Data sheet

# WSE26G-24162400A00

W26

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

Illustration may differ

## Ordering information

| Type | part no. |
|---|---|
| WSE26G-24162400A00 | 1127145 |

Other models and accessories ➜ www.sick.com/W26

## Detailed technical data

### Features

| | |
|---|---|
| **Functional principle** | Through-beam photoelectric sensor |
| **Sensing range** | |
| Sensing range min. | 5 m |
| Sensing range max. | 120 m |
| Maximum distance range from receiver to sender (operating reserve 1) | 5 m ... 120 m |
| Recommended distance range from receiver to sender (operating reserve 2) | 5 m ... 85 m |
| Recommended sensing range for the best performance | 5 m ... 85 m |
| **Emitted beam** | |
| Light source | LED |
| Type of light | Visible red light |
| Shape of light spot | Point-shaped |
| Light spot size (distance) | 850 mm x 850 mm (40 m) |
| Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle) | < +/- 1.0° (at $T_U$ = +23 °C) |
| **Key LED figures** | |
| Normative reference | EN 62471:2008-09 \| IEC 62471:2006, modified |
| LED risk group marking | Free group |
| Wave length | 625 nm |
| Average service life | 100,000 h at $T_a$ = +25 °C |

| | |
|---|---|
| **Adjustment** | |
| IO-Link | For configuring the sensor parameters and Smart Task functions |
| Wire/pin | For activating the test input |
| **Display** | |
| LED blue | BluePilot: Alignment aid |
| LED green | Operating indicator<br>Static on: power on<br>Flashing: IO-Link mode |
| LED yellow | Status of received light beam<br>Static on: object not present<br>Static off: object present<br>Flashing: Below the 1.5 function reserve |

## Safety-related parameters

| | |
|---|---|
| **$MTTF_D$** | 524 years |
| **$DC_{avg}$** | 0 % |
| **$T_M$ (mission time)** | 20 years |

## Communication interface

| | |
|---|---|
| **IO-Link** | ✓ , V1.1 |
| 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 = empty |
| VendorID | 26 |
| DeviceID HEX | 0x800302 |
| DeviceID DEC | 8389378 |
| Compatible master port type | A |
| SIO mode support | Yes |

## Electronics

| | |
|---|---|
| **Supply voltage $U_B$** | 10 V DC ... 30 V DC [1] |
| **Ripple** | ≤ 5 $V_{pp}$ |
| **Usage category** | DC-12 (According to EN 60947-5-2)<br>DC-13 (According to EN 60947-5-2) |
| **Current consumption, sender** | ≤ 40 mA, without load. At $U_B$ = 24 V<br>< 50 mA |
| **Current consumption, receiver** | ≤ 30 mA, without load. At $U_B$ = 24 V<br>< 50 mA |
| **Protection class** | III |
| **Digital output** | |
| Number | 2 (Complementary) |

[1] Limit values.
[2] Signal transit time with resistive load in switching mode.
[3] With light/dark ratio 1:1.
[4] This switching output must not be connected to another output.

| | |
|---|---|
| Type | Push-pull: PNP/NPN |
| Switching mode | Light/dark switching |
| Signal voltage PNP HIGH/LOW | Approx. $U_B$-2.5 V / 0 V |
| Signal voltage NPN HIGH/LOW | Approx. $U_B$ / < 2.5 V |
| Output current $I_{max.}$ | ≤ 100 mA |
| Circuit protection outputs | Reverse polarity protected |
| | Overcurrent and short-circuit protected |
| Response time | ≤ 500 µs [2] |
| Repeatability (response time) | 150 µs |
| Switching frequency | 1,000 Hz [3] |
| **Pin/Wire assignment, sender** | |
| Function of pin 4/black (BK) | Test at 0 V |
| **Pin/Wire assignment, receiver** | |
| Function of pin 4/black (BK) | Digital output, light switching, object present → output $Q_{L1}$ LOW; IO-Link communication C [4] |
| Function of pin 4/black (BK) – detail | The pin 4 function of the sensor can be configured, Additional possible settings via IO-Link |
| Function of pin 2/white (WH) | Digital output, dark switching, object present → output $\bar{Q}_{L1}$ HIGH |
| Function of pin 2/white (WH) – detail | The pin 2 function of the sensor can be configured, Additional possible settings via IO-Link |

[1] Limit values.
[2] Signal transit time with resistive load in switching mode.
[3] With light/dark ratio 1:1.
[4] This switching output must not be connected to another output.

