

W 12-2: Fantastic performance - years of experience



New: - IP 69K
- ECOLAB material resistance tests

| | |
|--|--|
| | FGS Photoelectric proximity switch |
| | BGS Photoelectric proximity switch |
| | Energ. Photoelectric proximity switch |



The WL 12 G "glass photoelectric switch" designed for filling systems used in the beverage industry, represents more than just a technical advance. This intelligent sensor needs to be configured just once using the teach-in method and then it is able to adapt its switching threshold to increasing contamination continuously and fully automatically during operation. As a result, transparent objects, e.g. transparent films or filled PET mineral water bottles, can now be detected much more reliably.

Continual cleaning and realignment are, therefore, a thing of the past. Monitoring the flow of bottles, and bottle counting, has been made possible while simultaneously minimising maintenance requirements.

Further advantages:

- The Teflon-coated version for use in, for example, the beverage industry.
- IP 69K assures reliable operation even when high pressure cleaning equipment is being used.
- The Series W 12-2 sensors fulfil the test requirements of



ECOLAB certifies that material resistance tests with cleaning agents and disinfectants in common use in the food-processing sector, were successfully completed.

| | |
|--|---|
| | Photoelectric reflex switch |
| | Through-beam photoelectric switch |
| | Proximity switch with fibre optic cables |

The W 12-2 series of photoelectric switches is in use all over the world. The key advantage for the user is the wealth of experience gained from the previous W 12 series. The W 12-2 series is backed by years of know-how gained from many thousands of applications.

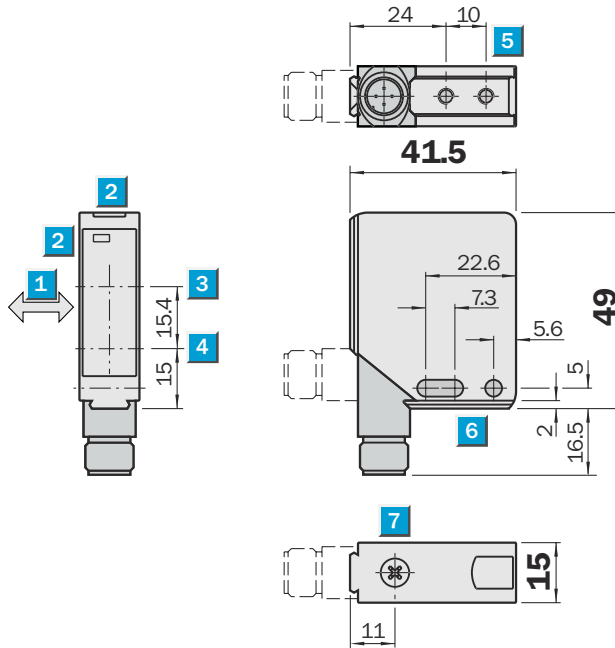
A sturdy metal housing protects the WT 12-2 photoelectric proximity switch, the WL 12-2 photoelectric reflex switch and the WS/WE 12-2 through-beam photoelectric switch. Rotatable plugs provide flexibility of location and cable installation. Features such as foreground and background suppression, AS-Interface, fibre-optic cable versions, insensitivity to ambient light and mutual interference when units are installed close together, are all device standards.

Scanning distance
35 ... 100 mm

Photoelectric proximity switch

- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°, or 2 m cable
- Adjustable foreground suppression; ideal for applications with critical surfaces

Dimensional drawing



Adjustments possible

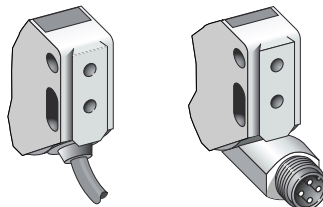


- Standard direction of the material being scanned
- LED signal strength indicator
- Receiver's optical axis
- Transmitter's optical axis
- M4 threaded mounting hole - 4 mm deep
- Mounting holes \varnothing 4.2 mm
- Scanning distance adjustment

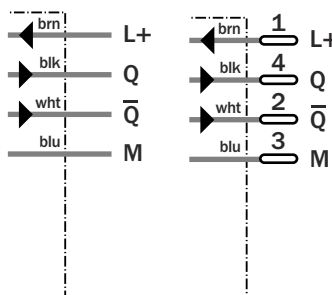


Connection type

| | |
|------------|------------|
| WT12-2N140 | WT12-2N440 |
| WT12-2P140 | WT12-2P440 |



| | |
|--------------------------|------------|
| 4 x 0.25 mm ² | M12, 4-pin |
|--------------------------|------------|



Accessories

| |
|-----------------------|
| Connector, M12, 4-pin |
| Mounting systems |

| WT12-2 | | N140 | N440 | P140 | P440 |
|--------------------------------------|---|------|------|------|------|
| Operating distance | 35 ... 100 mm | | | | |
| Light source, light type | LED, Red light ¹⁾ | | | | |
| Light spot diameter | 3 x 3 mm at 60 mm distance | | | | |
| Supply voltage V_s | DC 10 ... 30 V ²⁾ | | | | |
| Ripple | ≤ 5 V _{ss} ³⁾ | | | | |
| Power consumption | ≤ 40 mA ⁴⁾ | | | | |
| | ≤ 30 mA ⁴⁾ | | | | |
| Switching outputs | NPN antivalent | | | | |
| | PNP antivalent | | | | |
| Output current I _a max | ≤ 100 mA | | | | |
| Response time | ≤ 330 μs ⁵⁾ | | | | |
| Switching frequency | 1,500 Hz ⁶⁾ | | | | |
| Connection type | Cable, 2 m ⁷⁾ | | | | |
| | Connector, M12, 4-pin | | | | |
| VDE protection class | □ ⁸⁾ | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | |
| Enclosure rating | IP 69K | | | | |
| Ambient temperature operation | -40 °C ... +60 °C | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | |
| Weight | Ca. 200 g | | | | |
| | Ca. 120 g | | | | |
| Housing material | Zinc die-cast ⁹⁾ | | | | |

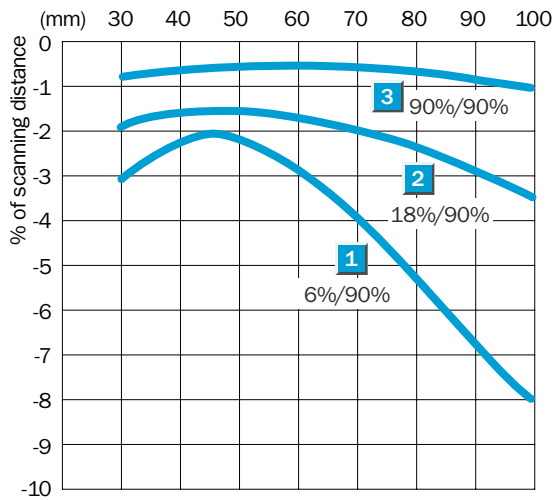
¹⁾ Average service life 100,000 h at T_a = +25 °C
²⁾ Limit values

³⁾ May not exceed or fall short of V_s tolerances
⁴⁾ Without load

⁵⁾ Signal transit time with resistive load
⁶⁾ With light/dark ratio 1:1
⁷⁾ Do not bend below 0 °C

⁸⁾ Reference voltage 50 V DC
⁹⁾ Teflon-coated housing available on request

Scanning distance



Ordering information

| Type | Order No. |
|------------|-----------|
| WT12-2N140 | 1 016 145 |
| WT12-2N440 | 1 016 146 |
| WT12-2P140 | 1 016 148 |
| WT12-2P440 | 1 016 150 |

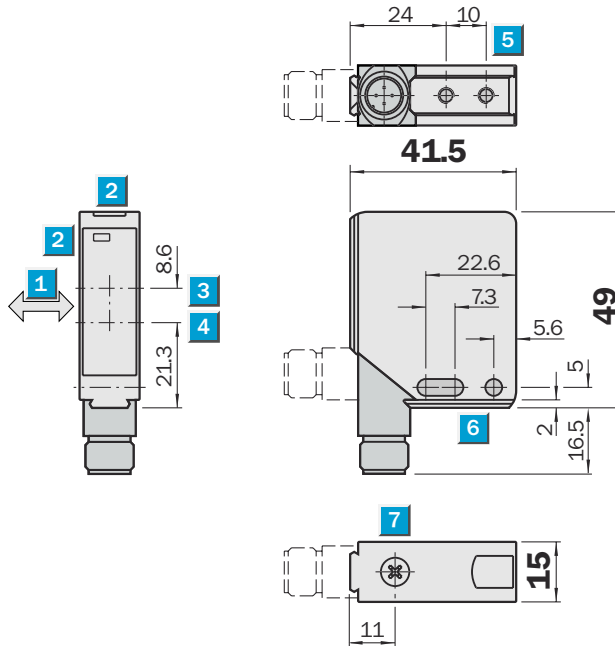
Photoelectric proximity switch, WT 12-2, BGS, red light - DC

Scanning distance
20 ... 250 mm

Photoelectric proximity switch

- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°, or 2 m/5 m cable
- Adjustable background suppression

Dimensional drawing



Adjustments possible

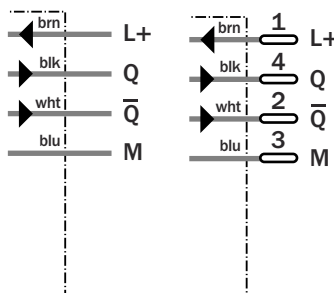
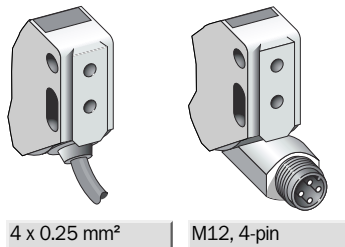


- Standard direction of the material being scanned
- LED signal strength indicator
- Receiver's optical axis
- Transmitter's optical axis
- M4 threaded mounting hole - 4 mm deep
- Mounting holes \varnothing 4.2 mm
- Scanning distance adjustment



