

Photoelectric Sensors with Special Properties

Plastic fiber optics BFO

Plastic Fiber Optics

Fiber optics are generally available in a diffuse sensor or through-beam design.

The diffuse sensors have an integrated emitter and receiver fiber at the optical head; the through-beam sensors use two separate optical fibers.

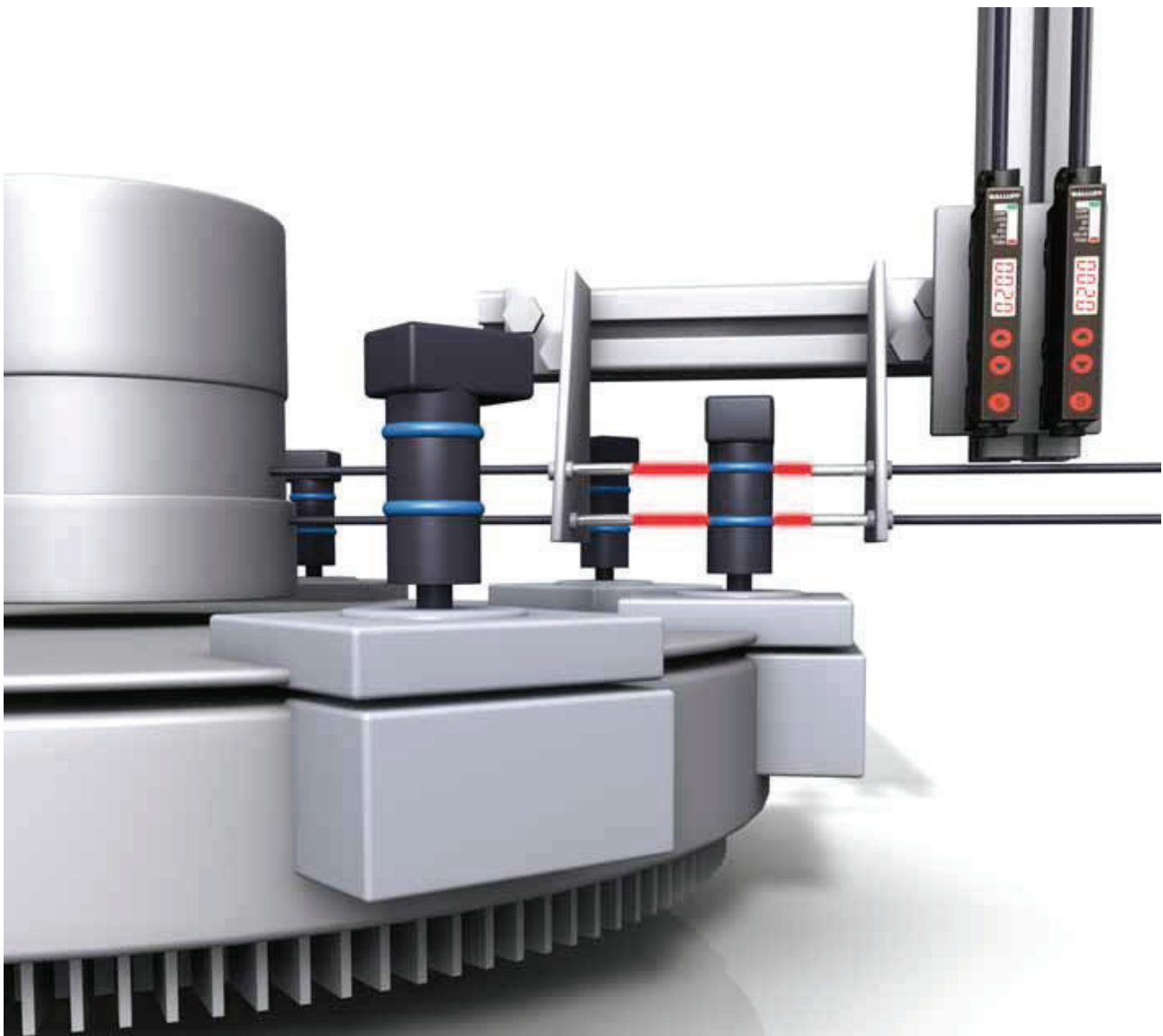
It is easy to see why optical fibers are so commonly used: The variety of end configurations, with straight or angled light exit, flexible optical head or coaxial fiber arrangement, the various fiber diameters and the ability to trim them to the desired length.

