



WTL16P-2416112BA00

W16

SMALL PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Illustration may differ

Ordering information

| Type | Part no. |
|--------------------|----------|
| WTL16P-2416112BA00 | 1220298 |

Other models and accessories → www.sick.com/W16



Detailed technical data

Features

| | |
|--|---|
| Sensor/ detection principle | Photoelectric proximity sensor, LineSpot technology, Background suppression |
| Dimensions (W x H x D) | 20 mm x 55.7 mm x 42 mm |
| Housing design (light emission) | Rectangular |
| Sensing range max. | 10 mm ... 500 mm ¹⁾ |
| Type of light | Visible red light |
| Light source | PinPoint LED ²⁾ |
| Light spot size (distance) | 3 mm x 30 mm (200 mm) |
| Wave length | 635 nm |
| Adjustment | BluePilot: Teach-Turn adjustment with sensing range indicator, IO-Link, Bluetooth |
| Pin 2 configuration | External input, Teach-in, switching signal |
| Special applications | Detecting perforated objects |
| Special features | Line-shaped light spot |

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

²⁾ Average service life: 100,000 h at T_J = +25 °C.

Mechanics/electronics

| | |
|--|---|
| Supply voltage | 10 V DC ... 30 V DC ¹⁾ |
| Ripple | $\leq 5 V_{pp}$ |
| Power consumption | 30 mA, 50 mA ^{2) 3)} |
| Switching output | PUSH/PULL, PNP, NPN |
| Output: Q_{L1} / C | Switching output or IO-Link mode |
| Output function | Factory setting: Pin 2 / white (MF): NPN normally open (light switching), PNP normally closed (dark switching), Pin 4 / black (QL1 / C): NPN normally closed (dark switching), PNP normally open (light switching), IO-Link |
| Switching mode | Light/dark switching |
| Signal voltage PNP HIGH/LOW | Approx. $V_S - 2.5 V / 0 V$ |
| Signal voltage NPN HIGH/LOW | Approx. $V_S / < 2.5 V$ |
| Output current I_{max.} | $\leq 100 mA$ |
| Response time | $\leq 500 \mu s$ ⁴⁾ |
| Switching frequency | 1,000 Hz ⁵⁾ |
| Connection type | Male connector M12, 4-pin |
| Circuit protection | A, B, C, D ^{6) 7) 8) 9)} |
| Protection class | III |
| Weight | 50 g |
| IO-Link | ✓ |
| Housing material | Plastic, VISTAL® |
| Optics material | Plastic, PMMA |
| Enclosure rating | IP66 (According to EN 60529) IP67 (According to EN 60529) IP69 (According to EN 60529) ¹⁰⁾ |
| Ambient operating temperature | -40 °C ... +60 °C |
| Ambient storage temperature | -40 °C ... +75 °C |
| UL File No. | NRKH.E181493 & NRKH7.E181493 |

¹⁾ Limit values.

²⁾ 16 V DC ... 30 V DC, without load.

³⁾ 10 V DC ... 16 V DC, without load.

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

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

⁶⁾ A = V_S connections reverse-polarity protected.

⁷⁾ B = inputs and output reverse-polarity protected.

⁸⁾ C = interference suppression.

⁹⁾ D = outputs overcurrent and short-circuit protected.

¹⁰⁾ Replaces IP69K with ISO 20653: 2013-03.

Safety-related parameters

| | |
|-------------------------|-----------|
| MTTF_D | 539 years |
| DC_{avg} | 0% |

Classifications

| | |
|---------------------|----------|
| ECl@ss 5.0 | 27270904 |
| ECl@ss 5.1.4 | 27270904 |

| | |
|-----------------------|----------|
| ECl@ss 6.0 | 27270904 |
| ECl@ss 6.2 | 27270904 |
| ECl@ss 7.0 | 27270904 |
| ECl@ss 8.0 | 27270904 |
| ECl@ss 8.1 | 27270904 |
| ECl@ss 9.0 | 27270904 |
| ETIM 5.0 | EC002719 |
| ETIM 6.0 | EC002719 |
| UNSPSC 16.0901 | 39121528 |

Smart Task

| | |
|--|--|
| Smart Task name | Base logics |
| Logic function | Direct AND OR Window Hysteresis |
| Timer function | Deactivated On delay Off delay ON and OFF delay Impulse (one shot) |
| Inverter | Yes |
| Switching frequency | SIO Direct: 1000 HzSIO Logic: 800 HzIOL: 650 Hz ^{1) 2) 3)} |
| Response time | SIO Direct: 500 µsSIO Logic: 600 µsIOL: 750 µs ^{1) 2) 3)} |
| Repeatability | SIO Direct: 150 µsSIO Logic: 300 µsIOL: 400 µs ^{1) 2) 3)} |
| Switching signal Q_{L1} | Switching output |
| Switching signal Q_{L2} | Switching output |

¹⁾ 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").

