



# WTT190L-A3532

PowerProx

MULTITASK PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

| Type          | Part no. |
|---------------|----------|
| WTT190L-A3532 | 6062146  |

**Included in delivery:** BEF-W190 (1)

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

## Detailed technical data

### Features

|                                        |                                                          |
|----------------------------------------|----------------------------------------------------------|
| <b>Sensor/ detection principle</b>     | Photoelectric proximity sensor, Background suppression   |
| <b>Dimensions (W x H x D)</b>          | 17.4 mm x 45.6 mm x 34.7 mm                              |
| <b>Housing design (light emission)</b> | Rectangular                                              |
| <b>Sensing range max.</b>              | 200 mm ... 3,000 mm <sup>1)</sup>                        |
| <b>Sensing range</b>                   | 200 mm ... 3,000 mm <sup>2)</sup>                        |
| <b>Distance value</b>                  |                                                          |
| Measuring range                        | 200 mm ... 3,000 mm <sup>1)</sup>                        |
| Resolution                             | 2 mm                                                     |
| Repeatability                          | 5 mm ... 80 mm <sup>3) 4) 5)</sup>                       |
| Accuracy                               | Typ. ± 30 mm <sup>6)</sup><br>Typ. ± 50 mm <sup>7)</sup> |
| <b>Type of light</b>                   | Visible red light                                        |
| <b>Light source</b>                    | Laser <sup>8)</sup>                                      |
| <b>Light spot size (distance)</b>      | Ø 12 mm (3,000 mm)                                       |
| <b>Wave length</b>                     | 658 nm                                                   |
| <b>Laser class</b>                     | 1 (IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11)          |
| <b>Adjustment</b>                      | Single teach-in button (4 x)                             |

<sup>1)</sup> Object with 6 ... 90 % remission (based on standard white to DIN 5033).

<sup>2)</sup> Adjustable.

<sup>3)</sup> Equivalent to 1  $\sigma$ .

<sup>4)</sup> See characteristic curves repeatability.

<sup>5)</sup> 6 % ... 90 % remission.

<sup>6)</sup> 0.2 m ... 2 m.

<sup>7)</sup> 2 m ... 3 m.

<sup>8)</sup> Average service life: 100,000 h at T<sub>U</sub> = +25 °C.

|  |         |
|--|---------|
|  | Display |
|--|---------|

- 1) Object with 6 ... 90 % remission (based on standard white to DIN 5033).  
 2) Adjustable.  
 3) Equivalent to 1  $\sigma$ .  
 4) See characteristic curves repeatability.  
 5) 6 % ... 90 % remission.  
 6) 0.2 m ... 2 m.  
 7) 2 m ... 3 m.  
 8) Average service life: 100,000 h at  $T_U = +25^\circ\text{C}$ .

## Mechanics/electronics

|                                            |                                                                                                |
|--------------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Supply voltage</b>                      | 12 V DC ... 30 V DC <sup>1)</sup>                                                              |
| <b>Ripple</b>                              | $\leq 5 V_{pp}$ <sup>2)</sup>                                                                  |
| <b>Current consumption</b>                 | 75 mA <sup>3)</sup>                                                                            |
| <b>Switching output</b>                    | PNP <sup>4)</sup><br>NPN <sup>5)</sup>                                                         |
| <b>Number of switching outputs</b>         | 1 ( $Q_1$ ) <sup>4)</sup>                                                                      |
| <b>Switching mode</b>                      | Light/dark switching <sup>4)</sup>                                                             |
| <b>Switching mode selector</b>             | Selectable via menu                                                                            |
| <b>Output current <math>I_{max}</math></b> | $\leq 100\text{ mA}$                                                                           |
| <b>Response time</b>                       | 0.6 ms, 1 ms, 3.4 ms, 13 ms, 51.4 ms <sup>6) 7) 8)</sup>                                       |
| <b>Switching frequency</b>                 | 833 Hz, 500 Hz, 147 Hz, 38 Hz, 10 Hz <sup>7) 8) 9)</sup>                                       |
| <b>Time functions</b>                      | Without time delay<br>Off delay<br>On delay<br>One shot                                        |
| <b>Delay time</b>                          | Programmable, 0 ms ... 999 ms                                                                  |
| <b>Analog output</b>                       | 4 mA ... 20 mA ( $\leq 300\ \Omega$ ) / 0 V ... 10 V ( $\geq 10\text{ k}\Omega$ ) / switchable |
| <b>Resolution of analog output</b>         | 10 bit                                                                                         |
| <b>Output time</b>                         | 0.6 ms <sup>7)</sup><br>1 ms <sup>8)</sup><br>3.4 ms<br>13 ms<br>51.4 ms                       |

