



Photoelectric sensors  
W12-3, Photoelectric retro-reflective sensor,  
autocollimation

WL12-3P2451



**Model Name** > [WL12-3P2451](#)  
**Part No.** > [1041448](#)



*Illustration may differ*

**At a glance**

- Retro-reflective with autocollimation principle
- Rugged housing designed to withstands harsh environments
- PinPoint LED technology with highly visible light spot
- Rugged die-cast zinc housing, optional Teflon® coating
- Dovetail mounting - mounting holes and oblong holes
- Highly visible status LEDs
- Sensing range adjustment via potentiometer

**Your benefits**

High immunity to ambient light and crosstalk ensures fewer false readings and less downtime

Quick and easy setup due to highly visible PinPoint LED light spot

Highly visible status LEDs simplify sensitivity adjustments and reduce installation time

Rugged metal housing (optional Teflon® coating available) requires fewer maintenance costs due to its resistance to high-pressure cleaning

Increased reliability in harsh wash down environments

Easy installation using SICK accessories



**Features**

|                                  |  |
|----------------------------------|--|
| Sensor/detection principle:      | Photoelectric retro-reflective sensor, autocollimation |
| Dimensions (W x H x D):          | 15.6 mm x 48.5 mm x 42 mm                              |
| Housing design (light emission): | Rectangular  |
| Sensing range max.:              | 0 m ... 2 m <sup>1)</sup>                              |
| Sensing range:                   | 0 m ... 1 m <sup>2)</sup>                              |
| Type of light:                   | Visible red light                                      |
| Light source:                    | LED <sup>3)</sup>                                      |
| Wave length:                     | 640 nm   |
| Angle of dispersion:             | Ca. 5 °  |
| Adjustment:                      | Potentiometer, 5 turns                                 |
| Light spot size (distance):      | Ø 2 mm (90 mm)   |

<sup>1) 2)</sup> PL80A <sup>3)</sup> Average service life of 100,000 h at T<sub>A</sub> = +25 °C

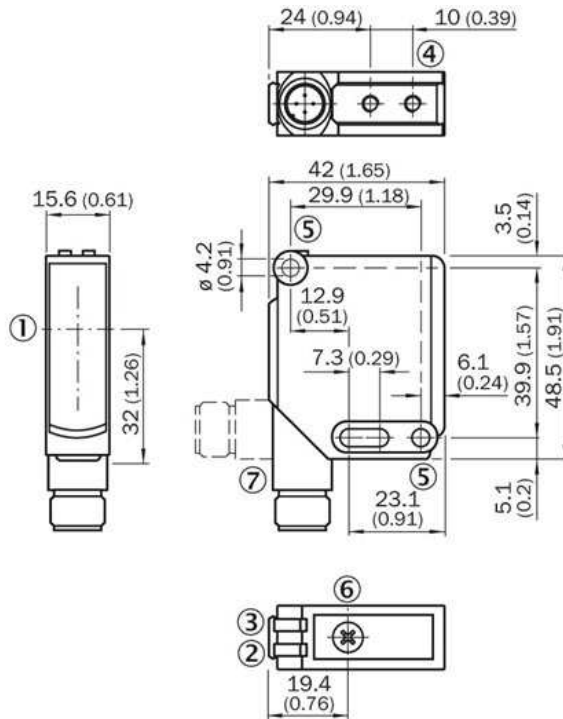
## Mechanics/electronics

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|                                    |   |
|------------------------------------|---|
| Supply voltage:                    | 10 V DC ... 30 V DC <sup>1)</sup>                 |
| Ripple:                            | $\leq 5 \text{ Vpp}$ <sup>2)</sup>                |
| Power consumption:                 | $\leq 30 \text{ mA}$ <sup>3)</sup>                |
| Output type:                       | PNP   |
| Output function:                   | Complementary                                     |
| Switching mode:                    | Light/dark switching                              |
| Signal voltage PNP HIGH/LOW:       | $> U_v - 2,5 \text{ V} / \text{ca. } 0 \text{ V}$ |
| Output current I <sub>max.</sub> : | 100 mA <sup>4)</sup>                              |
| Response time:                     | $\leq 330 \mu\text{s}$ <sup>5)</sup>              |
| Switching frequency:               | 1,500 Hz <sup>5)</sup>                            |
| Connection type:                   | Connector M12, 4-pin                              |
| Circuit protection:::              | A, C, D <sup>6) 7) 8)</sup>                       |
| Protection class:                  | II  |
| Weight:                            | 120 g   |
| Polarisation filter:               | ✓   |
| Housing material:                  | Metal   |
| Enclosure rating:                  | IP 66<br>IP 67<br>IP 69K                          |
| Special feature:                   | Focused optics                                    |
| Ambient operating temperature:     | -40 °C ... 60 °C                                  |
| Ambient storage temperature:       | -40 °C ... 75 °C                                  |
| UL File No.:                       | NRKH.E181493 & NRKH7.E181493                      |