Connection type

| | |
|------------|------------|
| WT12-2N130 | WT12-2N430 |
| WT12-2P130 | WT12-2P430 |
| WT12-2P830 | |



Accessories

| |
|-----------------------|
| Connector, M12, 4-pin |
| Mounting systems |

| WT12-2 | | N130 | N430 | N830 | P130 | P430 | P830 | | | | |
|--------------------------------------|---|------|------|------|------|------|------|--|--|--|--|
| Operating distance | 20 ... 250 mm | | | | | | | | | | |
| Adjustment of operating distance | Potentiometer | | | | | | | | | | |
| Light source, light type | LED, Red light ¹⁾ | | | | | | | | | | |
| Light spot diameter | 10 mm at 200 mm distance | | | | | | | | | | |
| | 10 mm | | | | | | | | | | |
| Supply voltage V_s | DC 10 ... 30 V ²⁾ | | | | | | | | | | |
| Ripple | ≤ 5 V _{SS} ³⁾ | | | | | | | | | | |
| Power consumption | ≤ 40 mA ⁴⁾ | | | | | | | | | | |
| | ≤ 30 mA ⁴⁾ | | | | | | | | | | |
| Switching outputs | NPN antivalent | | | | | | | | | | |
| | PNP antivalent | | | | | | | | | | |
| Output current I _a max | ≤ 100 mA | | | | | | | | | | |
| Response time | ≤ 330 μs ⁵⁾ | | | | | | | | | | |
| Switching frequency | 1,500 Hz ⁶⁾ | | | | | | | | | | |
| Connection type | Cable, PVC, 2 m ⁷⁾ | | | | | | | | | | |
| | Connector, M12, 4-pin | | | | | | | | | | |
| | Cable, PVC, 5 m ⁷⁾ | | | | | | | | | | |
| VDE protection class | □ ⁸⁾ | | | | | | | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | | | | | | | |
| | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression / Outputs overcurrent and short-circuit protected | | | | | | | | | | |
| Enclosure rating | IP 69K | | | | | | | | | | |
| Ambient temperature operation | -40 °C ... +60 °C | | | | | | | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | | | | | | | |
| Weight | Ca. 200 g | | | | | | | | | | |
| | Ca. 120 g | | | | | | | | | | |
| | Ca. 280 g | | | | | | | | | | |
| Housing material | Zinc die-cast ⁹⁾ | | | | | | | | | | |

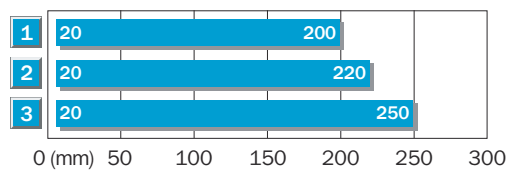
¹⁾ Average service life 100,000 h at T_a = +25 °C
²⁾ Limit values

³⁾ May not exceed or fall short of V_s tolerances
⁴⁾ Without load

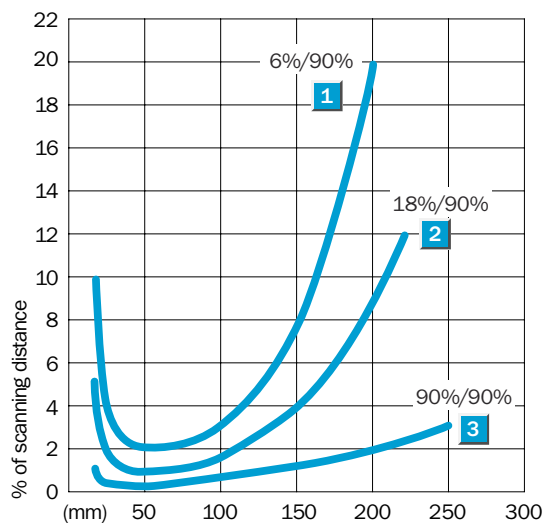
⁵⁾ Signal transit time with resistive load
⁶⁾ With light/dark ratio 1:1
⁷⁾ Do not bend below 0 °C

⁸⁾ Reference voltage 50 V DC
⁹⁾ Teflon-coated housing available on request

Scanning distance



- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission



| Ordering information | |
|----------------------|-----------|
| Type | Order No. |
| WT12-2N130 | 1 016 122 |
| WT12-2N430 | 1 016 125 |
| WT12-2N830 | 1 016 123 |
| WT12-2P130 | 1 016 129 |
| WT12-2P430 | 1 016 134 |
| WT12-2P830 | 1 016 130 |

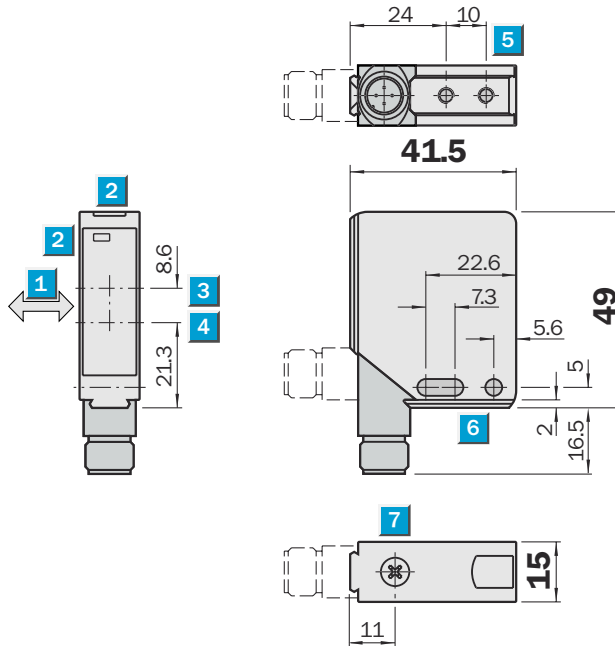
Scanning distance
20 ... 250 mm

Photoelectric proximity switch

- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°
- With integrated AS-i chip
- Adjustable background suppression



Dimensional drawing



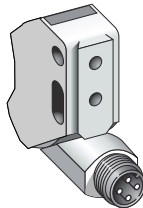
Adjustments possible



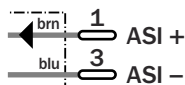
- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Receiver's optical axis
- 4 Transmitter's optical axis
- 5 M4 threaded mounting hole - 4 mm deep
- 6 Mounting holes \varnothing 4.2 mm
- 7 Scanning distance adjustment

Connection type

WT12-2Z430



M12, 4-pin



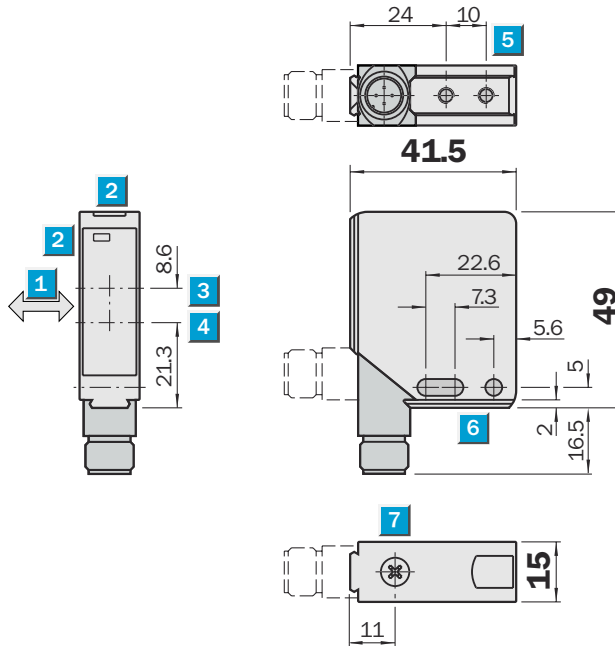
| |
|-----------------------|
| Accessories |
| Connector, M12, 4-pin |
| Mounting systems |

Scanning distance
20 ... 250 mm

Photoelectric proximity switch

- Infrared
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°, or 2 m/3 m cable
- Adjustable background suppression

Dimensional drawing



Adjustments possible

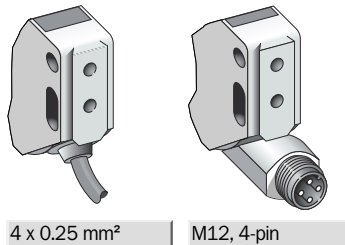


- 1 Standard direction of the material being scanned
- 2 LED signal strength indicator
- 3 Receiver's optical axis
- 4 Transmitter's optical axis
- 5 M4 threaded mounting hole - 4 mm deep
- 6 Mounting holes Ø 4.2 mm
- 7 Scanning distance adjustment



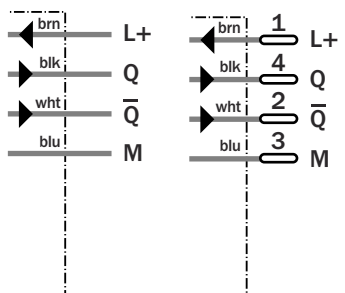
Connection type

| | |
|------------|------------|
| WT12-2N110 | WT12-2N410 |
| WT12-2N710 | WT12-2P410 |
| WT12-2P110 | |
| WT12-2P710 | |