- 1) Limit values. Operated in short-circuit protected network: max. 8 A.  
 2) May not exceed or fall below  $U_V$  tolerances.  
 3) Without load. At  $V_S = 24\text{ V}$ .  
 4)  $Q_1 = 1$  switching threshold, light/dark switching selectable via light/dark selector.  
 5) PNP/NPN switchable.  
 6) Signal transit time with resistive load.  
 7) Can be set via a mean value filter (AVG1, AVG4, AVG16, AVG64, AVG256).  
 8) Depending on distance to object, distance to background and selected switching threshold.  
 9) With light/dark ratio 1:1.  
 10) External teach-in via cable, laser shutdown.  
 11) Do not bend below  $0^\circ\text{C}$ .  
 12) A =  $V_S$  connections reverse-polarity protected.  
 13) B = inputs and output reverse-polarity protected.  
 14) C = interference suppression.  
 15)  $V_S \geq 24\text{ V}$ . Below  $T_a < -10^\circ\text{C}$  warm-up time < 10 min.  
 16) For best performance consider warm up time  $\leq 5$  minutes.

|                                      |                                                                      |
|--------------------------------------|----------------------------------------------------------------------|
| <b>Input</b>                         | MF <sub>in</sub> = multifunctional input programmable <sup>10)</sup> |
| <b>Connection type</b>               | Cable with plug M12, 5-pin, 0.3 m <sup>11)</sup>                     |
| <b>Cable material</b>                | PVC                                                                  |
| <b>Circuit protection</b>            | A <sup>12)</sup><br>B <sup>13)</sup><br>C <sup>14)</sup>             |
| <b>Protection class</b>              | III                                                                  |
| <b>Weight</b>                        | 45 g                                                                 |
| <b>Housing material</b>              | Plastic, ABS                                                         |
| <b>Optics material</b>               | Plastic, PMMA                                                        |
| <b>Enclosure rating</b>              | IP67                                                                 |
| <b>Items supplied</b>                | BEF-W190 mounting bracket                                            |
| <b>Ambient operating temperature</b> | -30 °C ... +50 °C <sup>15)</sup>                                     |
| <b>Ambient storage temperature</b>   | -40 °C ... +70 °C                                                    |
| <b>Warm-up time</b>                  | < 5 min <sup>16)</sup>                                               |
| <b>Initialization time</b>           | < 300 ms                                                             |

- 1) Limit values. Operated in short-circuit protected network: max. 8 A.  
2) May not exceed or fall below U<sub>V</sub> tolerances.  
3) Without load. At V<sub>S</sub> = 24 V.  
4) Q1 = 1 switching threshold, light/dark switching selectable via light/dark selector.  
5) PNP/NPN switchable.  
6) Signal transit time with resistive load.  
7) Can be set via a mean value filter (AVG1, AVG4, AVG16, AVG64, AVG256).  
8) Depending on distance to object, distance to background and selected switching threshold.  
9) With light/dark ratio 1:1.  
10) External teach-in via cable, laser shutdown.  
11) Do not bend below 0 °C.  
12) A = V<sub>S</sub> connections reverse-polarity protected.  
13) B = inputs and output reverse-polarity protected.  
14) C = interference suppression.  
15) V<sub>S</sub> ≥ 24 V. Below Ta < -10 °C warm-up time < 10 min.  
16) For best performance consider warm up time ≤ 5 minutes.

#### Safety-related parameters

|                         |             |
|-------------------------|-------------|
| <b>MTTF<sub>D</sub></b> | 170.3 years |
| <b>DC<sub>avg</sub></b> | 0%          |

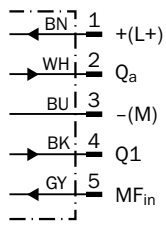
#### Classifications

|                     |          |
|---------------------|----------|
| <b>ECl@ss 5.0</b>   | 27270904 |
| <b>ECl@ss 5.1.4</b> | 27270904 |
| <b>ECl@ss 6.0</b>   | 27270904 |
| <b>ECl@ss 6.2</b>   | 27270904 |
| <b>ECl@ss 7.0</b>   | 27270904 |
| <b>ECl@ss 8.0</b>   | 27270904 |
| <b>ECl@ss 8.1</b>   | 27270904 |
| <b>ECl@ss 9.0</b>   | 27270904 |
| <b>ECl@ss 10.0</b>  | 27270904 |

