



WTB4FP-97311A0ZZZ  
W4

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

| Type              | part no. |
|-------------------|----------|
| WTB4FP-97311A0ZZZ | 1125738  |

Other models and accessories → [www.sick.com/W4](http://www.sick.com/W4)

Detailed technical data

Features

|                                                                                                 |                                                                                       |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Functional principle                                                                            | Photoelectric proximity sensor                                                        |
| Functional principle detail                                                                     | Background suppression, MultiPulse                                                    |
| Sensing range                                                                                   |                                                                                       |
| Sensing range min.                                                                              | 28 mm                                                                                 |
| Sensing range max.                                                                              | 165 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%)                | 23 mm, at a distance of 165 mm                                                        |
| Emitted beam                                                                                    |                                                                                       |
| Light source                                                                                    | PinPoint LED                                                                          |
| Type of light                                                                                   | Visible red light                                                                     |
| Shape of light spot                                                                             | Point-shaped                                                                          |
| Light spot size (distance)                                                                      | Ø 4.2 mm (130 mm)                                                                     |
| Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle) | < +/- 1.5° (at Ta = +23 °C)                                                           |
| 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 Ta = +25 °C                                                              |
| Smallest detectable object (MDO) typ.                                                           |                                                                                       |

|                         |            |                                                                                                                        |
|-------------------------|------------|------------------------------------------------------------------------------------------------------------------------|
|                         |            | 0.2 mm (At 130 mm distance (object with remission factor of 90% (complies with standard white according to DIN 5033))) |
| <b>Adjustment</b>       |            |                                                                                                                        |
|                         | None       | –                                                                                                                      |
| <b>Display</b>          |            |                                                                                                                        |
|                         | LED green  | Operating indicator<br>Static on: power on                                                                             |
|                         | LED yellow | Status of received light beam<br>Oscillating: object present<br>Static off: object not present                         |
| <b>Special features</b> |            | MultiPulse: sensor with self-monitoring                                                                                |

### Safety-related parameters

|                                     |           |
|-------------------------------------|-----------|
| <b>MTTF<sub>D</sub></b>             | 642 years |
| <b>DC<sub>avg</sub></b>             | 0 %       |
| <b>T<sub>M</sub> (mission time)</b> | 20 years  |

### Electronics

|                                     |                                                                                     |
|-------------------------------------|-------------------------------------------------------------------------------------|
| <b>Supply voltage U<sub>B</sub></b> | 10 V DC ... 30 V DC <sup>1)</sup>                                                   |
| <b>Ripple</b>                       | ≤ 5 V <sub>pp</sub>                                                                 |
| <b>Usage category</b>               | DC-12 (According to EN 60947-5-2)<br>DC-13 (According to EN 60947-5-2)              |
| <b>Current consumption</b>          | ≤ 25 mA, without load. At U <sub>B</sub> = 24 V                                     |
| <b>Protection class</b>             | III                                                                                 |
| <b>Digital output</b>               |                                                                                     |
|                                     | Number 1                                                                            |
|                                     | Type Push-pull: PNP/NPN                                                             |
| Signal voltage PNP HIGH/LOW         | Approx. U <sub>B</sub> -2.5 V / 0 V                                                 |
| Signal voltage NPN HIGH/LOW         | Approx. U <sub>B</sub> / < 2.5 V                                                    |
| Output current I <sub>max.</sub>    | ≤ 100 mA                                                                            |
| Circuit protection outputs          | Reverse polarity protected                                                          |
|                                     | Overcurrent protected                                                               |
|                                     | Short-circuit protected                                                             |
| Response time                       | ≤ 0.1 s <sup>2)</sup>                                                               |
| Repeatability (response time)       | 150 μs                                                                              |
| Switching frequency                 | 10 Hz <sup>3)</sup>                                                                 |
| <b>Pin/Wire assignment</b>          |                                                                                     |
| Function of pin 4/black (BK)        | Digital output, object present → output Q, HIGH/LOW oscillating 10 Hz <sup>4)</sup> |

<sup>1)</sup> Limit values.

<sup>2)</sup> Signal transit time with resistive load in switching mode.

<sup>3)</sup> With light/dark ratio 1:1.

<sup>4)</sup> This switching output must not be connected to another output.

