



# WLL180T-P434

WLL180

FIBER-OPTIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

| Type         | part no. |
|--------------|----------|
| WLL180T-P434 | 6039095  |

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          | Stand-alone  |
| 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                  |  |
| Wire/pin                    | For deactivating the sender and executing the test logic/for setting the sensing range/synchronization with input signal |
| Display + operating buttons | For configuring the sensor parameters  |
| Display                     |  |
| LED yellow                  | Status of digital output<br>Permanently on: Switching output active<br>Permanently off: Digital output not active        |
| Display                     | Display of sensor functions  |
| Items supplied              | BEF-WLL180 mounting bracket  |

Safety-related parameters

|                   |           |
|-------------------|-----------|
| MTTF <sub>D</sub> | 323 years |
| DC <sub>avg</sub> | 0 %       |

|                                     |          |
|-------------------------------------|----------|
| <b>T<sub>M</sub> (mission time)</b> | 20 years |
|-------------------------------------|----------|

## Electronics

|                                       |  |
|---------------------------------------|--|
| <b>Supply voltage U<sub>B</sub></b>   | 12 V DC ... 24 V DC <sup>1)</sup>  |
| <b>Ripple</b>                         | ≤ 10 % <sup>2)</sup>   |
| <b>Current consumption</b>            | ≤ 50 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                         | ≤ 16 µs  |
|                                       | ≤ 70 µs  |
|                                       | ≤ 250 µs   |
|                                       | ≤ 2,000 µs   |
|                                       | ≤ 8,000 µs   |
| 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                         |
| Function of pin 2/white (WH)          | Teach-in input   |
| Function of pin 2/white (WH) – detail | The pin 2 function of the sensor can be configured                         |

<sup>1)</sup> ± 10%.

<sup>2)</sup> May not fall below or exceed U<sub>y</sub> 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>             | Male connector M8, 4-pin    |
| <b>Material</b>               |                             |
| Housing                       | Plastic, ABS/PC             |
| <b>Weight</b>                 | 20 g                        |

### Ambient data

|  |   |
|--|---|
| <b>Enclosure rating</b>                    | IP50 (EN 60529)   |
| <b>Ambient operating temperature</b>       | -25 °C ... +55 °C   |
| <b>Ambient temperature, storage</b>        | -40 °C ... +70 °C   |
| <b>Typ. Ambient light immunity</b>         | Artificial light: ≤ 3,000 lx<br>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>UL File No.</b>                         | NRKH.E300503 & NRKH7.E300503  |
| <b>RoHS certificate</b>                    | ✓   |

### Smart Task

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

### Certificates

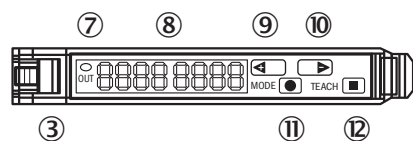
|  |   |
|--|---|
| <b>EU declaration of conformity</b>                      | ✓ |
| <b>UK declaration of conformity</b>                      | ✓ |
| <b>ACMA declaration of conformity</b>                    | ✓ |
| <b>Moroccan declaration of conformity</b>                | ✓ |
| <b>China-RoHS</b>  | ✓ |
| <b>cULus certificate</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 |

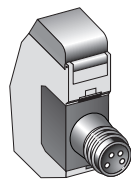
|                       |          |
|-----------------------|----------|
| <b>ETIM 8.0</b>       | EC002651 |
| <b>UNSPSC 16.0901</b> | 39121528 |

## Adjustments WLL180

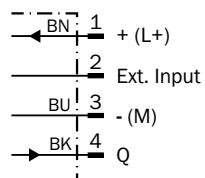


- ③ Locking the fiber-optic cables
- ⑦ LED indicator orange, lights up when switching output is active
- ⑧ Numeric display 2 x 4-digit; green: switching threshold, operating mode; red: actual value, Teach-in and function parameter
- ⑨ step pushbutton > (manual switching threshold: higher/next function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

