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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!



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# WTS16P-34161120A00

W16

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

| Type               | Part no. |
|--------------------|----------|
| WTS16P-34161120A00 | 1218943  |

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, TwinEye technology, 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 ... 750 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 8 mm (300 mm)  |
| <b>Wave length</b>                     | 635 nm   |
| <b>Adjustment</b>                      | Teach-Turn adjustment with sensing range indicator<br>IO-Link              |
| <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>U</sub> = +25 °C.

## Mechanics/electronics

|  |  |
|--|--|
| <b>Supply voltage</b>                      | 10 V DC ... 30 V DC <sup>1)</sup>  |
| <b>Ripple</b>                              | $\leq 5 V_{pp}$  |
| <b>Power consumption</b>                   | $\leq 30 \text{ mA}$ <sup>2)</sup><br>$< 50 \text{ mA}$ <sup>3)</sup>  |
| <b>Switching output</b>                    | PUSH/PULL<br>PNP<br>NPN  |
| <b>Output function</b>                     | Complementary, Pin 2: NPN normally open (light switching), PNP normally closed (dark switching), Pin 4: 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. $V_S - 2.5 \text{ V} / 0 \text{ V}$  |
| <b>Signal voltage NPN HIGH/LOW</b>         | Approx. $V_S / < 2.5 \text{ V}$  |
| <b>Output current <math>I_{max}</math></b> | $\leq 100 \text{ mA}$  |
| <b>Response time</b>                       | $\leq 1.25 \text{ ms}$ <sup>4)</sup>   |
| <b>Switching frequency</b>                 | 400 Hz <sup>5)</sup>   |
| <b>Connection type</b>                     | Cable with M12 male connector, 4-pin, 270 mm <sup>6)</sup>   |
| <b>Cable material</b>                      | PVC  |
| <b>Circuit protection</b>                  | A <sup>7)</sup><br>B <sup>8)</sup><br>C <sup>9)</sup><br>D <sup>10)</sup>  |
| <b>Protection class</b>                    | III  |
| <b>Weight</b>                              | 70 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> Do not bend below 0 °C.

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

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

<sup>9)</sup> C = interference suppression.

<sup>10)</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: 350 Hz <sup>1)</sup><br>SIO Logic: 300 Hz <sup>2)</sup><br>IOL: 280 Hz <sup>3)</sup>   |
| <b>Response time</b>                   | SIO Direct: 1.4 ms <sup>1)</sup><br>SIO Logic: 1.65 ms <sup>2)</sup><br>IOL: 1.75 ms <sup>3)</sup> |
| <b>Repeatability</b>                   | SIO Direct: 750 µs <sup>1)</sup><br>SIO Logic: 800 µs <sup>2)</sup><br>IOL: 900 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.

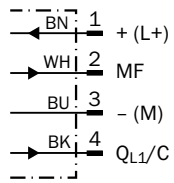
### Communication interface

|                                       |  |
|---------------------------------------|--|
| <b>Communication interface</b>        | IO-Link V1.1   |
| <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>                   | 0x800164   |

|                     |         |
|---------------------|---------|
| <b>DeviceID DEZ</b> | 8388964 |
|---------------------|---------|

### Connection diagram

Cd-390

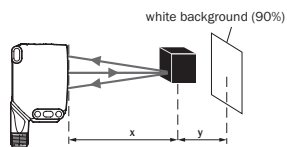
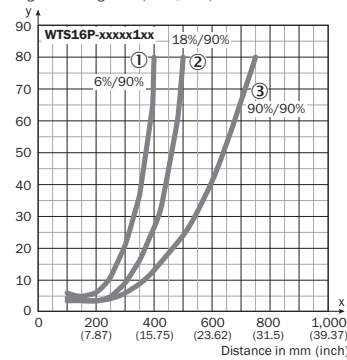


