



# WLL180T-F333S01

WLL180

FIBER-OPTIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
WLL180T-F333S01	6041001

Included in delivery: BEF-WLL180 (1)  
Other models and accessories → [www.sick.com/WLL180](http://www.sick.com/WLL180)

Detailed technical data

Features

Device type	Fiber-optic amplifier
Device type detail	Expansion unit
Functional principle detail	Depending on the optical fiber cable used
Sensing range max.	Depending on the optical fiber cable used
Emitted beam	
Light source	LED
Type of light	Visible red light
Key LED figures	
Normative reference	EN 62471:2008-09   IEC 62471:2006, modified
LED risk group marking	Free group
Wave length	650 nm
Average service life	100,000 h at T <sub>a</sub> = +25 °C
Adjustment	
Display + operating buttons	For configuring the sensor parameters
Display	
LED yellow	Status of digital output Permanently on: Switching output active Permanently off: Digital output not active
Display	Display of sensor functions
Special features	Cable with M8 male connector, 3-pin, 200 mm
Items supplied	BEF-WLL180 mounting bracket

Safety-related parameters

MTTF <sub>D</sub>	317 years
DC <sub>avg</sub>	0 %
T <sub>M</sub> (mission time)	20 years

## Electronics

<b>Supply voltage <math>U_B</math></b>		12 V DC ... 24 V DC <sup>1)</sup>
<b>Ripple</b>		$\leq 10\%$ <sup>2)</sup>
<b>Current consumption</b>		$\leq 50\text{ mA}$ <sup>3)</sup>
<b>Protection class</b>		III
<b>Digital output</b>		
	Number	1
	Type	PNP <sup>4)</sup>
	Switching mode	Light/dark switching
	Switching mode selector	Manually selectable
	Circuit protection outputs	Reverse polarity protected
		Overcurrent protected
		Short-circuit protected
	Response time	$\leq 16\text{ }\mu\text{s}$
		$\leq 70\text{ }\mu\text{s}$
		$\leq 250\text{ }\mu\text{s}$
		$\leq 2,000\text{ }\mu\text{s}$
		$\leq 8,000\text{ }\mu\text{s}$
	Switching frequency	31.2 kHz
		7.1 kHz
		2 kHz
		250 Hz
		62.5 Hz
	Time functions	Without time delay, off delay, switch-on delay, ON and OFF delay, one shot
	Delay time	Programmable, 0 ms ... 9,999 ms
<b>Pin/Wire assignment</b>		
	Function of pin 4/black (BK)	Digital output, received light → Output Q1 HIGH
	Function of pin 4/black (BK) – detail	The pin 4 function of the sensor can be configured

<sup>1)</sup>  $\pm 10\%$ .

<sup>2)</sup> May not fall below or exceed  $U_Y$  tolerances.

<sup>3)</sup> Without load.

<sup>4)</sup> Selectable via menu.

## Mechanics

<b>Housing</b>		Rectangular
<b>Dimensions (W x H x D)</b>		10.5 mm x 34.6 mm x 71.9 mm
<b>Connection</b>		Cable with connector M8, 3-pin
<b>Connection detail</b>		
	Deep-freeze property	Do not bend below 0 °C
	Length of cable (L)	0.2 m
<b>Material</b>		
	Housing	Plastic, ABS/PC
	Cable	Plastic, PVC

<b>Weight</b>	25 g
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### Ambient data

<b>Enclosure rating</b>	IP50 (EN 60529)
<b>Ambient operating temperature</b>	-25 °C ... +55 °C <sup>1)</sup>
<b>Ambient temperature, storage</b>	-25 °C ... +70 °C
<b>Typ. Ambient light immunity</b>	Artificial light: ≤ 3,000 lx Sunlight: ≤ 10,000 lx
<b>Shock resistance</b>	50 g, 11 ms (3 positive and 3 negative shocks along X, Y, Z axes, 18 total shocks (EN60068-2-27))
<b>Vibration resistance</b>	10 Hz ... 55 Hz (Amplitude 1 mm, 3 x 30 min (EN60068-2-6))
<b>Air humidity</b>	35 % ... 85 %, relative humidity (no condensation)
<b>Electromagnetic compatibility (EMC)</b>	EN 60947-5-2
<b>RoHS certificate</b>	✓

<sup>1)</sup> Operating temperature fluctuates according to number of devices connected: 4–8 devices: -25 °C ... +50 °C (output current 50 mA) / 9–16 devices: -25 °C ... +45 °C (output current 20 mA).

