Online data sheet




# WLA16P-1H162100A00

W16

SMALL PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Illustration may differ

## Ordering information

| Type | Part no. |
|---|---|
| WLA16P-1H162100A00 | 1218826 |

Other models and accessories ➜ www.sick.com/W16

## Detailed technical data

### Features

| | |
|---|---|
| **Sensor/ detection principle** | Photoelectric retro-reflective sensor, autocollimation |
| **Dimensions (W x H x D)** | 20 mm x 55.7 mm x 42 mm |
| **Housing design (light emission)** | Rectangular |
| **Sensing range max.** | 0 m ... 10 m [1] |
| **Type of light** | Visible red light |
| **Light source** | PinPoint LED [2] |
| **Light spot size (distance)** | Ø 80 mm (5 m) |
| **Wave length** | 635 nm |
| **Adjustment** | BluePilot: With alignment aid, IO-Link |
| **Pin 2 configuration** | External input, Teach-in, switching signal |

[1] Reflector PL80A.
[2] Average service life: 100,000 h at $T_U$ = +25 °C.

## Mechanics/electronics

| | |
|---|---|
| **Supply voltage** | 10 V DC ... 30 V DC [1] |
| **Ripple** | ≤ 5 $V_{pp}$ |
| **Power consumption** | 30 mA, 50 mA [2] [3] |
| **Switching output** | PUSH/PULL, PNP, NPN |
| **Output: $Q_{L1}$ / C** | Switching output or IO-Link mode |
| **Output function** | Factory setting: Pin 2 / white (MF): NPN normally closed (light switching), PNP normally open (dark switching), Pin 4 / black (QL1 / C): NPN normally open (dark switching), PNP normally closed (light switching), IO-Link |
| **Switching mode** | Light/dark switching |
| **Signal voltage PNP HIGH/LOW** | Approx. $V_S$ – 2.5 V / 0 V |
| **Signal voltage NPN HIGH/LOW** | Approx. VS / < 2.5 V |
| **Output current $I_{max.}$** | ≤ 100 mA |
| **Response time** | ≤ 500 µs [4] |
| **Switching frequency** | 1,000 Hz [5] |
| **Connection type** | Cable, 2 m [6] |
| **Cable material** | PVC |
| **Circuit protection** | A, B, C, D [10] [7] [8] [9] |
| **Protection class** | III |
| **Weight** | 100 g |
| **Polarisation filter** | ✓ |
| **IO-Link** | ✓ |
| **Housing material** | Plastic, VISTAL® |
| **Optics material** | Plastic, PMMA |
| **Enclosure rating** | IP66 (According to EN 60529)<br>IP67 (According to EN 60529)<br>IP69 (According to EN 60529) [11] |
| **Ambient operating temperature** | –40 °C ... +60 °C |
| **Ambient storage temperature** | –40 °C ... +75 °C |
| **UL File No.** | NRKH.E181493 & NRKH7.E181493 |

[1] Limit values.
[2] 16 V DC ... 30 V DC, without load.
[3] 10 V DC ... 16 V DC, without load.
[4] Signal transit time with resistive load in switching mode. Different values possible in COM2 mode.
[5] With light/dark ratio 1:1 in switching mode. Different values possible in IO-Link mode.
[6] Do not bend below 0 °C.
[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] Replaces IP69K with ISO 20653: 2013-03.

## Safety-related parameters

| | |
|---|---|
| **$MTTF_D$** | 627 years |
| **$DC_{avg}$** | 0% |

## Classifications

| | |
|---|---|
| **ECl@ss 5.0** | 27270904 |
| **ECl@ss 5.1.4** | 27270904 |
| **ECl@ss 6.0** | 27270904 |
| **ECl@ss 6.2** | 27270904 |
| **ECl@ss 7.0** | 27270904 |
| **ECl@ss 8.0** | 27270904 |
| **ECl@ss 8.1** | 27270904 |
| **ECl@ss 9.0** | 27270904 |
| **ETIM 5.0** | EC002719 |
| **ETIM 6.0** | EC002719 |
| **UNSPSC 16.0901** | 39121528 |

## Smart Task

| | |
|---|---|
| **Smart Task name** | Base logics |
| **Logic function** | Direct<br>AND<br>OR<br>Window<br>Hysteresis |
| **Timer function** | Deactivated<br>On delay<br>Off delay<br>ON and OFF delay<br>Impulse (one shot) |
| **Inverter** | Yes |
| **Switching frequency** | SIO Direct: 1000 HzSIO Logic: 800 HzIOL: 650 Hz [1) 2) 3)] |
| **Response time** | SIO Direct: 500 µsSIO Logic: 600 µsIOL: 750 µs [1) 2) 3)] |
| **Repeatability** | SIO Direct: 150 µsSIO Logic: 300 µsIOL: 750 µs [1) 2) 3)] |
| **Switching signal $Q_{L1}$** | Switching output |
| **Switching signal $Q_{L2}$** | Switching output |

