



# WTT190L-A2232

PowerProx

MULTITASK PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	Part no.
WTT190L-A2232	6062144

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

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

### Detailed technical data

#### Features

<b>Functional principle</b>	Photoelectric proximity sensor
<b>Functional principle detail</b>	Background suppression, Optical time-of-flight
<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> 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)

<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 factor.

<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>J</sub> = +25 °C.

<b>Adjustment</b>	Single teach-in button (4 x) Display
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- 2) Adjustable.
- 3) Equivalent to 1  $\sigma$ .
- 4) See characteristic curves repeatability.
- 5) 6% ... 90% remission factor.
- 6) 0.2 m ... 2 m.
- 7) 2 m ... 3 m.
- 8) Average service life: 100,000 h at  $T_U = +25$  °C.

## Mechanics/electronics

<b>Supply voltage</b>	12 V DC ... 30 V DC <sup>1)</sup>
<b>Ripple</b>	< 5 V <sub>pp</sub> <sup>2)</sup>
<b>Current consumption</b>	75 mA <sup>3)</sup>
<b>Switching output</b>	PNP <sup>4)</sup> NPN <sup>5)</sup>
<b>Number of switching outputs</b>	1 (Q <sub>1</sub> ) <sup>4)</sup>
<b>Switching mode</b>	Light/dark switching <sup>4)</sup>
<b>Switching mode selector</b>	Selectable via menu
<b>Output current I<sub>max.</sub></b>	≤ 100 mA
<b>Response time</b>	0.6 ms <sup>6)</sup> 1 ms <sup>7)</sup> 3.4 ms <sup>8)</sup> 13 ms 51.4 ms
<b>Switching frequency</b>	833 Hz <sup>9)</sup> 500 Hz <sup>7)</sup> 147 Hz <sup>8)</sup> 38 Hz 10 Hz
<b>Time functions</b>	Without time delay Off delay On delay One shot
<b>Delay time</b>	Programmable, 0 ms ... 999 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) Q<sub>1</sub> = 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) A = V<sub>S</sub> connections reverse-polarity protected.
- 12) B = inputs and output reverse-polarity protected.
- 13) C = interference suppression.
- 14) U<sub>v</sub> ≥ 24 V. At T<sub>u</sub> < -10 °C warm-up time < 10 min.
- 15) For optimum performance observe max. warm-up time of 5 minutes.

<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>	$\leq 0.6 \text{ ms}$ <sup>7)</sup>
<b>Input</b>	MF <sub>in</sub> = multifunctional input programmable <sup>10)</sup>
<b>Connection type</b>	Male connector M8, 4-pin
<b>Circuit protection</b>	A <sup>11)</sup> B <sup>12)</sup> C <sup>13)</sup>
<b>Protection class</b>	III
<b>Weight</b>	25 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>14)</sup>
<b>Ambient temperature, storage</b>	-40 °C ... +70 °C
<b>Warm-up time</b>	< 5 min <sup>15)</sup>
<b>Initialization time</b>	< 300 ms

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

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	170 years
<b>DC<sub>avg</sub></b>	0 %

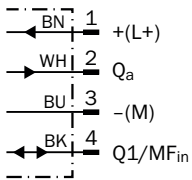
### Classifications

<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>eCl@ss 11.0</b>	27270904
<b>eCl@ss 12.0</b>	27270903
<b>ETIM 5.0</b>	EC002719
<b>ETIM 6.0</b>	EC002719
<b>ETIM 7.0</b>	EC002719
<b>ETIM 8.0</b>	EC002719
<b>UNSPSC 16.0901</b>	39121528