### Smart Task

<b>Timer function</b>	Deactivated Switch-on delay Off delay ON and OFF delay Impulse (one shot) Switch-on delay and pulse
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### Certificates

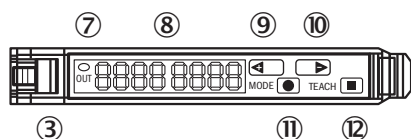
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China-RoHS</b>	✓
<b>Photobiological safety (DIN EN 62471) certificate</b>	✓

### Classifications

<b>ECLASS 5.0</b>	27270905
<b>ECLASS 5.1.4</b>	27270905
<b>ECLASS 6.0</b>	27270905
<b>ECLASS 6.2</b>	27270905
<b>ECLASS 7.0</b>	27270905
<b>ECLASS 8.0</b>	27270905
<b>ECLASS 8.1</b>	27270905
<b>ECLASS 9.0</b>	27270905
<b>ECLASS 10.0</b>	27270905
<b>ECLASS 11.0</b>	27270905
<b>ECLASS 12.0</b>	27270905
<b>ETIM 5.0</b>	EC002651

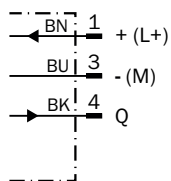
<b>ETIM 6.0</b>	EC002651
<b>ETIM 7.0</b>	EC002651
<b>ETIM 8.0</b>	EC002651
<b>UNSPSC 16.0901</b>	39121528

## Adjustments WLL180

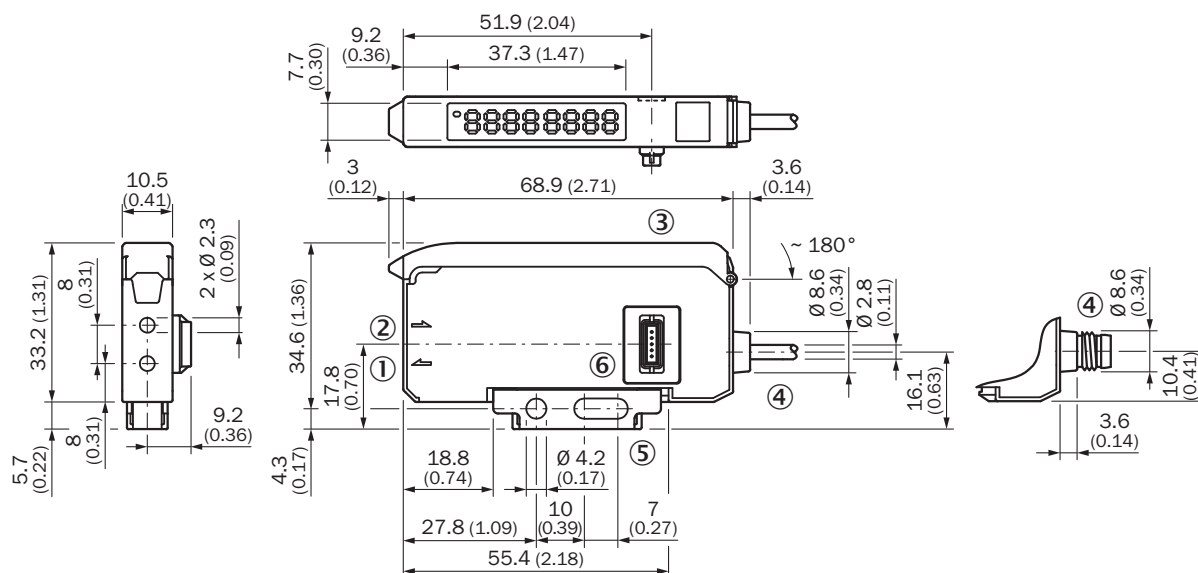


- ③ Locking the fiber-optic cables
- ⑦ LED indicator orange, lights up when switching output is active
- ⑧ Numeric display 2 x 4-digit; green: switching threshold, operating mode; red: actual value, Teach-in and function parameter
- ⑨ step pushbutton > (manual switching threshold: higher/next function parameter)
- ⑩ step pushbutton < (manual switching threshold: lower/previous function parameter)
- ⑪ Mode/Enter-button
- ⑫ Teach-in button

## Connection diagram Cd-045



## Dimensional drawing Expansion unit



Dimensions in mm (inch)






- ① Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- ② Receiver, installation of LL3 fibre optic cable (receiver fibre)
- ③ protective hood opens approx. 180°
- ④ Connection
- ⑤ Mounting bracket, included with delivery
- ⑥ bus connector

## Recommended accessories

Other models and accessories → [www.sick.com/WLL180](http://www.sick.com/WLL180)

	Brief description	Type	part no.
fiber-optic sensors			
	<ul style="list-style-type: none"> <li>• <b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), KTL180</li> <li>• <b>Functional principle:</b> Proximity system</li> <li>• <b>Fiber length:</b> 2,000 mm</li> <li>• <b>Thread diameter (housing):</b> M6</li> <li>• <b>Fiber material:</b> Plastic</li> <li>• <b>Jacket material:</b> Plastic</li> <li>• <b>Fiber head material:</b> Stainless steel</li> <li>• <b>Included with delivery:</b> Mounting, 2 x M6 hexagon nut, 2 x washer, FC fiber cutter (5304141)</li> </ul>	LL3-DB01	5308074
	<ul style="list-style-type: none"> <li>• <b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T)</li> <li>• <b>Functional principle:</b> Proximity system</li> <li>• <b>Fiber length:</b> 2,000 mm</li> <li>• <b>Thread diameter (housing):</b> M3</li> <li>• <b>Fiber material:</b> Plastic</li> <li>• <b>Jacket material:</b> Plastic</li> <li>• <b>Fiber head material:</b> Stainless steel</li> <li>• <b>Included with delivery:</b> Mounting, 2 x M3 hexagon nut, 2 x washer, adapter sleeves, BF-WLL160-13 (1.3 mm) adapter sleeves, FC fiber cutter (5304141)</li> </ul>	LL3-DT01	5308076
	<ul style="list-style-type: none"> <li>• <b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T)</li> <li>• <b>Functional principle:</b> Proximity system</li> <li>• <b>Fiber length:</b> 2,000 mm</li> <li>• <b>Smooth sleeve diameter:</b> 3 mm</li> <li>• <b>Fiber material:</b> Plastic</li> <li>• <b>Jacket material:</b> Plastic</li> <li>• <b>Fiber head material:</b> Stainless steel</li> <li>• <b>Included with delivery:</b> Adapter sleeves, 1 x BF-WLL160-10 (1.0 mm) adapter sleeve, 1 x BF-WLL160-13 (1.3 mm) adapter sleeve, FC fiber cutter (5304141)</li> </ul>	LL3-DR11	5326000
	<ul style="list-style-type: none"> <li>• <b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li>• <b>Functional principle:</b> Proximity system</li> <li>• <b>Fiber length:</b> 2,000 mm</li> <li>• <b>Thread diameter (housing):</b> M6</li> <li>• <b>Fiber material:</b> Plastic</li> <li>• <b>Jacket material:</b> Plastic</li> <li>• <b>Fiber head material:</b> Plastic</li> <li>• <b>Included with delivery:</b> Mounting, 1 x M6 hexagon nut, FC fiber cutter (5304141)</li> </ul>	LL3-DV05	5322549
	<ul style="list-style-type: none"> <li>• <b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li>• <b>Functional principle:</b> Proximity system</li> <li>• <b>Fiber length:</b> 2,000 mm</li> <li>• <b>Thread diameter (housing):</b> M6</li> <li>• <b>Fiber material:</b> Plastic</li> <li>• <b>Jacket material:</b> Plastic</li> <li>• <b>Fiber head material:</b> Stainless steel</li> <li>• <b>Included with delivery:</b> Mounting, 2 x M6 hexagon nut, 2 x washer, FC fiber cutter (5304141)</li> </ul>	LL3-DB02	5308083
	<ul style="list-style-type: none"> <li>• <b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), WLL24 Ex, KTL180</li> <li>• <b>Functional principle:</b> Proximity system</li> <li>• <b>Fiber length:</b> 2,000 mm</li> <li>• <b>Fiber material:</b> Plastic</li> <li>• <b>Jacket material:</b> Plastic</li> <li>• <b>Fiber head material:</b> Plastic</li> <li>• <b>Included with delivery:</b> Adapter sleeves, BF-WLL160-10 (1.0 mm) adapter sleeves, FC fiber cutter (5304141)</li> </ul>	LL3-DC38	5322472
	<ul style="list-style-type: none"> <li>• <b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li>• <b>Functional principle:</b> Through-beam system</li> <li>• <b>Fiber length:</b> 2,000 mm</li> <li>• <b>Thread diameter (housing):</b> M4</li> <li>• <b>Fiber material:</b> Plastic</li> <li>• <b>Jacket material:</b> Plastic</li> <li>• <b>Fiber head material:</b> Stainless steel</li> <li>• <b>Included with delivery:</b> Mounting, 4 x M4 hexagon nut, 4 x washer, FC fiber cutter (5304141)</li> </ul>	LL3-TB01	5308050
	<ul style="list-style-type: none"> <li>• <b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li>• <b>Functional principle:</b> Through-beam system</li> <li>• <b>Fiber length:</b> 20,000 mm</li> <li>• <b>Thread diameter (housing):</b> M12</li> <li>• <b>Fiber material:</b> Plastic</li> <li>• <b>Jacket material:</b> Plastic</li> <li>• <b>Fiber head material:</b> Stainless steel</li> </ul>	LL3-TX01	5324173

