



WTB9LC-3P2462A71

W9

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Ordering information

| Type | part no. |
|------------------|----------|
| WTB9LC-3P2462A71 | 1080944 |

Other models and accessories → www.sick.com/W9

Illustration may differ



Detailed technical data

Features

| | |
|--|--|
| Functional principle | Photoelectric proximity sensor |
| Functional principle detail | Background suppression |
| Dimensions (W x H x D) | 12.2 mm x 52.2 mm x 23.6 mm |
| Housing design (light emission) | Rectangular |
| Mounting hole | M3 |
| Sensing range max. | 25 mm ... 300 mm ¹⁾ |
| Sensing range | 25 mm ... 300 mm ¹⁾ |
| Type of light | Visible red light |
| Light source | Laser ²⁾ |
| Light spot size (distance) | Ø 1 mm (170 mm) |
| Wave length | 650 nm |
| Laser class | 1 (IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11) ³⁾ |
| Adjustment | IO-Link, Single teach-in button |
| Pin 2 configuration | External input, Teach-in input, Sender off input, Detection output, logic output |
| Special applications | Detecting small objects |

¹⁾ Object with 90% remission (based on standard white, DIN 5033).

²⁾ Average service life: 50,000 h at T_U = +25 °C.

³⁾ Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

Mechanics/electronics

| | |
|---|--|
| Supply voltage U_B | 10 V DC ... 30 V DC ¹⁾ |
| Ripple | < 5 V _{pp} ²⁾ |
| Current consumption | 30 mA ³⁾ |
| Switching output | PNP ⁴⁾ 5) |
| Output function | Complementary |
| Switching mode | Light/dark switching ⁴⁾ |
| Output current $I_{max.}$ | ≤ 100 mA |
| Response time | ≤ 0.5 ms ⁶⁾ |
| Response time Q/ on Pin 2 | 300 μs ... 450 μs ^{6) 7)} |
| Switching frequency | 1,000 Hz ⁸⁾ |
| Switching frequency Q / to pin 2 | ≤ 1,000 Hz ⁹⁾ |
| Connection type | Male connector M12, 4-pin |
| Circuit protection | A ¹⁰⁾ B ¹¹⁾ C ¹²⁾ |
| Protection class | III |
| Weight | 13 g |
| Housing material | Plastic, VISTAL® |
| Optics material | Plastic, PMMA |
| Enclosure rating | IP66 IP67 IP69K |
| Ambient operating temperature | -10 °C ... +50 °C |
| Ambient operating temperature extended | -30 °C ... +55 °C ^{13) 14)} |
| Ambient temperature, storage | -30 °C ... +70 °C |
| UL File No. | NRKH.E181493 |
| Repeatability Q/ on Pin 2: | 150 μs ⁷⁾ |

¹⁾ Limit values when operated in short-circuit protected network: max. 8 A.

²⁾ May not fall below or exceed U_y tolerances.

³⁾ Without load.

⁴⁾ Q = light switching.

⁵⁾ Pin 4: This switching output must not be connected to another output.

⁶⁾ Signal transit time with resistive load.

⁷⁾ Valid for Q \ on Pin2, if configured with software.

⁸⁾ With light/dark ratio 1:1.

⁹⁾ With light / dark ratio 1:1, valid for Q \ on Pin2, if configured with software.

¹⁰⁾ A = V_S connections reverse-polarity protected.

¹¹⁾ B = inputs and output reverse-polarity protected.

¹²⁾ C = interference suppression.

¹³⁾ As of $T_a = 50$ °C, a max. supply voltage $V_{max.} = 24$ V and a max. load current $I_{max.} = 50$ mA is permitted.

¹⁴⁾ Operation below $T_u - 10$ °C is possible if the sensor is already switched on at $T_u > -10$ °C, then cools down, and the supply voltage is subsequently not switched off. Switching on below $T_u - 10$ °C is not permissible.

Safety-related parameters

| | |
|-------------------------------------|--|
| MTTF_D | 326 years (EN ISO 13849-1) ¹⁾ |
| DC_{avg} | 0 % |
| T_M (mission time) | 10 years |

¹⁾ Mode of calculation: Parts-Count-calculation.

