

# WTT12L-B2547

PowerProx

**PHOTOELECTRIC SENSORS** 





#### Ordering information

Туре	Part no.
WTT12L-B2547	1072653

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

Illustration may differ



#### Detailed technical data

#### **Features**

Sensor/detection principle	Photoelectric proximity sensor, Background suppression
Dimensions (W x H x D)	20 mm x 49.6 mm x 44.2 mm
Housing design (light emission)	Rectangular
Sensing range max.	50 mm 1,800 mm <sup>1)</sup>
Sensing range	100 mm 1,800 mm <sup>2)</sup>
Type of light	Visible red light
Light source	Laser 3)
Light spot size (distance)	Ø 12 mm (1,800 mm)
Wave length	658 nm
Laser class	1 (IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11)
Adjustment	Single teach-in button (2 x)

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

#### Mechanics/electronics

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Supply voltage	10 V DC 30 V DC <sup>1)</sup>

<sup>1)</sup> Limit values. Operated in short-circuit protected network: max. 8 A.

<sup>&</sup>lt;sup>2)</sup> Adjustable.

 $<sup>^{3)}</sup>$  Average service life: 100,000 h at  $T_U$  = +25 °C.

 $<sup>^{2)}\,\</sup>mbox{May}$  not exceed or fall below  $\mbox{U}_{\mbox{\scriptsize V}}$  tolerances.

 $<sup>^{3)}</sup>$  Without load. At  $V_S = 24 \text{ V}$ .

 $<sup>^{4)}</sup>$  Q1, Q2 = 2 switching thresholds, light switching.

<sup>&</sup>lt;sup>5)</sup> Signal transit time with resistive load.

<sup>6)</sup> With light/dark ratio 1:1.

 $<sup>^{7)}</sup>$  A = V<sub>S</sub> connections reverse-polarity protected.

 $<sup>^{8)}</sup>$  B = inputs and output reverse-polarity protected.

 $<sup>^{9)}</sup>$  C = interference suppression.

 $<sup>^{10)}</sup>$  As of T<sub>a</sub> = 45 °C, a max.load current I<sub>max</sub> = 50 mA is permitted.

<sup>&</sup>lt;sup>11)</sup> Below  $T_a = -10$  °C a warm-up time is required.