Default: MF =  $\bar{Q}$   
 QL1/C = Q

### Characteristic curve

WTS16P-xxxxx1xx

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

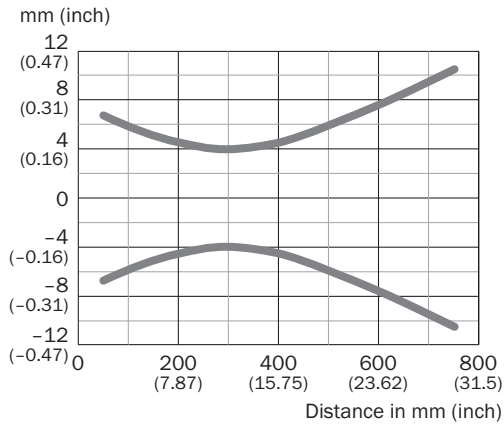


Example:  
 Sensing range on black, 6%,  
 x = 300 mm, y = 20 mm

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

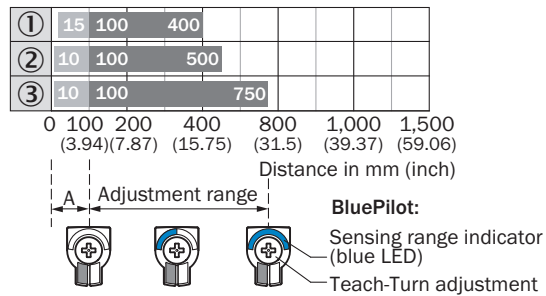
### Light spot size

WTS16P-xxxxx1xx



### Sensing range diagram

WTS16P-xxxxx1xx

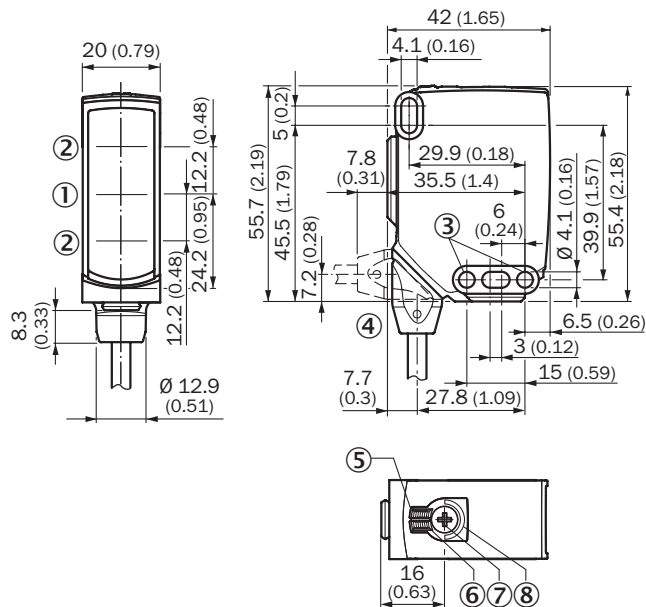


A = Detection distance (depending on object remission)

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

Dimensional drawing (Dimensions in mm (inch))




WTS16, cable







- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Mounting hole,  $\varnothing$  4.1 mm
- ④ Connection
- ⑤ LED indicator green: power
- ⑥ LED indicator yellow: Status of received light beam
- ⑦ Teach-Turn adjustment of sensing range
- ⑧ BluePilot blue: sensing range indicator

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  |
| <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  |



|   | Brief description   | Type                | Part no. |
|---|---|---------------------|----------|
| Plug connectors and cables  |   |                     |          |
|  | Head A: female connector, M12, 4-pin, straight<br>Head B: open cable ends<br>Cable: PUR, halogen-free, unshielded, 2 m  | DOL-1204G02M-C75KM0 | 2079290  |
|   | Head A: female connector, M12, 4-pin, straight<br>Head B: open cable ends<br>Cable: PUR, halogen-free, unshielded, 5 m  | DOL-1204G05M-C75KM0 | 2079291  |
|  | Head A: female connector, M12, 4-pin, straight, A-coded<br>Head B: open cable ends<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: open cable ends<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: open cable ends<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: open cable ends<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m                        | YG2A14-050VB3XLEAX  | 2095897  |
|  | Head A: female connector, M12, 4-pin, angled with LED, A-coded<br>Head B: open cable ends<br>Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 2 m | YI2A14-020UB3XLEAX  | 2095836  |
|   | Head A: female connector, M12, 4-pin, angled with LED, A-coded<br>Head B: open cable ends<br>Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 5 m | YI2A14-050UB3XLEAX  | 2095837  |

## 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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