



# WTB2SC-2P3144B01

W2S-2

MINIATURE PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

| Type             | Part no. |
|------------------|----------|
| WTB2SC-2P3144B01 | 1105144  |

Other models and accessories → [www.sick.com/W2S-2](http://www.sick.com/W2S-2)

## Detailed technical data

### Features

|                                        |                                                        |
|----------------------------------------|--------------------------------------------------------|
| <b>Sensor/ detection principle</b>     | Photoelectric proximity sensor, Background suppression |
| <b>Dimensions (W x H x D)</b>          | 7.7 mm x 21.8 mm x 13.5 mm                             |
| <b>Housing design (light emission)</b> | Rectangular                                            |
| <b>Sensing range max.</b>              | 4 mm ... 110 mm <sup>1)</sup>                          |
| <b>Preset sensing range</b>            | 45 mm                                                  |
| <b>Sensing range</b>                   | 10 mm ... 90 mm <sup>1)</sup>                          |
| <b>Type of light</b>                   | Visible red light                                      |
| <b>Light source</b>                    | PinPoint LED <sup>2)</sup>                             |
| <b>Light spot size (distance)</b>      | Ø 4.4 mm (60 mm)                                       |
| <b>Wave length</b>                     | 640 nm                                                 |
| <b>Adjustment</b>                      | IO-Link                                                |
| <b>Special applications</b>            | Detecting small objects                                |
| <b>IO-Link functions</b>               | Standard functions                                     |

<sup>1)</sup> Object with 90 % reflectance (referred to standard white, DIN 5033).

<sup>2)</sup> Average service life: 100,000 h at T<sub>U</sub> = +25 °C.

## Mechanics/electronics

|                                            |                                                       |
|--------------------------------------------|-------------------------------------------------------|
| <b>Supply voltage</b>                      | 10 V DC ... 30 V DC <sup>1)</sup>                     |
| <b>Ripple</b>                              | $\leq 5 V_{pp}$ <sup>2)</sup>                         |
| <b>Current consumption</b>                 | 20 mA <sup>3)</sup>                                   |
| <b>Switching output</b>                    | PNP <sup>4)</sup>                                     |
| <b>Switching mode</b>                      | Light/dark switching <sup>4)</sup>                    |
| <b>Switching mode selector</b>             | Programmable                                          |
| <b>Output current <math>I_{max}</math></b> | < 50 mA                                               |
| <b>Response time</b>                       | < 0.5 ms <sup>5)</sup>                                |
| <b>Switching frequency</b>                 | 1,000 Hz                                              |
| <b>Connection type</b>                     | Cable with connector M8, 3-pin, 200 mm <sup>6)</sup>  |
| <b>Cable material</b>                      | PVC                                                   |
| <b>Cable diameter</b>                      | Ø 3 mm                                                |
| <b>Circuit protection</b>                  | A <sup>7)</sup><br>B <sup>8)</sup><br>D <sup>9)</sup> |
| <b>Protection class</b>                    | III                                                   |
| <b>IO-Link</b>                             | ✓                                                     |
| <b>Transmission rate</b>                   | COM2                                                  |
| <b>Housing material</b>                    | Plastic, ABS/PC                                       |
| <b>Optics material</b>                     | Plastic, PMMA                                         |
| <b>Enclosure rating</b>                    | IP67                                                  |
| <b>Description</b>                         | IO-Link                                               |
| <b>Ambient operating temperature</b>       | -25 °C ... +50 °C                                     |
| <b>Ambient storage temperature</b>         | -40 °C ... +75 °C                                     |
| <b>UL File No.</b>                         | NRKH.E181493                                          |

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

<sup>2)</sup> May not exceed or fall below  $U_V$  tolerances.

<sup>3)</sup> Without load.

<sup>4)</sup> Parametrisable via IO-Link.

<sup>5)</sup> Signal transit time with resistive load.

<sup>6)</sup> Do not bend below 0 °C.