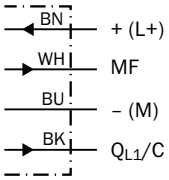
[1)] SIO Direct: sensor operation in standard I/O mode without IO-Link communication and without using internal sensor logic or time parameters (set to "direct"/"deactivated").
[2)] SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters plus Automation Functions used.
[3)] IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

## Communication interface

| | |
|---|---|
| **Communication interface** | IO-Link V1.1 |
| **Communication Interface detail** | 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 = empty |
| **VendorID** | 26 |
| **DeviceID HEX** | 0x80016C |
| **DeviceID DEZ** | 8388972 |

## Connection diagram

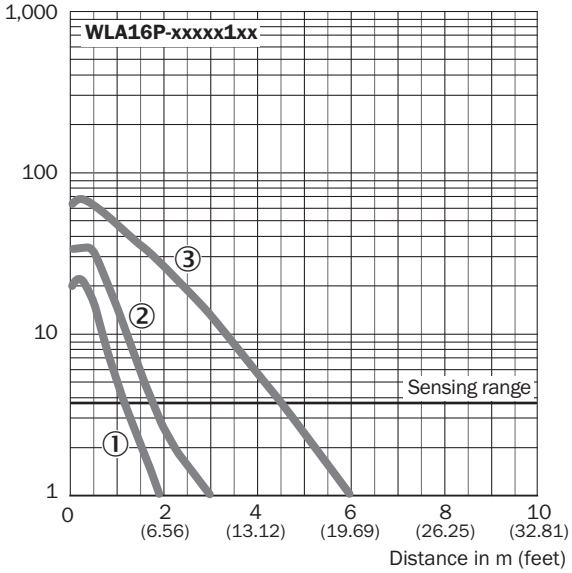
Cd-389




## Characteristic curve

Reflective tape

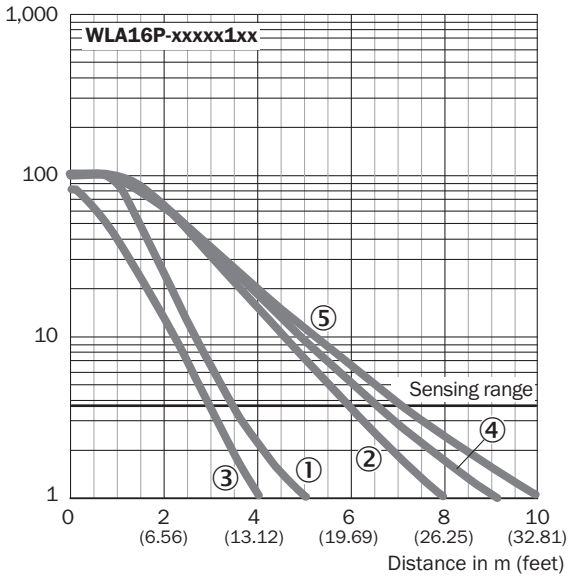
Function reserve




① Reflective tape REF-DG (50 x 50 mm)
② Reflective tape REF-IRF-56 (50 x 50 mm)
③ Reflective tape REF-AC1000 (50 x 50 mm)

### Standard reflectors

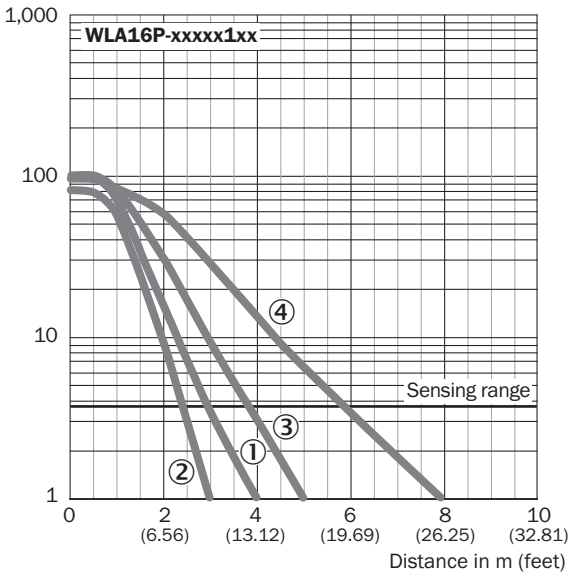
Function reserve




① Reflector PL22
② Reflector P250, PL30A
③ Reflector PL20A
④ Reflector PL40A
⑤ Reflector PL80A, C110A

