



# WSE9LC-3P2436A71

W9

SMALL PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ

### Ordering information

Type	Part no.
WSE9LC-3P2436A71	1080962

Other models and accessories → [www.sick.com/W9](http://www.sick.com/W9)



### Detailed technical data

#### Features

<b>Sensor/ detection principle</b>	Through-beam photoelectric sensor
<b>Dimensions (W x H x D)</b>	12.2 mm x 52.2 mm x 23.6 mm
<b>Housing design (light emission)</b>	Rectangular
<b>Mounting hole</b>	M3
<b>Sensing range max.</b>	0 m ... 60 m
<b>Sensing range</b>	0 m ... 50 m
<b>Type of light</b>	Visible red light
<b>Light source</b>	Laser <sup>1)</sup>
<b>Light spot size (distance)</b>	Ø 1 mm (500 mm)
<b>Wave length</b>	650 nm
<b>Laser class</b>	1 (IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11)
<b>Adjustment</b>	IO-Link
<b>Diagnosis</b>	Status indicator operating reserve
<b>Pin 2 configuration</b>	External input, Teach-in input, Detection output, logic output, Device contamination alarm output
<b>Special applications</b>	Detecting small objects

<sup>1)</sup> Average service life: 50,000 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>	< 5 V <sub>pp</sub> <sup>2)</sup>
<b>Current consumption</b>	30 mA <sup>3)</sup>
<b>Switching output</b>	PNP <sup>4)</sup>
<b>Output function</b>	Complementary
<b>Switching mode</b>	Light/dark switching <sup>4)</sup>
<b>Output current I<sub>max.</sub></b>	≤ 100 mA
<b>Response time</b>	≤ 0.5 ms <sup>5)</sup>
<b>Response time Q/ on Pin 2</b>	300 μs ... 450 μs <sup>5) 6)</sup>
<b>Switching frequency</b>	1,000 Hz <sup>7)</sup>
<b>Switching frequency Q / to pin 2</b>	≤ 1,000 Hz <sup>8)</sup>
<b>Connection type</b>	Male connector M12, 4-pin
<b>Circuit protection</b>	A <sup>9)</sup> B <sup>10)</sup> C <sup>11)</sup>
<b>Protection class</b>	III
<b>Weight</b>	13 g
<b>IO-Link</b>	✓
<b>Housing material</b>	Plastic, VISTAL®
<b>Optics material</b>	Plastic, PMMA
<b>Enclosure rating</b>	IP66 IP67 IP69K
<b>Ambient operating temperature</b>	-10 °C ... +50 °C
<b>Ambient operating temperature extended</b>	-30 °C ... +55 °C <sup>12) 13)</sup>
<b>Ambient storage temperature</b>	-30 °C ... +70 °C
<b>UL File No.</b>	NRKH.E181493
<b>Part number of individual components</b>	2064063 WS9L-3D2436, 2088370 WE9LC-3P2430A71
<b>Repeatability Q/ on Pin 2:</b>	150 μs <sup>6)</sup>

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

2) May not exceed or fall below U<sub>v</sub> tolerances.

3) Without load.

4) Q = light switching.

5) Signal transit time with resistive load.

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

7) With light/dark ratio 1:1.

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

9) A = V<sub>S</sub> connections reverse-polarity protected.

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

11) C = interference suppression.

12) As of T<sub>a</sub> = 50 °C, a max. supply voltage V<sub>max.</sub> = 24 V and a max. load current I<sub>max.</sub> = 50 mA is permitted.

13) Operation below T<sub>u</sub> -10 °C is possible if the sensor is already switched on at T<sub>u</sub> > -10 °C, then cools down, and the supply voltage is subsequently not switched off. Switching on below T<sub>u</sub> -10 °C is not permissible.

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	355 years (EN ISO 13849-1) <sup>1)</sup>
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<sup>1)</sup> Mode of calculation: Parts-Count-calculation.