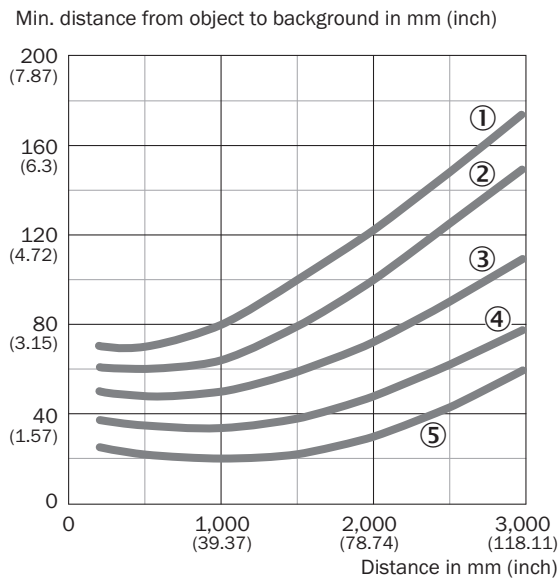
|                       |          |
|-----------------------|----------|
| <b>ECI@ss 11.0</b>    | 27270904 |
| <b>ETIM 5.0</b>       | EC002719 |
| <b>ETIM 6.0</b>       | EC002719 |
| <b>ETIM 7.0</b>       | EC002719 |
| <b>UNSPSC 16.0901</b> | 39121528 |

