Data sheet

# WSE4SC-3P2230A91

W4

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

Illustration may differ

## Ordering information

| Type | part no. |
|---|---|
| WSE4SC-3P2230A91 | 1067770 |

Other models and accessories ➜ www.sick.com/W4

## Detailed technical data

### Features

| | |
|---|---|
| **Functional principle** | Through-beam photoelectric sensor |
| **Sensing range max.** | 0 m ... 5 m |
| **Sensing range** | 0 m ... 4.5 m |
| **Emitted beam** | |
| Light source | PinPoint LED [1] |
| Type of light | Visible red light |
| Light spot size (distance) | Ø 50 mm (2 m) |
| **Key LED figures** | |
| Wave length | 650 nm |
| **Adjustment** | IO-Link |
| **Part number of individual components** | 2073737 WS4S-3D2230 2073951 WE4SC-3P2230A91 |
| **Pin 2 configuration** | External input, Teach-in input, Detection output, logic output, alarm output operating reserve |

[1] Average service life: 100,000 h at $T_U$ = +25 °C.

### Safety-related parameters

| | |
|---|---|
| **$MTTF_D$** | 693 years |
| **$DC_{avg}$** | 0 % |

### Communication interface

| | |
|---|---|
| **IO-Link** | ✓ , COM2 (38,4 kBaud) |
| Data transmission rate | 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 | 0x8000E9 |
| DeviceID DEC | 8388841 |

## Electronics

| | |
|---|---|
| **Supply voltage $U_B$** | 10 V DC ... 30 V DC [1] |
| **Ripple** | < 5 $V_{pp}$ [2] |
| **Current consumption** | 20 mA [3]<br>20 mA [4] |
| **Protection class** | III |
| **Digital output** | |
| Type | PNP [5] |
| Switching mode | Light/dark switching |
| Output current $I_{max.}$ | ≤ 100 mA |
| Repeatability (response time) | 150 µs [6] |
| Switching frequency | 1,000 Hz |
| **Circuit protection** | A [7]<br>B [8]<br>C [9]<br>D [10] |
| **Response time Q/ on Pin 2** | 300 µs ... 450 µs [11] [6] |
| **Switching frequency Q / to pin 2** | 1,000 Hz [12] |
| **Test input sender off** | TE to 0 V |

[1] Limit values when operated in short-circuit protected network: max. 8 A.
[2] May not fall below or exceed $U_V$ tolerances.
[3] Sender.
[4] Receiver without load.
[5] Pin 4: This switching output must not be connected to another output.
[6] Valid for Q \ on Pin2, if configured with software.
[7] A = $V_S$ connections reverse-polarity protected.
[8] B = inputs and output reverse-polarity protected.
[9] C = interference suppression.
[10] D = outputs overcurrent and short-circuit protected.
[11] Signal transit time with resistive load.
[12] With light / dark ratio 1:1, valid for Q \ on Pin2, if configured with software.

## Mechanics

| | |
|---|---|
| **Housing** | Rectangular |
| **Design detail** | Slim |
| **Dimensions (W x H x D)** | 12.2 mm x 41.8 mm x 17.3 mm |
| **Connection** | Male connector M8, 4-pin |

| | |
|---|---|
| **Material** | |
| Housing | Plastic, ABS |
| Front screen | Plastic, PMMA |
| **Weight** | 40 g |

## Ambient data

| | |
|---|---|
| **Enclosure rating** | IP67<br>IP66 |
| **Ambient operating temperature** | –40 °C ... +60 °C |
| **Ambient temperature, storage** | –40 °C ... +75 °C |
| **UL File No.** | NRKH.E181493 & NRKH7.E181493 |

## Smart Task

| | |
|---|---|
| **Smart Task name** | Timestamp + debouncing |
| **Logic function** | Direct<br>AND<br>OR<br>WINDOW<br>Hysteresis |
| **Timer function** | Deactivated<br>Switch-on delay<br>Off delay<br>ON and OFF delay<br>Impulse (one shot) |
| **Inverter** | Yes |
| **Response time** | SIO Direct: 300 µs ... 450 µs [1]<br>SIO Logic: 550 µs ... 650 µs [2]<br>IOL: --- [3] |
| **Repeatability** | SIO Direct: 150 µs [1]<br>SIO Logic: 150 µs [2]<br>IOL: --- [3] |
| **Time stamp accuracy** | SIO Direct: ---<br>SIO Logic: ---<br>IOL: - 90 ... + 90 µs |
| **Min. Time between two process events (switches)** | SIO Direct: 450 µs<br>SIO Logic: 450 µs<br>IOL: 500 ms |
| **Time stamp number buffer** | SIO Direct: ---<br>SIO Logic: ---<br>IOL: 8 |
| **Max. TimeStamp Range** | SIO Direct: ---<br>SIO Logic: ---<br>IOL: 260 ms |
| **Debounce time max.** | SIO Direct: ---<br>SIO Logic: 52 ms<br>IOL: 52 ms |
| **Switching signal** | |
| Switching signal $Q_{L1}$ | 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.

