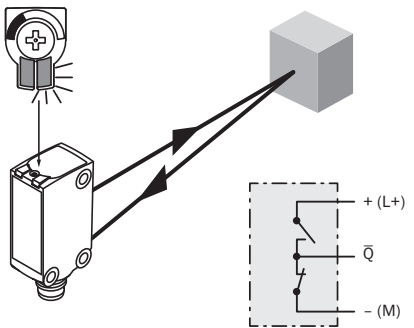
CONNECTION TYPE CONNECTOR M8, 3-PIN



CONNECTION DIAGRAM CD-514

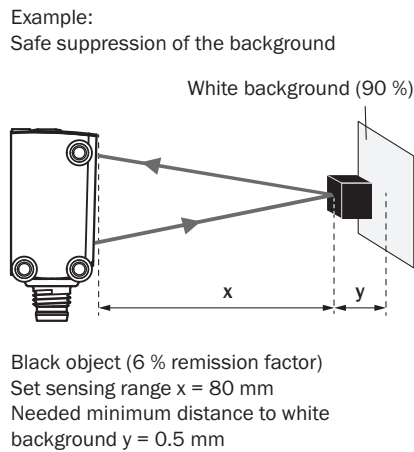
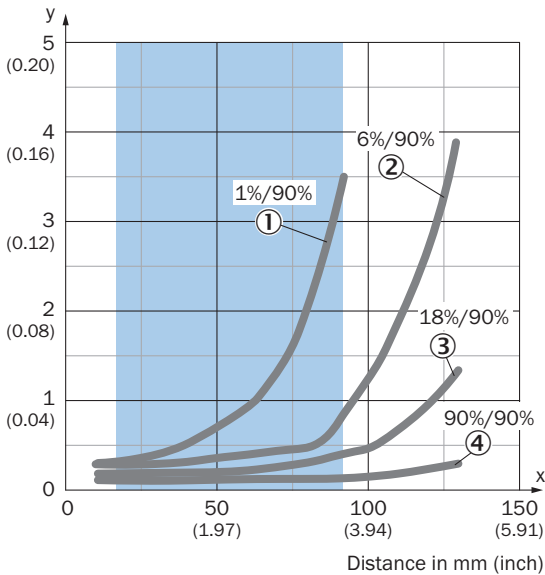


TRUTH TABLE PUSH-PULL: PNP/NPN - DARK SWITCHING \bar{Q}

| | Dark switching \bar{Q} (normally closed (upper switch), normally open (lower switch)) | |
|-------------------------|---|--|
| | Object not present → Output HIGH | Object present → Output LOW |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⊗ | ⚡ |
| Load resistance to M | ⚡ | ⊗ |
| |  |  |

CHARACTERISTIC CURVE

Minimum distance in mm (y) between the set sensing range and white background (90 % remission factor)

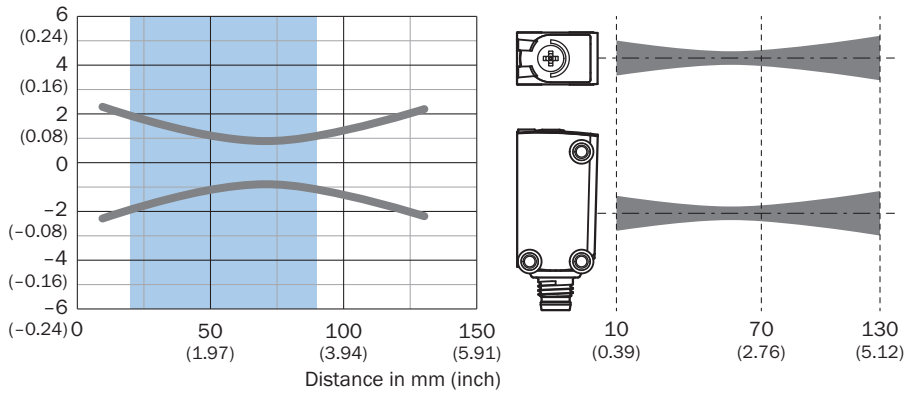


Recommended sensing range for the best performance

- ① ultra-black object, 1% remission factor
- ② Black object, 6% remission factor
- ③ Gray object, 18% remission factor
- ④ White object, 90% remission factor

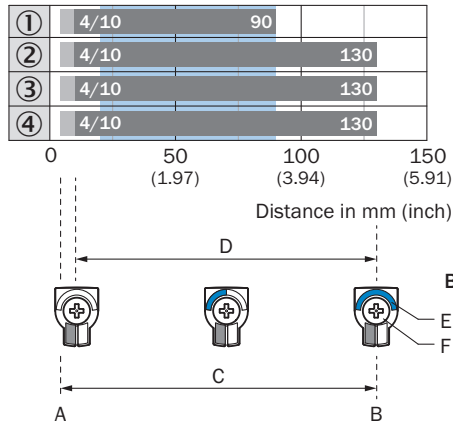
LIGHT SPOT SIZE

Dimensions in mm (inch)



Recommended sensing range for the best performance

SENSING RANGE DIAGRAM



Recommended sensing range for the best performance

| | |
|---|---|
| 1 | Ultra-black object, 1% remission factor |
| 2 | Black object, 6% remission factor |
| 3 | Gray object, 18% remission factor |
| 4 | White object, 90% remission factor |
| A | Sensing range min. in mm |
| B | Sensing range max. in mm |
| C | Field of view |
| D | Adjustable switching threshold for background suppression |
| E | Sensing range indicator |
| F | Teach-Turn adjustment |

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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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