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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





# WTB16P-2416122BA00

W16

SMALL PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ

### Ordering information

| Type               | Part no. |
|--------------------|----------|
| WTB16P-2416122BA00 | 1220297  |

Other models and accessories → [www.sick.com/W16](http://www.sick.com/W16)



### Detailed technical data

#### Features

|  |   |
|--|---|
| <b>Sensor/ detection principle</b>     | Photoelectric proximity sensor, Background suppression                                |
| <b>Dimensions (W x H x D)</b>          | 20 mm x 55.7 mm x 42 mm   |
| <b>Housing design (light emission)</b> | Rectangular   |
| <b>Sensing range max.</b>              | 10 mm ... 500 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 3 mm (200 mm)   |
| <b>Wave length</b>                     | 635 nm  |
| <b>Adjustment</b>                      | BluePilot: Teach-Turn adjustment with sensing range indicator<br>IO-Link<br>Bluetooth |
| <b>Pin 2 configuration</b>             | External input, Teach-in, switching signal  |

<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>J</sub> = +25 °C.



## Mechanics/electronics

|   |   |
|---|---|
| <b>Supply voltage</b>                       | 10 V DC ... 30 V DC <sup>1)</sup>   |
| <b>Ripple</b>                               | $\leq 5 V_{pp}$   |
| <b>Power consumption</b>                    | 30 mA <sup>2)</sup><br>50 mA <sup>3)</sup>  |
| <b>Switching output</b>                     | PUSH/PULL<br>PNP<br>NPN   |
| <b>Output function</b>                      | Factory setting: Pin 2 (MF): NPN normally open (light switching), PNP normally closed (dark switching), Pin 4 (QL1/C): NPN normally closed (dark switching), PNP normally open (light switching), IO-Link |
| <b>Switching mode</b>                       | Light/dark switching  |
| <b>Signal voltage PNP HIGH/LOW</b>          | Approx. $V_S - 2.5 V / 0 V$   |
| <b>Signal voltage NPN HIGH/LOW</b>          | Approx. $V_S / < 2.5 V$   |
| <b>Output current <math>I_{max.}</math></b> | $\leq 100 mA$   |
| <b>Response time</b>                        | $\leq 500 \mu s$ <sup>4)</sup>  |
| <b>Switching frequency</b>                  | 1,000 Hz <sup>5)</sup>  |
| <b>Connection type</b>                      | Male connector M12, 4-pin   |
| <b>Circuit protection</b>                   | A <sup>6)</sup><br>B <sup>7)</sup><br>C <sup>8)</sup><br>D <sup>9)</sup>  |
| <b>Protection class</b>                     | III   |
| <b>Weight</b>                               | 50 g  |
| <b>IO-Link</b>                              | ✓   |
| <b>Housing material</b>                     | Plastic, VISTAL®  |
| <b>Optics material</b>                      | Plastic, PMMA   |
| <b>Enclosure rating</b>                     | IP66<br>IP67  |
| <b>Ambient operating temperature</b>        | -40 °C ... +60 °C   |
| <b>Ambient storage temperature</b>          | -40 °C ... +75 °C   |
| <b>UL File No.</b>                          | NRKH.E181493 & NRKH7.E181493  |

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

<sup>2)</sup> 16 V DC ... 30 V DC, without load.

<sup>3)</sup> 10 V DC ... 16 V DC, without load.

<sup>4)</sup> Signal transit time with resistive load in switching mode. Different values possible in COM2 mode.

<sup>5)</sup> With light/dark ratio 1:1 in switching mode. Different values possible in IO-Link mode.

<sup>6)</sup> A =  $V_S$  connections reverse-polarity protected.

<sup>7)</sup> B = inputs and output reverse-polarity protected.

<sup>8)</sup> C = interference suppression.

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

## 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>ETIM 5.0</b>       | EC002719 |
| <b>ETIM 6.0</b>       | EC002719 |
| <b>UNSPSC 16.0901</b> | 39121528 |

### 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: 800 Hz <sup>2)</sup><br>IOL: 650 Hz <sup>3)</sup> |
| <b>Response time</b>                   | SIO Direct: 500 µs <sup>1)</sup><br>SIO Logic: 600 µs <sup>2)</sup><br>IOL: 750 µs <sup>3)</sup>  |
| <b>Repeatability</b>                   | SIO Direct: 150 µs <sup>1)</sup><br>SIO Logic: 300 µs <sup>2)</sup><br>IOL: 400 µs <sup>3)</sup>  |
| <b>Switching signal Q<sub>L1</sub></b> | Switching output  |
| <b>Switching signal Q<sub>L2</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.