Communication interface

| | |
|---------------------------------------|--|
| Communication interface | IO-Link V1.1 |
| 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 = measuring value |
| VendorID | 26 |
| DeviceID HEX | 0x80010E |
| DeviceID DEC | 8388878 |

Smart Task

| | |
|--|--|
| Smart Task name | Counter + debouncing |
| Logic function | Direct WINDOW Hysteresis |
| Timer function | Deactivated Switch-on delay Off delay ON and OFF delay Impulse (one shot) |
| Inverter | Yes |
| Maximum counting frequency | SIO Direct: --- ¹⁾ SIO Logic: 1000 Hz ²⁾ IOL: 650 Hz ³⁾ |
| Counter reset | SIO Direct: --- SIO Logic: 1,5 ms IOL: 1,5 ms |
| Min. Time between two process events (switches) | SIO Direct: --- SIO Logic: 500 µs IOL: 800 µs |
| Debounce time max. | SIO Direct: --- SIO Logic: 30.000 ms IOL: 30.000 ms |
| Switching signal | |
| Switching signal Q _{L1} | Output type (dependant on the adjusted threshold) |
| Switching signal Q _{L2} | Output type (dependant on the adjusted threshold) |
| Measuring value | Counting value |

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.

Diagnosis

| | |
|----------------------|-----|
| Device status | Yes |
|----------------------|-----|

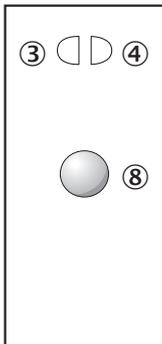
Certificates

| | |
|---|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |
| ACMA declaration of conformity | ✓ |
| Moroccan declaration of conformity | ✓ |
| China RoHS | ✓ |
| ECOLAB certificate | ✓ |
| cULus certificate | ✓ |
| IO-Link certificate | ✓ |
| Laser safety (IEC 60825-1) certificate | ✓ |

Classifications

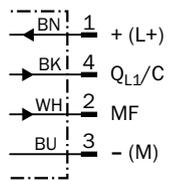
| | |
|-----------------------|----------|
| ECLASS 5.0 | 27270904 |
| ECLASS 5.1.4 | 27270904 |
| ECLASS 6.0 | 27270904 |
| ECLASS 6.2 | 27270904 |
| ECLASS 7.0 | 27270904 |
| ECLASS 8.0 | 27270904 |
| ECLASS 8.1 | 27270904 |
| ECLASS 9.0 | 27270904 |
| ECLASS 10.0 | 27270904 |
| ECLASS 11.0 | 27270904 |
| ECLASS 12.0 | 27270903 |
| ETIM 5.0 | EC002719 |
| ETIM 6.0 | EC002719 |
| ETIM 7.0 | EC002719 |
| ETIM 8.0 | EC002719 |
| UNSPSC 16.0901 | 39121528 |

Adjustments Single teach-in button

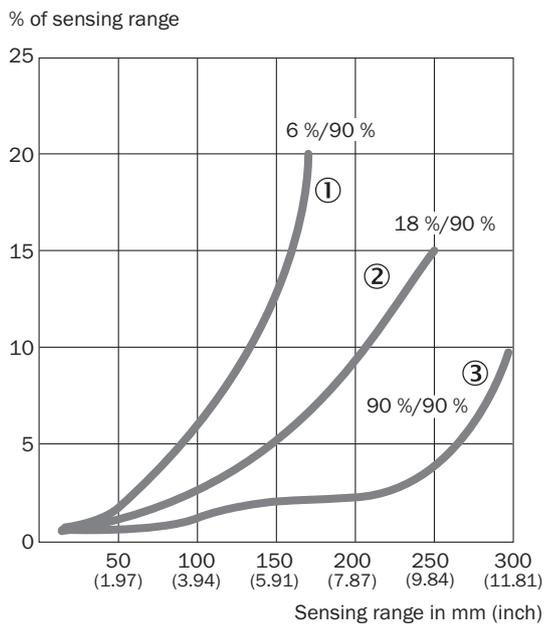


- ③ LED indicator yellow: Status of received light beam
- ④ LED indicator green: power on
- ⑧ Teach-in button

Connection diagram Cd-367



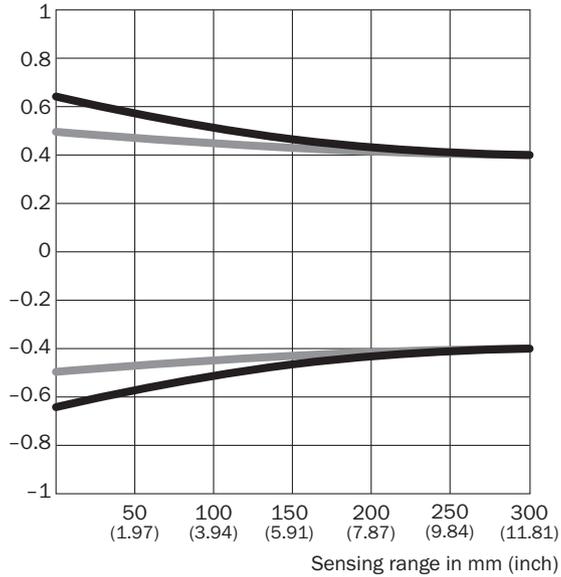
Characteristic curve



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

Light spot size

Radius in mm (inch)