Another plus

For full flexibility there are also the user-fabricated fiber optics: Their duplex cable can be cut to length and combined with various end pieces at will.

Applications

- Small parts detection
- For tight mounting conditions
- Inspecting parts features
- Counting (e.g. counting drops)
- Precise parts positioning
- Handling and assembly technology
- Robotics



Photoelectric Sensors with Special Properties

Plastic fiber optics BFO Product overview



Photoelectric Sensors

Photoelectric Sensors

Photoelectric Sensors with Special Properties

Analog Fork Sensors BGL_C

Optical Window Sensors BOW

Light Grids BLG

Color Sensors BFS

Contrast Sensors BKT

Luminescence Sensors BLT

Optical Fiber Base Units BFB/ BOS

Plastic Fiber Optics BFO

Glass Fiber Optics BFO

Photoelectric Distance Sensors for Analog Distance Measurement

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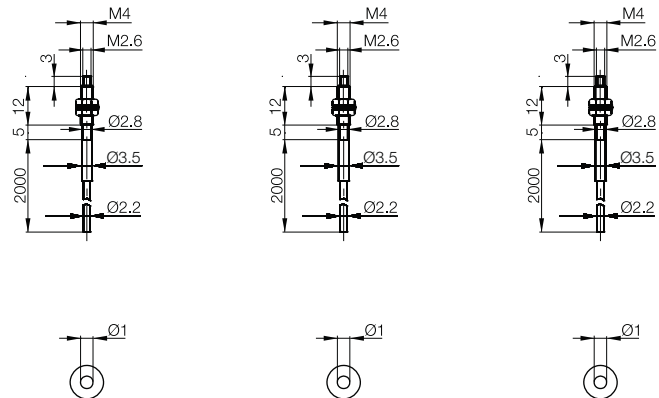
| Type | Optical head | Light exit | | Fiber arrangement | | | Core diameter | | | | Features | | | Page | |
|------------------------------------|---------------------------|------------|-----|-------------------|---------|-------------|---------------|--------|--------|---------|----------------------|----------------------------|-----------------|------|-----|
| | | Straight | 90° | Standard | Coaxial | Light grids | 1.5 mm | 1.0 mm | 0.5 mm | 0.25 mm | Bendable optical tip | Extended temperature range | Highly flexible | | |
| Through-beam fiber optics | | | | | | | | | | | | | | | |
| BF0005M | BFO D22-LA-KB-EAK-10-02 | M4 | ■ | ■ | | | | ■ | | | | | | | 328 |
| BF0005T | BFO D22-LAH-KB-EAK-10-02 | M4 | ■ | ■ | | | | ■ | | | | | | ■ | 328 |
| BF0005W | BFO D22-LAT-KB-EAK-10-02 | M4 | ■ | ■ | | | | ■ | | | | ■ | | | 328 |
| BF0005U | BFO D22-LAP-KB-EAK-15-02 | M4 | ■ | ■ | | | ■ | | | | | | | | 329 |
| BF00002 | BFO D22-LA-TB-EAK-10-02 | M4 | ■ | ■ | | | | ■ | | | | ■ | | | 329 |
| BF0005N | BFO D22-LA-NB-PZK-10-02 | M4 | ■ | ■ | | | | ■ | | | | ■ | | | 329 |
| BF000AW | BFO D22-LAH-BK-EAK-10-02 | M4 | ■ | ■ | ■ | | | ■ | | | | | | ■ | 329 |
| BF0005R | BFO D22-LA-RB-EAK-10-02 | M3 | ■ | ■ | | | | ■ | | | | | | | 330 |
| BF0000C | BFO N22-LA-FB-EAK-05-01 | M2 | ■ | ■ | | | | | ■ | | | | | | 330 |
| BF000AY | BFO D22-LAT-YB-EAK-10-0,5 | Ø3 | | ■ | ■ | | | ■ | | | | | ■ | | 330 |
| BF0005P | BFO D22-LA-QB-PAK-05-02 | Ø3 | | ■ | ■ | | | ■ | | | | | | | 331 |
| BF00056 | BFO D13-LA-QB-EAK-05-02 | Ø3 | | ■ | ■ | | | | ■ | | | | | | 331 |
| BF00051 | BFO D10-LA-CB-EAK-05-02 | Ø2 | ■ | ■ | ■ | | | | ■ | | | | | | 331 |
| BF00057 | BFO D13-LA-WB-EAK-05-02 | Ø2 | | ■ | ■ | | | ■ | | | | | | | 331 |
| BF000AP | BFO D22-LA-GD-EAK-52-02 | 10×10 | ■ | | | ■ | | | | | ■ | | | | 332 |