### Fine triple reflectors

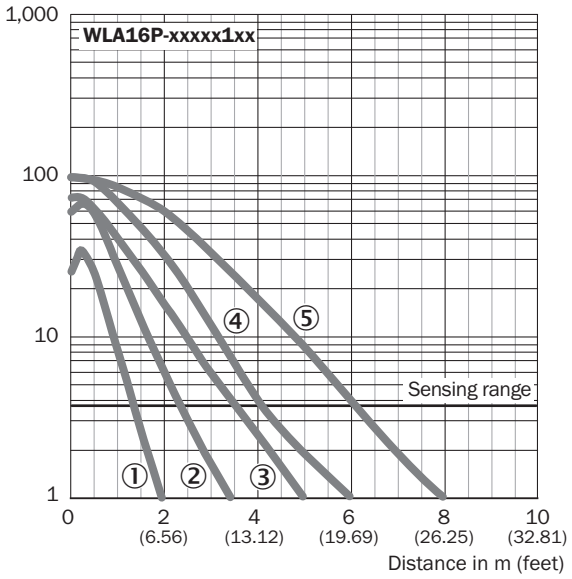
Function reserve




① PL10FH-1 reflector
② PL10F reflector
③ Reflector PL20F
④ Reflector P250F

Chemical-resistant reflectors

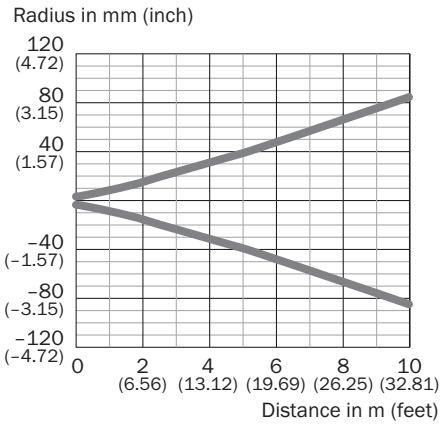
Function reserve




① PL10F CHEM reflector
② Reflector PL20 CHEM
③ Reflector P250 CHEM
④ Reflector P250H
⑤ Reflector PL40A Antifog

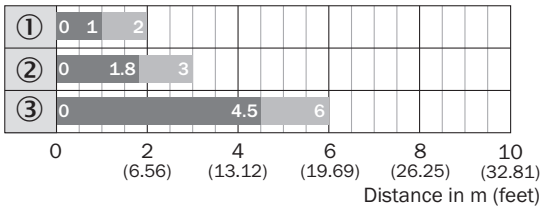
## Light spot size

WLA16P-xxxxx1xx



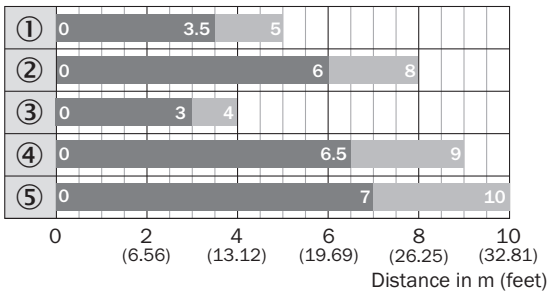
## Sensing range diagram

Reflective tape



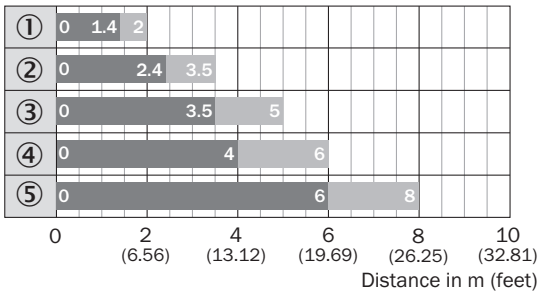

WLA16P-xxxxx1xx
① Reflective tape REF-DG (50 x 50 mm)
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Standard reflectors



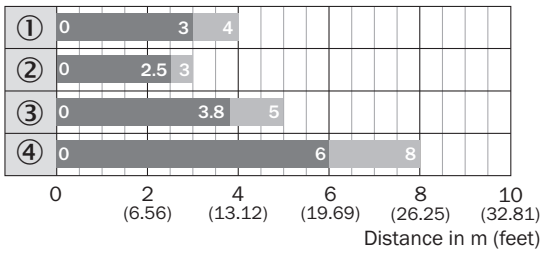

WLA16P-xxxxx1xx
① Reflector PL22
② Reflector P250, PL30A
③ Reflector PL20A
④ Reflector PL40A
⑤ Reflector PL80A, C110A