Accessories

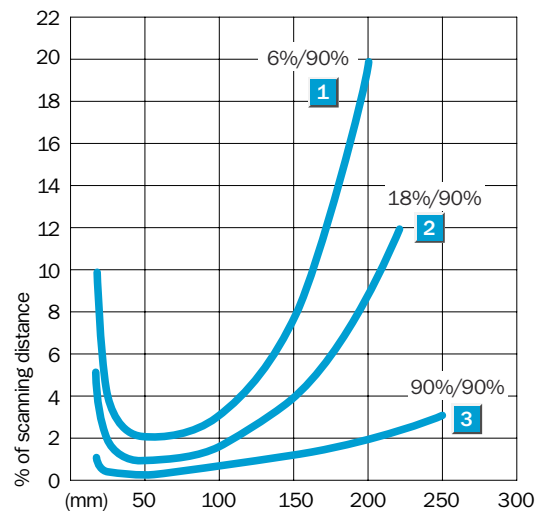
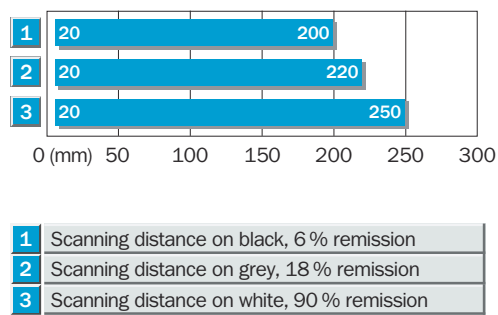
| |
|-----------------------|
| Connector, M12, 4-pin |
| Mounting systems |



| WT12-2 | | N110 | N410 | N710 | P110 | P410 | P710 | | | | |
|--------------------------------------|---|------|------|------|------|------|------|--|--|--|--|
| Operating distance | 20 ... 250 mm | | | | | | | | | | |
| Adjustment of operating distance | Potentiometer | | | | | | | | | | |
| Light source, light type | LED, Infrared light ¹⁾ | | | | | | | | | | |
| Light spot diameter | 10 mm ar 200 mm distance | | | | | | | | | | |
| | 10 mm at 200 mm distance | | | | | | | | | | |
| Supply voltage V_s | DC 10 ... 30 V ²⁾ | | | | | | | | | | |
| | 10 30 ²⁾ | | | | | | | | | | |
| Ripple | ≤ 5 V _{SS} ³⁾ | | | | | | | | | | |
| Power consumption | ≤ 50 mA ⁴⁾ | | | | | | | | | | |
| | ≤ 40 mA ⁴⁾ | | | | | | | | | | |
| Switching outputs | NPN antivalent | | | | | | | | | | |
| | PNP antivalent | | | | | | | | | | |
| Output current I _a max | ≤ 100 mA | | | | | | | | | | |
| Response time | ≤ 330 μs ⁵⁾ | | | | | | | | | | |
| Switching frequency | 1,500 Hz ⁶⁾ | | | | | | | | | | |
| Connection type | Cable, PVC, 2 m ⁷⁾ | | | | | | | | | | |
| | Connector, M12, 4-pin | | | | | | | | | | |
| | Cable, PVC, 3 m ⁷⁾ | | | | | | | | | | |
| VDE protection class | □ ⁸⁾ | | | | | | | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | | | | | | | |
| | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression / Outputs overcurrent and short-circuit protected | | | | | | | | | | |
| Enclosure rating | IP 69K | | | | | | | | | | |
| Ambient temperature operation | -40 °C ... +60 °C | | | | | | | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | | | | | | | |
| Weight | Ca. 200 g | | | | | | | | | | |
| | Ca. 120 g | | | | | | | | | | |
| | Ca. 250 g | | | | | | | | | | |
| Housing material | Zinc die-cast ⁹⁾ | | | | | | | | | | |

1) Average service life 100,000 h at T_a = +25 °C
 2) Limit values
 3) May not exceed or fall short of V_s tolerances
 4) Without load
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Do not bend below 0 °C
 8) Reference voltage 50 V DC
 9) Teflon-coated housing available on request

Scanning distance



| Ordering information | |
|----------------------|-----------|
| Type | Order No. |
| WT12-2N110 | 1 016 118 |
| WT12-2N410 | 1 016 124 |
| WT12-2N710 | 1 016 121 |
| WT12-2P110 | 1 016 126 |
| WT12-2P410 | 1 016 131 |
| WT12-2P710 | 1 016 128 |

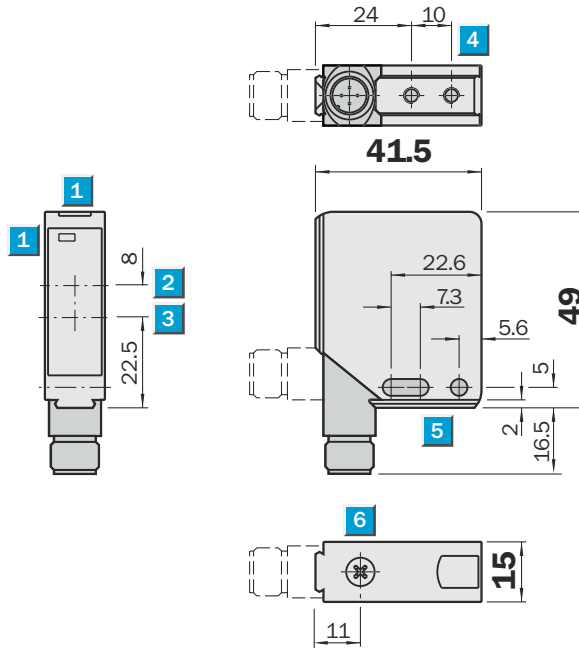
Photoelectric proximity switch, WT 12-2, energetic, red light - DC

Scanning distance
10 ... 1,000 mm

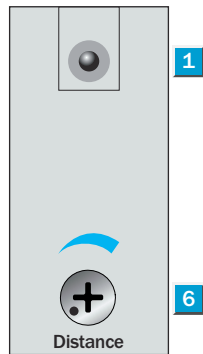
Photoelectric proximity switch

- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°, or 2 m cable
- Energetic proximity switch, scanning distance adjustable; ideal for standard applications

Dimensional drawing



Adjustments possible

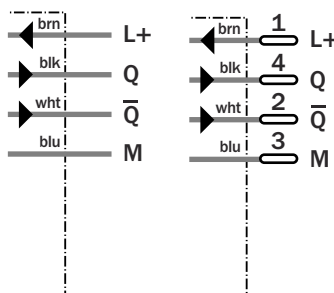
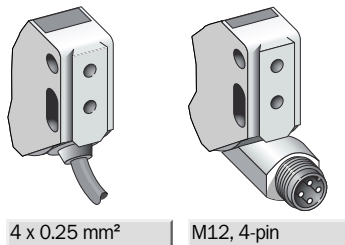


- 1 LED signal strength indicator
- 2 Receiver's optical axis
- 3 Transmitter's optical axis
- 4 M4 threaded mounting hole - 4 mm deep
- 5 Mounting holes \varnothing 4.2 mm
- 6 Scanning distance adjustment



Connection type

| | |
|------------|------------|
| WT12-2N150 | WT12-2N450 |
| WT12-2P150 | WT12-2P450 |



Accessories

| |
|-----------------------|
| Connector, M12, 4-pin |
| Mounting systems |

| WT12-2 | | N150 | N450 | P150 | P450 |
|--------------------------------------|---|------|------|------|------|
| Scanning distance typ. max. | 10 ... 1,000 mm | | | | |
| Operating distance | 80 ... 800 mm | | | | |
| Adjustment of operating distance | Potentiometer | | | | |
| Light source, light type | LED, Red light ¹⁾ | | | | |
| Light spot diameter | 30 mm at 600 mm distance | | | | |
| Supply voltage V_s | DC 10 ... 30 V ²⁾ | | | | |
| Ripple | ≤ 5 V _{SS} ³⁾ | | | | |
| Power consumption | ≤ 40 mA ⁴⁾ | | | | |
| | ≤ 30 mA ⁴⁾ | | | | |
| Switching outputs | NPN antivalent | | | | |
| | PNP antivalent | | | | |
| Output current I _a max | ≤ 100 mA | | | | |
| Response time | ≤ 330 μs ⁵⁾ | | | | |
| Switching frequency | 1,500 Hz ⁶⁾ | | | | |
| Connection type | Cable, 2 m ⁷⁾ | | | | |
| | Connector, M12, 4-pin | | | | |
| VDE protection class | □ ⁸⁾ | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | |
| Enclosure rating | IP 69K | | | | |
| Ambient temperature operation | -40 °C ... +60 °C | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | |
| Weight | Ca. 200 g | | | | |
| | Ca. 120 g | | | | |
| Housing material | Zinc die-cast ⁹⁾ | | | | |

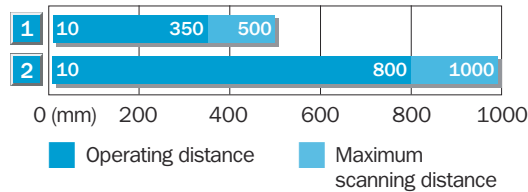
¹⁾ Average service life 100,000 h at T_a = +25 °C
²⁾ Limit values

³⁾ May not exceed or fall short of V_s tolerances
⁴⁾ Without load

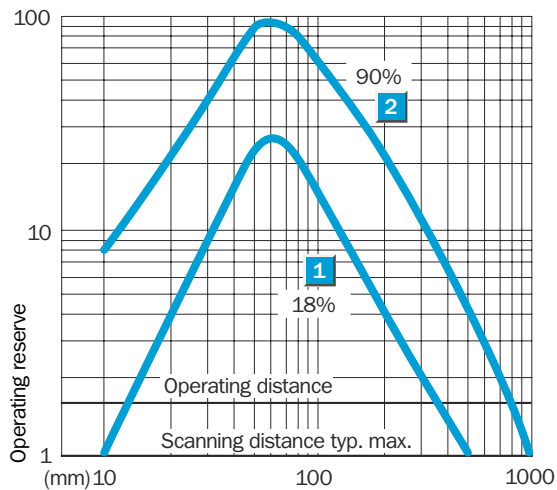
⁵⁾ Signal transit time with resistive load
⁶⁾ With light/dark ratio 1:1
⁷⁾ Do not bend below 0 °C

⁸⁾ Reference voltage 50 V DC
⁹⁾ Teflon-coated housing available on request

Scanning distance



- 1 Scanning distance on grey, 18 % remission
- 2 Scanning distance on white, 90 % remission



Ordering information

| Type | Order No. |
|------------|-----------|
| WT12-2N150 | 1 016 138 |
| WT12-2N450 | 1 016 139 |
| WT12-2P150 | 1 016 140 |
| WT12-2P450 | 1 016 142 |