| BF0005H | BFO D22-LA-AD-EAK-52-02 | 20×10 | ■ | | | ■ | | | | | ■ | | | | 332 |
| BF0005K | BFO D22-LA-BD-EAK-52-02 | 15×15 | | ■ | | ■ | | | | | ■ | | | | 332 |
| BF00067 | BFO D25-LA-CD-EAK-110-02 | 19×25 | ■ | | | ■ | | | | | ■ | | | | 333 |
| BF000C5 | BFO D25-LA-ED-EAK-250-0,5 | 19×38 | | ■ | | ■ | | | | | ■ | | | | 333 |
| BF00068 | BFO D25-LA-ED-EAK-250-02 | 19×38 | | ■ | | ■ | | | | | ■ | | | | 333 |
| BFB00C8 | BFO D25 LA-HD-EAK-465-02 | 23×55 | | ■ | | ■ | | | | | ■ | | | | 333 |
| BF00058 | BFO D13-LG-05-EAK-30-02 | 15×41 | | ■ | | ■ | | | | | ■ | | | | 334 |
| BF00059 | BFO D13-LG-10-EAK-30-02 | 20×32 | | ■ | | ■ | | | | | ■ | | | | 334 |
| BF0000E | BFO D22-LAH-ZB-EAK-10-02 | 5×4 | ■ | ■ | ■ | | | ■ | | | | | | ■ | 334 |
| BF000C6 | BFO D10-LAH-CK-EAK-05-02 | 11×6 | ■ | ■ | ■ | | | | ■ | | | | | ■ | 335 |
| BF000C7 | BFO D10-LAH-DK-EAK-05-02 | 13×7 | | ■ | ■ | | | | ■ | | | | | ■ | 335 |
| Diffuse sensor fiber optics | | | | | | | | | | | | | | | |
| BF00061 | BFO D22-XA-LB-EAK-20-02 | M6 | ■ | | ■ | | | ■ | | | | | | | 336 |
| BF00063 | BFO D22-XAH-LB-EAK-20-02 | M6 | ■ | | ■ | | | ■ | | | | | | ■ | 336 |
| BF00065 | BFO D22-XAT-LB-EAK-20-02 | M6 | ■ | | ■ | | | ■ | | | | ■ | | | 336 |
| BF00064 | BFO D22-XAP-LB-EAK-30-02 | M6 | ■ | | ■ | | ■ | | | | | | | | 337 |
| BF00066 | BFO D22-XB-LB-EAK-15-02 | M6 | ■ | | ■ | ■ | | ■ | | | | | | | 337 |
| BF00007 | BFO D22-XBF-LB-EAK-15-02 | M6 | ■ | | ■ | ■ | | ■ | | | | | | ■ | 337 |
| BF00004 | BFO D22-XA-SB-EAK-20-02 | M6 | ■ | | ■ | | | ■ | | | | ■ | | | 337 |
| BF00005 | BFO D22-XA-UB-EAK-20-02 | M4 | ■ | | ■ | | | ■ | | | | | | | 338 |
| BF00006 | BFO D22-XB-UB-EAK-15-02 | M4 | ■ | | ■ | ■ | | ■ | | | | | | | 338 |
| BF00055 | BFO D10-XAH-KB-EAK-10-02 | M4 | ■ | | ■ | | | ■ | | | | | | ■ | 338 |
| BF0005C | BFO D13-XB-KB-EAK-10-02 | M4 | ■ | | ■ | ■ | | | ■ | | | | | | 339 |
| BF00053 | BFO D10-XA-HB-EAK-10-02 | M4 | ■ | | ■ | | | | ■ | | | ■ | | | 339 |
| BF00054 | BFO D10-XA-RB-EAK-10-02 | M3 | ■ | | ■ | | | | ■ | | | | | | 339 |
| BF0005E | BFO D13-XB-RB-EAK-10-02 | M3 | ■ | | ■ | ■ | | | ■ | | | | | | 339 |
| BF000C3 | BFO D10-XA-VB-EAK-10-02 | M3 | ■ | | ■ | | | ■ | | | | ■ | | | 339 |
| BF00052 | BFO D10-XA-GB-EAK-10-02 | M3 | ■ | | ■ | | | | ■ | | | ■ | | | 340 |
| BF0005A | BFO D13-XA-JB-EAK-20-02 | Ø3 | ■ | | ■ | | | ■ | | | | | | | 340 |
| BF00062 | BFO D22-XA-MB-PAK-10-02 | Ø3 | | ■ | ■ | | | | ■ | | | | | | 340 |
| BF000AT | BFO D13-XB-AB-EAK-10-01 | Ø2.5 | ■ | | ■ | | | ■ | | | | | | | 341 |
| BF000AR | BFO D13-XV-AK-EAK-50-02 | 13×20 | | ■ | | | | | ■ | | | | | | 341 |
| BF0005Z | BFO D22-XA-CD-EAK-110-02 | 19×25 | ■ | | ■ | | | | | | ■ | | | | 341 |
| BF00060 | BFO D22-XA-ED-EAK-250-02 | 19×38 | | ■ | | ■ | | | | | ■ | | | | 341 |



