

## LL3-TR02

Fiber-optic cables

FIBERS

**SICK**  
Sensor Intelligence.



### Ordering information

Type	Part no.
LL3-TR02	5308053

Other models and accessories → [www.sick.com/Fiber-optic\\_cables](http://www.sick.com/Fiber-optic_cables)

### Detailed technical data

#### Features

<b>Device type</b>	Fiber-optic cables
<b>Functional principle</b>	Through-beam system
<b>Fiber-optic head design</b>	Threaded sleeve
<b>Application</b>	High flexible (static), Robotics (dynamic flexible)
<b>Compatible fiber-optic amplifiers</b>	WLL80, WLL180, GLL170(T)
<b>Sensing range max.</b>	1,310 mm (Sensing range of WLL80 at 8 ms)
<b>Minimal object diameter</b>	0.1 mm <sup>1)</sup>
<b>Optical fiber head</b>	
Angle of dispersion	60°
Integrated lens	No
Compatibility tip adapters	No
<b>Optical fiber</b>	
Compatibility with infrared light	No
Optical fiber cable can be shortened	✓
Adapter end sleeves required	Yes
<b>Included with delivery</b>	Mounting, 4 x M3 hexagon nut, 4 x washer, adapter sleeves, BF-WLL160-10 (1.0 mm) adapter sleeves, FC fiber cutter (5304141)

<sup>1)</sup> Minimum detectable object was determined at optimum measuring distance and optimum setting.

#### Mechanics

<b>Optical fiber head</b>	
Light emission	Axial
Thread diameter (housing)	M3
<b>Optical fiber</b>	
Fiber length	2,000 mm
Bending radius	4 mm
Dynamic flexibility (robotics)	Yes
Outside diameter, optical fiber cable connection	1 mm
Fiber arrangement	Multi-fiber
Core structure	4 x Ø 0.25 mm Multi-fiber
<b>Material</b>	
Optical fiber head	Stainless steel
Sheath	Polyethylen (PE)

	Fibers	Polymethylmethacrylat (PMMA)
<b>Weight</b>		20 g

## Ambient data

<b>Ambient operating temperature</b>	-40 °C ... +70 °C
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## 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

## Sensing ranges with WLL80

<b>Operating mode 16 µs</b>	85 mm
<b>Operating mode 70 µs</b>	265 mm
<b>Operating mode 250 µs</b>	420 mm
<b>Operating mode 500 µs</b>	525 mm
<b>Operating mode 1 ms</b>	595 mm
<b>Operating mode 2 ms</b>	865 mm
<b>Operating mode 8 ms</b>	1,310 mm

## Sensing ranges with WLL180T

<b>Operating mode 16 µs</b>	60 mm
<b>Operating mode 70 µs</b>	175 mm
<b>Operating mode 250 µs</b>	330 mm
<b>Operating mode 2 ms</b>	750 mm
<b>Operating mode 8 ms</b>	1,100 mm
<b>Note</b>	Sensing ranges related to fiber-optic sensors with type of light: visible red light

## Sensing ranges with GLL170

<b>Operating mode 250 µs</b>	130 mm
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## Sensing ranges with GLL170T

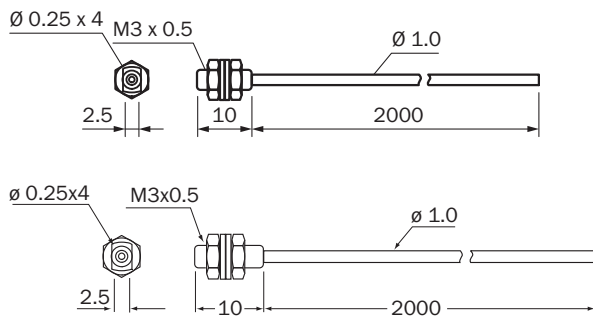
<b>Operating mode 50 µs</b>	100 mm
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Operating mode 250  $\mu$ s

180 mm

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

LL3-TR02



## 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:

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