<sup>7)</sup> A =  $V_S$  connections reverse-polarity protected.

<sup>8)</sup> B = output reverse-polarity protected.

<sup>9)</sup> D = outputs overcurrent and short-circuit protected.

## Safety-related parameters

|                         |             |
|-------------------------|-------------|
| <b>MTTF<sub>D</sub></b> | 1,547 years |
| <b>DC<sub>avg</sub></b> | 0%          |

## Communication interface

|                                       |                   |
|---------------------------------------|-------------------|
| <b>Communication interface</b>        | IO-Link V1.1      |
| <b>Communication Interface detail</b> | COM2 (38,4 kBaud) |
| <b>Cycle time</b>                     | 2.3 ms            |

|                               |                                                                                                              |
|-------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Process data length</b>    | 16 Bit                                                                                                       |
| <b>Process data structure</b> | Bit 0 = switching signal Q <sub>L1</sub><br>Bit 1 = switching signal Q <sub>L2</sub><br>Bit 2 ... 15 = empty |
| <b>VendorID</b>               | 26                                                                                                           |
| <b>DeviceID HEX</b>           | 0x800121                                                                                                     |
| <b>DeviceID DEC</b>           | 8388897                                                                                                      |

## Smart Task

|                                        |                                                                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Smart Task name</b>                 | Base logics                                                                                                                       |
| <b>Logic function</b>                  | Direct<br>AND<br>OR<br>WINDOW<br>Hysteresis                                                                                       |
| <b>Timer function</b>                  | Deactivated<br>On delay<br>Off delay<br>ON and OFF delay<br>Impulse (one shot)                                                    |
| <b>Inverter</b>                        | Yes                                                                                                                               |
| <b>Switching frequency</b>             | SIO Direct: 1000 Hz <sup>1)</sup><br>SIO Logic: 1000 Hz <sup>2)</sup><br>IOL: 900 Hz <sup>3)</sup>                                |
| <b>Response time</b>                   | SIO Direct: 300 µs ... 450 µs <sup>1)</sup><br>SIO Logic: 500 µs ... 600 µs <sup>2)</sup><br>IOL: 500 µs ... 900 µs <sup>3)</sup> |
| <b>Repeatability</b>                   | SIO Direct: 150 µs <sup>1)</sup><br>SIO Logic: 150 µs <sup>2)</sup><br>IOL: 400 µs <sup>3)</sup>                                  |
| <b>Switching signal Q<sub>L1</sub></b> | Switching output                                                                                                                  |

<sup>1)</sup> SIO Direct: sensor operation in standard I/O mode without IO-Link communication and without using internal sensor logic or time parameters (set to "direct"/"deactivated").

<sup>2)</sup> SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters plus Automation Functions used.

<sup>3)</sup> IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

## Classifications

|                     |          |
|---------------------|----------|
| <b>ECl@ss 5.0</b>   | 27270904 |
| <b>ECl@ss 5.1.4</b> | 27270904 |
| <b>ECl@ss 6.0</b>   | 27270904 |
| <b>ECl@ss 6.2</b>   | 27270904 |
| <b>ECl@ss 7.0</b>   | 27270904 |
| <b>ECl@ss 8.0</b>   | 27270904 |
| <b>ECl@ss 8.1</b>   | 27270904 |
| <b>ECl@ss 9.0</b>   | 27270904 |
| <b>ECl@ss 10.0</b>  | 27270904 |
| <b>ECl@ss 11.0</b>  | 27270904 |
| <b>ETIM 5.0</b>     | EC002719 |
| <b>ETIM 6.0</b>     | EC002719 |