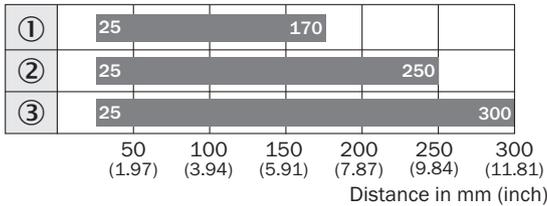


Dimensions in mm (inch)

| Sensing range | Vertical | Horizontal |
|---------------------------------|---------------|---------------|
| 50 mm (1.97) | 1.2 (0.05) | 1.0 (0.04) |
| 100 mm (3.94) | 1.1 (0.04) | 1.0 (0.04) |
| 200 mm (7.87) | 0.9 (0.04) | 0.9 (0.04) |
| 300 mm (11.81) | 0.8 (0.03) | 0.8 (0.03) |

— Vertical
— Horizontal

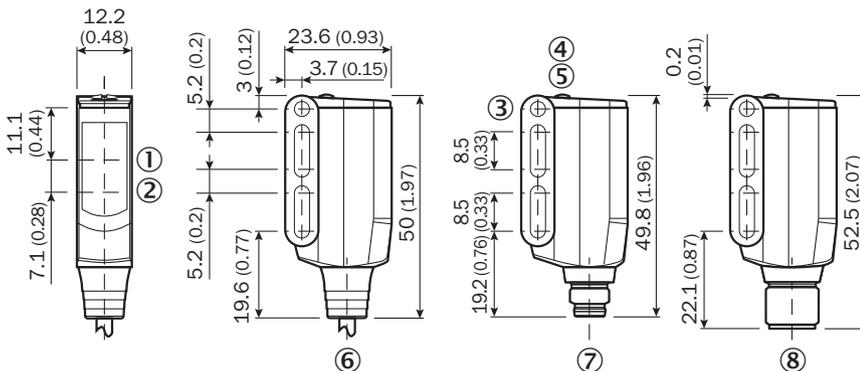
Sensing range diagram



■ Sensing range typ. max.

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

Dimensional drawing WTB9L-3



Dimensions in mm (inch)

- ① Center of optical axis, receiver
- ② Center of optical axis, sender
- ③ Mounting hole M3 (Ø 3.1 mm)
- ④ LED indicator yellow: Status of received light beam
- ⑤ LED indicator green: power on
- ⑥ Connecting cable or connecting cable with connector
- ⑦ male connector M8, 4-pin
- ⑧ male connector M12, 4-pin

Recommended accessories

Other models and accessories → www.sick.com/W9

| | Brief description | Type | part no. |
|---|--|--------------------|----------|
| Mounting systems | | | |
|  | <ul style="list-style-type: none"> • Description: Plate N08 for universal clamp bracket • Material: Steel, zinc diecast • Details: Zinc plated steel (sheet), Zinc die cast (clamping bracket) • Items supplied: Universal clamp (5322626), mounting hardware • Usable for: 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 | BEF-KHS-N08 | 2051607 |
|  | <ul style="list-style-type: none"> • Description: Mounting bracket • Material: Steel • Details: Steel, zinc coated • Items supplied: Mounting hardware included • Suitable for: W9-3 | BEF-WN-W9-2 | 2022855 |
|  | <ul style="list-style-type: none"> • Description: Plate N11N for universal clamp bracket • Material: Stainless steel • Details: Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp) • Items supplied: Universal clamp (5322627), mounting hardware • Usable for: DeltaPac, Glare, WTD20E | BEF-KHS-N11N | 2071081 |
| connectors and cables | | | |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 4-pin, straight, A-coded • Connection type head B: Flying leads • Signal type: Sensor/actuator cable • Cable: 5 m, 4-wire, PVC • Description: Sensor/actuator cable, unshielded • Application: Uncontaminated zones, Zones with chemicals | YF2A14-050VB3XLEAX | 2096235 |
|  | <ul style="list-style-type: none"> • Connection type head A: Male connector, M12, 4-pin, straight, A-coded • Description: Unshielded • Connection systems: Screw-type terminals • Permitted cross-section: ≤ 0.75 mm² | STE-1204-G | 6009932 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 4-pin, straight, A-coded • Connection type head B: Flying leads • Signal type: Sensor/actuator cable • Cable: 5 m, 4-wire, PUR, halogen-free • Description: Sensor/actuator cable, unshielded • Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation | YF2A14-050UB3XLEAX | 2095608 |

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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