



# WL12GC-3P2472B01

## W12

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

| Type             | part no. |
|------------------|----------|
| WL12GC-3P2472B01 | 1070335  |

Other models and accessories → [www.sick.com/W12](http://www.sick.com/W12)

Detailed technical data

Features

|                                    |                            |                                                                                                                     |
|------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Functional principle</b>        |                            | Photoelectric retro-reflective sensor                                                                               |
| <b>Functional principle detail</b> |                            | Without reflector minimum distance (autocollimation/coaxial optics)                                                 |
| <b>Sensing range max.</b>          |                            | 0 m ... 4 m                                                                                                         |
| <b>Sensing range</b>               |                            | 0 m ... 4 m <sup>1)</sup>                                                                                           |
| <b>Polarisation filter</b>         |                            | Yes                                                                                                                 |
| <b>Emitted beam</b>                |                            |                                                                                                                     |
|                                    | Light source               | PinPoint LED <sup>2)</sup>                                                                                          |
|                                    | Type of light              | Visible red light                                                                                                   |
|                                    | Light spot size (distance) | Ø 25 mm (1.5 m)                                                                                                     |
| <b>Key LED figures</b>             |                            |                                                                                                                     |
|                                    | Wave length                | 660 nm                                                                                                              |
| <b>Adjustment</b>                  |                            | IO-Link, Single teach-in button                                                                                     |
| <b>Special features</b>            |                            | Functions compatible with WL12GC-3P2472A91                                                                          |
| <b>Special applications</b>        |                            | Detecting transparent objects                                                                                       |
| <b>Pin 2 configuration</b>         |                            | External input, Teach-in input, Sender off input, Detection output, logic output, Device contamination alarm output |
| <b>AutoAdapt</b>                   |                            | ✓                                                                                                                   |

<sup>1)</sup> Reflector PL80A.  
<sup>2)</sup> Average service life: 100,000 h at T<sub>U</sub> = +25 °C.

## Safety-related parameters

|                                     |           |
|-------------------------------------|-----------|
| <b>MTTF<sub>D</sub></b>             | 891 years |
| <b>DC<sub>avg</sub></b>             | 0 %       |
| <b>T<sub>M</sub> (mission time)</b> | 20 years  |

## Communication interface

|                        |                                                                                                                        |
|------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>IO-Link</b>         | ✓ , 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 <sub>L1</sub><br>Bit 1 = switching signal Q <sub>L2</sub><br>Bit 2 ... 15 = measuring value |
| VendorID               | 26                                                                                                                     |
| DeviceID HEX           | 0x8000F5                                                                                                               |
| DeviceID DEC           | 8388853                                                                                                                |

## Electronics

|                                     |                                                                           |
|-------------------------------------|---------------------------------------------------------------------------|
| <b>Supply voltage U<sub>B</sub></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>Protection class</b>             | III                                                                       |
| <b>Digital output</b>               |                                                                           |
| Type                                | PNP <sup>4)</sup>                                                         |
| Switching mode                      | Light/dark switching                                                      |
| Signal voltage PNP HIGH/LOW         | Approx. V <sub>S</sub> – 2.5 V / 0 V                                      |
| Output current I <sub>max.</sub>    | ≤ 100 mA                                                                  |
| Repeatability (response time)       | 100 μs <sup>5)</sup>                                                      |
| Switching frequency                 | 1,500 Hz <sup>6)</sup>                                                    |
| <b>Attenuation along light beam</b> | > 8 %                                                                     |
| <b>Circuit protection</b>           | A <sup>7)</sup><br>B <sup>8)</sup><br>C <sup>9)</sup><br>D <sup>10)</sup> |

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

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

<sup>3)</sup> Without load.

<sup>4)</sup> Pin 4: This switching output must not be connected to another output.

<sup>5)</sup> Valid for Q \ on Pin2, if configured with software.

<sup>6)</sup> With light/dark ratio 1:1.

<sup>7)</sup> A = V<sub>S</sub> connections reverse-polarity protected.

<sup>8)</sup> B = inputs and output reverse-polarity protected.

<sup>9)</sup> C = interference suppression.