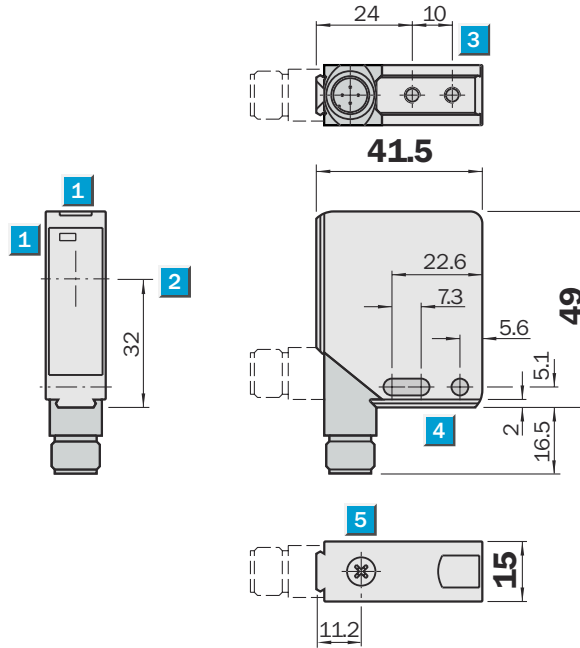
Scanning range
0 ... 7 m

Photoelectric reflex switch

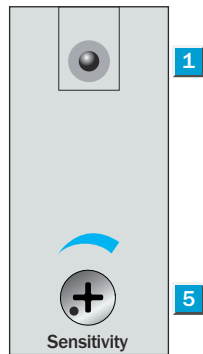
- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°, or 2 m/3 m cable
- Adjustable sensitivity; optimum adaptation to application



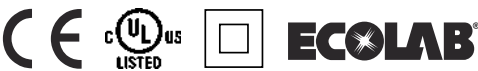
Dimensional drawing



Adjustments possible

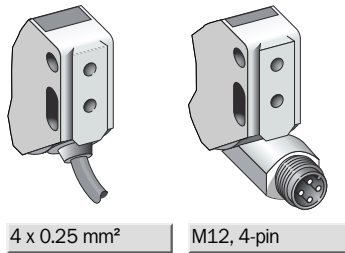


- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M4 threaded mounting hole - 4 mm deep
- 4 Mounting holes Ø 4.2 mm
- 5 Sensitivity adjustment



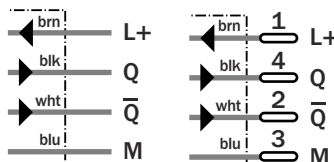
Connection type

| | |
|------------|------------|
| WL12-2N120 | WL12-2N420 |
| WL12-2N130 | WL12-2N430 |
| WL12-2N730 | WL12-2P420 |
| WL12-2P120 | WL12-2P430 |
| WL12-2P130 | |



Accessories

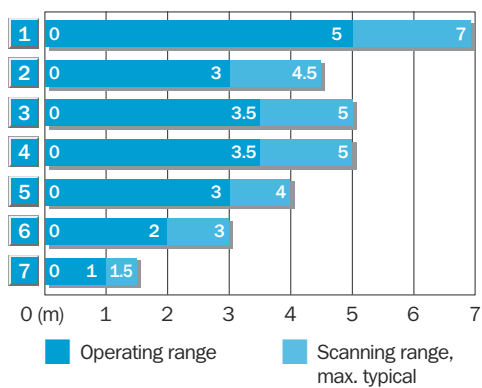
| |
|-----------------------|
| Connector, M12, 4-pin |
| Mounting systems |
| Reflectors |



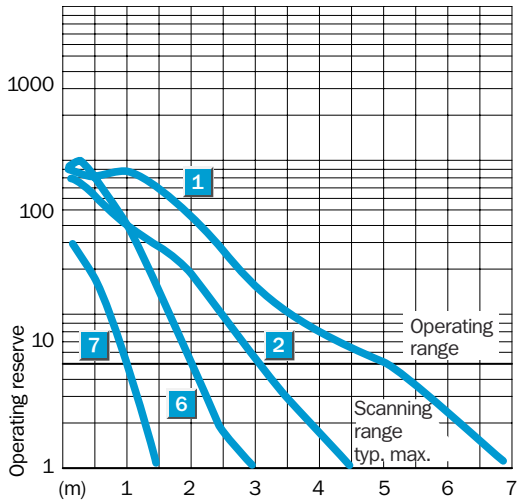
| WL12-2 | | N120 | N130 | N420 | N430 | N730 | P120 | P130 | P420 | P430 | P730 |
|--------------------------------------|---|------|------|------|------|------|------|------|------|------|------|
| Scanning range typ. max. | 0 ... 2 m | | | | | | | | | | |
| | 0 ... 7 m | | | | | | | | | | |
| Scanning range, recommended | 0 ... 1 m | | | | | | | | | | |
| | 0 ... 5 m | | | | | | | | | | |
| Relating to | Reflector PL 80 A ¹⁾ | | | | | | | | | | |
| | Reflector PL 80 A ²⁾ | | | | | | | | | | |
| Sensitivity adjustment | Potentiometer | | | | | | | | | | |
| Light source, light type | LED, Red light ³⁾ | | | | | | | | | | |
| Light spot diameter | 2 mm at 90 mm distance | | | | | | | | | | |
| | 80 mm at 3 m distance | | | | | | | | | | |
| Polarisation filter | ✓ | | | | | | | | | | |
| Supply voltage V_s | DC 10 ... 30 V ⁴⁾ | | | | | | | | | | |
| Ripple | ≤ 5 V _{SS} ⁵⁾ | | | | | | | | | | |
| Power consumption | ≤ 40 mA ⁶⁾ | | | | | | | | | | |
| | ≤ 30 mA ⁶⁾ | | | | | | | | | | |
| Switching outputs | NPN antivalent | | | | | | | | | | |
| | PNP antivalent | | | | | | | | | | |
| Output current I _a max | ≤ 100 mA | | | | | | | | | | |
| Response time | ≤ 330 μs ⁷⁾ | | | | | | | | | | |
| Switching frequency | 1,500 Hz ⁸⁾ | | | | | | | | | | |
| Connection type | Cable, 2 m ⁹⁾ | | | | | | | | | | |
| | Connector, M12, 4-pin | | | | | | | | | | |
| | Cable, 3 m ⁹⁾ | | | | | | | | | | |
| VDE protection class | □ ¹⁰⁾ | | | | | | | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | | | | | | | |
| Enclosure rating | IP 69K | | | | | | | | | | |
| Ambient temperature operation | -40 °C ... +60 °C | | | | | | | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | | | | | | | |
| Weight | Ca. 200 g | | | | | | | | | | |
| | Ca. 120 g | | | | | | | | | | |
| | Ca. 230 g | | | | | | | | | | |
| Housing material | Zinc die-cast ¹¹⁾ | | | | | | | | | | |

1) Focus = 90 mm
 2) Focus = infinite
 3) Average service life 100,000 h at T_a = +25 °C
 4) Limit values
 5) May not exceed or fall short of V_s tolerances
 6) Without load
 7) Signal transit time with resistive load
 8) With light/dark ratio 1:1
 9) Do not bend below 0 °C
 10) Reference voltage 50 V DC
 11) Teflon-coated housing available on request

Scanning range and operating reserve



| Reflector type | Operating range |
|-------------------|-----------------|
| 1 PL 80 A | 0 ... 5.0 m |
| 2 C 110 | 0 ... 3.0 m |
| 3 PL 50 A | 0 ... 3.5 m |
| 4 PL 40 A | 0 ... 3.5 m |
| 5 PL 30 A | 0 ... 3.0 m |
| 6 PL 20 A | 0 ... 2.0 m |
| 7 Reflective tape | 0 ... 1.0 m |



| Ordering information | |
|----------------------|-----------|
| Type | Order No. |
| WL12-2N120 | 1 016 084 |
| WL12-2N130 | 1 016 085 |
| WL12-2N420 | 1 016 091 |
| WL12-2N430 | 1 016 092 |
| WL12-2N730 | 1 016 088 |
| WL12-2P120 | 1 016 095 |
| WL12-2P130 | 1 016 096 |
| WL12-2P420 | 1 016 101 |
| WL12-2P430 | 1 016 102 |
| WL12-2P730 | 1 016 098 |

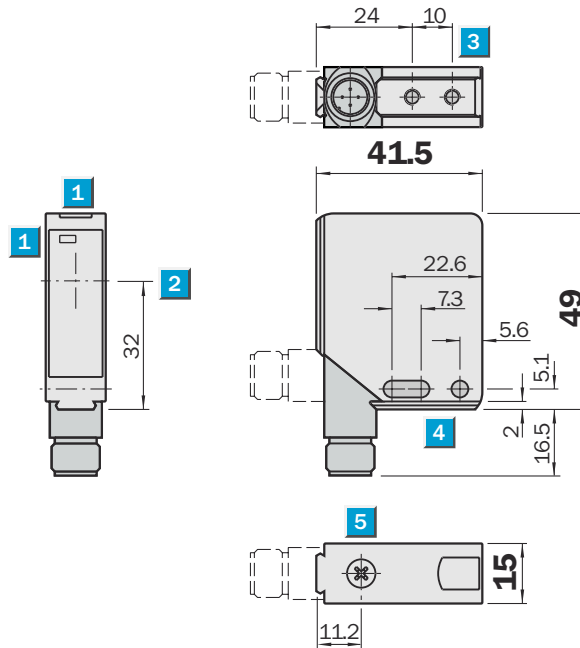
Scanning range
0 ... 7 m

Photoelectric reflex switch

- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°, or 2 m cable
- Adjustable sensitivity; optimum adaptation to application



Dimensional drawing



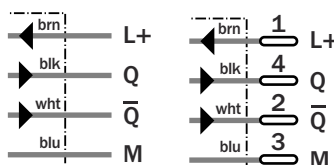
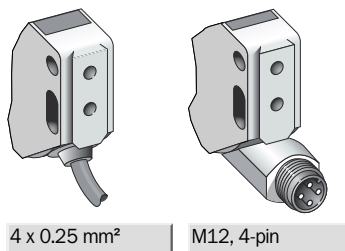
Adjustments possible



- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M4 threaded mounting hole - 4 mm deep
- 4 Mounting holes \varnothing 4.2 mm
- 5 Sensitivity adjustment

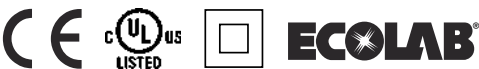
Connection type

| | |
|------------|------------|
| WL12-2N180 | WL12-2N480 |
| WL12-2N190 | WL12-2P480 |
| WL12-2N490 | WL12-2P490 |
| WL12-2P180 | |
| WL12-2P190 | |



