

WTT280L-2P1531

PowerProx

MULTITASK PHOTOELECTRIC SENSORS



MULTITASK PHOTOELECTRIC SENSORS



Ordering information

| Туре | Part no. |
|----------------|----------|
| WTT280L-2P1531 | 6048065 |

Included in delivery: BEF-W280 (1)

Other models and accessories → www.sick.com/PowerProx

Illustration may differ



Detailed technical data

Features

| Functional principle | Photoelectric proximity sensor |
|---------------------------------|--|
| Functional principle detail | Background suppression, Optical time-of-flight |
| Dimensions (W x H x D) | 23.5 mm x 76 mm x 55.8 mm |
| Housing design (light emission) | Rectangular |
| Sensing range max. | 200 mm 4,000 mm ¹⁾ 200 mm 3,000 mm ²⁾ |
| Sensing range | 200 mm 4,000 mm ^{1) 3)} 200 mm 3,000 mm ^{2) 3)} |
| Type of light | Visible red light |
| Light source | Laser ⁴⁾ |
| Light spot size (distance) | Ø 12 mm (3 m) |
| Laser class | 1 (EN 60825-1:2014, IEC 60825-1:2014) |
| Adjustment | Potentiometer (1 x) |
| Special applications | Detecting small objects |

 $^{^{1)}}$ Object with 90% remission (based on standard white, DIN 5033).

 $^{^{\}rm 2)}$ Objects to be sensed with 6 % reflectivity (based on black).

³⁾ Einstellbar.