## Connection diagram

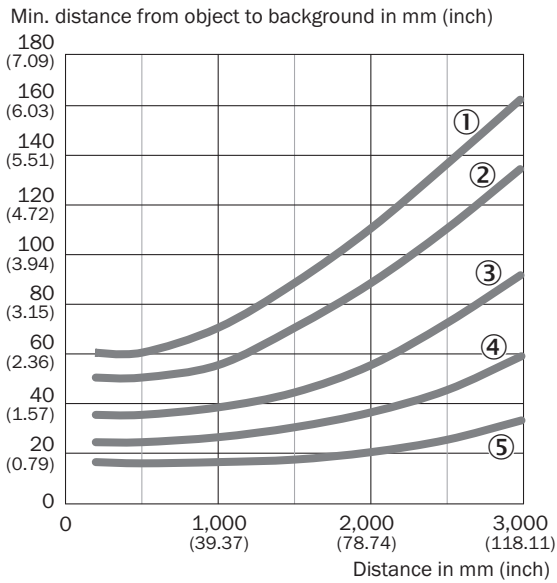
Cd-374



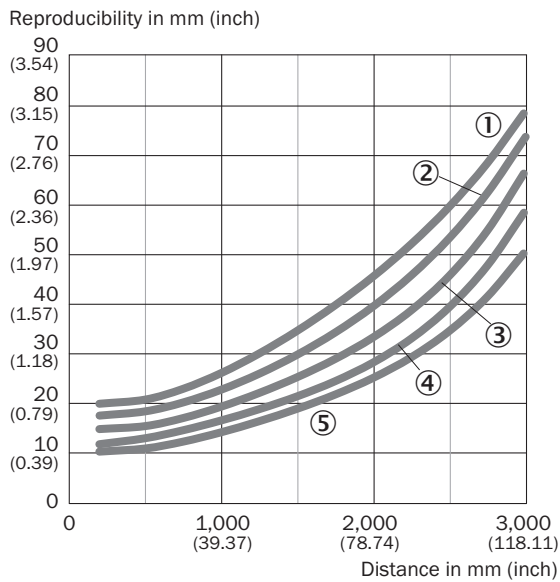
## Characteristic curve



- ① 6 % / 90 % AVG1
- ② 6 % / 90 % AVG4
- ③ 6 % / 90 % AVG16
- ④ 6 % / 90 % AVG64
- ⑤ 6 % / 90 % AVG256

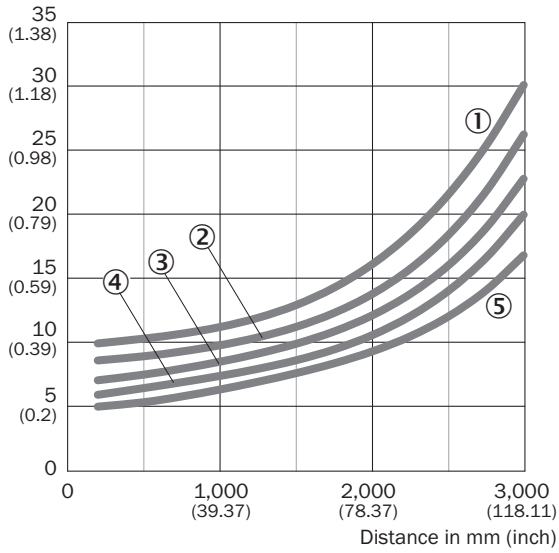


- ① 90 % / 90 % AVG1
- ② 90 % / 90 % AVG4
- ③ 90 % / 90 % AVG16
- ④ 90 % / 90 % AVG64
- ⑤ 90 % / 90 % AVG256



- ① 6 % AVG1
- ② 6 % AVG4
- ③ 6 % AVG16
- ④ 6 % AVG64
- ⑤ 6 % AVG256

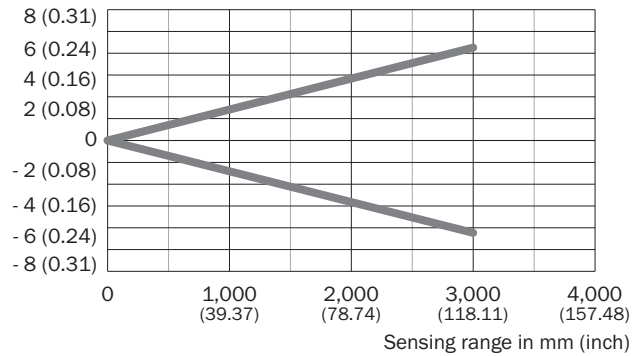
Reproducibility in mm (inch)



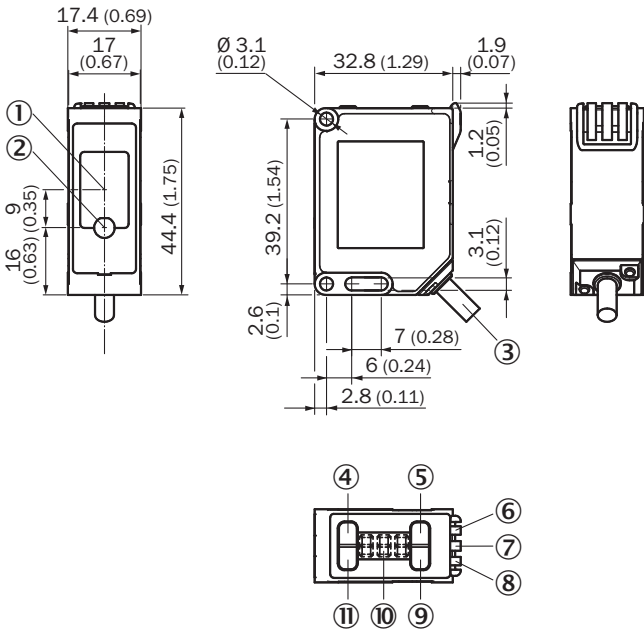
- ① 90 % AVG1
- ② 90 % AVG4
- ③ 90 % AVG16
- ④ 90 % AVG64
- ⑤ 90 % AVG256

## Light spot size

Radius mm (inch)



Dimensional drawing (Dimensions in mm (inch))



- ① Receiver
- ② Sender
- ③ Connection
- ④ RUN button
- ⑤ (+) button
- ⑥ Status indicator orange: Q1 output indicator
- ⑦ Status indicator LED, green/red/off: power on / stability indicator / laser off
- ⑧ Status indicator orange: Q1 output indicator
- ⑨ (-/Q1) button
- ⑩ Display
- ⑪ SET button

Recommended accessories

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

|                                                                                     | Brief description                                                                                                                     | Type               | Part no. |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
| Plug connectors and cables                                                          |                                                                                                                                       |                    |          |
|  | Head A: female connector, M12, 5-pin, straight, A-coded<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PVC, unshielded, 5 m | YF2A15-050VB5XLEAX | 2096240  |
|  | Head A: male connector, M12, 5-pin, straight<br>Cable: unshielded<br>For field bus technology                                         | STE-1205-G         | 6022083  |

## 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)