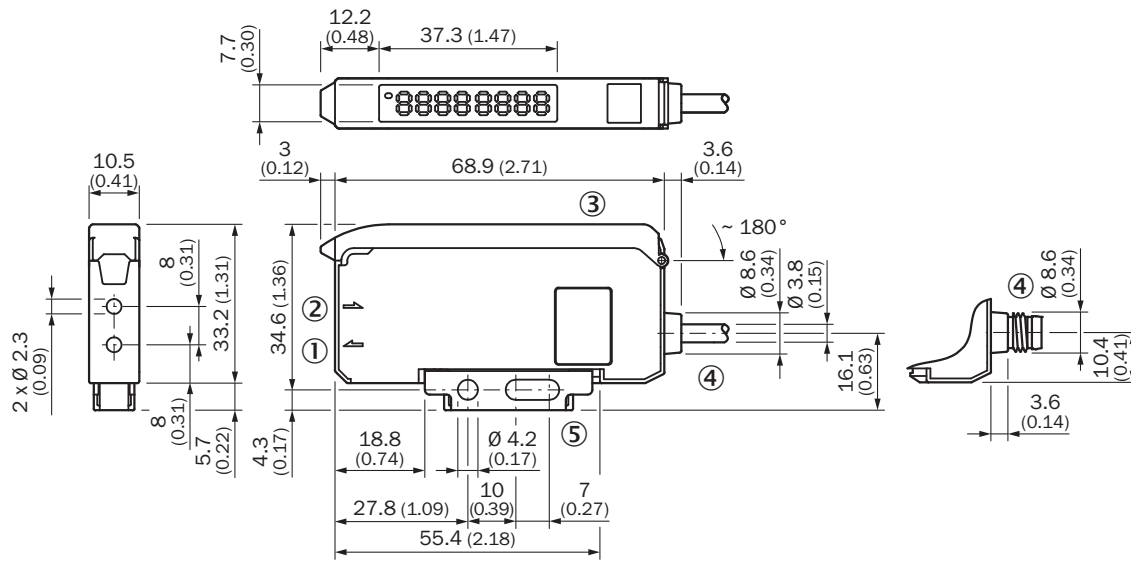
## Connection type



## Connection diagram Cd-134



### Dimensional drawing Stand-alone






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

## 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>For fiber optic amplifiers: WLL80, WLL180, GLL170(T), KTL180</li> <li>Functional principle: Proximity system</li> <li>Fiber length: 2,000 mm</li> <li>Thread diameter (housing): M6</li> <li>Fiber material: Plastic</li> <li>Jacket material: Plastic</li> <li>Fiber head material: Stainless steel</li> <li>Included with delivery: 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>For fiber optic amplifiers: WLL80, WLL180, GLL170(T)</li> <li>Functional principle: Proximity system</li> <li>Fiber length: 2,000 mm</li> <li>Thread diameter (housing): M3</li> <li>Fiber material: Plastic</li> <li>Jacket material: Plastic</li> <li>Fiber head material: Stainless steel</li> <li>Included with delivery: 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>For fiber optic amplifiers: WLL80, WLL180, GLL170(T)</li> <li>Functional principle: Proximity system</li> <li>Fiber length: 2,000 mm</li> <li>Smooth sleeve diameter: 3 mm</li> <li>Fiber material: Plastic</li> <li>Jacket material: Plastic</li> <li>Fiber head material: Stainless steel</li> <li>Included with delivery: 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>For fiber optic amplifiers: WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li>Functional principle: Proximity system</li> <li>Fiber length: 2,000 mm</li> <li>Thread diameter (housing): M6</li> <li>Fiber material: Plastic</li> <li>Jacket material: Plastic</li> <li>Fiber head material: Plastic</li> <li>Included with delivery: Mounting, 1 x M6 hexagon nut, FC fiber cutter (5304141)</li> </ul>   | LL3-DV05 | 5322549  |
|  | <ul style="list-style-type: none"> <li>For fiber optic amplifiers: WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li>Functional principle: Proximity system</li> <li>Fiber length: 2,000 mm</li> <li>Thread diameter (housing): M6</li> <li>Fiber material: Plastic</li> <li>Jacket material: Plastic</li> <li>Fiber head material: Stainless steel</li> <li>Included with delivery: 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>For fiber optic amplifiers: WLL80, WLL180, GLL170(T), WLL24 Ex, KTL180</li> <li>Functional principle: Proximity system</li> <li>Fiber length: 2,000 mm</li> <li>Fiber material: Plastic</li> <li>Jacket material: Plastic</li> <li>Fiber head material: Plastic</li> <li>Included with delivery: 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>For fiber optic amplifiers: WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li>Functional principle: Through-beam system</li> <li>Fiber length: 2,000 mm</li> <li>Thread diameter (housing): M4</li> <li>Fiber material: Plastic</li> <li>Jacket material: Plastic</li> <li>Fiber head material: Stainless steel</li> <li>Included with delivery: 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>For fiber optic amplifiers: WLL80, WLL180, GLL170(T), WLL24 Ex</li> <li>Functional principle: Through-beam system</li> <li>Fiber length: 20,000 mm</li> <li>Thread diameter (housing): M12</li> <li>Fiber material: Plastic</li> <li>Jacket material: Plastic</li> <li>Fiber head material: 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  |



|   | Brief description  | Type               | part no. |
|---|--|--------------------|----------|
| connectors and cables   |  |                    |          |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>   | YF8U14-020VA3XLEAX | 2095888  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>   | YF8U14-050VA3XLEAX | 2095889  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>     | YG8U14-020VA3XLEAX | 2095962  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>     | YG8U14-050VA3XLEAX | 2095963  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul> | YF8U14-C60VA3XLEAX | 2145852  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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> 1 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>   | YF8U14-010VA3XLEAX | 2145853  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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> 0.6 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>   | YG8U14-C60VA3XLEAX | 2145854  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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> 3 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>     | YG8U14-030VA3XLEAX | 2145857  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 4-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> 1 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>     | YG8U14-010VA3XLEAX | 2145855  |

## 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)