ETIM 7.0

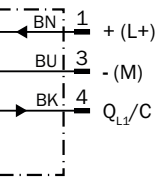
EC002719

UNSPSC 16.0901

39121528

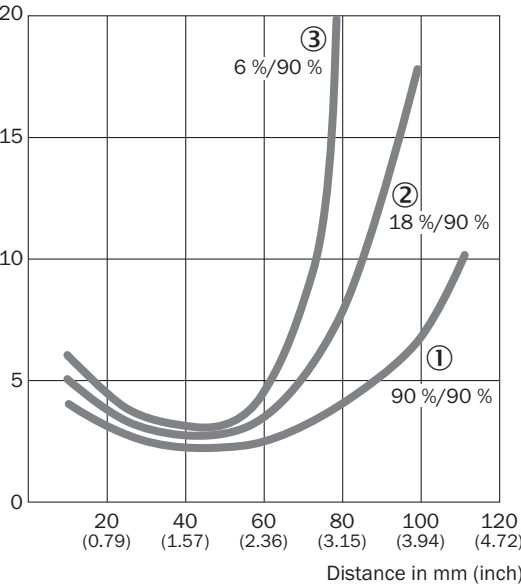
Connection diagram

Cd-434



Characteristic curve

WTB2S-2, 110 mm

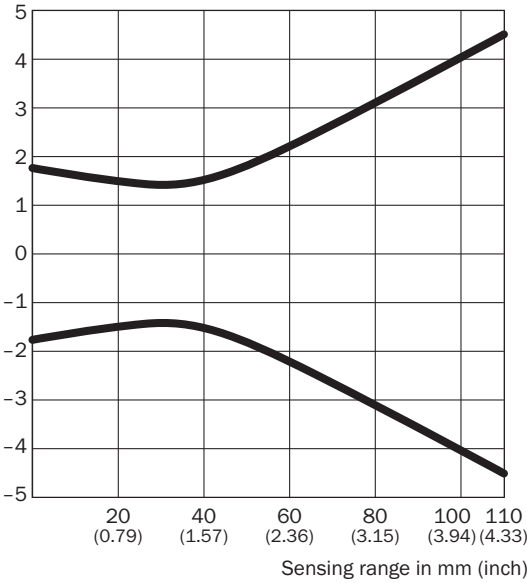


- ① Sensing range on white, 90% remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on black, 6% remission

Light spot size

WTB2S-2, 110 mm

Spot diameter in mm (inch)

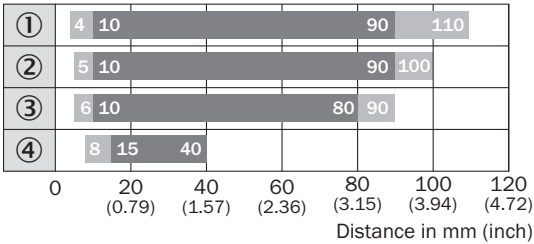


Dimensions in mm (inch)

| Sensing range | Spot diameter |
|---------------|---------------|
| 0<br>(0.00)   | 3.5<br>(0.14) |
| 20<br>(0.79)  | 3.0<br>(0.12) |
| 40<br>(1.57)  | 3.0<br>(0.12) |
| 60<br>(2.36)  | 4.4<br>(0.17) |
| 100<br>(3.94) | 8.0<br>(0.31) |
| 110<br>(4.33) | 9.0<br>(0.35) |