 $^{^{4)}}$ Average service life: 100,000 h at T_{U} = +25 $^{\circ}\text{C}.$

Mechanics/electronics

| Septential | Supply voltage U _B | 10 V DC 30 V DC ¹⁾ |
|--|-------------------------------------|---|
| Current consumption Switching output Number of switching outputs Light/dark switching Switching mode Light/dark switching Switching mode selector Selectable via light/dark rotary switch Switching frequency Light/dark rotary switch Switching frequency Loon Hz 5) Switching frequency Loon Hz 5) Analog output Input Sender off Connection type Cable, 5-wire, 2 m 6) Cable material PVC Conductor cross section Chicuit protection A 7 B 8 S C 9 C 9 D 10) Protection class Ill Weight Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating Items supplied Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) Ambient operating temperature -10 ° C +50 ° C Ambient temperature, storage | | |
| Switching output PNP Number of switching outputs 1 (Q₁) ³) Switching mode Light/dark switching Switching mode selector Selectable via light/dark rotary switch Output current I _{max.} ≤ 100 mA Response time ≤ 0.5 ms ⁴) Switching frequency 1,000 Hz ⁵) Analog output - Input Sender off Connection type Cable, 5-wire, 2 m ⁶) Cable material PVC Conductor cross section 0.18 mm² Cable diameter Ø 3.8 mm Circuit protection A 7) B 8) C 9) D 10) Protection class Ill Weight Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -10 ° C +50 ° C Ambient operating temperature -40 ° C +70 ° C | | |
| Number of switching outputs Switching mode Light/dark switching Switching mode selector Output current I _{max.} \$100 mA Response time \$0.5 ms ⁴¹ Switching frequency 1,000 Hz ⁵⁾ Analog output Input Sender off Connection type Cable, 5-wire, 2 m ⁶⁾ Cable material PVC Conductor cross section O.18 mm² Cable diameter O'3.8 mm Circuit protection A ⁷⁾ B ⁸⁾ C ⁹ D ¹⁰⁾ Protection class III Weight 120 g Housing material Plastic, ABS Optics material Plastic, ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +50 °C Ambient temperature, storage -40 °C +70 °C | Current consumption | |
| Switching mode Switching mode selector Output current I _{max} . \$ 100 mA Response time \$ 0.5 ms 40 Switching frequency 1,000 Hz 51 Analog output Input Connection type Cable, 5-wire, 2 m 60 Cable diameter Outcuit protection A 71 B 80 C 90 D 100 Protection class III Weight 120 g Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating Imen Selection selection Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +50 °C Ambient degree impact in the supplied Electromagnetic compatibility (EMC) Ambient degree in the switching Selectable via light/dark rotary switch Selectable via light/dark rotary switch \$ 200 mA 8 200 | Switching output | PNP |
| Switching mode selector Output current I _{max} . ≤ 100 mA Response time ≤ 0.5 ms ⁴⁾ Switching frequency 1,000 Hz ⁵⁾ Analog output Input Sender off Cable, 5-wire, 2 m ⁶⁾ Cable material Circuit protection A 7 | Number of switching outputs | 1 (Q ₁) ³⁾ |
| Output current Imax. ≤ 100 mA Response time ≤ 0.5 ms ⁴⁾ Switching frequency 1,000 Hz ⁵⁾ Analog output - Input Sender off Connection type Cable, 5-wire, 2 m ⁶⁾ Cable material PVC Conductor cross section 0.18 mm² Cable diameter Ø 3.8 mm Circuit protection A ⁷⁾ | Switching mode | Light/dark switching |
| Response time ≤ 0.5 ms ⁴⁾ Switching frequency 1,000 Hz ⁵⁾ Analog output - Input Sender off Connection type Cable, 5-wire, 2 m ⁶⁾ Cable material PVC Conductor cross section 0.18 mm² Cable diameter Ø 3.8 mm Circuit protection A ⁷⁾ B ⁸⁾ C ⁹⁾ D ¹⁰⁾ Protection class III Weight 120 g Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -10 ° C +50 ° C Ambient temperature, storage -40 ° C +70 ° C | Switching mode selector | Selectable via light/dark rotary switch |
| Analog output Input Sender off Connection type Cable, 5-wire, 2 m 6) Cable material PVC Conductor cross section O.18 mm² Cable diameter Ø 3.8 mm Circuit protection A7) B8) C 9) D10) Protection class III Weight Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Electromagnetic compatibility (EMC) Ambient operating temperature A-0 °C +50 °C Ambient demanding material Plastic, PMC Ambient demanding material Plastic, PMC Ambient demanding temperature A-0 °C +50 °C Ambient demanding material Plastic, PMC Ambient demanding temperature A-0 °C +50 °C Ambient demanding material Plastic, PMC Plastic, | Output current I _{max.} | ≤ 100 mA |
| Analog output Input Sender off Connection type Cable, 5-wire, 2 m 5) Cable material PVC Conductor cross section 0.18 mm² Cable diameter Ø 3.8 mm Circuit protection A 7) B 8) C 9) D 10) Protection class III Weight 120 g Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating Items supplied Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +50 °C Ambient temperature, storage | Response time | \leq 0.5 ms $^{4)}$ |
| Input Connection type Cable, 5-wire, 2 m 6) Cable material PVC Conductor cross section 0.18 mm² Cable diameter Ø 3.8 mm Circuit protection A 7) B 8) C 9) D 10) Protection class III Weight 120 g Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +50 °C Ambient temperature, storage | Switching frequency | 1,000 Hz ⁵⁾ |
| Connection type Cable, 5-wire, 2 m 6) Cable material PVC Conductor cross section 0.18 mm² Cable diameter Ø 3.8 mm Circuit protection A ⁷ B ⁸ C ⁹ D ¹⁰⁾ Protection class III Weight 120 g Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +50 °C Ambient temperature, storage | Analog output | - |
| Cable material Conductor cross section Cable diameter Ø 3.8 mm Circuit protection A 7) B 8) C 9) D 10) Protection class III Weight 120 g Housing material Optics material Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -10 °C +50 °C Ambient temperature, storage | Input | Sender off |
| Conductor cross section Cable diameter Ø 3.8 mm A 7) B 8) C 9) D 10) Protection class III Weight 120 g Housing material Optics material Plastic, ABS Optics material Plastic, PMMA Enclosure rating Items supplied Enclosure compatibility (EMC) EN 60947-5-2 Ambient operating temperature -10 °C +50 °C Ambient temperature, storage | Connection type | Cable, 5-wire, 2 m ⁶⁾ |
| Cable diameter Circuit protection A 7) B 8) C 9) D 10) Protection class III Weight 120 g Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating Items supplied Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +70 °C | Cable material | PVC |
| Circuit protection A 7) B 8) C 9) D 10) Protection class III Weight 120 g Plastic, ABS Optics material Plastic, PMMA Enclosure rating Items supplied Electromagnetic compatibility (EMC) Ambient operating temperature -10 ° C +50 ° C -40 ° C +70 ° C | Conductor cross section | 0.18 mm ² |
| B 8) C 9) D 10) Protection class III Weight 120 g Housing material Optics material Plastic, ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +50 °C -40 °C +70 °C | Cable diameter | Ø 3.8 mm |
| Weight Housing material Plastic, ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -10 °C +50 °C -40 °C +70 °C | Circuit protection | B ⁸⁾ C ⁹⁾ |
| Housing material Optics material Plastic, ABS Plastic, PMMA IP67 Items supplied Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +50 °C -40 °C +70 °C | Protection class | III |
| Optics material Plastic, PMMA IP67 Items supplied Mounting bracket BEF-W280 Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -10 °C +50 °C -40 °C +70 °C | Weight | 120 g |
| Enclosure ratingIP67Items suppliedMounting bracket BEF-W280Electromagnetic compatibility (EMC)EN 60947-5-2Ambient operating temperature-10 °C +50 °CAmbient temperature, storage-40 °C +70 °C | Housing material | Plastic, ABS |
| Items suppliedMounting bracket BEF-W280Electromagnetic compatibility (EMC)EN 60947-5-2Ambient operating temperature-10 °C +50 °CAmbient temperature, storage-40 °C +70 °C | Optics material | Plastic, PMMA |
| Electromagnetic compatibility (EMC) Ambient operating temperature -10 °C +50 °C -40 °C +70 °C | Enclosure rating | IP67 |
| Ambient operating temperature -10 °C +50 °C Ambient temperature, storage -40 °C +70 °C | Items supplied | Mounting bracket BEF-W280 |
| Ambient temperature, storage -40 °C +70 °C | Electromagnetic compatibility (EMC) | EN 60947-5-2 |
| , , , | Ambient operating temperature | -10 °C +50 °C |
| UL File No. NRKH2.E300503 & NRKH8.E300503 | Ambient temperature, storage | -40 °C +70 °C |
| | UL File No. | NRKH2.E300503 & NRKH8.E300503 |