## Mechanics

| | |
|---|---|
| **Housing** | Rectangular |
| **Dimensions (W x H x D)** | 24.6 mm x 82.5 mm x 53.3 mm |
| **Connection** | Male connector M12, 4-pin |
| **Material** | |
| Housing | Plastic, VISTAL® |
| Front screen | Plastic, PMMA |
| Male connector | Plastic, VISTAL® |
| **Weight** | Approx. 160 g |
| **Maximum tightening torque of the fixing screws** | 1.3 Nm |

## Ambient data

| | |
|---|---|
| **Enclosure rating** | IP66 (EN 60529)<br>IP67 (EN 60529)<br>IP69 (EN 60529) [1] |
| **Ambient operating temperature** | –40 °C ... +60 °C |
| **Ambient temperature, storage** | –40 °C ... +75 °C |
| **Shock resistance** | 50 g, 11 ms (25 positive and 25 negative shocks per axis, for X, Y, Z axes, 150 shocks in total (EN60068-2-27))<br>50 g, 6 ms (5,000 positive and 5,000 negative shocks per axis, for X, Y, Z axes, 30,000 shocks in total (EN60068-2-27)) |

[1] Replaces IP69K with ISO 20653: 2013-03.

| | |
|---|---|
| **Vibration resistance** | 10 Hz ... 2,000 Hz (Amplitude 0.5 mm / 10 g, 20 sweeps per axis, for X, Y, Z axes, 1 octave/min, (EN60068-2-6)) |
| **Air humidity** | 35 % ... 95 %, relative humidity (no condensation) |
| **Electromagnetic compatibility (EMC)** | EN 60947-5-2 |
| **Resistance to cleaning agent** | ECOLAB |
| **UL File No.** | NRKH.E181493 & NRKH7.E181493 |

[1] Replaces IP69K with ISO 20653: 2013-03.

## Smart Task

| | |
|---|---|
| **Smart Task name** | Base logics |
| **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 |
| **Switching frequency** | SIO Logic: 800 Hz [1]<br>IOL: 650 Hz [2] |
| **Response time** | SIO Logic: 600 µs [1]<br>IOL: 750 µs [2] |
| **Repeatability** | SIO Logic: 300 µs [1]<br>IOL: 400 µs [2] |
| **Switching signal** | |
| Switching signal $Q_{L1}$ | Switching output |

[1] Use of Smart Task functions without IO-Link communication (SIO mode).

[2] Use of Smart Task functions with IO-Link communication function.

## Diagnosis

| | |
|---|---|
| **Device status** | Yes |
| **Quality of teach** | Yes |
| **Quality of run** | Yes, Contamination display |

## Certificates

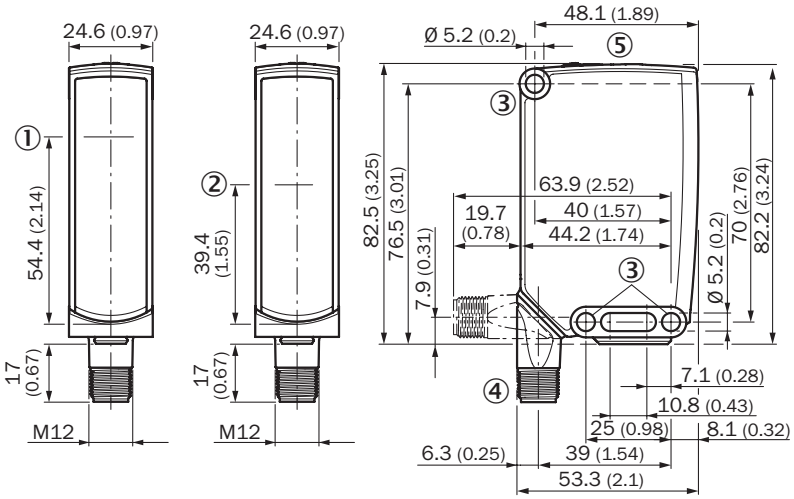
| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **Moroccan declaration of conformity** | ✓ |
| **China RoHS** | ✓ |
| **ECOLAB certificate** | ✓ |
| **cULus certificate** | ✓ |
| **IO-Link certificate** | ✓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

| | |
|---|---|
| **Information according to Art. 3 of Data Act (Regulation EU 2023/2854)** | ✓ |

## Classifications

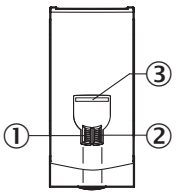
| | |
|---|---|
| **ECLASS 5.0** | 27270901 |
| **ECLASS 5.1.4** | 27270901 |
| **ECLASS 6.0** | 27270901 |
| **ECLASS 6.2** | 27270901 |
| **ECLASS 7.0** | 27270901 |
| **ECLASS 8.0** | 27270901 |
| **ECLASS 8.1** | 27270901 |
| **ECLASS 9.0** | 27270901 |
| **ECLASS 10.0** | 27270901 |
| **ECLASS 11.0** | 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 |