| Optical head | | M4 thread | M4 thread | M4 thread | |
|----------------------|----------------------|-------------------------|--------------------------|--------------------------|--|
| Features | | Standard | Highly flexible | Temperature rated | |
| Straight light exit | Ordering code | BFO005M | BFO005T | BFO005W | |
| | Part number | BFO D22-LA-KB-EAK-10-02 | BFO D22-LAH-KB-EAK-10-02 | BFO D22-LAT-KB-EAK-10-02 | |
| 90° light exit | Ordering code | | | | |
| | Part number | | | | |
| Sheathing Ø | | 2.2 mm | 2.2 mm | 2.2 mm | |
| Core Ø | | 1 mm | 1 mm | 1 mm | |
| Fiber length | | 2 m | 2 m | 2 m | |
| Fiber bending radius | | ≥ 25 mm | ≥ 2 mm | ≥ 25 mm | |
| Head bending radius | | | | | |
| Temperature range | | -55...+70 °C | -40...+70 °C | -55...+105 °C | |
| Range | with BFB 75K-001 | 500 mm | 300 mm | 600 mm | |
| | with BFB 75K-002* | 500 mm | 300 mm | 600 mm | |
| | with BFB 73K | 500 mm | 300 mm | 500 mm | |
| | with BFB 6K | 220 mm | 200 mm | 230 mm | |
| | with BFB 18KF | 120 mm | 90 mm | 120 mm | |

Packaging unit: 2 pcs.

*Max. range in standard mode



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Plastic fiber optics BFO

Through-beam principle



| M4 thread | M4 thread | M4 thread | M4 thread | |
|--------------------------|-----------------------------|-----------------------------|--------------------------|--|
| Long range | Bendable optical tip | Bendable optical tip | Highly flexible | |
| BFO005U | BFO0002 | BFO005N | BFO00AW | |
| BFO D22-LAP-KB-EAK-15-02 | BFO D22-LA-TB-EAK-10-02 | BFO D22-LA-NB-PZK-10-02 | BFO D22-LAH-BK-EAK-10-02 | |
| 2.2 mm | 2.2 mm | 2.2 mm | 2.2 mm | |
| 1.5 mm | 1 mm | 1 mm | 1 mm | |
| 2 m | 2 m | 2 m | 2 m | |
| ≥ 40 mm | ≥ 25 mm | ≥ 25 mm | ≥ 2 mm | |
| -55...+70 °C | -30...+60 °C | -55...+70 °C | -40...+70 °C | |
| 800 mm | 450 mm | 500 mm | 250 mm | |
| 800 mm | 450 mm | 500 mm | 250 mm | |
| 800 mm | 400 mm | 500 mm | 250 mm | |
| 500 mm | 200 mm | 250 mm | 170 mm | |
| 250 mm | 110 mm | 120 mm | 80 mm | |