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

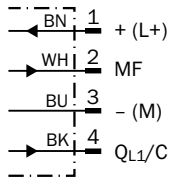
³⁾ IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

Communication interface

| | |
|---------------------------------------|--|
| Communication interface | IO-Link V1.1 Bluetooth |
| Communication Interface detail | COM2 (38,4 kBaud) |
| Cycle time | 2.3 ms |
| Process data length | 16 Bit |
| Process data structure | Bit 0 = switching signal Q _{L1} Bit 1 = switching signal Q _{L2} Bit 2 ... 15 = empty |
| VendorID | 26 |
| DeviceID HEX | 0x8001B4 |
| DeviceID DEZ | 8389044 |

Connection diagram

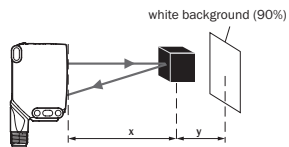
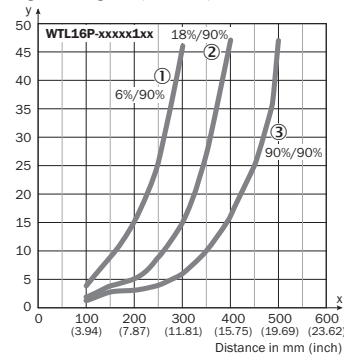
Cd-390



Characteristic curve

WTL16P-xxxx1xx

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

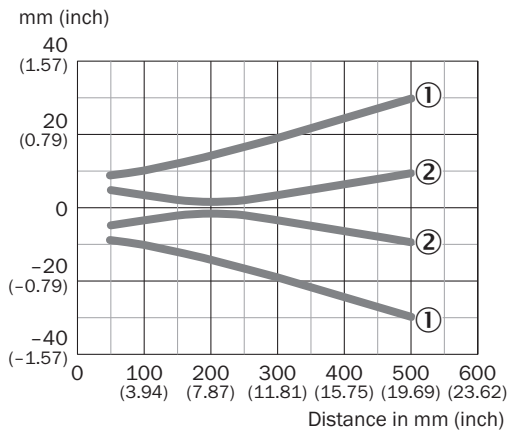


Example:
Sensing range on black, 6%,
x = 200 mm, y = 15 mm

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

Light spot size

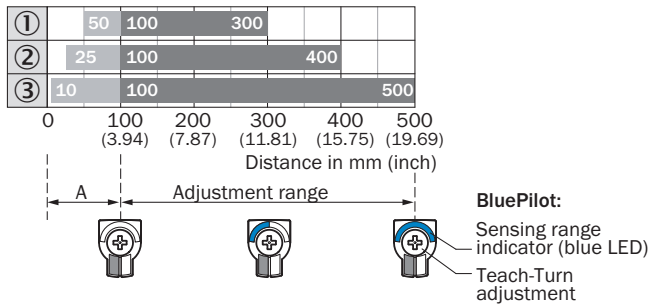
WTL16P-xxxx1xx



- ① Horizontal
- ② Vertical

Sensing range diagram

WTL16P-xxxx1xx

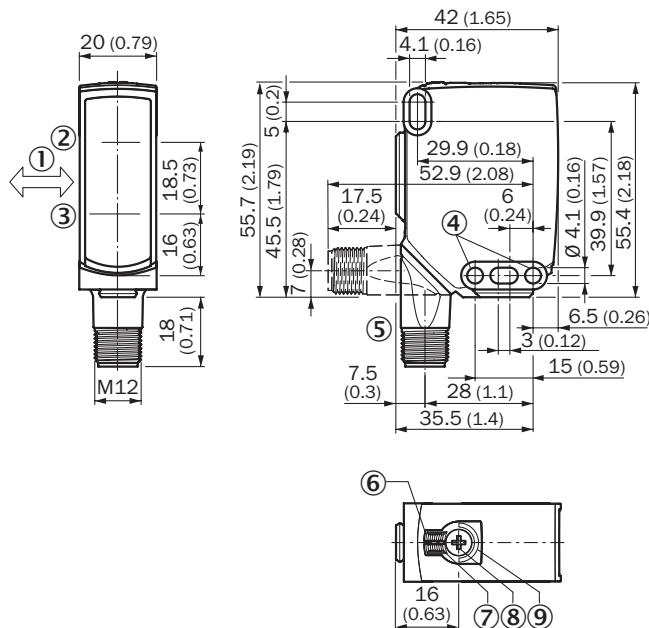


A = Detection distance (depending on object remission)

- 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))




WTB16, WTL16, connector



- ① Standard direction of the material being detected
- ② Center of optical axis, sender
- ③ Center of optical axis, receiver
- ④ Mounting hole, Ø 4.1 mm
- ⑤ Connection
- ⑥ LED indicator green: power
- ⑦ LED indicator yellow: Status of received light beam
- ⑧ Teach-Turn adjustment of sensing range
- ⑨ BluePilot blue: sensing range indicator

Recommended accessories

Other models and accessories → www.sick.com/W16

| | Brief description | Type | Part no. |
|---|--|--------------------|----------|
| Universal bar clamp systems | | | |
|  | Plate N02 for universal clamp bracket, Zinc plated steel (sheet), Zinc die cast (clamping bracket), Universal clamp (5322626), mounting hardware | BEF-KHS-N02 | 2051608 |
| Plug connectors and cables | | | |
|  | Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m | YF2A14-050VB3XLEAX | 2096235 |
|  | Head A: male connector, M12, 4-pin, straight Head B: - 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.”

WORLDWIDE PRESENCE:

Contacts and other locations –www.sick.com