## Dimensional drawing, sensor



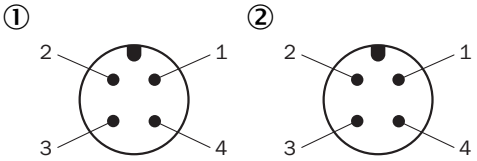

Dimensions in mm (inch)
① Center of optical axis, sender
② Center of optical axis, receiver
③ Mounting hole, Ø 5.2 mm
④ Connection
⑤ display and adjustment elements

## display and adjustment elements



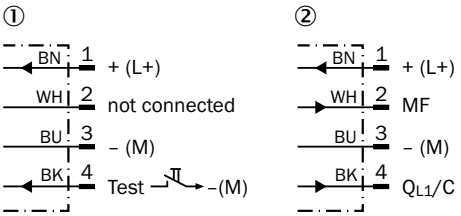

① LED indicator green
② LED indicator yellow
③ LED blue

## pinouts



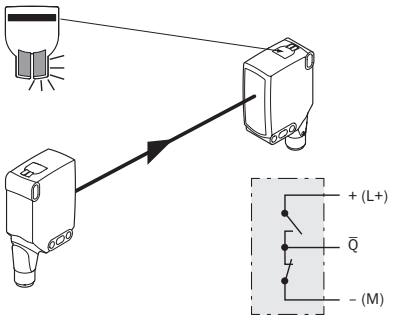
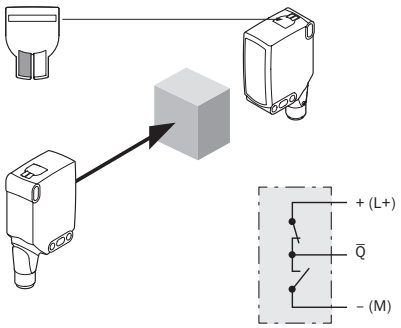

M12 male connector, 4-pin, A-coding
① receiver
② sender

## Connection diagram Cd-392

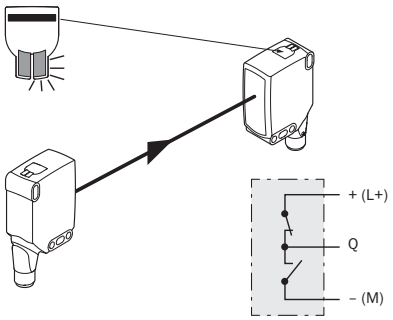
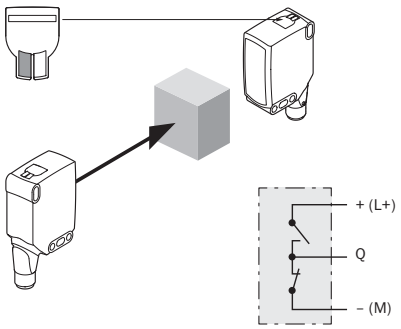



① sender
② receiver

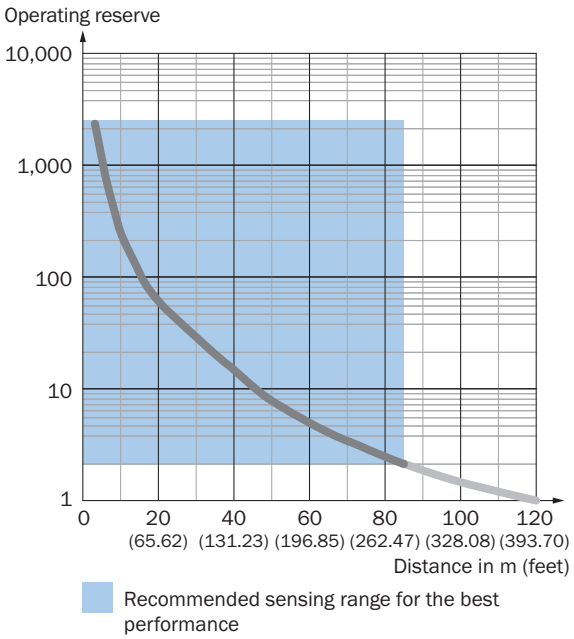
## Truth table Push-pull: PNP/NPN – dark switching $\bar{Q}$

| | Dark switching $\bar{Q}$ (normally open (upper switch), normally closed (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output LOW | Object present ➜ Output HIGH |
| Light receive | ✓ | ✗ |
| Light receive indicator | ☀ | ✗ |
| Load resistance to L+ | ⚠ | ✗ |
| Load resistance to M | ✗ | ⚠ |
| |  |  |