Ripple         \$ 5 V <sub>pp</sub> <sup>2</sup> Power consumption         \$ 70 mA <sup>3)</sup> Output type         PUSH/PULL, PNP, NPN <sup>4)</sup> Number of switching outputs         2 (Q1, Q2) <sup>4)</sup> Switching mode         Light switching <sup>4)</sup> Output current I <sub>max</sub> .         \$ 100 mA           Response time         \$ 16.7 ms <sup>5)</sup> Switching frequency         30 Hz <sup>6)</sup> Analog output         L/D = light/dark switching           Connection type         Male connector M12, 5-pin           Circuit protection         A <sup>7)</sup>		
Output type     PUSH/PULL, PNP, NPN 4)       Number of switching outputs     2 (Q1, Q2) 4)       Switching mode     Light switching 4)       Output current I <sub>max</sub> .     ≤ 100 mA       Response time     ≤ 16.7 ms 5)       Switching frequency     30 Hz 6)       Analog output     -       Input     L/D = light/dark switching       Connection type     Male connector M12, 5-pin       Circuit protection     A 7)     B 8)       B 8)     C 9)       Protection class     III       Weight     48 g       Housing material     Plastic, VISTAL®, Plastic, PMMA       Optics material     Plastic, PMMA       Enclosure rating     IP67       Ambient operating temperature     -35 °C +50 °C 10)       Ambient storage temperature     -40 °C +70 °C       Warm-up time     < 15 min 111	Ripple	$\leq$ 5 $V_{pp}^{2)}$
Number of switching outputs  2 (Q1, Q2) 4)  Switching mode  Light switching 4)  Output current I <sub>max</sub> .  \$ 100 mA  Response time  \$ 16.7 ms 5)  Switching frequency  Analog output  Input  L/D = light/dark switching  Connection type  Male connector M12, 5-pin  Circuit protection  A 7) B 8) C 9)  Protection class  III  Weight  48 g  Housing material  Plastic, VISTAL®, Plastic, PMMA  Optics material  Plastic, PMMA  Enclosure rating  IP67  Ambient operating temperature  -35 °C +50 °C 10)  Ambient storage temperature  -40 °C +70 °C  Warm-up time  1 initialization time  2 (Q1, Q2) 4)  2 (Q1, Q2)  4)  2 (Q1, Q2)  4)  2 (Q1, Q2)  4)  4 (Q1, Q2)  4)  5 (Q1, Q2)  40 Plastic, PMMA  Find the storage temperature  -40 °C +70 °C  Warm-up time  -415 min 111)  Initialization time	Power consumption	$\leq$ 70 mA $^{3)}$
Switching mode  Output current I <sub>max.</sub> Response time  ≤ 16.7 ms <sup>5)</sup> Switching frequency  Analog output  Input  L/D = light/dark switching  Connection type  Male connector M12, 5-pin  Circuit protection  A <sup>7)</sup> B <sup>8)</sup> C <sup>9)</sup> Protection class  III  Weight  Housing material  Plastic, VISTAL®, Plastic, PMMA  Optics material  Plastic, PMMA  Enclosure rating  Ambient operating temperature  -35 °C +50 °C <sup>10)</sup> Ambient storage temperature  -40 °C +70 °C  Warm-up time  Initialization time  Light switching  100 mA  100 ma	Output type	PUSH/PULL, PNP, NPN <sup>4)</sup>
Output current I <sub>max.</sub> ≤ 100 mA           Response time         ≤ 16.7 ms <sup>5)</sup> Switching frequency         30 Hz <sup>6)</sup> Analog output         -           Input         L/D = light/dark switching           Connection type         Male connector M12, 5-pin           Circuit protection         A <sup>7)</sup>	Number of switching outputs	2 (Q1, Q2) <sup>4)</sup>
Response time \$ 16.7 ms 5)  Switching frequency 30 Hz 6)  Analog output - L/D = light/dark switching  Connection type Male connector M12, 5-pin  Circuit protection A7 B8 C9 C9)  Protection class III  Weight 48 g  Housing material Plastic, VISTAL®, Plastic, PMMA  Optics material Plastic, PMMA  Enclosure rating IP67  Ambient operating temperature -35 °C +50 °C 10)  Ambient storage temperature -40 °C +70 °C  Warm-up time -40 °C +70 °C  Warm-up time -40 °C +70 °C	Switching mode	Light switching <sup>4)</sup>
Switching frequency  Analog output  Input  L/D = light/dark switching  Connection type  Male connector M12, 5-pin  A 7) B 8) C 9)  Protection class  III  Weight  Housing material  Optics material  Plastic, VISTAL®, Plastic, PMMA  Deficioure rating  IP67  Ambient operating temperature  Ambient storage temperature  -40 ° C +70 ° C  Warm-up time  Initialization time  A 10 A 12 A 13 A 14 A 15 A 15 A 16 A 17 A 18 A 18 A 19	Output current I <sub>max.</sub>	≤ 100 mA
Analog output Input  L/D = light/dark switching  Connection type  Male connector M12, 5-pin  Circuit protection  A 7) B 8) C 9)  Protection class  III  Weight  48 g  Housing material  Plastic, VISTAL®, Plastic, PMMA  Optics material  Plastic, PMMA  Enclosure rating  Ambient operating temperature  -35 °C +50 °C 10)  Ambient storage temperature  -40 °C +70 °C  Warm-up time  Initialization time  -300 ms	Response time	$\leq$ 16.7 ms $^{5)}$