Accessories

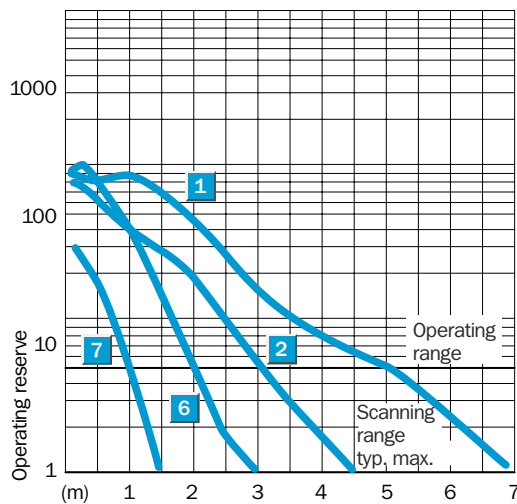
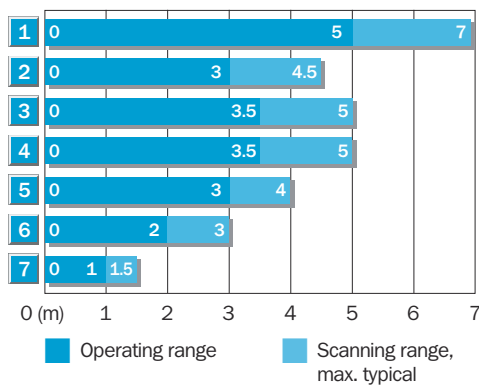
| |
|-----------------------|
| Connector, M12, 4-pin |
| Mounting systems |
| Reflectors |



| WL12-2 | | N180 | N190 | N480 | N490 | P180 | P190 | P480 | P490 |
|--------------------------------------|---|------|------|------|------|------|------|------|------|
| Scanning range typ. max. | 0 ... 7 m | | | | | | | | |
| | 0 ... 2 m | | | | | | | | |
| Scanning range, recommended | 0 ... 5 m | | | | | | | | |
| | 0 ... 1 m | | | | | | | | |
| Relating to | Reflector PL 80 A ¹⁾ | | | | | | | | |
| | Reflector PL 80 A ²⁾ | | | | | | | | |
| Sensitivity adjustment | Potentiometer | | | | | | | | |
| Light source, light type | LED, Red light ³⁾ | | | | | | | | |
| Light spot diameter | 80 mm at 3 m distance | | | | | | | | |
| | 2 mm at 90 mm distance | | | | | | | | |
| Supply voltage V_s | DC 10 ... 30 V ⁴⁾ | | | | | | | | |
| Ripple | ≤ 5 V _{SS} ⁵⁾ | | | | | | | | |
| Power consumption | ≤ 40 mA ⁶⁾ | | | | | | | | |
| | ≤ 30 mA ⁶⁾ | | | | | | | | |
| Switching outputs | NPN antivalent | | | | | | | | |
| | PNP antivalent | | | | | | | | |
| Output current I _a max | 100 mA | | | | | | | | |
| Response time | ≤ 330 μs ⁷⁾ | | | | | | | | |
| Switching frequency | 1,500 Hz ⁸⁾ | | | | | | | | |
| Connection type | Cable, 2 m ⁹⁾ | | | | | | | | |
| | Connector, M12, 4-pin | | | | | | | | |
| VDE protection class | □ ¹⁰⁾ | | | | | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | | | | | |
| Enclosure rating | IP 69K | | | | | | | | |
| Ambient temperature operation | -40 °C ... +60 °C | | | | | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | | | | | |
| Weight | Ca. 200 g | | | | | | | | |
| | Ca. 120 g | | | | | | | | |
| Housing material | Zinc die-cast ¹¹⁾ | | | | | | | | |

1) Focus = infinite
 2) Focus = 90 mm
 3) Average service life 100,000 h at T_a = +25 °C
 4) Limit values
 5) May not exceed or fall short of V_s tolerances
 6) Without load
 7) Signal transit time with resistive load
 8) With light/dark ratio 1:1
 9) Do not bend below 0 °C
 10) Reference voltage 50 V DC
 11) Teflon-coated housing available on request

Scanning range and operating reserve



| Reflector type | Operating range |
|-------------------|-----------------|
| 1 PL 80 A | 0 ... 5.0 m |
| 2 C 110 | 0 ... 3.0 m |
| 3 PL 50 A | 0 ... 3.5 m |
| 4 PL 40 A | 0 ... 3.5 m |
| 5 PL 30 A | 0 ... 3.0 m |
| 6 PL 20 A | 0 ... 2.0 m |
| 7 Reflective tape | 0 ... 1.0 m |

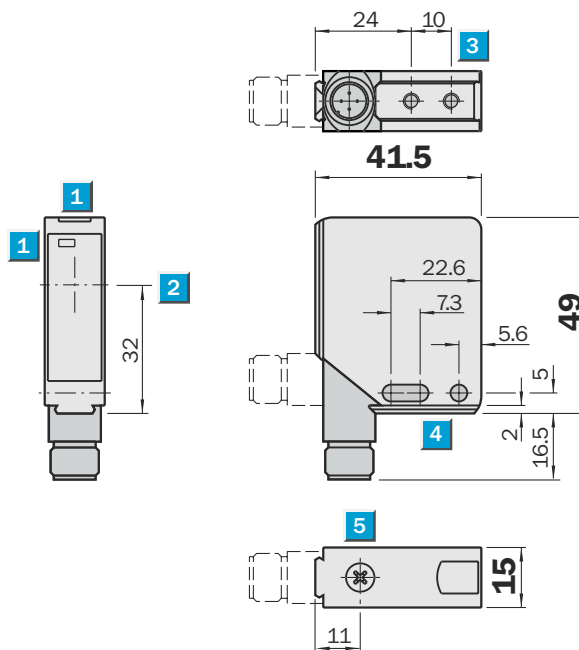
| Ordering information | |
|----------------------|-----------|
| Type | Order No. |
| WL12-2N180 | 1 016 089 |
| WL12-2N190 | 1 016 090 |
| WL12-2N480 | 1 016 093 |
| WL12-2N490 | 1 016 094 |
| WL12-2P180 | 1 016 099 |
| WL12-2P190 | 1 016 100 |
| WL12-2P480 | 1 016 106 |
| WL12-2P490 | 1 016 107 |

Scanning range
0 ... 7 m

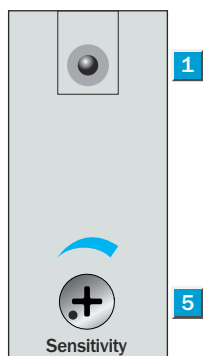
Photoelectric reflex switch

- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°
- Integrated AS-i chip
- Adjustable sensitivity; optimum adaptation to application

Dimensional drawing



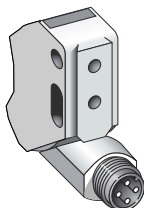
Adjustments possible



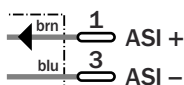
- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M4 threaded mounting hole - 4 mm deep
- 4 Mounting holes Ø 4.2 mm
- 5 Sensitivity adjustment

Connection type

WL12-2Z430



M12, 4-pin



| |
|-----------------------|
| Accessories |
| Connector, M12, 4-pin |
| Mounting systems |

WL12-2

Z430

| | |
|--------------------------------------|--|
| Scanning range typ. max. | 0 ... 7 m |
| Scanning range, recommended | 0 ... 5 m |
| Relating to | Reflector PL 80 A |
| Sensitivity adjustment | Potentiometer |
| Light source, light type | LED, Red light ¹⁾ |
| Light spot diameter | 80 mm at 3 m distance |
| Polarisation filter | ✓ |
| Supply voltage V_s | DC 26.5 ... 31.6 V ²⁾ |
| Power consumption | ≤ 35 mA ³⁾ |
| Response time | ≤ 330 μs ⁴⁾ |
| Switching frequency | 1,500 Hz ⁵⁾ |
| Test input sender off | TE to 0 V |
| Alarm output | Pre-failure signalling output |
| Connection type | Connector, M12, 4-pin |
| VDE protection class | □ ⁶⁾ |
| Circuit protection | V _s connections reverse-polarity protected / Interference suppression |
| Enclosure rating | IP 69K |
| Ambient temperature operation | -25 °C ... +60 °C |
| Ambient temperature storage | -40 °C ... +75 °C |
| Weight | Ca. 120 g |
| Housing material | Zinc die-cast ⁷⁾ |

¹⁾ Average service life 100,000 h at T_a = +25 °C

²⁾ Limit values
³⁾ Without load

⁴⁾ Signal transit time with resistive load
⁵⁾ With light/dark ratio 1:1

⁶⁾ Reference voltage 50 V DC
⁷⁾ Teflon-coated housing available on request

Assignment of data bits (Host level)

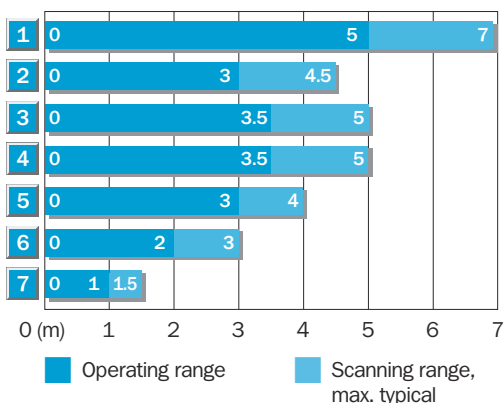
| | | | |
|----------------|-----------------|------------------------|--------|
| D ₀ | Switching state | 0 If light interrupted | Input |
| | Mode: | 1 If light received | |
| | light-switching | | |
| D ₁ | Alarm | 0 Active | Input |
| | | 1 Inactive | |
| D ₂ | NC | 0 | Input |
| | | 1 | |
| D ₃ | Test function | 0 Sender ON | Output |
| | | 1 Sender OFF | |

Assignment of parameter bits (Host level)