<sup>10)</sup> D = outputs overcurrent and short-circuit protected.

<sup>11)</sup> Signal transit time with resistive load.

<sup>12)</sup> With light / dark ratio 1:1, valid for Q \ on Pin2, if configured with software.

|                                         |                                     |
|-----------------------------------------|-------------------------------------|
| <b>Response time Q/ on Pin 2</b>        | 200 µs ... 300 µs <sup>11) 5)</sup> |
| <b>Switching frequency Q / to pin 2</b> | ≤ 1,500 Hz <sup>12)</sup>           |
| <b>Special feature</b>                  | Detecting transparent objects       |

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

6) With light/dark ratio 1:1.

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

|                               |                           |
|-------------------------------|---------------------------|
| <b>Housing</b>                | Rectangular               |
| <b>Dimensions (W x H x D)</b> | 15.6 mm x 48.5 mm x 42 mm |
| <b>Connection</b>             | Male connector M12, 4-pin |
| <b>Material</b>               |                           |
| Housing                       | Metal, zinc diecast       |
| Front screen                  | Plastic, PMMA             |
| <b>Weight</b>                 | 120 g                     |

## Ambient data

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

## Smart Task

|                        |                                                                                           |
|------------------------|-------------------------------------------------------------------------------------------|
| <b>Smart Task name</b> | Timestamp + debouncing                                                                    |
| <b>Logic function</b>  | Direct<br>AND<br>OR<br>WINDOW<br>Hysteresis                                               |
| <b>Timer function</b>  | Deactivated<br>Switch-on delay<br>Off delay<br>ON and OFF delay<br>Impulse (one shot)     |
| <b>Inverter</b>        | Yes                                                                                       |
| <b>Response time</b>   | SIO Direct: 300 µs ... 450 µs <sup>1)</sup><br>SIO Logic: 550 µs ... 650 µs <sup>2)</sup> |

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.

|                                                        |                                                                                                                         |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Repeatability</b>                                   | IOL: --- <sup>3)</sup><br>SIO Direct: 150 µs <sup>1)</sup><br>SIO Logic: 150 µs <sup>2)</sup><br>IOL: --- <sup>3)</sup> |
| <b>Time stamp accuracy</b>                             | SIO Direct: ---<br>SIO Logic: ---<br>IOL: - 90 ... + 90 µs                                                              |
| <b>Min. Time between two process events (switches)</b> | SIO Direct: 450 µs<br>SIO Logic: 450 µs<br>IOL: 500 ms                                                                  |
| <b>Time stamp number buffer</b>                        | SIO Direct: ---<br>SIO Logic: ---<br>IOL: 8                                                                             |
| <b>Max. TimeStamp Range</b>                            | SIO Direct: ---<br>SIO Logic: ---<br>IOL: 260 ms                                                                        |
| <b>Debounce time max.</b>                              | SIO Direct: ---<br>SIO Logic: 52 ms<br>IOL: 52 ms                                                                       |
| <b>Switching signal</b>                                |                                                                                                                         |
| Switching signal Q <sub>L1</sub>                       | Switching output                                                                                                        |
| Switching signal Q <sub>L2</sub>                       | Switching output                                                                                                        |
| <b>Measuring value</b>                                 | Timestamp                                                                                                               |

<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.

## Diagnosis

|                         |                            |
|-------------------------|----------------------------|
| <b>Device status</b>    | Yes                        |
| <b>Quality of teach</b> | Yes                        |
| <b>Quality of run</b>   | Yes, Contamination display |