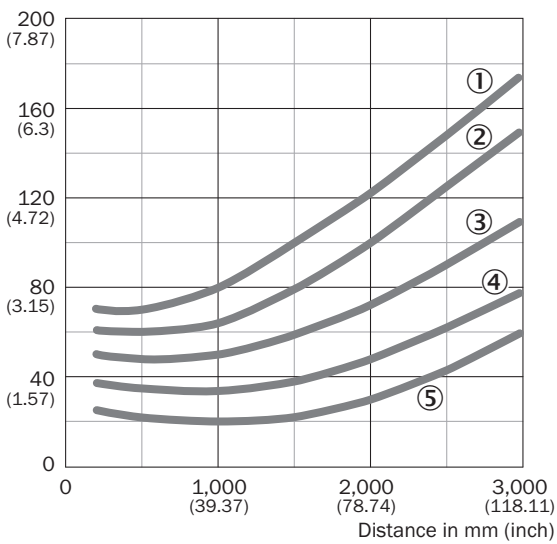
### Connection diagram

Cd-372

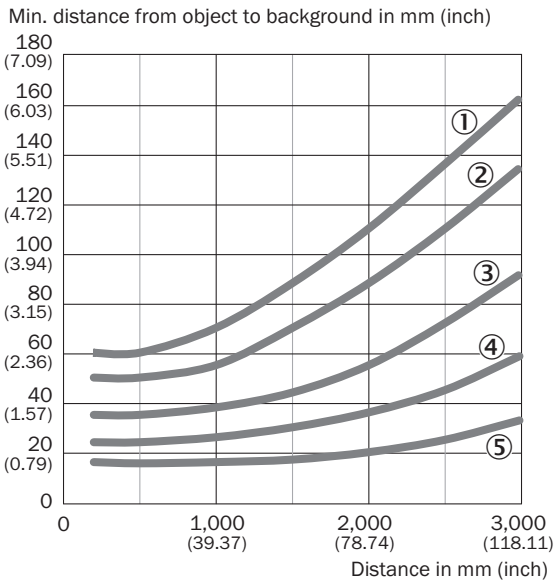


### Characteristic curve

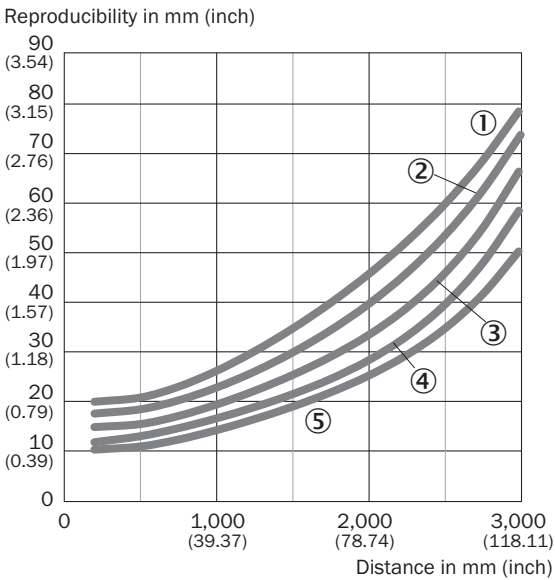
Min. distance from object to background in mm (inch)



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

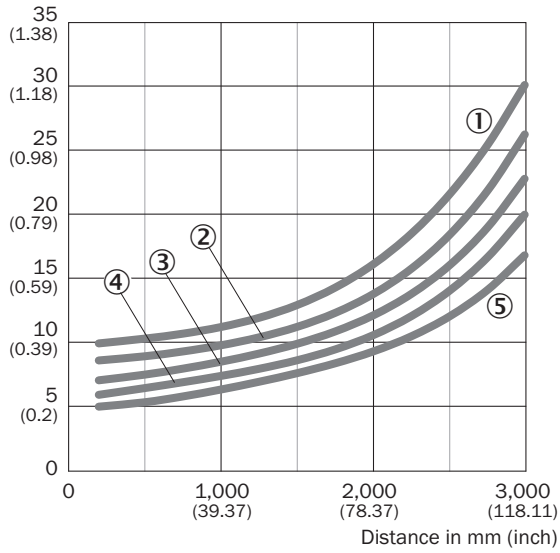


- ① 90 % / 90 % AVG1
- ② 90 % / 90 % AVG4
- ③ 90 % / 90 % AVG16
- ④ 90 % / 90 % AVG64
- ⑤ 90 % / 90 % AVG256



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

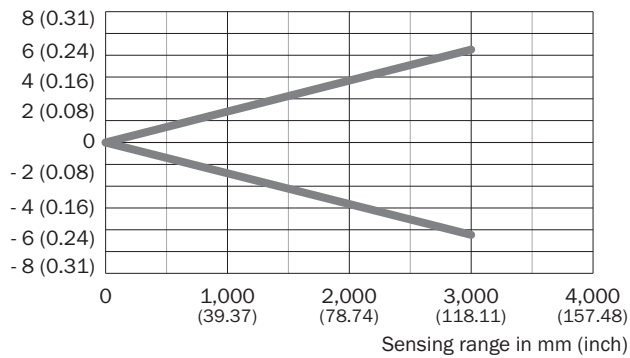
Reproducibility in mm (inch)



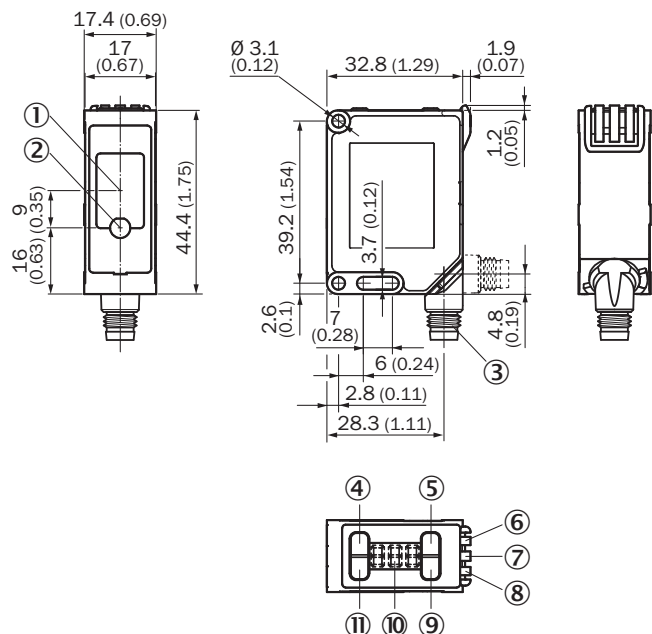
- ① 90 % AVG1
- ② 90 % AVG4
- ③ 90 % AVG16
- ④ 90 % AVG64
- ⑤ 90 % AVG256

### 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: output indicator
- ⑦ Status indicator LED, green/red/off: power on / stability indicator / laser off
- ⑧ Status indicator orange: 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, M8, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF8U14-050VA3XLEAX	2095889
	Head A: male connector, M8, 4-pin, straight Cable: unshielded	STE-0804-G	6037323

## 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)