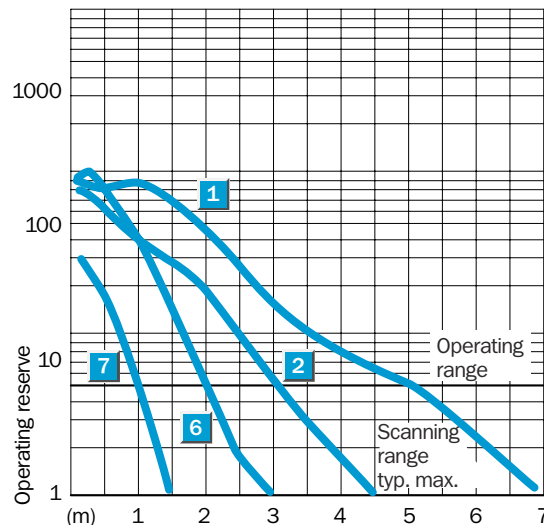
| | | | |
|------------------|----------------|-------------------|-----------|
| P ₀ * | NC | 0 | Parameter |
| | | 1 | |
| P ₁ * | Light-/ | 0 Dark-switching | Parameter |
| | dark-switching | 1 Light-switching | |
| P ₂ * | NC | 0 | Parameter |
| | | 1 | |
| P ₃ * | NC | 0 | Parameter |
| | | 1 | |

* Default setting = 1

Scanning range and operating reserve



| Reflector type | Operating range |
|-------------------|-----------------|
| 1 PL 80 A | 0 ... 5.0 m |
| 2 C 110 | 0 ... 3.0 m |
| 3 PL 50 A | 0 ... 3.5 m |
| 4 PL 40 A | 0 ... 3.5 m |
| 5 PL 30 A | 0 ... 3.0 m |
| 6 PL 20 A | 0 ... 2.0 m |
| 7 Reflective tape | 0 ... 1.0 m |



Ordering information

| | |
|-------------|------------------|
| Type | Order No. |
| WL12-2Z430 | 1 016 108 |

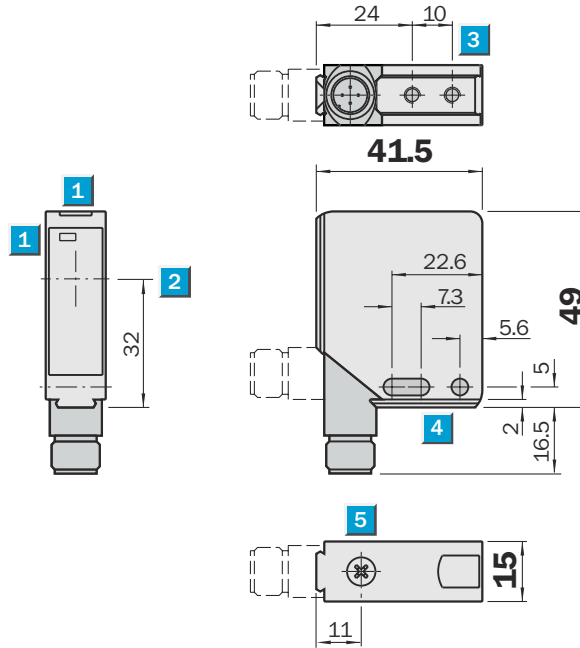
Scanning range
0 ... 3 m

Photoelectric reflex switch

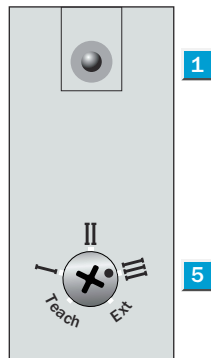
- Red light; consequently, fast alignment is possible
- Reliable detection of transparent objects
- Innovative microprocessor technology allows continuous adaptation of the switching threshold on contamination
- Operating range can be preselected via rotary switch or external cable



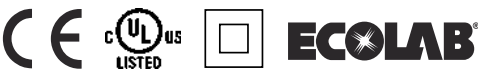
Dimensional drawing



Adjustments possible

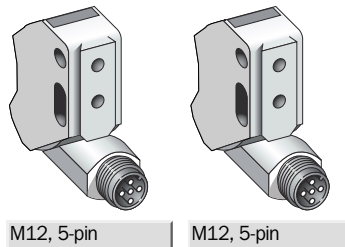


- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M4 threaded mounting hole - 4 mm deep
- 4 Mounting holes \varnothing 4.2 mm
- 5 Function selector



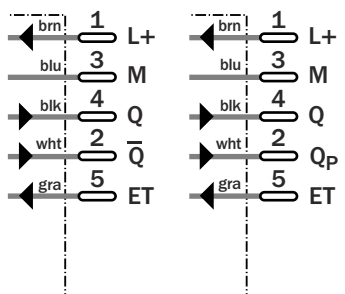
Connection type

| | |
|------------|------------|
| WL12G-N530 | WL12G-V530 |
| WL12G-P510 | WL12G-W530 |
| WL12G-P530 | |



Accessories

| |
|-----------------------|
| Connector, M12, 5-pin |
| Mounting systems |
| Reflectors |



| | | WL12G-N | 530 | 510 | 530 | 530 | 530 | | | | | |
|--------------------------------------|---|---------|-----|-----|-----|-----|-----|--|--|--|--|--|
| Scanning range typ. max. | 0 ... 3 m | | | | | | | | | | | |
| Scanning range, recommended | 0 ... 2.7 m | | | | | | | | | | | |
| Relating to | Reflector PL 80 A | | | | | | | | | | | |
| Sensitivity adjustment | Potentiometer | | | | | | | | | | | |
| Light source, light type | LED, Red light ¹⁾ | | | | | | | | | | | |
| | LED, Infrared light | | | | | | | | | | | |
| Light spot diameter | Approx. 8 x 13 mm at 200 mm distance | | | | | | | | | | | |
| Polarisation filter | ✓ | | | | | | | | | | | |
| Supply voltage V_s | DC 10 ... 30 V ²⁾ | | | | | | | | | | | |
| | DC | | | | | | | | | | | |
| Ripple | ≤ 5 V _{SS} ³⁾ | | | | | | | | | | | |
| Power consumption | ≤ 65 mA ⁴⁾ | | | | | | | | | | | |
| Switching outputs | NPN antivalent | | | | | | | | | | | |
| | PNP antivalent | | | | | | | | | | | |
| | PNP, Q and plausibility output | | | | | | | | | | | |
| | NPN, Q and plausibility output | | | | | | | | | | | |
| Switching mode | Light-switching | | | | | | | | | | | |
| Output current I _a max | 100 mA | | | | | | | | | | | |
| | ≤ 100 mA | | | | | | | | | | | |
| Response time | ≤ 0,5 ms ⁵⁾ | | | | | | | | | | | |
| Switching frequency | 1,000 Hz ⁶⁾ | | | | | | | | | | | |
| Connection type | Connector, M12, 5-pin | | | | | | | | | | | |
| VDE protection class | □ ⁷⁾ | | | | | | | | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | | | | | | | | |
| Enclosure rating | IP 69K | | | | | | | | | | | |
| Ambient temperature operation | -25 °C ... +60 °C | | | | | | | | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | | | | | | | | |
| Weight | Ca. 120 g | | | | | | | | | | | |
| Housing material | Zinc die-cast ⁸⁾ | | | | | | | | | | | |

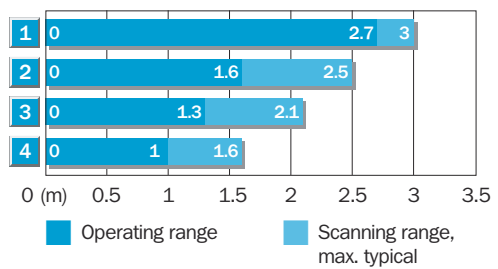
¹⁾ Average service life 100,000 h at T_a = +25 °C
²⁾ Limit values
³⁾ May not exceed or fall short of V_s tolerances
⁴⁾ Without load
⁵⁾ Signal transit time with resistive load
⁶⁾ With light/dark ratio 1:1
⁷⁾ Reference voltage 50 V DC
⁸⁾ Teflon-coated housing available on request

Operating range setting **Set via rotary switch on device or via ET cable (+V_s to ET)**

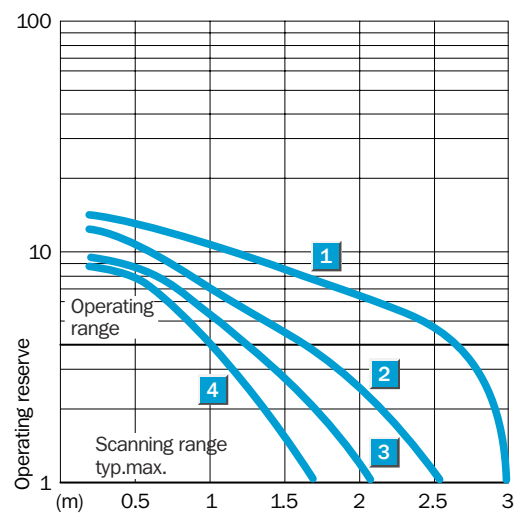
| Mode I : 50 ms * | Mode II : 150 ms * | Mode III : 250 ms * |
|--------------------------------------|--------------------------------------|---|
| Switches at signal attenuation > 10% | Switches at signal attenuation > 18% | Switches at signal attenuation > 40% |
| Clean PET bottles | Clear-glass bottles | Coloured glass or non-transparent objects |

* Pulse duration via ET (control cable), duration set via rotary switch approx. 2 s

Scanning range and operating reserve



| Reflector type | Operating range |
|----------------|-----------------|
| 1 PL 80 A | 0 ... 2.7 m |
| 2 PL 40 A | 0 ... 1.6 m |
| 3 PL 30 A | 0 ... 1.3 m |
| 4 PL 20 A | 0 ... 1.0 m |