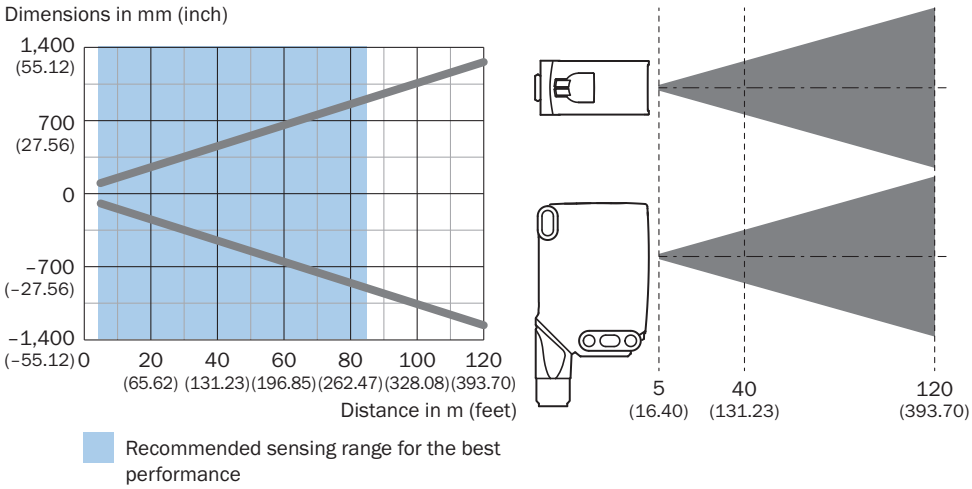
## Truth table Push-pull: PNP/NPN - light switching Q

| | Light switching Q (normally closed (upper switch), normally open (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output HIGH | Object present ➜ Output LOW |
| Light receive | ✓ | ✗ |
| Light receive indicator | ☀ | ✗ |
| Load resistance to L+ | ✗ | ⚠ |
| Load resistance to M | ⚠ | ✗ |
| |  |  |

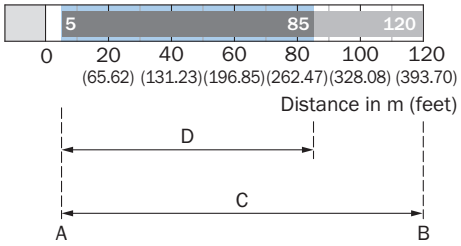
## Characteristic curve




## Light spot size



## Sensing range diagram




Recommended sensing range for the best performance

| | |
|---|---|
| A | Sensing range min. in mm |
| B | Sensing range max. in mm |
| C | Maximum distance range from receiver to sender |
| D | Recommended distance range from receiver to sender |

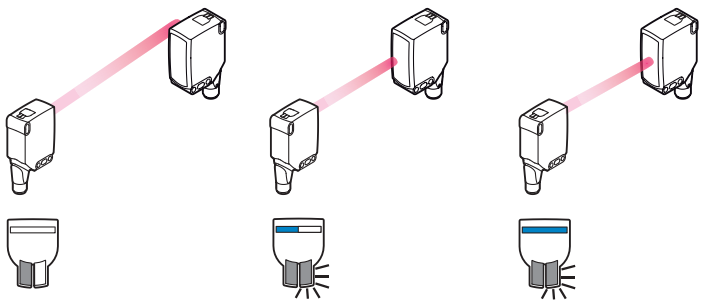
## Functions Operation note

**BluePilot: Blue indicator LEDs with double benefits**

Easy and quick sensor alignment with the help of the LED indicator

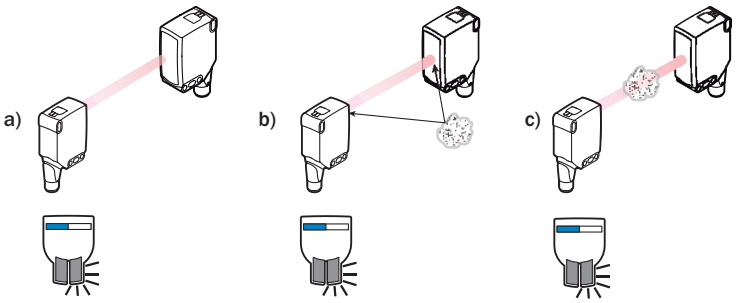
All blue LEDs illuminate
– optimum alignment
– highest possible operating reserve

