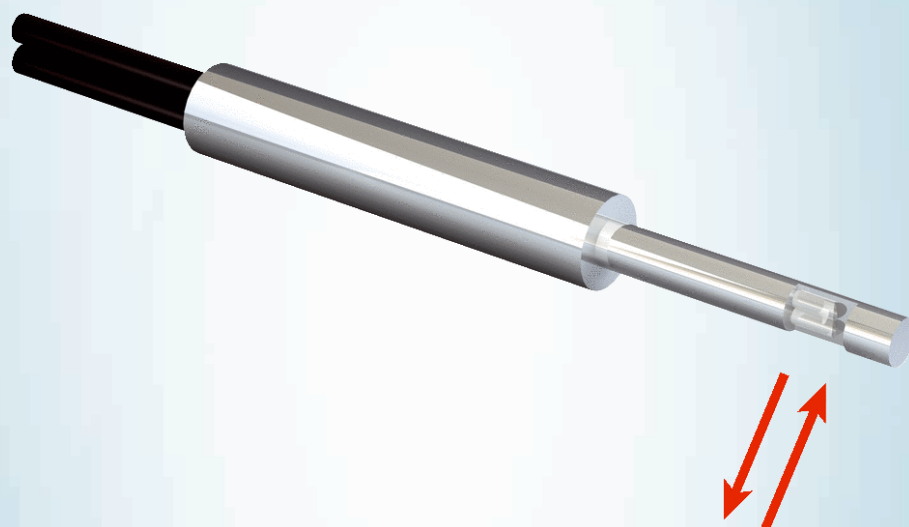


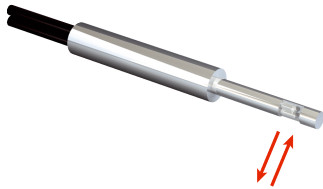


## LL3-DV02

Fiber-optic cables

**FIBER-OPTIC SENSORS**

**SICK**  
Sensor Intelligence.



### Ordering information

| Type     | part no. |
|----------|----------|
| LL3-DV02 | 5308089  |

**Included in delivery:** BF-WLL160-10 (1), FC (1)

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>              | Proximity system                                                                  |
| <b>Fiber-optic head design</b>           | Smooth sleeve, Long end sleeve, 90° deflection                                    |
| <b>Application</b>                       | Standard                                                                          |
| <b>Compatible fiber-optic amplifiers</b> | GLL70, WLL80, WLL180, GLL170(T)                                                   |
| <b>Sensing range max.</b>                | 320 mm (Sensing range of WLL80 at 8 ms)                                           |
| <b>Minimal object diameter</b>           | 0.015 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>            | 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                                   | Radial      |
| Smooth sleeve diameter                           | 3 mm        |
| Optical fiber taper diameter                     | ≥ 1.5 mm    |
| Optical fiber taper length after 2 mm            | ≥ 10 mm     |
| <b>Optical fiber</b>                             |             |
| Fiber length                                     | 2,000 mm    |
| Bending radius                                   | 25 mm       |
| Dynamic flexibility (robotics)                   | No          |
| Outside diameter, optical fiber cable connection | 1 mm        |
| Fiber arrangement                                | Singlefiber |

<sup>1)</sup> C = Coaxial, S = Sender, E = Receiver.

|                 |                    |                                        |
|-----------------|--------------------|----------------------------------------|
|                 | Core structure     | 2 x Ø 0,5 mm <sup>1)</sup> Singlefiber |
| <b>Material</b> |                    |                                        |
|                 | Optical fiber head | Stainless steel                        |
|                 | Sheath             | Polyethylen (PE)                       |
|                 | Fibers             | Polymethylmethacrylat (PMMA)           |
| <b>Weight</b>   |                    | 18 g                                   |

<sup>1)</sup> C = Coaxial, S = Sender, E = Receiver.

#### Ambient data

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

#### 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 GLL70

|                              |        |
|------------------------------|--------|
| <b>Operating mode 50 µs</b>  | 30 mm  |
| <b>Operating mode 250 µs</b> | 90 mm  |
| <b>Operating mode 1 ms</b>   | 135 mm |
| <b>Operating mode 4 ms</b>   | 270 mm |

#### Sensing ranges with WLL80

|                              |                                                                                     |
|------------------------------|-------------------------------------------------------------------------------------|
| <b>Operating mode 16 µs</b>  | 25 mm                                                                               |
| <b>Operating mode 70 µs</b>  | 70 mm                                                                               |
| <b>Operating mode 250 µs</b> | 95 mm                                                                               |
| <b>Operating mode 500 µs</b> | 125 mm                                                                              |
| <b>Operating mode 1 ms</b>   | 145 mm                                                                              |
| <b>Operating mode 2 ms</b>   | 215 mm                                                                              |
| <b>Operating mode 8 ms</b>   | 320 mm                                                                              |
| <b>Note</b>                  | Sensing ranges related to fiber-optic sensors with type of light: visible red light |

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Operating mode 16 μs  | 10 mm                                                                               |
| Operating mode 70 μs  | 35 mm                                                                               |
| Operating mode 250 μs | 70 mm                                                                               |
| Operating mode 2 ms   | 125 mm                                                                              |
| Operating mode 8 ms   | 290 mm                                                                              |
| Note                  | Sensing ranges related to fiber-optic sensors with type of light: visible red light |

|                       |       |
|-----------------------|-------|
| Operating mode 250 µs | 20 mm |
|-----------------------|-------|

|                              |       |
|------------------------------|-------|
| <b>Operating mode 50 μs</b>  | 20 mm |
| <b>Operating mode 250 μs</b> | 40 mm |

Technical drawing of a cable assembly. The drawing shows a cross-section of a cable with a central conductor of diameter  $\varnothing 1,5$  and an outer jacket of thickness  $0,5 \times 2$ . The cable is shown in two views: a side view and a top view. The side view shows the cable with a length of 2000 units, divided into segments of 10, 15, and 15 units. The top view shows the cable with a diameter of  $\varnothing 3$  and a length of 2,8 units. The cable is shown with a central conductor of diameter  $\varnothing 1,5$  and an outer jacket of thickness  $0,5 \times 2$ . The cable is shown in two views: a side view and a top view. The side view shows the cable with a length of 2000 units, divided into segments of 10, 15, and 15 units. The top view shows the cable with a diameter of  $\varnothing 3$  and a length of 2,8 units. The cable is shown with a central conductor of diameter  $\varnothing 1,5$  and an outer jacket of thickness  $0,5 \times 2$ .

Technical drawing of a mechanical part with dimensions:

- Top view:  $\varnothing 0.5 \times 2$ ,  $\varnothing 1.5$ ,  $\varnothing 3$ ,  $\varnothing 1$
- Left view: 1.5, 2.8, 10, 15, 2000
- Bottom view: 2

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## 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)