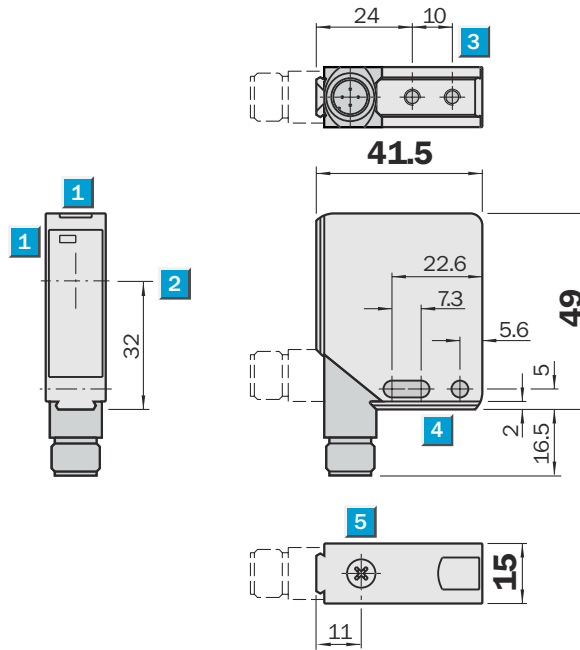
| Ordering information | |
|----------------------|-----------|
| Type | Order No. |
| WL12G-N530 | 1 016 309 |
| WL12G-P510 | 1 016 738 |
| WL12G-P530 | 1 016 289 |
| WL12G-V530 | 1 016 310 |
| WL12G-W530 | 1 016 311 |

Scanning range
0 ... 4 m

Photoelectric reflex switch

- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- Detection of glass and transparent films
- Adjustable sensitivity, optimum adaptation to application

Dimensional drawing



Adjustments possible

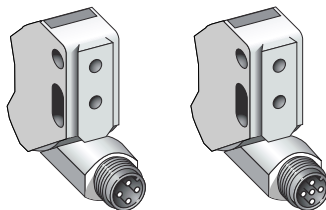


- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M4 threaded mounting hole - 4 mm deep
- 4 Mounting holes \varnothing 4.2 mm
- 5 Sensitivity adjustment

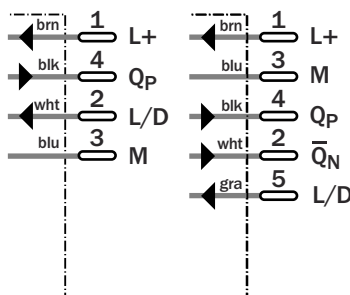


Connection type

| | |
|------------|------------|
| WL12-2P460 | WL12-2B560 |
|------------|------------|

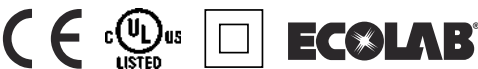


| | |
|------------|------------|
| M12, 4-pin | M12, 5-pin |
|------------|------------|



Accessories

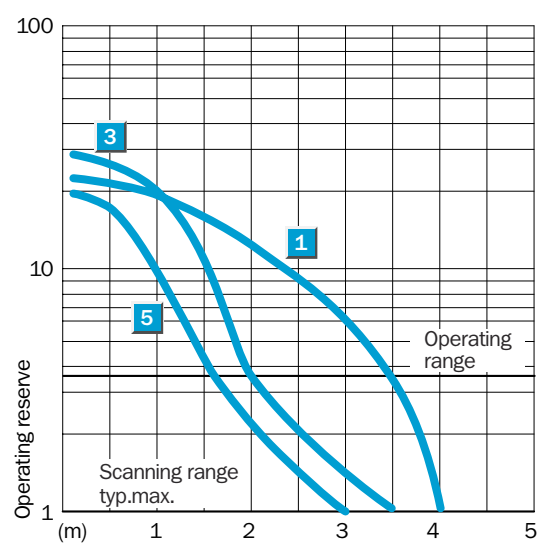
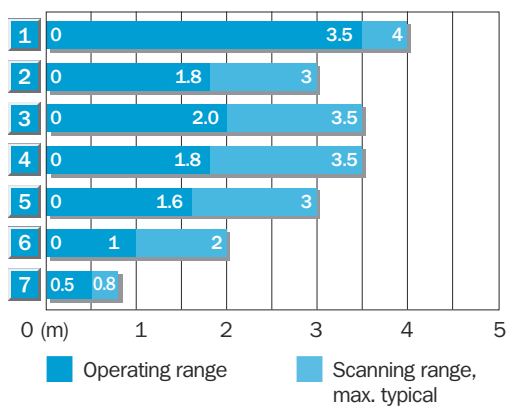
| |
|-----------------------|
| Connector, M12, 4-pin |
| Connector, M12, 5-pin |
| Mounting systems |
| Reflectors |



| WL12-2 | | B560 | P460 | | | | | | | | |
|--------------------------------------|---|------|------|--|--|--|--|--|--|--|--|
| Scanning range typ. max. | 0 ... 4 m | | | | | | | | | | |
| Scanning range, recommended | 0 ... 3.5 m | | | | | | | | | | |
| Relating to | Reflector PL 80 A | | | | | | | | | | |
| Sensitivity adjustment | Potentiometer | | | | | | | | | | |
| Light source, light type | LED, Red light ¹⁾ | | | | | | | | | | |
| Light spot diameter | 30 mm at 1.5 m distance | | | | | | | | | | |
| Angle of dispersion | Ca. 1.5 ° | | | | | | | | | | |
| Polarisation filter | ✓ | | | | | | | | | | |
| Supply voltage V_s | DC 10 ... 30 V ²⁾ | | | | | | | | | | |
| Ripple | ≤ 5 V _{SS} ³⁾ | | | | | | | | | | |
| Power consumption | ≤ 30 mA ⁴⁾ | | | | | | | | | | |
| Switching outputs | Transistor outputs Qp and Qn | | | | | | | | | | |
| | PNP antivalent | | | | | | | | | | |
| Switching mode | Light-/dark-switching, switchable ⁵⁾ | | | | | | | | | | |
| Output current I _{a,max} | 100 mA | | | | | | | | | | |
| Response time | ≤ 330 μs ⁶⁾ | | | | | | | | | | |
| Switching frequency | 1,500 Hz ⁷⁾ | | | | | | | | | | |
| Connection type | Connector, M12, 5-pin | | | | | | | | | | |
| | Connector, M12, 4-pin | | | | | | | | | | |
| VDE protection class | □ ⁸⁾ | | | | | | | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output QP and QN short-circuit protected / Interference suppression | | | | | | | | | | |
| Enclosure rating | IP 69K | | | | | | | | | | |
| Ambient temperature operation | -40 °C ... +60 °C | | | | | | | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | | | | | | | |
| Weight | Ca. 120 g | | | | | | | | | | |
| Housing material | Zinc die-cast ⁹⁾ | | | | | | | | | | |

¹⁾ Average service life 100,000 h at T_a = +25 °C
²⁾ Limit values
³⁾ May not exceed or fall short of
⁴⁾ V_s tolerances Without load
⁵⁾ Control cable 0 V or open-circuited = light-switching.
⁶⁾ Control cable V_s = dark-switching
⁷⁾ Signal transit time with resistive load
⁸⁾ Reference voltage 50 V DC
⁹⁾ Teflon-coated housing available on request

Scanning range and operating reserve



| Reflector type | Operating range |
|-------------------|-----------------|
| 1 PL 80 A | 0 ... 3.5 m |
| 2 C 110 | 0 ... 1.8 m |
| 3 PL 50 A | 0 ... 2.0 m |
| 4 PL 40 A | 0 ... 1.8 m |
| 5 PL 30 A | 0 ... 1.6 m |
| 6 PL 20 A | 0 ... 1.0 m |
| 7 Reflective tape | 0 ... 0.5 m |

| Ordering information | |
|----------------------|-----------|
| Type | Order No. |
| WL12-2B560 | 1 016 080 |
| WL12-2P460 | 1 016 105 |

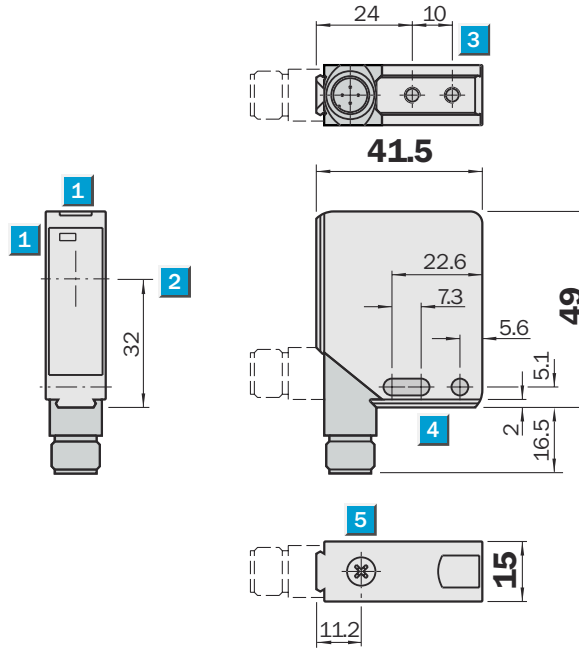
Through-beam photoelectric switch, WS/WS 12-2, red light - DC

Scanning range
0 ... 20 m

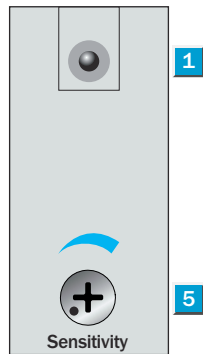
Through-beam photoelectric

- Red light; consequently, fast alignment is possible
- Insensitive to external light sources, i.e., increased operating reliability
- M12 plug rotatable by 90°, or 2 m cable
- Adjustable sensitivity; optimum adaptation to application

Dimensional drawing



Adjustments possible



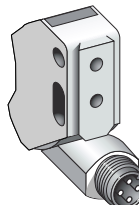
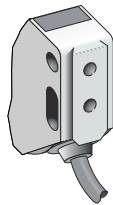
- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M4 threaded mounting hole - 4 mm deep
- 4 Mounting holes Ø 4.2 mm
- 5 Sensitivity adjustment



Connection type

WS/WE12-2N130
WS/WE12-2P130

WS/WE12-2N430
WS/WE12-2P430

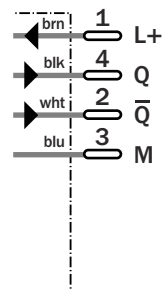
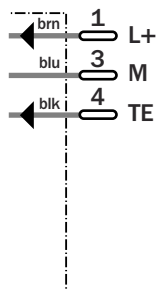
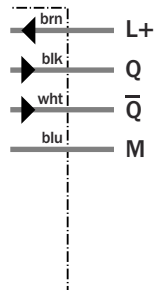
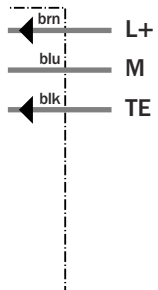