## Classifications

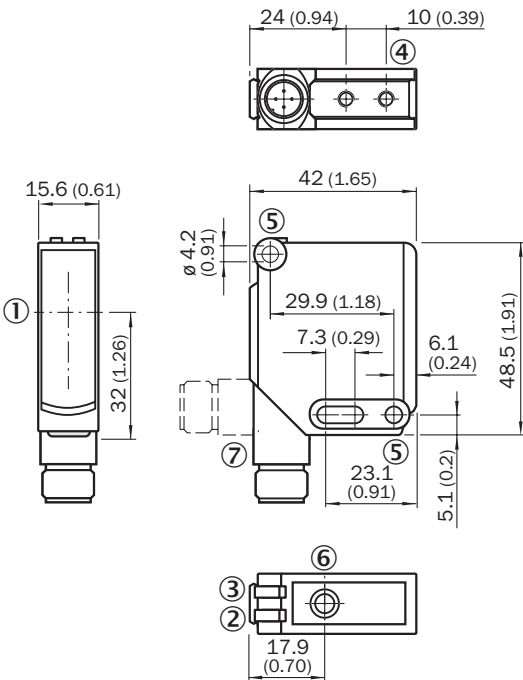
|                     |          |
|---------------------|----------|
| <b>ECLASS 5.0</b>   | 27270902 |
| <b>ECLASS 5.1.4</b> | 27270902 |
| <b>ECLASS 6.0</b>   | 27270902 |
| <b>ECLASS 6.2</b>   | 27270902 |
| <b>ECLASS 7.0</b>   | 27270902 |
| <b>ECLASS 8.0</b>   | 27270902 |
| <b>ECLASS 8.1</b>   | 27270902 |
| <b>ECLASS 9.0</b>   | 27270902 |
| <b>ECLASS 10.0</b>  | 27270902 |
| <b>ECLASS 11.0</b>  | 27270902 |
| <b>ECLASS 12.0</b>  | 27270902 |
| <b>ETIM 5.0</b>     | EC002717 |
| <b>ETIM 6.0</b>     | EC002717 |
| <b>ETIM 7.0</b>     | EC002717 |

|                       |          |
|-----------------------|----------|
| <b>ETIM 8.0</b>       | EC002717 |
| <b>UNSPSC 16.0901</b> | 39121528 |

Certificates

|                                                                              |   |
|------------------------------------------------------------------------------|---|
| <b>EU declaration of conformity</b>                                          | ✓ |
| <b>UK declaration of conformity</b>                                          | ✓ |
| <b>ACMA declaration of conformity</b>                                        | ✓ |
| <b>Moroccan declaration of conformity</b>                                    | ✓ |
| <b>China-RoHS</b>                                                            | ✓ |
| <b>ECOLAB certificate</b>                                                    | ✓ |
| <b>cULus certificate</b>                                                     | ✓ |
| <b>IO-Link</b>                                                               | ✓ |
| <b>Photobiological safety (DIN EN 62471) certificate</b>                     | ✓ |
| <b>Information according to Art. 3 of Data Act (Regulation EU 2023/2854)</b> | ✓ |

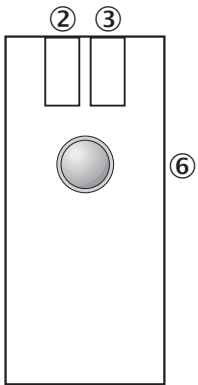
Dimensional drawing



Dimensions in mm (inch)

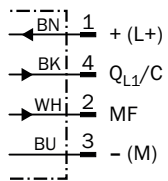
- ① Optical axis
- ② LED indicator yellow: Status of received light beam
- ③ LED indicator green: Supply voltage active
- ④ M4 threaded mounting hole, 4 mm deep
- ⑤ Mounting hole,  $\varnothing$  4.2 mm
- ⑥ Sensitivity setting: single teach-in button
- ⑦ Connection

## Adjustments Teach-in

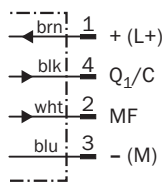


- ② LED indicator yellow: Status of received light beam
- ③ green LED indicator: power on, teach-in mode I
- ③ blue LED indicator: teach-in mode II
- ⑥ Single teach-in button,
- ⑥ function 1: teach-in sensitivity on reflector,
- ⑥ function 2: change operation/teach-in mode