Input  Connection type  Male connector M12, 5-pin  A <sup>7)</sup> B <sup>8)</sup> C <sup>9)</sup> Protection class  III  Weight  48 g  Housing material  Plastic, VISTAL®, Plastic, PMMA  Optics material  Plastic, PMMA  Enclosure rating  Ambient operating temperature  -35 °C +50 °C <sup>10)</sup> Ambient storage temperature  -40 °C +70 °C  Warm-up time  Initialization time  L/D = light/dark switching  Male connector M12, 5-pin  A <sup>7)</sup> B <sup>8</sup> B <sup>8)</sup> C <sup>9)</sup> Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  -35 °C +70 °C  415 min <sup>11)</sup> Initialization time	Switching frequency	30 Hz <sup>6)</sup>
Connection type  Circuit protection  A <sup>7)</sup> B <sup>8)</sup> C <sup>9)</sup> Protection class  III  Weight  48 g  Housing material  Plastic, VISTAL®, Plastic, PMMA  Optics material  Plofor  Ambient operating temperature  -35 °C +50 °C <sup>10)</sup> Ambient storage temperature  -40 °C +70 °C  Warm-up time  Initialization time  Male connector M12, 5-pin  A <sup>7)</sup> B <sup>8)</sup> C <sup>9)</sup> Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  1P67  -35 °C +50 °C <sup>10)</sup> -40 °C +70 °C <a href="mailto:storage-temperature">storage temperature</a> -40 °C +70 °C	Analog output	-
Circuit protection  A 7) B 8) C 9)  Protection class  III  Weight  48 g  Housing material  Plastic, VISTAL®, Plastic, PMMA  Optics material  Plastic, PMMA  IP67  Ambient operating temperature  -35 °C +50 °C 10)  Ambient storage temperature  -40 °C +70 °C  Warm-up time  < 15 min 11)  Initialization time  A 7) B 8) C 9)  III  III  III  III  III  III  III	Input	L/D = light/dark switching
Protection class  III  Weight  Housing material  Plastic, VISTAL®, Plastic, PMMA  Optics material  Plastic, PMMA  Plastic, PMMA  Enclosure rating  IP67  Ambient operating temperature  -35 °C +50 °C <sup>10)</sup> -40 °C +70 °C  Warm-up time  <15 min <sup>11)</sup> Initialization time  <300 ms	Connection type	Male connector M12, 5-pin
Weight  Housing material  Plastic, VISTAL®, Plastic, PMMA  Optics material  Plastic, PMMA  IP67  Ambient operating temperature  -35 °C +50 °C <sup>10)</sup> Ambient storage temperature  -40 °C +70 °C  Warm-up time  < 15 min <sup>11)</sup> Initialization time  48 g  Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  IP67  -35 °C +50 °C <sup>10)</sup> -35 °C +50 °C <sup>10)</sup> -40 °C +70 °C  < 15 min <sup>11)</sup> < 300 ms	Circuit protection	B <sup>8)</sup>
Housing material  Plastic, VISTAL®, Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  IP67  Ambient operating temperature  -35 °C +50 °C <sup>10)</sup> Ambient storage temperature  -40 °C +70 °C  Warm-up time  < 15 min <sup>11)</sup> Initialization time  Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  -35 °C +50 °C <sup>10)</sup> -35 °C +50 °C <sup>10)</sup> -40 °C +70 °C  < 15 min <sup>11)</sup> < 300 ms	Protection class	III
Optics material  Plastic, PMMA  IP67  Ambient operating temperature  -35 °C +50 °C <sup>10)</sup> Ambient storage temperature  -40 °C +70 °C  Warm-up time  < 15 min <sup>11)</sup> Initialization time  Plastic, PMMA  IP67  -35 °C +50 °C <sup>10)</sup> -40 °C +70 °C  < 15 min <sup>11)</sup> < 300 ms	Weight	48 g
Enclosure rating IP67  Ambient operating temperature $-35  ^{\circ}\text{C} \dots +50  ^{\circ}\text{C}^{10)}$ Ambient storage temperature $-40  ^{\circ}\text{C} \dots +70  ^{\circ}\text{C}$ Warm-up time $<15  \text{min}^{11)}$ Initialization time $<300  \text{ms}$	Housing material	Plastic, VISTAL®, Plastic, PMMA
Ambient operating temperature $-35  ^{\circ}\text{C} \dots +50  ^{\circ}\text{C}^{10)}$ Ambient storage temperature $-40  ^{\circ}\text{C} \dots +70  ^{\circ}\text{C}$ Warm-up time $< 15  \text{min}^{11)}$ Initialization time $< 300  \text{ms}$	Optics material	Plastic, PMMA
Ambient storage temperature -40 °C +70 °C  Warm-up time <15 min <sup>11)</sup> Initialization time <300 ms	Enclosure rating	IP67
Warm-up time < 15 min <sup>11)</sup> Initialization time < 300 ms	Ambient operating temperature	-35 °C +50 °C <sup>10)</sup>
Initialization time < 300 ms	Ambient storage temperature	-40 °C +70 °C
	Warm-up time	< 15 min <sup>11)</sup>
UL File No. NRKH.E181493	Initialization time	< 300 ms
	UL File No.	NRKH.E181493

