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DATA SHEET

# WL12C-3P2432A70

W12
Photoelectric sensors

SICK Sensor Intelligence




Illustration may differ

# PHOTOELECTRIC SENSORS

# WL12C-3P2432A70

## ORDERING INFORMATION

| Type | part no. |
|---|---|
| WL12C-3P2432A70 | 1067775 |

Further device versions and accessories at www.sick.com/W12

## DETAILED TECHNICAL DATA

### FEATURES

| | |
|---|---|
| Functional principle | Photoelectric retro-reflective sensor |
| Functional principle detail | Without reflector minimum distance (autocollimation/coaxial optics) |
| Sensing range max. | 0 m ... 5 m [1] |
| Sensing range | 0 m ... 4 m [1] |
| Polarisation filter | Yes |
| Emitted beam | |
| Light source | PinPoint LED [2] |
| Type of light | Visible red light |
| Light spot size (distance) | Ø 100 mm (3 m) |
| Key LED figures | |
| Wave length | 640 nm |
| Adjustment | IO-Link, Single teach-in button |
| Angle of dispersion | Approx. 1.5° |
| Pin 2 configuration | External input, Teach-in input, Sender off input, Detection output, logic output, Device contamination alarm output |

[1] Reflector PL80A.

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

### SAFETY-RELATED PARAMETERS

| | |
|---|---|
| $MTTF_D$ | 891 years |
| $DC_{avg}$ | 0 % |
| $T_M$ (mission time) | 20 years |

## COMMUNICATION INTERFACE

| | |
|---|---|
| IO-Link | ✓ , 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 $Q_{L1}$<br>Bit 1 = switching signal $Q_{L2}$<br>Bit 2 ... 15 = measuring value |
| VendorID | 26 |
| DeviceID HEX | 0x8000EF |
| DeviceID DEC | 8388847 |
| Compatible master port type | A |
| SIO mode support | Yes |

## ELECTRONICS

| | |
|---|---|
| Supply voltage $U_B$ | 10 V DC ... 30 V DC [1] |
| Ripple | < 5 $V_{pp}$ [2] |
| Current consumption | 30 mA [3] |
| Protection class | III |
| Digital output | |
| Type | PNP [4] |
| Switching mode | Light/dark switching |
| Signal voltage PNP HIGH/LOW | > Uv - 2,5 V / ca. 0 V |
| Output current $I_{max.}$ | ≤ 100 mA |
| Response time | [5] |
| Repeatability (response time) | 100 µs [6] |
| Switching frequency | 1,500 Hz [7] |
| Circuit protection | A [8]<br>B [9]<br>C [10]<br>D [11] |
| Response time Q/ on Pin 2 | 200 µs ... 300 µs [5] [6] |
| Switching frequency Q / to pin 2 | ≤ 1,500 Hz [12] |

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

[2] May not fall below or exceed $U_v$ tolerances.

[3] Without load.

[4] Pin 4: This switching output must not be connected to another output.

[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] A = $V_s$ connections reverse-polarity protected.

[9] B = inputs and output reverse-polarity protected.

[10] C = interference suppression.

[11] D = outputs overcurrent and short-circuit protected.

[12] With light / dark ratio 1:1, valid for Q \ on Pin2, if configured with software.

## MECHANICS

| | |
|---|---|
| Housing | Rectangular |
| Dimensions (W x H x D) | 15.6 mm x 48.5 mm x 42 mm |

| | |
|---|---|
| Connection | Male connector M12, 4-pin |
| Material | |
| Housing | Metal, zinc diecast |
| Front screen | Plastic, PMMA |
| Weight | 120 g |

## AMBIENT DATA

| | |
|---|---|
| Enclosure rating | IP66<br>IP67 |
| 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 | Time measurement + debouncing |
| Logic function | Direct<br>WINDOW |
| Timer function | Deactivated<br>Switch-on delay<br>Off delay<br>ON and OFF delay<br>Impulse (one shot) |
| Inverter | Yes |
| Time measurement accuracy | SIO Direct: ---<br>SIO Logic: - 0,7 ... + 0,7 ms ± 0,5 % of time measurement value<br>IOL: - 0.9 ... + 0.9 ms ± 0.5% of the time measurement |
| Time measurement accuracy (e.g. accuracy for time measurement value = 1 s ) | SIO Direct: ---<br>SIO Logic: - 5,6 ... + 5,6 ms<br>IOL: - 5,9 ... + 5,9 ms |
| Resolution time measuring value | 1 ms |
| Min. Time between two process events (switches) | SIO Direct: ---<br>SIO Logic: 300 µs<br>IOL: 500 µs |
| Debounce time max. | SIO Direct: ---<br>SIO Logic: 30.000 ms<br>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 | Time measurement value |