| | |
|---|---|
| Switching signal $Q_{L2}$ | Switching output |
| **Measuring value** | Timestamp |

[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 |
| **Function reserve** | Yes |

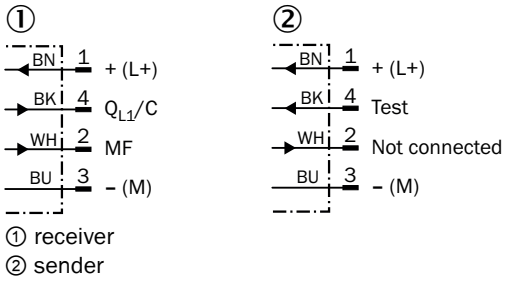
## Certificates

| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **Moroccan declaration of conformity** | ✓ |
| **China-RoHS** | ✓ |
| **ECOLAB certificate** | ✓ |
| **cULus certificate** | ✓ |
| **Photobiological safety (DIN EN 62471) certificate** | ✓ |

## Classifications

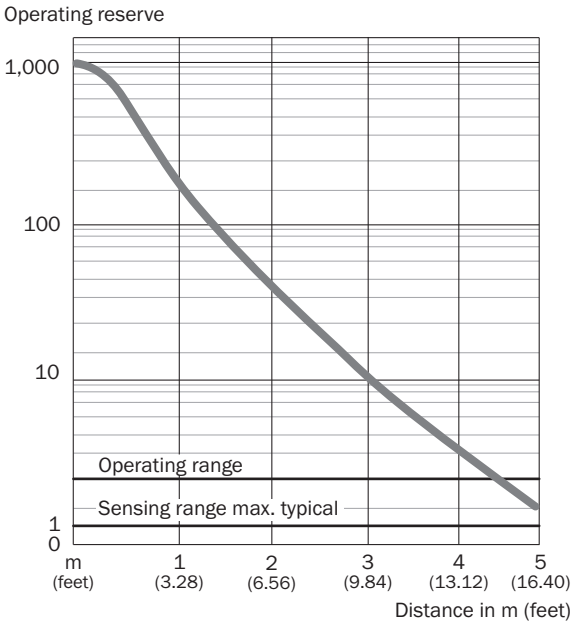
| | |
|---|---|
| **ECLASS 5.0** | 27270901 |
| **ECLASS 5.1.4** | 27270901 |
| **ECLASS 6.0** | 27270901 |
| **ECLASS 6.2** | 27270901 |
| **ECLASS 7.0** | 27270901 |
| **ECLASS 8.0** | 27270901 |
| **ECLASS 8.1** | 27270901 |
| **ECLASS 9.0** | 27270901 |
| **ECLASS 10.0** | 27270901 |
| **ECLASS 11.0** | 27270901 |
| **ECLASS 12.0** | 27270901 |
| **ETIM 5.0** | EC002716 |
| **ETIM 6.0** | EC002716 |
| **ETIM 7.0** | EC002716 |
| **ETIM 8.0** | EC002716 |
| **UNSPSC 16.0901** | 39121528 |

## Connection diagram Cd-365

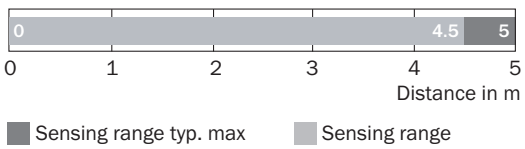



① receiver
② sender

## Characteristic curve WSE4S-3




## Sensing range diagram WSE4S-3



## Recommended accessories

Other models and accessories ➜ www.sick.com/W4

| | Brief description | Type | part no. |
|---|---|---|---|
| Mounting systems | | | |
|  | • **Description:** Mounting bracket for wall mounting<br>• **Material:** Stainless steel<br>• **Details:** Stainless steel 1.4571<br>• **Items supplied:** Mounting hardware included<br>• **Suitable for:** W4S, W4F, W4S | BEF-W4-A | 2051628 |
| connectors and cables | | | |
|  | • **Connection type head A:** Male connector, M8, 4-pin, straight, A-coded<br>• **Description:** Unshielded<br>• **Connection systems:** Screw-type terminals<br>• **Permitted cross-section:** 0.14 mm² ... 0.5 mm² | STE-0804-G | 6037323 |
|  | • **Connection type head A:** Female connector, M8, 4-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 5 m, 4-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals, Uncontaminated zones | YF8U14-050VA3XLEAX | 2095889 |

# 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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