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

#### Classifications

ECI@ss 5.0	27270904
ECI@ss 5.1.4	27270904
ECI@ss 6.0	27270904
ECI@ss 6.2	27270904
ECI@ss 7.0	27270904
ECI@ss 8.0	27270904
ECI@ss 8.1	27270904

 $<sup>^{2)}</sup>$  May not exceed or fall below  $\mathrm{U}_{\mathrm{V}}$  tolerances.

 $<sup>^{3)}</sup>$  Without load. At  $V_S = 24 \text{ V}$ .

 $<sup>^{4)}</sup>$  Q1, Q2 = 2 switching thresholds, light switching.

<sup>5)</sup> Signal transit time with resistive load.

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 $<sup>^{7)}</sup>$  A = V<sub>S</sub> connections reverse-polarity protected.

<sup>8)</sup> B = inputs and output reverse-polarity protected.

<sup>9)</sup> C = interference suppression.

 $<sup>^{10)}</sup>$  As of  $T_a$  = 45 °C, a max.load current  $I_{max}$  = 50 mA is permitted.

 $<sup>^{11)}</sup>$  Below  $T_a$  =  $-10\,$  °C a warm-up time is required.

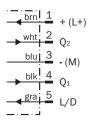
## WTT12L-B2547 | PowerProx

PHOTOELECTRIC SENSORS

ECI@ss 9.0	27270904
ETIM 5.0	EC002719
ETIM 6.0	EC002719
UNSPSC 16.0901	39121528

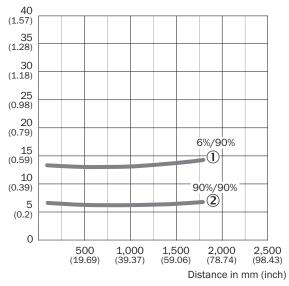
#### Connection diagram

Cd-286



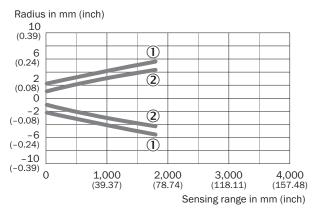
#### Characteristic curve

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



- ① Sensing range on black, 6% remission
- ② Sensing range on white, 90% remission

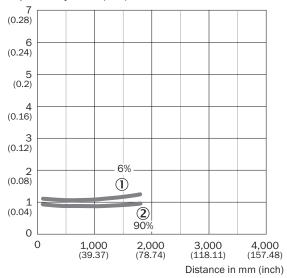
#### Light spot size



- ① Light spot horizontal
- ② Light spot vertical

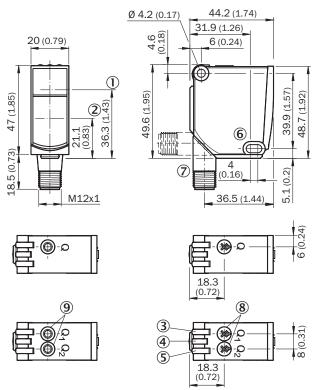
#### Reproducibility

#### Repeatablility in mm (inch)



- 1 6 % remission, on black
- ② 90 % remission, on white

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



- ① Optical axis sender
- ② Optical axis receiver
- 3 LED indicator yellow: Status of received light beam
- 4 LED indicator green: power on
- (5) LED indicator yellow: Status of received light beam
- 6 Mounting hole, Ø 4.2 mm
- ⑦ Connection
- ® Potentiometer
- Single teach-in button

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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.

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For us, that is "Sensor Intelligence."

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