### Mechanics

|                      |             |
|----------------------|-------------|
| <b>Housing</b>       | Rectangular |
| <b>Design detail</b> | Flat        |

|                                                       |                                                          |
|-------------------------------------------------------|----------------------------------------------------------|
| <b>Dimensions (W x H x D)</b>                         | 16 mm x 40.1 mm x 12.1 mm                                |
| <b>Connection</b>                                     | Cable with connector M8, 3-pin, with knurled nut, 318 mm |
| <b>Connection detail</b>                              |                                                          |
| Deep-freeze property                                  | Do not bend below 0 °C                                   |
| Conductor size                                        | 0.14 mm <sup>2</sup>                                     |
| Cable diameter                                        | Ø 3.4 mm                                                 |
| Length of cable (L)                                   | 280 mm                                                   |
| <b>Material</b>                                       |                                                          |
| Housing                                               | Plastic, VISTAL®                                         |
| Front screen                                          | Plastic, PMMA                                            |
| Cable                                                 | Plastic, PVC                                             |
| Male connector                                        | Plastic, VISTAL®                                         |
| <b>Weight</b>                                         | Approx. 30 g                                             |
| <b>Maximum tightening torque of the fixing screws</b> | 0.4 Nm                                                   |

#### Ambient data

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

#### Certificates

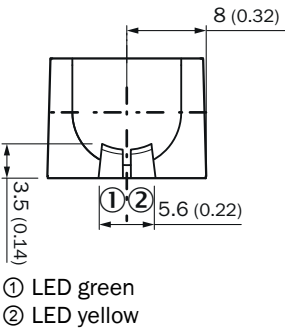
|                                           |   |
|-------------------------------------------|---|
| <b>EU declaration of conformity</b>       | ✓ |
| <b>UK declaration of conformity</b>       | ✓ |
| <b>ACMA declaration of conformity</b>     | ✓ |
| <b>Moroccan declaration of conformity</b> | ✓ |
| <b>China-RoHS</b>                         | ✓ |
| <b>ECOLAB certificate</b>                 | ✓ |
| <b>cULus certificate</b>                  | ✓ |
| <b>EAC certificate / DoC</b>              | ✓ |

#### Classifications

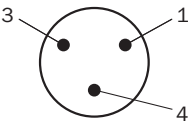
|                     |          |
|---------------------|----------|
| <b>ECLASS 5.0</b>   | 27270904 |
| <b>ECLASS 5.1.4</b> | 27270904 |
| <b>ECLASS 6.0</b>   | 27270904 |
| <b>ECLASS 6.2</b>   | 27270904 |

|                |          |
|----------------|----------|
| ECLASS 7.0     | 27270904 |
| ECLASS 8.0     | 27270904 |
| ECLASS 8.1     | 27270904 |
| ECLASS 9.0     | 27270904 |
| ECLASS 10.0    | 27270904 |
| ECLASS 11.0    | 27270904 |
| ECLASS 12.0    | 27270903 |
| ETIM 5.0       | EC002719 |
| ETIM 6.0       | EC002719 |
| ETIM 7.0       | EC002719 |
| ETIM 8.0       | EC002719 |
| UNSPSC 16.0901 | 39121528 |