## DIAGNOSIS

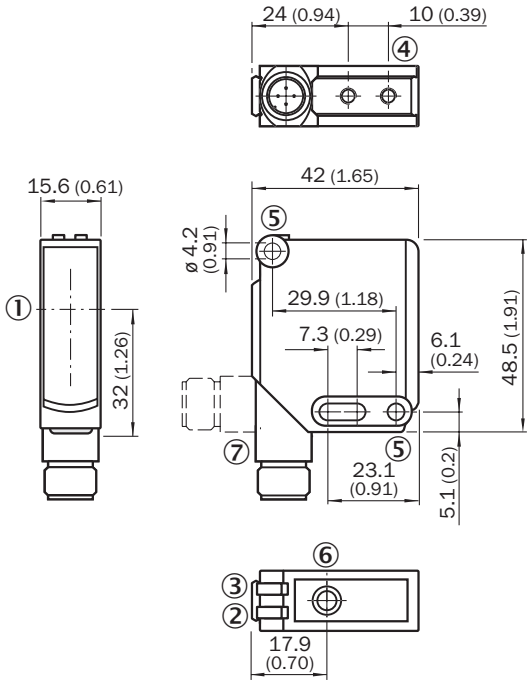
| | |
|---|---|
| Device status | Yes |
| Quality of teach | Yes |
| Quality of run | Yes, Contamination display |

## CERTIFICATES

| | |
|---|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |
| ACMA declaration of conformity | ✓ |
| Moroccan declaration of conformity | ✓ |
| China RoHS | ✓ |

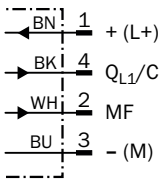
| | |
|---|---|
| China Compulsory Product Certification (CCC) exempt | ✓ |
| ECOLAB certificate | ✓ |
| cULus certificate | ✓ |
| IO-Link certificate | ✓ |
| Photobiological safety (DIN EN 62471) certificate | ✓ |
| Information according to Art. 3 of Data Act (Regulation EU 2023/2854) | ✓ |

## DIMENSIONAL DRAWING

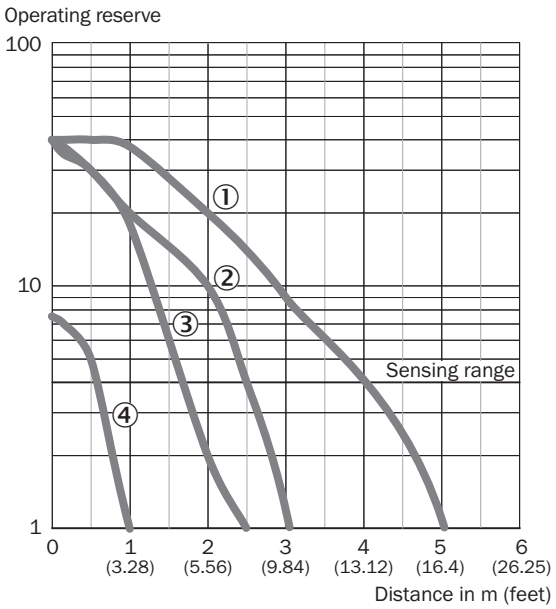



Dimensions in mm (inch)
① Optical axis
② LED indicator yellow: Status of received light beam
③ LED indicator green: Supply voltage active
④ M4 threaded mounting hole, 4 mm deep
⑤ Mounting hole, Ø 4.2 mm
⑥ Sensitivity setting: single teach-in button
⑦ Connection

## CONNECTION DIAGRAM CD-367

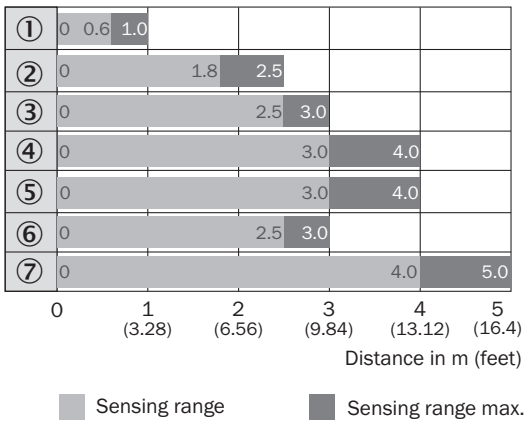


## CHARACTERISTIC CURVE




① Reflector PL80A
② Reflector C110A
③ Reflector PL20A
④ reflective tape

## SENSING RANGE DIAGRAM




① reflective tape
② Reflector PL20A
③ Reflector PL30A
④ Reflector PL40A
⑤ Reflector PL50A
⑥ Reflector C110A
⑦ Reflector PL80A

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1067775

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# SICK AT A GLANCE

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SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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