4 x 0.25 mm²
Sender

Receiver

M12, 4-pin
Sender

Receiver



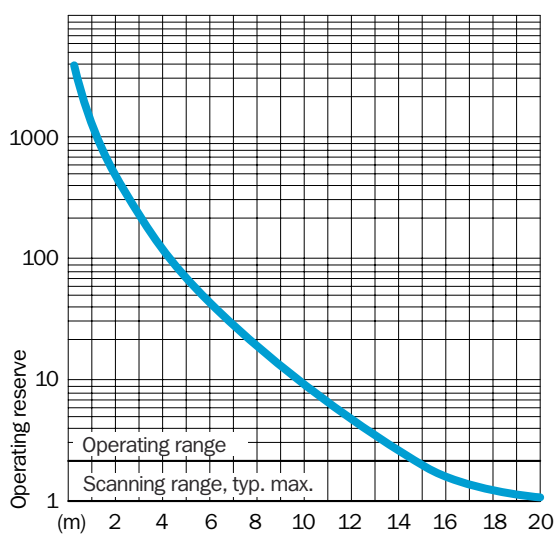
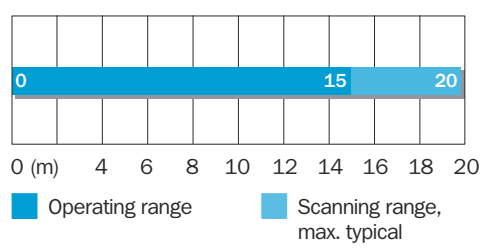
Accessories

- Connector, M12, 4-pin
- Masks
- Mounting systems

| WS/WE12-2 | | N130 | N430 | P130 | P430 | | | | | | |
|--------------------------------------|---|------|------|------|------|--|--|--|--|--|--|
| Scanning range typ. max. | 0 ... 20 m | | | | | | | | | | |
| Scanning range, recommended | 0 ... 15 m | | | | | | | | | | |
| Sensitivity adjustment | Potentiometer | | | | | | | | | | |
| Light source, light type | LED, Red light ¹⁾ | | | | | | | | | | |
| Light spot diameter | Approx. 500 mm at 15 m distance | | | | | | | | | | |
| Angle of dispersion | 1.5 ° | | | | | | | | | | |
| Supply voltage V_s | DC 10 ... 30 V ²⁾ | | | | | | | | | | |
| Ripple | ≤ 5 V _{SS} ³⁾ | | | | | | | | | | |
| Power consumption, sender | ≤ 30 mA ⁴⁾ | | | | | | | | | | |
| Power consumption, receiver | ≤ 25 mA ⁴⁾ | | | | | | | | | | |
| | ≤ 15 mA ⁴⁾ | | | | | | | | | | |
| Switching outputs | NPN antivalent | | | | | | | | | | |
| | PNP antivalent | | | | | | | | | | |
| Output current I _a max | 100 mA | | | | | | | | | | |
| Response time | ≤ 330 μs ⁵⁾ | | | | | | | | | | |
| Switching frequency | 1,500 Hz ⁶⁾ | | | | | | | | | | |
| Test input sender off | TE to 0 V | | | | | | | | | | |
| Connection type | Cable, 2 m ⁷⁾ | | | | | | | | | | |
| | Connector, M12, 4-pin | | | | | | | | | | |
| VDE protection class | □ ⁸⁾ | | | | | | | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | | | | | | | |
| Enclosure rating | IP 69K | | | | | | | | | | |
| Ambient temperature operation | -40 °C ... +60 °C | | | | | | | | | | |
| Ambient temperature storage | -40 °C ... +75 °C | | | | | | | | | | |
| Weight | Ca. 200 g | | | | | | | | | | |
| | Ca. 120 g | | | | | | | | | | |
| Housing material | Zinc die-cast ⁹⁾ | | | | | | | | | | |

1) Average service life 100,000 h at T_a = +25 °C
 2) Limit values
 3) May not exceed or fall short of V_s tolerances
 4) Without load
 5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Do not bend below 0 °C
 8) Reference voltage 50 V DC
 9) Teflon-coated housing available on request

Scanning range

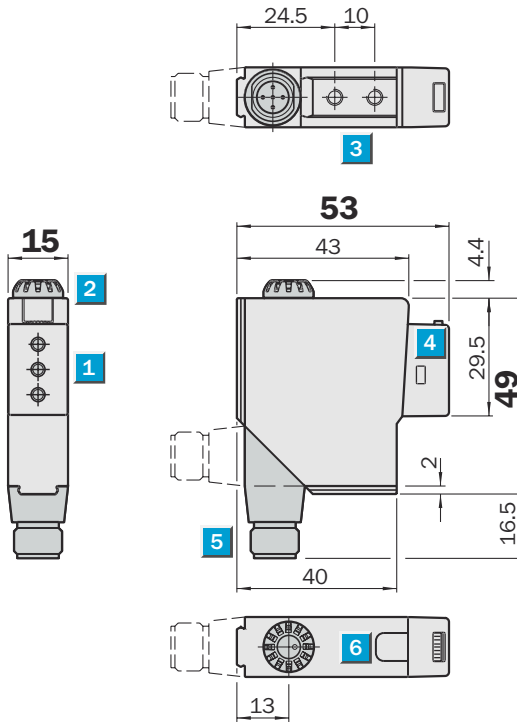


| Ordering information | |
|----------------------|-----------|
| Type | Order No. |
| WS/WE12-2N130 | 1 016 154 |
| WS/WE12-2N430 | 1 016 155 |
| WS/WE12-2P130 | 1 016 156 |
| WS/WE12-2P430 | 1 016 157 |

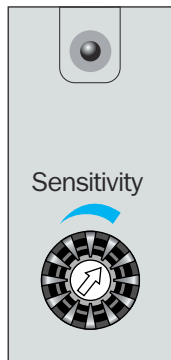
| | |
|--|--|
| | Scanning distance 0 ... 280 mm |
| | Scanning range 0 ... 300 mm |
| Proximity switch with fibre optic cables | |

- Red, infrared or green light
- Plug-in fibre-optic cables
- Switch-selectable light-/dark-switching
- Adjustable sensitivity

Dimensional drawing



Adjustments possible

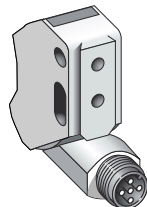


- 1 Connector for fibre-optic cable
- 2 Sensitivity-control
- 3 M4 threaded mounting hole - 4 mm deep
- 4 Adapter
- 5 Plug not rotatable. Plug facing backwards on request
- 5 LED signal strength indicator

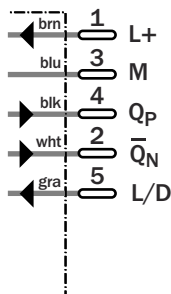


Connection type

| |
|-------------|
| WLL12-B5181 |
| WLL12-B5281 |
| WLL12-B5381 |
| WLL12-B5481 |



M12, 5-pin



| |
|--------------------------------|
| Accessories |
| Adapter for fibre-optic cables |
| Connector, M12, 5-pin |
| Fibre-optic cables |
| Mounting systems |

| WLL12-B | | 5181 | 5281 | 5381 | 5481 | | | | | | |
|---|---|------|------|------|------|--|--|--|--|--|--|
| Scanning distance typ. max. | 0 ... 280 mm ¹⁾ | | | | | | | | | | |
| | 0 ... 60 mm | | | | | | | | | | |
| | 0 ... 280 mm | | | | | | | | | | |
| Fibre-optic cable (proximity system) | LM/LT | | | | | | | | | | |
| Scanning range typ. max. | 0 ... 200 mm | | | | | | | | | | |
| | 0 ... 300 mm | | | | | | | | | | |
| | 0 ... 20 mm | | | | | | | | | | |
| Fibre-optic cable (through-beam system) | LM/LT | | | | | | | | | | |
| Light source, light type | LED, Red light ²⁾ | | | | | | | | | | |
| | LED, Infrared light ²⁾ | | | | | | | | | | |
| | LED, green light ²⁾ | | | | | | | | | | |
| Supply voltage V_s | DC 10 ... 30 V ³⁾ | | | | | | | | | | |
| Ripple | ≤ 5 V _{SS} ⁴⁾ | | | | | | | | | | |
| Power consumption | ≤ 35 mA ⁵⁾ | | | | | | | | | | |
| Switching outputs | PNP: Q/NPN: Q | | | | | | | | | | |
| Switching mode | Light/dark-switching, switchable | | | | | | | | | | |
| Output current I _{a,max} | 100 mA | | | | | | | | | | |
| Response time | 360 μs ⁶⁾ | | | | | | | | | | |
| Switching frequency | 1,300 Hz ⁷⁾ | | | | | | | | | | |
| Connection type | Connector, M12, 5-pin | | | | | | | | | | |
| VDE protection class | □ ⁸⁾ | | | | | | | | | | |
| Circuit protection | V _s connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression | | | | | | | | | | |
| Enclosure rating | IP 67 | | | | | | | | | | |
| Ambient temperature operation | -25 °C ... +60 °C | | | | | | | | | | |
| Ambient temperature storage | -25 °C ... +70 °C | | | | | | | | | | |
| Weight | Ca. 130 g | | | | | | | | | | |
| Housing material | Zinc die-cast | | | | | | | | | | |

¹⁾ Object with 90% remission (based on standard white to DIN 5033)
²⁾ Average service life 100,000 h

at T_a = +25 °C
³⁾ Limit values
⁴⁾ May not exceed or fall short of

V_s tolerances
⁵⁾ Without load
⁶⁾ Signal transit time with resistive load

⁷⁾ With light/dark ratio 1:1
⁸⁾ Reference voltage 50 V DC

| Ordering information | |
|----------------------|-----------|
| Type | Order No. |
| WLL12-B5181 | 1 011 677 |
| WLL12-B5281 | 1 011 687 |
| WLL12-B5381 | 1 011 688 |
| WLL12-B5481 | 1 011 965 |