	Brief description	Type	part no.
	<ul style="list-style-type: none"> <li><b>Included with delivery:</b> Mounting, 4 x M12 hexagon nut, FC fiber cutter (5304141), protective cladding for fiber head</li> <li><b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li><b>Functional principle:</b> Through-beam system</li> <li><b>Fiber length:</b> 2,000 mm</li> <li><b>Thread diameter (housing):</b> M4</li> <li><b>Fiber material:</b> Plastic</li> <li><b>Jacket material:</b> Plastic</li> <li><b>Fiber head material:</b> Plastic</li> <li><b>Included with delivery:</b> Mounting, 2 x M4 hexagon nut, FC fiber cutter (5304141)</li> </ul>	LL3-TV05	5322546
	<ul style="list-style-type: none"> <li><b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li><b>Functional principle:</b> Through-beam system</li> <li><b>Fiber length:</b> 2,000 mm</li> <li><b>Optical fiber head array width:</b> 40 mm</li> <li><b>Fiber material:</b> Plastic</li> <li><b>Jacket material:</b> Plastic</li> <li><b>Fiber head material:</b> Plastic</li> <li><b>Included with delivery:</b> Mounting, 4 x M3 Phillips-head screw, FC fiber cutter (5304141), protective cladding for fiber head</li> </ul>	LL3-TS40	5323971
	<ul style="list-style-type: none"> <li><b>For fiber optic amplifiers:</b> WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li><b>Functional principle:</b> Through-beam system</li> <li><b>Fiber length:</b> 2,000 mm</li> <li><b>Smooth sleeve diameter:</b> 6 mm</li> <li><b>Fiber material:</b> Plastic</li> <li><b>Jacket material:</b> Chemical-resistant plastic</li> <li><b>Fiber head material:</b> Chemical-resistant plastic</li> <li><b>Included with delivery:</b> FC fiber cutter (5304141)</li> </ul>	LL3-TY01	5308066
integration modules and adapters			
	<ul style="list-style-type: none"> <li><b>Description:</b> EtherCAT coupler for WLL180T, KTL180 and AOD1. Features: EtherCAT; transmission rates of up to 100 Mbaud; M12 EtherCAT connection; M8 voltage supply connection, 4-pin; full read/write functionality for the process and service data of the connected sensors. See operating instructions for additional information and technical details</li> </ul>	WI180C-EC	6068089
	<ul style="list-style-type: none"> <li><b>Description:</b> PROFINET coupler for WLL180T, KTL180 and AOD1. Features: PROFINET IRT; transmission rates 10 Mbaud – 100 Mbaud; M12 PROFINET connection; M8 voltage supply connection, 4-pin; full read/write functionality for the process and service data of the connected sensors. See operating instructions for additional information and technical details</li> </ul>	WI180C-PN	6068088
	<ul style="list-style-type: none"> <li><b>Description:</b> IO-Link Smart Sensor Gateway for WLL180T, KTL180 and AOD1; Features: IO-Link; COM3; M8 connection, 4-pin; full read/write functionality for the process and service data of the connected sensors. See operating instructions for additional information and technical details</li> </ul>	WI180C-IOA00	6071650

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 3-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF8U13-020VA1XLEAX	2095860
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 3-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF8U13-050VA1XLEAX	2095884
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 3-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG8U13-020VA1XLEAX	2096165
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 3-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG8U13-050VA1XLEAX	2096166
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 0.6 m, 3-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF8U13-C60VA1XLEAX	2146368

## 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)