### 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> Bit 1 = switching signal Q <sub>L2</sub> Bit 2 ... 15 = measuring value
<b>VendorID</b>	26
<b>DeviceID HEX</b>	0x800120
<b>DeviceID DEC</b>	8388896

### Smart Task

<b>Smart Task name</b>	Counter + debouncing
<b>Logic function</b>	Direct WINDOW Hysteresis
<b>Timer function</b>	Deactivated On delay Off delay ON and OFF delay Impulse (one shot)
<b>Inverter</b>	Yes
<b>Maximum counting frequency</b>	SIO Direct: --- <sup>1)</sup> SIO Logic: 1000 Hz <sup>2)</sup> IOL: 900 Hz <sup>3)</sup>
<b>Counter reset</b>	SIO Direct: --- SIO Logic: 1,5 ms IOL: 1,5 ms
<b>Min. Time between two process events (switches)</b>	SIO Direct: --- SIO Logic: 450 µs IOL: 500 µs
<b>Debounce time max.</b>	SIO Direct: --- SIO Logic: 30.000 ms IOL: 30.000 ms
<b>Switching signal Q<sub>L1</sub></b>	Output type (dependant on the adjusted threshold)
<b>Switching signal Q<sub>L2</sub></b>	Output type (dependant on the adjusted threshold)
<b>Measuring value</b>	Counting value

<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.

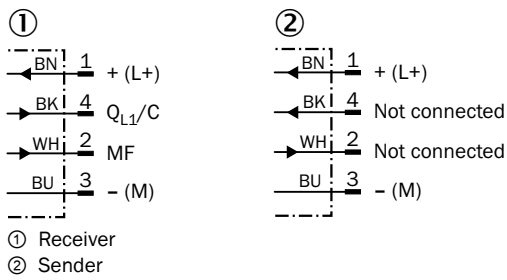
### Classifications

<b>ECl@ss 5.0</b>	27270901
<b>ECl@ss 5.1.4</b>	27270901

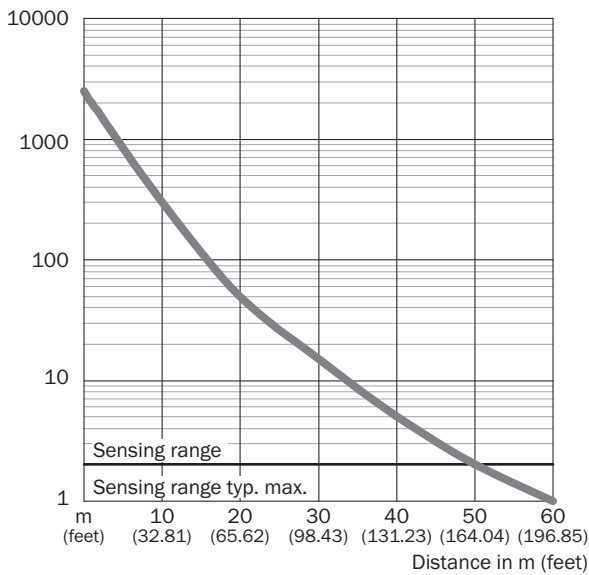
<b>ECI@ss 6.0</b>	27270901
<b>ECI@ss 6.2</b>	27270901
<b>ECI@ss 7.0</b>	27270901
<b>ECI@ss 8.0</b>	27270901
<b>ECI@ss 8.1</b>	27270901
<b>ECI@ss 9.0</b>	27270901
<b>ECI@ss 10.0</b>	27270901
<b>ECI@ss 11.0</b>	27270901
<b>ETIM 5.0</b>	EC002716
<b>ETIM 6.0</b>	EC002716
<b>ETIM 7.0</b>	EC002716
<b>UNSPSC 16.0901</b>	39121528