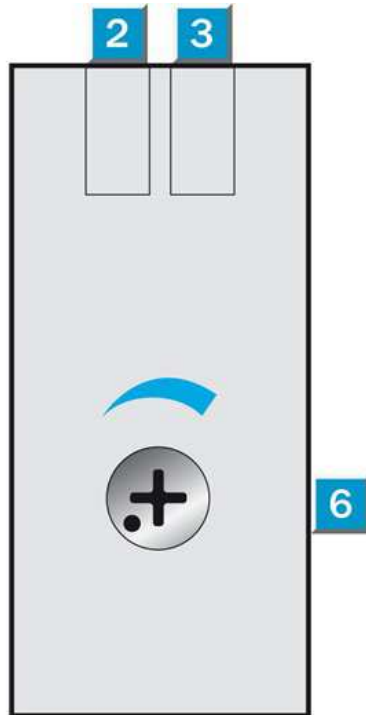
<sup>1)</sup> Limit values, operation in short-circuit protected network max. 8 A <sup>2)</sup> May not exceed or fall short of  $V_S$  tolerances <sup>3)</sup> Without load <sup>4)</sup> Signal transit time with resistive load <sup>5)</sup> With light/dark ratio 1:1 <sup>6)</sup> A =  $V_S$  connections reverse-polarity protected <sup>7)</sup> C = interference suppression <sup>8)</sup> D = outputs overcurrent and short-circuit protected

## Dimensional drawing



- |1| Optical axis
- |2| LED indicator yellow: Light received
- |3| Green LED indicator: supply voltage active
- |4| M4 threaded mounting hole, 4 mm deep
- |5| Mounting hole,  $\varnothing$  4.2 mm
- |6| Sensitivity adjustment: poti
- |7| Connection

## Adjustments possible

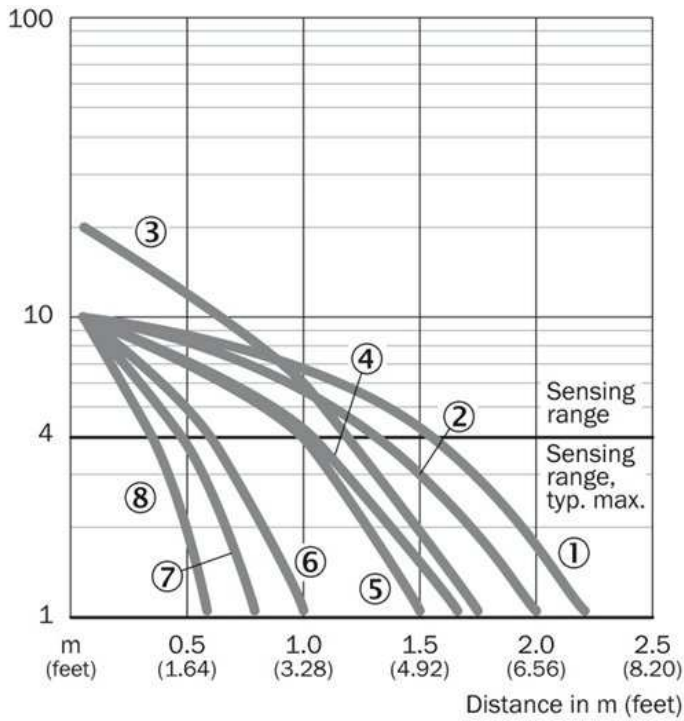


- |2| LED indicator yellow: Light received
- |3| Green LED indicator: supply voltage active
- |6| Sensitivity adjustment: poti

Connection diagram

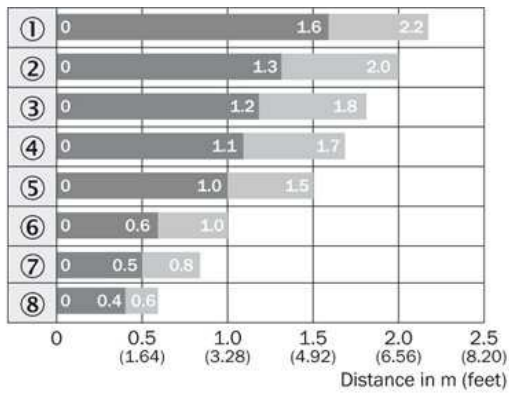


Characteristic curve



- |1| Reflector type C110A
- |2| Reflector type PL80A
- |3| Reflector type P205
- |4| Reflector type PL50A
- |5| Reflector type PL40A
- |6| Reflector type PL30A
- |7| Reflector type PL20A
- |8| Reflector type DG/IRF6000