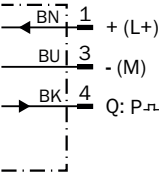
display and adjustment elements



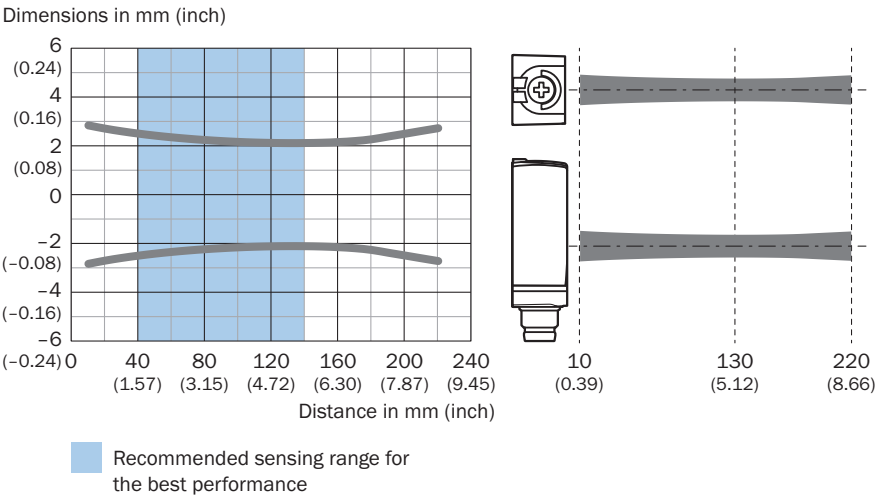
Connection type Connector M8, 3-pin



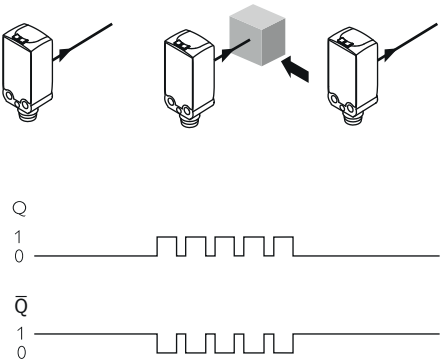
Connection diagram Cd-522



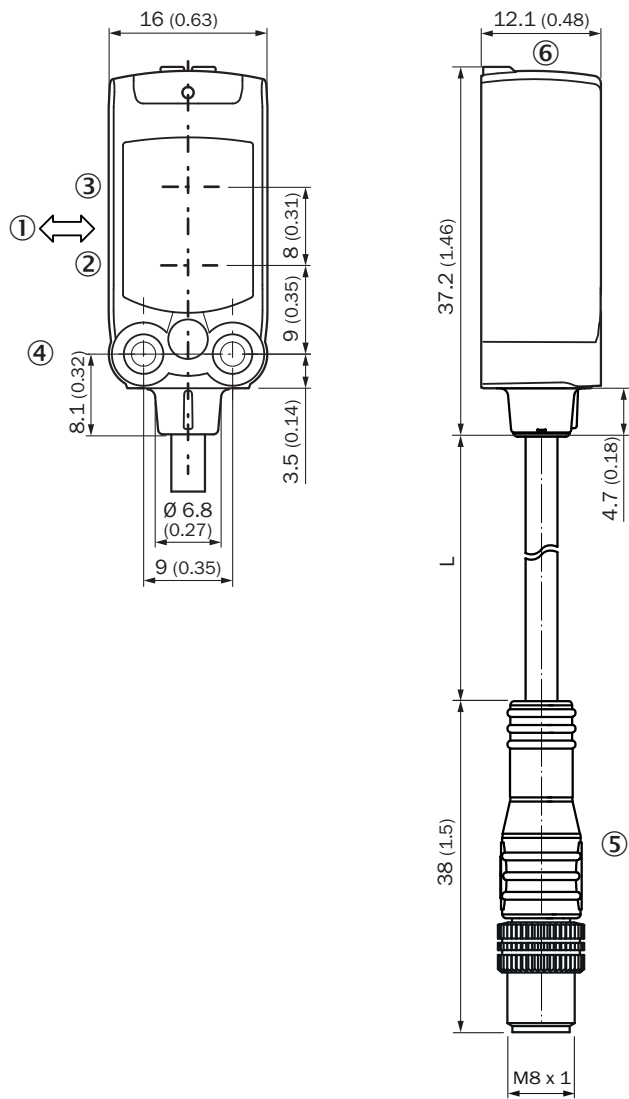
Light spot size



Functional principle: switching status



## Dimensional drawing



Dimensions in mm (inch)

For length of cable (L), see technical data

- ① Standard direction of the material being detected
- ② Center of optical axis, sender
- ③ Center of optical axis, receiver
- ④ M3 mounting hole
- ⑤ Cable with connector M8, with knurled nut
- ⑥ display and adjustment elements

Recommended accessories

Other models and accessories → [www.sick.com/W4](http://www.sick.com/W4)

|                                                                                   | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Type        | part no. |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| Mounting systems                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |             |          |
|  | <ul style="list-style-type: none"><li>• <b>Description:</b> Mounting bracket for wall mounting</li><li>• <b>Material:</b> Stainless steel</li><li>• <b>Details:</b> Stainless steel 1.4571</li><li>• <b>Items supplied:</b> Mounting hardware included</li><li>• <b>Suitable for:</b> W4S, W4F, W4S</li></ul>                                                                                                                                                                                                                                      | BEF-W4-A    | 2051628  |
|  | <ul style="list-style-type: none"><li>• <b>Description:</b> Mounting bracket for floor mounting</li><li>• <b>Material:</b> Stainless steel</li><li>• <b>Details:</b> Stainless steel 1.4571</li><li>• <b>Items supplied:</b> Mounting hardware included</li><li>• <b>Suitable for:</b> W4S, W4F, W4S</li></ul>                                                                                                                                                                                                                                     | BEF-W4-B    | 2051630  |
|  | <ul style="list-style-type: none"><li>• <b>Description:</b> Plate N08 for universal clamp bracket</li><li>• <b>Material:</b> Steel, zinc diecast</li><li>• <b>Details:</b> Zinc plated steel (sheet), Zinc die cast (clamping bracket)</li><li>• <b>Items supplied:</b> Universal clamp (5322626), mounting hardware</li><li>• <b>Usable for:</b> W100, W150, W4S, W4F, W8, W9-3, W8G, W8 Laser, W8 Inox, G6, W100 Laser, W100-2, W10, G6 Inox, RAY10, W4SLG-3, W9, GR18, MultiPulse, Reflex Array, MultiLine, LUT3, KT5, KT8, KT10, CS8</li></ul> | BEF-KHS-N08 | 2051607  |

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

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