### Connection diagram

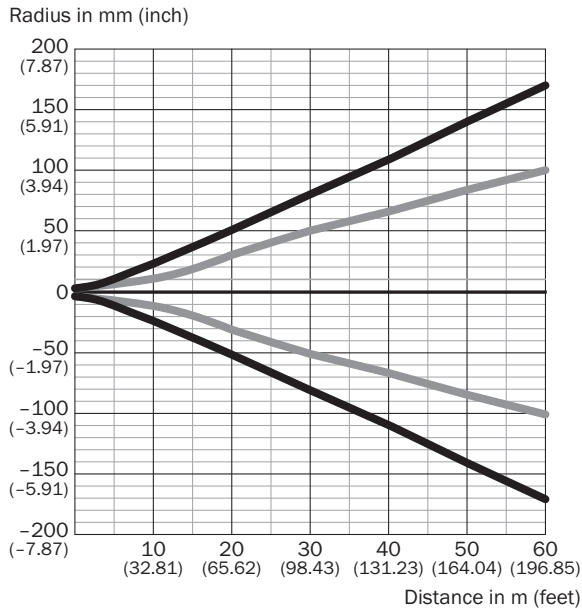
Cd-376



### Characteristic curve



### Light spot size



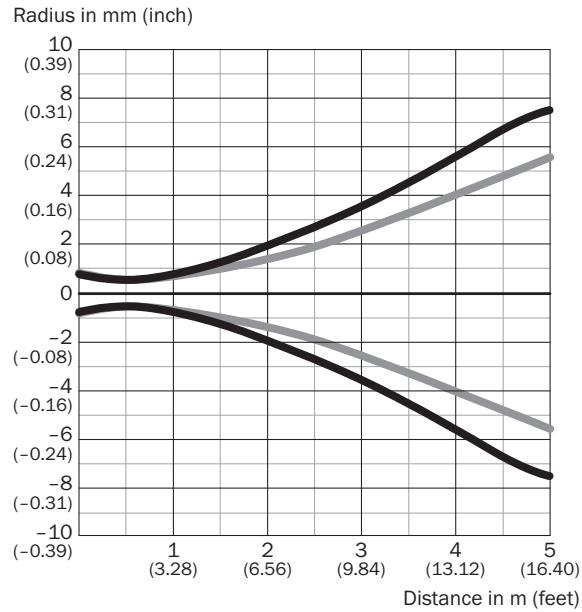
#### Dimensions in mm (inch)

Sensing range	Vertical	Horizontal
<b>0.5 m</b> (1.64 feet)	< 1.0 (0.04)	< 1.0 (0.04)
<b>1 m</b> (3.28 feet)	1.5 (0.06)	1.2 (0.05)
<b>5 m</b> (16.40 feet)	15 (0.59)	11 (0.43)
<b>10 m</b> (32.81 feet)	45 (1.77)	28 (1.10)
<b>60 m</b> (196.85 feet)	336 (13.23)	200 (7.87)

— Vertical  
 — Horizontal

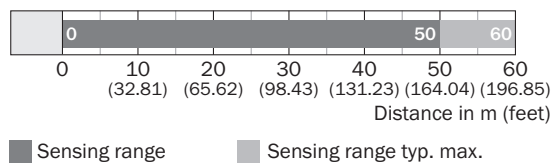
### Light spot size (detailed view)

Detailed view close range



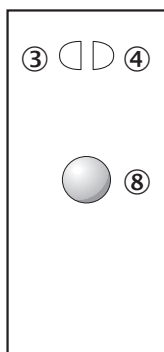
— Vertical  
 — Horizontal

### Sensing range diagram



### Adjustments

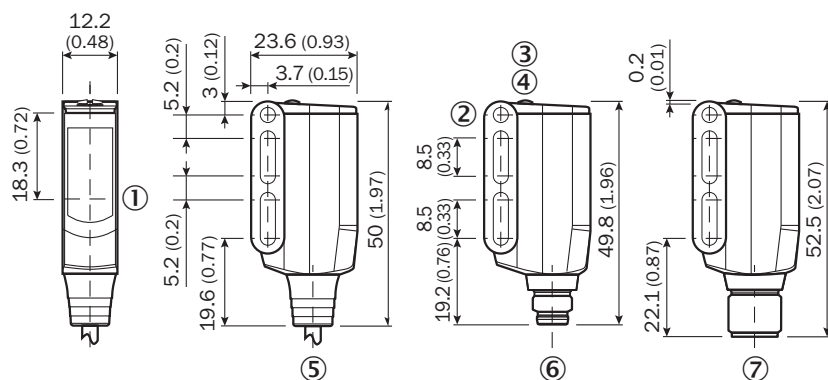
Single teach-in button



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

### Dimensional drawing (Dimensions in mm (inch))




WSE9L-3



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

### Recommended accessories

Other models and accessories → [www.sick.com/W9](http://www.sick.com/W9)

	Brief description	Type	Part no.
Mounting brackets and plates			
	Mounting bracket, steel, zinc coated, mounting hardware included	BEF-WN-W9-2	2022855
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

### Recommended services

Additional services → [www.sick.com/W9](http://www.sick.com/W9)

	Type	Part no.
Function Block Factory		
<ul style="list-style-type: none"> <li><b>Description:</b> The Function Block Factory supports common programmable logic controllers (PLCs) from various manufacturers, such as Siemens, Beckhoff, Rockwell Automation and B&amp;R. More information on the FBF can be found <a href="https://fbf.cloud.sick.com">here</a>.</li> </ul>	Function Block Factory	On request



## 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](http://www.sick.com)