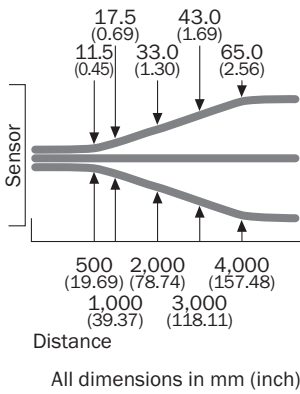
## Connection diagram Cd-367



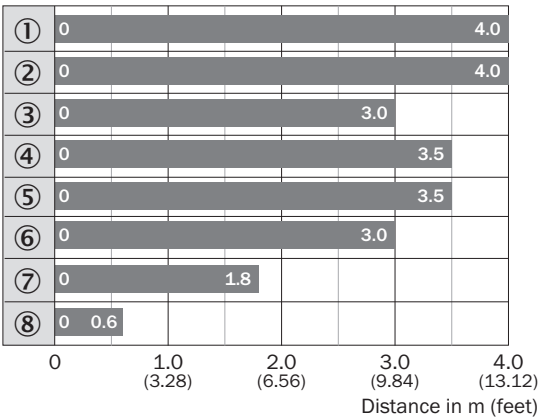
## Connection diagram Cd-273



Light spot size



Sensing range diagram WL12G-3



- Sensing range max.
- ① Reflector PL80A
  - ② Reflector C110A
  - ③ Reflector P250F
  - ④ Reflector PL50A
  - ⑤ Reflector PL40A
  - ⑥ Reflector PL30A
  - ⑦ Reflector PL20A
  - ⑧ Reflective tape REF-IRF-56

Functions

| Teach-in-Modus für Ob-<br>jekte /<br>Teach-in mode for objects | Lichtdämpfung /<br>Light attenuation | Objekttyp /<br>Object type                                | Teach-in-Zeit /<br>Teach-in time | Ext. Teach-in über Lei-<br>tung /<br>Ext. cable teach-in | Anzeige-LED /<br>LED indicator |
|----------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------------------------|----------------------------------------------------------|--------------------------------|
| I                                                              | 10 %                                 | PET-Flasche / Folie / Glas /<br>PET-Bottle / Foil / glass | 1 ... 5 s                        | 30 ... 100 ms                                            | grün / green                   |
| II                                                             | 18 %                                 | Farbglasflaschen/<br>Colored glass bottles                | 5 ... 10 s                       | 100 ... 200 ms                                           | blau / blue                    |



## Recommended accessories

Other models and accessories → [www.sick.com/W12](http://www.sick.com/W12)

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Type               | part no. |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
| Mounting systems                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |          |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Universal mounting bracket for reflectors</li> <li><b>Dimensions (W x H x L):</b> 85 mm x 90 mm x 35 mm</li> <li><b>Material:</b> Steel</li> <li><b>Details:</b> Steel, zinc coated</li> <li><b>Suitable for:</b> C110A, P250, PL20, PL30A, PL40A, PL80A</li> </ul>                                                                                                                                               | BEF-WN-REFX        | 2064574  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket, large</li> <li><b>Material:</b> Stainless steel</li> <li><b>Details:</b> Stainless steel</li> <li><b>Items supplied:</b> Mounting hardware included</li> <li><b>Suitable for:</b> W11-2, W12-3, W16</li> </ul>                                                                                                                                                                                  | BEF-WG-W12         | 2013942  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Plate N11N for universal clamp bracket</li> <li><b>Material:</b> Stainless steel</li> <li><b>Details:</b> Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp)</li> <li><b>Items supplied:</b> Universal clamp (5322627), mounting hardware</li> <li><b>Usable for:</b> DeltaPac, Glare, WTD20E</li> </ul>                                                                                              | BEF-KHS-N11N       | 2071081  |
| reflectors and optics                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |          |
|   | <ul style="list-style-type: none"> <li><b>Description:</b> Fine triple reflector, screw connection, suitable for laser sensors</li> <li><b>Dimensions:</b> 52 mm 62 mm</li> <li><b>Ambient operating temperature:</b> -30 °C ... +65 °C</li> </ul>                                                                                                                                                                                                                           | P250F              | 5308843  |
| connectors and cables                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |          |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>                                                      | YF2A14-050VB3XLEAX | 2096235  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li><b>Description:</b> Unshielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm²</li> </ul>                                                                                                                                                                                          | STE-1204-G         | 6009932  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul> | 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](http://www.sick.com)