## Sensing range diagram



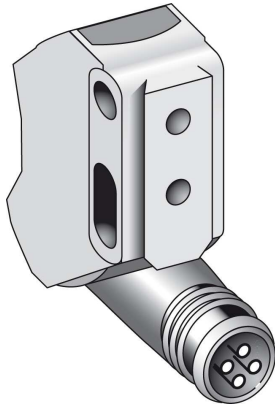
■ Sensing range      ■ Sensing range typ. max.

### Reflector type

- ① C110A
- ② PL80A
- ③ P250F
- ④ PL50A
- ⑤ PL40A
- ⑥ C30A
- ⑦ P20A
- ⑧ Reflective tape Diamond Grade

- |1| C110A
- |2| PL80A
- |3| P250F
- |4| PL50A
- |5| PL40A
- |6| C30A
- |7| PL20A
- |8| Reflective tape Diamond Grade

## Connection type



**Australia**

Phone +61 3 9457 0600  
1800 33 48 02 – tollfree  
E-Mail sales@sick.com.au

**Belgium/Luxembourg**

Phone +32 (0)2 466 55 66  
E-Mail info@sick.be

**Brasil**

Phone +55 11 3215-4900  
E-Mail marketing@sick.com.br

**Canada**

Phone +1 905 771 14 44  
E-Mail information@sick.com

**Česká republika**

Phone +420 2 57 91 18 50  
E-Mail sick@sick.cz

**China**

Phone +86 4000 121 000  
E-Mail info.china@sick.net.cn  
Phone +852-2153 6300  
E-Mail ghk@sick.com.hk

**Danmark**

Phone +45 45 82 64 00  
E-Mail sick@sick.dk

**Deutschland**

Phone +49 211 5301-301  
E-Mail info@sick.de

**España**

Phone +34 93 480 31 00  
E-Mail info@sick.es

**France**

Phone +33 1 64 62 35 00  
E-Mail info@sick.fr

**Great Britain**

Phone +44 (0)1727 831121  
E-Mail info@sick.co.uk

**India**

Phone +91-22-4033 8333  
E-Mail info@sick-india.com

**Israel**

Phone +972-4-6881000  
E-Mail info@sick-sensors.com

**Italia**

Phone +39 02 27 43 41  
E-Mail info@sick.it

**Japan**

Phone +81 (0)3 5309 2112  
E-Mail support@sick.jp

**Magyarország**

Phone +36 1 371 2680  
E-Mail office@sick.hu

**Nederland**

Phone +31 (0)30 229 25 44  
E-Mail info@sick.nl

**Norge**

Phone +47 67 81 50 00  
E-Mail sick@sick.no

**Österreich**

Phone +43 (0)22 36 62 28 8-0  
E-Mail office@sick.at

**Polska**

Phone +48 22 837 40 50  
E-Mail info@sick.pl

**România**

Phone +40 356 171 120  
E-Mail office@sick.ro

**Russia**

Phone +7-495-775-05-30  
E-Mail info@sick.ru

**Schweiz**

Phone +41 41 619 29 39  
E-Mail contact@sick.ch

**Singapore**

Phone +65 6744 3732  
E-Mail sales.gsg@sick.com

**Slovenija**

Phone +386 (0)1-47 69 990  
E-Mail office@sick.si

**South Africa**

Phone +27 11 472 3733  
E-Mail info@sickautomation.co.za

**South Korea**

Phone +82 2 786 6321/4  
E-Mail info@sickkorea.net

**Suomi**

Phone +358-9-25 15 800  
E-Mail sick@sick.fi

**Sverige**

Phone +46 10 110 10 00  
E-Mail info@sick.se

**Taiwan**

Phone +886 2 2375-6288  
E-Mail sales@sick.com.tw

**Türkiye**

Phone +90 (216) 528 50 00  
E-Mail info@sick.com.tr

**United Arab Emirates**

Phone +971 (0) 4 88 65 878  
E-Mail info@sick.ae

**USA/México**

Phone +1(952) 941-6780  
1 (800) 325-7425 – tollfree  
E-Mail info@sickusa.com

More representatives and agencies  
at [www.sick.com](http://www.sick.com)