Sensing range diagram

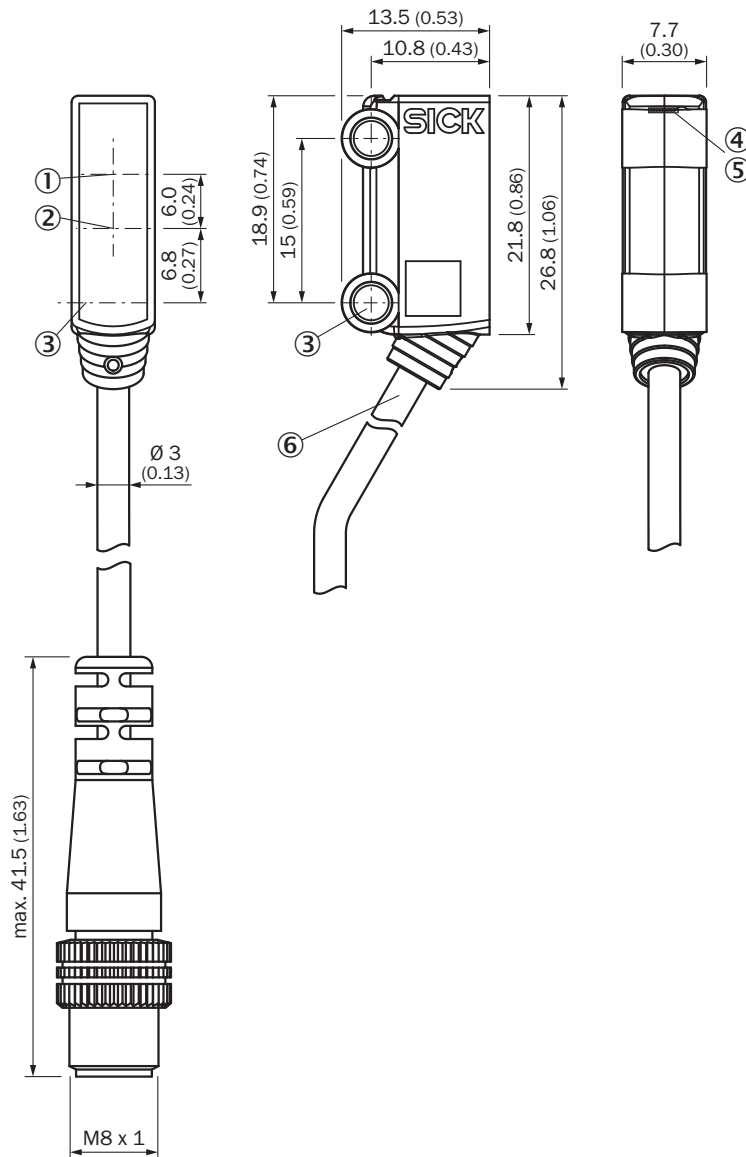
WTB2S-2, 110 mm



- Sensing range    ■ Sensing range max.
- ① Sensing range on white, 90% remission  
② Sensing range on gray, 18 % remission  
③ Sensing range on black, 6% remission  
④ Sensing range on ultra black, 1% remission

## Dimensional drawing (Dimensions in mm (inch))

WTB2S-2, 66 mm, 90 mm, 110 mm



- ① Optical axis, receiver
- ② Optical axis, sender
- ③ Middle axis fixing hole Ø 3.2 mm
- ④ LED indicator green: Supply voltage active
- ⑤ LED indicator yellow: Status of received light beam
- ⑥ Connection

## Recommended accessories

Other models and accessories → [www.sick.com/W2S-2](http://www.sick.com/W2S-2)

|                                                                                   | Brief description                                                                                                                    | Type               | Part no. |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
| Plug connectors and cables                                                        |                                                                                                                                      |                    |          |
|  | Head A: female connector, M8, 3-pin, straight, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m | YF8U13-050VA1XLEAX | 2095884  |
|  | Head A: male connector, M8, 3-pin, straight<br>Head B: -<br>Cable: unshielded                                                        | STE-0803-G         | 6037322  |

## Recommended services

Additional services → [www.sick.com/W2S-2](http://www.sick.com/W2S-2)

|                                                                                                                                                                                                                                                                                                                                                        | Type                   | Part no.   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------|
| Function Block Factory                                                                                                                                                                                                                                                                                                                                 |                        |            |
| <ul style="list-style-type: none"> <li><b>Description:</b> The Function Block Factory supports common programmable logic controllers (PLCs) from various manufacturers, such as Siemens, Beckhoff, Rockwell Automation and B&amp;R. More information on the FBF can be found <a href="https://fbf.cloud.sick.com target='_blank'">here</a>.</li> </ul> | Function Block Factory | On request |

## 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:

Contacts and other locations –[www.sick.com](http://www.sick.com)