Chemical-resistant reflectors




WLA16P-xxxxx1xx
① PL10F CHEM reflector
② Reflector PL20 CHEM
③ Reflector P250 CHEM
④ Reflector P250H
⑤ Reflector PL40A Antifog

### Fine triple reflectors

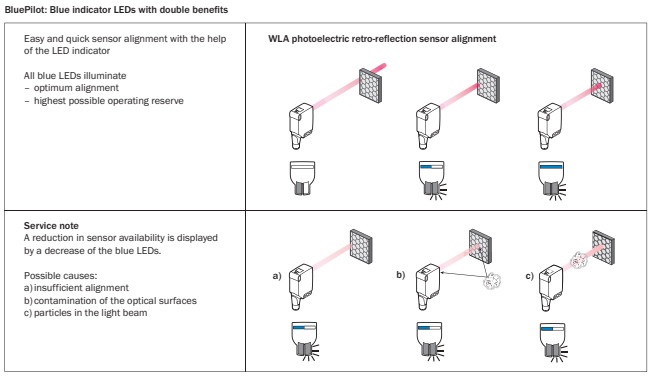



Sensing range  Sensing range typ. max.

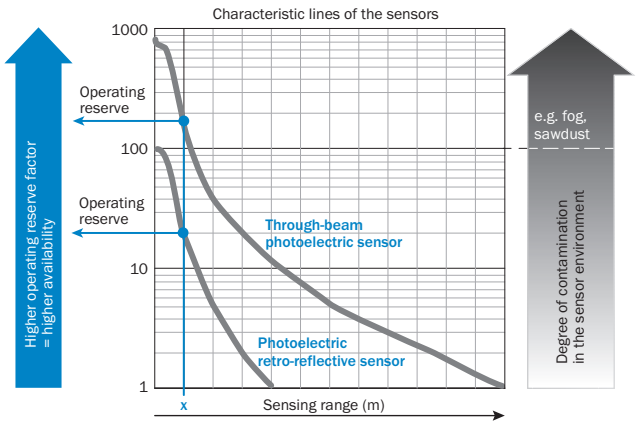
WLA16P-xxxxx1xx
① PL10FH-1 reflector
② PL10F reflector
③ Reflector PL20F
④ Reflector P250F

## Functions

### Operation note



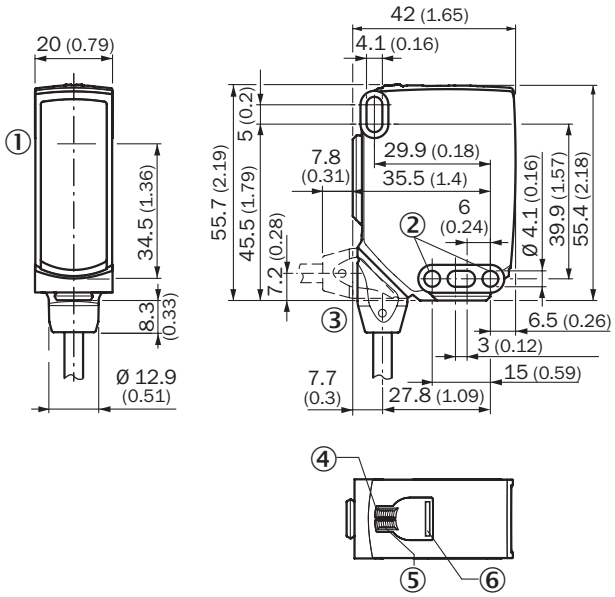

### Operation note




At a sensing range of „**x**" the photoelectric retro-reflective and through-beam photoelectric sensors have different operating reserves (see blue arrow). The higher the operating reserve factor, the better the sensor can compensate the contamination in the air or in the light beam and on the optical surfaces (front screen, reflector), i.e. the sensor has the maximum availablity, otherwise the sensor switches due to pollution although there is no object in the path of the light beam.

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

WLA16,cable




① Center of optical axis
② Mounting hole, Ø 4.1 mm
③ Connection
④ LED indicator green: power
⑤ LED indicator yellow: Status of received light beam
⑥ BluePilot blue: Alignment aid

## Recommended accessories

Other models and accessories ➜ www.sick.com/W16

| | Brief description | Type | Part no. |
|---|---|---|---|
| Universal bar clamp systems | | | |
|  | Plate N02 for universal clamp bracket, Zinc plated steel (sheet), Zinc die cast (clamping bracket), Universal clamp (5322626), mounting hardware | BEF-KHS-N02 | 2051608 |
| Mounting brackets and plates | | | |
|  | Universal mounting bracket for reflectors, steel, zinc coated | BEF-WN-REFX | 2064574 |

# 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.”**

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