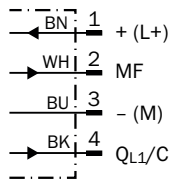
<sup>3)</sup> IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

### Communication interface

|                                       |  |
|---------------------------------------|--|
| <b>Communication interface</b>        | IO-Link V1.1<br>Bluetooth  |
| <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>                   | 0x800000   |
| <b>DeviceID DEZ</b>                   | 8388608  |

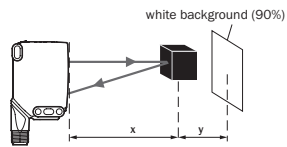
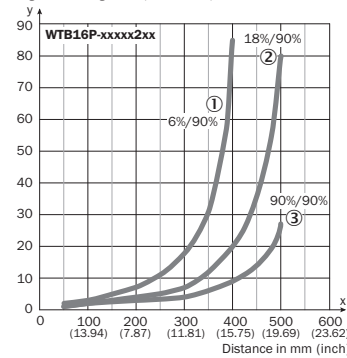
## Connection diagram

Cd-390



## Characteristic curve

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

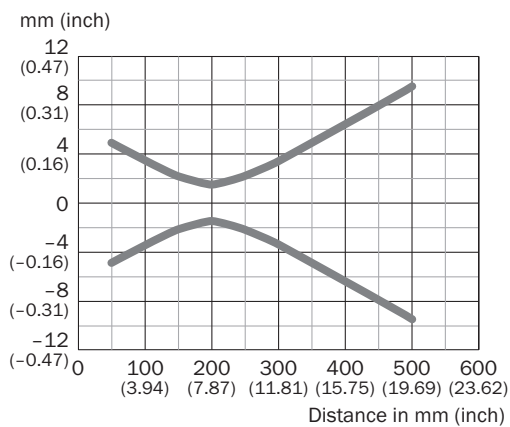


Example:  
Sensing range on black, 6%,  
x = 250 mm, y = 11 mm

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

## Light spot size

WTB16P-xxxxx2xx





## Recommended accessories

 Other models and accessories → [www.sick.com/W16](http://www.sick.com/W16)

|   | Brief description  | Type               | Part no. |
|---|--|--------------------|----------|
| <b>Universal bar clamp systems</b>  |  |                    |          |
|    | Plate N02 for universal clamp bracket, Zinc plated steel (sheet), Zinc die cast (clamping bracket), Universal clamp (5322626), mounting hardware     | BEF-KHS-N02        | 2051608  |
|    | Bar clamp for bar diameter of 12 mm (fixing the mounting rod), Aluminum, 2 screws M6 x 30, 2 spring discs  | BEF-RMC-D12        | 5321878  |
| <b>Device protection (mechanical)</b>   |  |                    |          |
|    | Protective housing for universal clamp, Zinc plated steel (protective housing), Zinc die cast (clamping bracket), Universal clamp, mounting hardware | BEF-SG-W16         | 2096146  |
| <b>Mounting brackets and plates</b>   |  |                    |          |
|    | Mounting bracket with articulated arm, steel, zinc coated, mounting hardware included  | BEF-WN-MULTI2      | 2093945  |
| <b>Plug connectors and cables</b>   |  |                    |          |
|    | Head A: female connector, M12, 4-pin, straight, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 2 m  | YF2A14-020UB3XLEAX | 2095607  |
|   | Head A: female connector, M12, 4-pin, straight, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 2 m                | YF2A14-020VB3XLEAX | 2096234  |
|  | Head A: female connector, M12, 4-pin, straight, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 5 m  | YF2A14-050UB3XLEAX | 2095608  |
|  | Head A: female connector, M12, 4-pin, straight, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m                | YF2A14-050VB3XLEAX | 2096235  |
|  | Head A: female connector, M12, 4-pin, angled, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 2 m                  | YG2A14-020VB3XLEAX | 2095895  |
|  | Head A: female connector, M12, 4-pin, angled, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m                  | YG2A14-050VB3XLEAX | 2095897  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: -<br>Cable: unshielded   | DOS-1204-G         | 6007302  |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: -<br>Cable: unshielded   | DOS-1204-GQU6      | 6042088  |
|  | Head A: female connector, M12, 4-pin, angled<br>Head B: -<br>Cable: unshielded   | DOS-1204-W         | 6007303  |
|  | Head A: male connector, M12, 4-pin, straight<br>Head B: -<br>Cable: unshielded   | STE-1204-G         | 6009932  |



## 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.”

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