**WSE through-beam photoelectric sensor alignment**

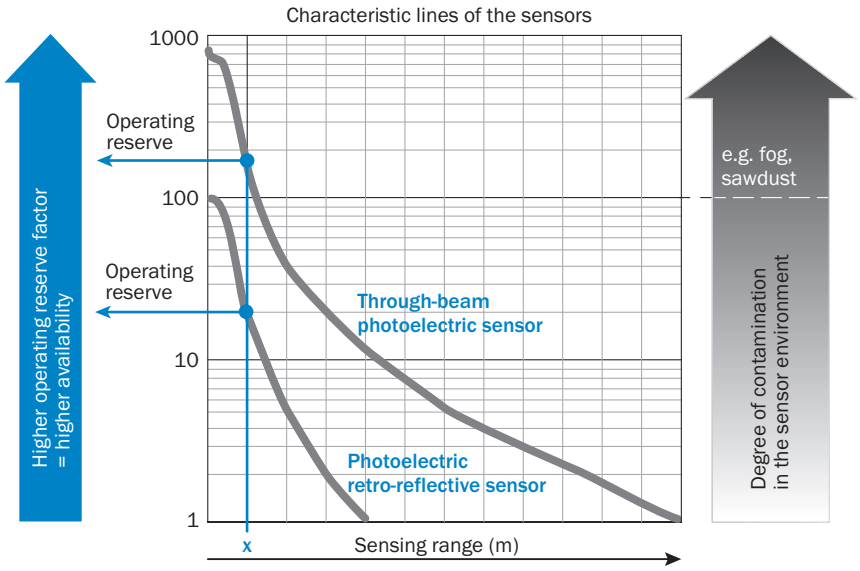


**Service note**
A reduction in sensor availability is displayed by a decrease of the blue LEDs.

Possible causes:
a) insufficient alignment
b) contamination of the optical surfaces
c) particles in the light beam



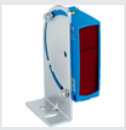
## Functions Operation note




At a sensing range of „**x**“ the photoelectric retro-reflective and through-beam photoelectric sensors have different operating reserves (see blue arrow). The higher the operating reserve factor, the better the sensor can compensate the contamination in the air or in the light beam and on the optical surfaces (front screen, reflector), i.e. the sensor has the maximum availablity, otherwise the sensor switches due to pollution although there is no object in the path of the light beam.

## Recommended accessories

Other models and accessories ➜ www.sick.com/W26

| | Brief description | Type | part no. |
|---|---|---|---|
| **Mounting systems** | | | |
| | • **Description:** Mounting bracket with hinged arm<br>• **Material:** Steel<br>• **Details:** Steel, zinc coated<br>• **Items supplied:** Mounting hardware included<br>• **Suitable for:** W23-2, W27-3, Reflex Array | BEF-WN-W27 | 2009122 |
| | • **Description:** Plate N12 for universal clamp. For mounting PL30A, P250 reflectors, W27 and WTR2 sensors.<br>• **Material:** Steel, zinc diecast<br>• **Details:** Zinc plated steel (sheet), Zinc die cast (clamping bracket)<br>• **Items supplied:** Universal clamp (2022726), mounting hardware<br>• **Usable for:** W26, Reflex Array, P250, W23-2, W27-3, W27-3 | BEF-KHS-N12 | 2071950 |
| | • **Description:** Mounting bracket with articulated arm<br>• **Material:** Steel<br>• **Details:** Steel, zinc coated<br>• **Items supplied:** Mounting hardware included<br>• **Suitable for:** W16, W26, W11, W12, W23, W27, Dx50, W280, G10 | BEF-WN-MULTI2 | 2093945 |
|  | • **Description:** Mounting bracket<br>• **Material:** Steel<br>• **Details:** Steel, zinc coated<br>• **Items supplied:** Mounting hardware included<br>• **Suitable for:** W23-2, W27-3, Reflex Array | BEF-WN-W23 | 2019085 |
| **connectors and cables** | | | |
| | • **Description:** Unshielded<br>• **Connection type head A:** Male connector, M12, 4-pin, straight, A-coded<br>• **Connection systems:** Screw-type terminals<br>• **Permitted cross-section:** ≤ 0.75 mm² | STE-1204-G | 6009932 |
| | • **Description:** Sensor/actuator cable, unshielded<br>• **Connection type head A:** Female connector, M12, 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>• **Application:** Uncontaminated zones, Zones with chemicals | YF2A14-050VB3XLEAX | 2096235 |
| | • **Description:** Sensor/actuator cable, unshielded<br>• **Connection type head A:** Female connector, M12, 4-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 5 m, 4-wire, PUR, halogen-free<br>• **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:

Contacts and other locations –www.sick.com