 $^{^{1)}\,\}mathrm{Limit}$ values. Operated in short-circuit protected network: max. 8 A.

Safety-related parameters

| MTTF _D 201 years | |
|-----------------------------|--|
|-----------------------------|--|

²⁾ Without load.

³⁾ Q1 = 1 switching threshold, light/dark switching selectable via light/dark selector.

⁴⁾ Signal transit time with resistive load.

⁵⁾ With light/dark ratio 1:1.

⁶⁾ Do not bend below 0 °C.

 $^{^{7)}}$ A = V_S connections reverse-polarity protected.

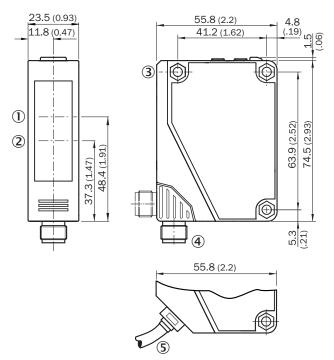
 $^{^{8)}}$ B = output reverse-polarity protected.

 $^{^{9)}}$ C = interference suppression.

 $^{^{10)}}$ D = outputs overcurrent and short-circuit protected.

| 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 |
| eCl@ss 10.0 | 27270904 |
| eCl@ss 11.0 | 27270904 |
| eCl@ss 12.0 | 27270903 |
| ETIM 5.0 | EC002719 |
| ETIM 6.0 | EC002719 |
| ETIM 7.0 | EC002719 |
| ETIM 8.0 | EC002719 |
| UNSPSC 16.0901 | 39121528 |

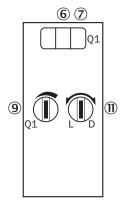
Dimensional drawing (Dimensions in mm (inch))



- ① Center of optical axis, receiver
- ② Center of optical axis, sender
- 3 Mounting hole, Ø 4.3 mm
- 4~ M12 plug connector, 5-pin, can be rotated through 90 $^{\circ}$
- (5) Cable, 2 m, 5-wire, Ø 3.8 mm

Adjustments

WTT280L-2xxxx1



- **(6)** LED indicator green: Stability indicator
- $\ensuremath{{\mbox{\scriptsize ?}}}$ LED indicator yellow: Status of received light beam
- Sensing range adjustment: potentiometer
- ① Light/dark selector

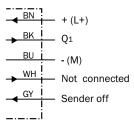
Connection type

WTT280L-2x15xx WLT280L-2x15xx

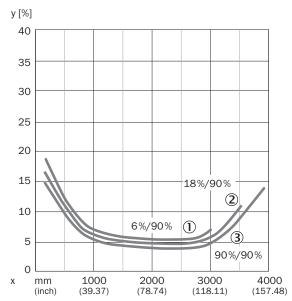


Connection diagram

Cd-209

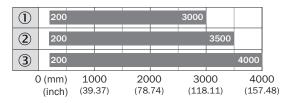


Characteristic curve



- ① Sensing range on black, 6% remission factor
- ② Sensing range on gray, 18% remission factor
- ③ Sensing range on white, 90% remission factor

Sensing range diagram



- Sensing range max.
- ① Sensing range on black, 6% remission factor
- $\ensuremath{\textcircled{2}}$ Sensing range on gray, 18% remission factor
- $\ensuremath{\mathfrak{G}}$ Sensing range on white, 90% remission factor

Recommended accessories

Other models and accessories → www.sick.com/PowerProx

| | Brief description | Туре | Part no. | |
|------------------------------|---|------------|----------|--|
| Mounting brackets and plates | | | | |
| | Mounting bracket, Stainless steel V2A (1.4301), 2 screws, 2 nuts, 2 circlips, 2 washers for mounting the sensor | BEF-W280 | 5313885 | |
| Plug connectors and cables | | | | |
| | Head A: male connector, M12, 5-pin, straight Cable: unshielded 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."

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