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Optical Window Sensors BOW

Light Grids BLG

Color Sensors BFS

Contrast Sensors BKT

Luminescence Sensors BLT

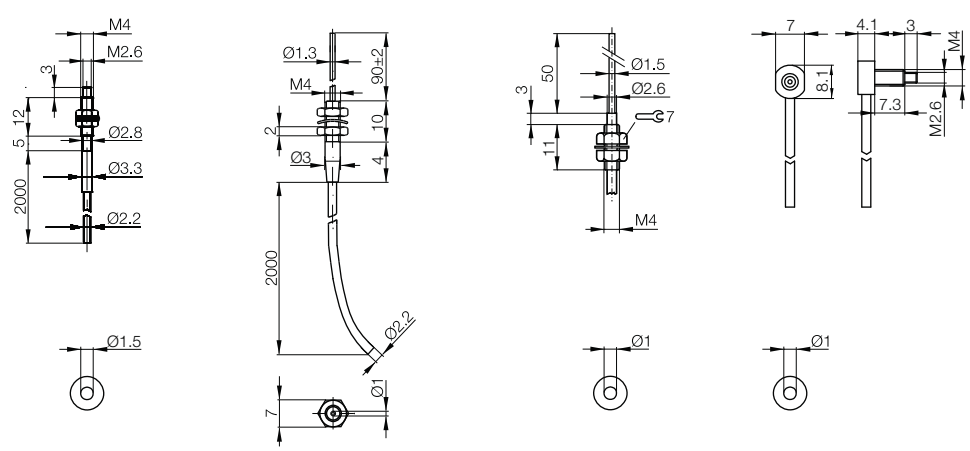
Optical Fiber Base Units BFB/BOS

Plastic Fiber Optics BFO

Glass Fiber Optics BFO

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors

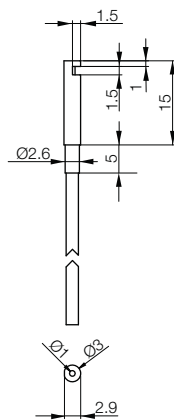
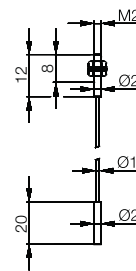
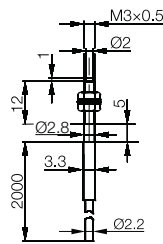




| Optical head | | M3 thread | M2 thread | Ø 3 |
|----------------------|----------------------|-------------------------|-------------------------|---------------------------|
| Features | | Standard | Precision | Temperature rated |
| Straight light exit | Ordering code | BFO005R | BFO000C | |
| | Part number | BFO D22-LA-RB-EAK-10-02 | BFO N22-LA-FB-EAK-05-01 | |
| 90° light exit | Ordering code | | | BFO00AY |
| | Part number | | | BFO D22-LAT-YB-EAK-10-0,5 |
| Sheathing Ø | | 2.2 mm | 1 mm | 2.2 mm |
| Core Ø | | 1 mm | 0.5 mm | 1 mm |
| Fiber length | | 2 m | 2 m | 0.5 m |
| Fiber bending radius | | ≥ 25 mm | ≥ 10 mm | ≥ 25 mm |
| Head bending radius | | | | |
| Temperature range | | -55...+70 °C | -30...+60 °C | -55...+70 °C |
| Range | with BFB 75K-001 | 500 mm | 140 mm | 600 mm |
| | with BFB 75K-002* | 500 mm | 140 mm | 600 mm |
| | with BFB 73K | 450 mm | 130 mm | 500 mm |
| | with BFB 6K | 220 mm | 50 mm | 230 mm |
| | with BFB 18KF | 100 mm | 20 mm | 120 mm |

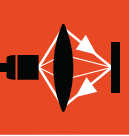
Packaging unit: 2 pcs.

*Max. range in standard mode



Photoelectric Sensors with Special Properties

Plastic fiber optics BFO Through-beam principle



Photoelectric Sensors

Photoelectric Sensors

Photoelectric Sensors with Special Properties

Analog Fork Sensors BGL_C

Optical Window Sensors BOW

Light Grids BLG

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Contrast Sensors BKT

Luminescence Sensors BLT

Optical Fiber Base Units BFB/ BOS

Plastic Fiber Optics BFO

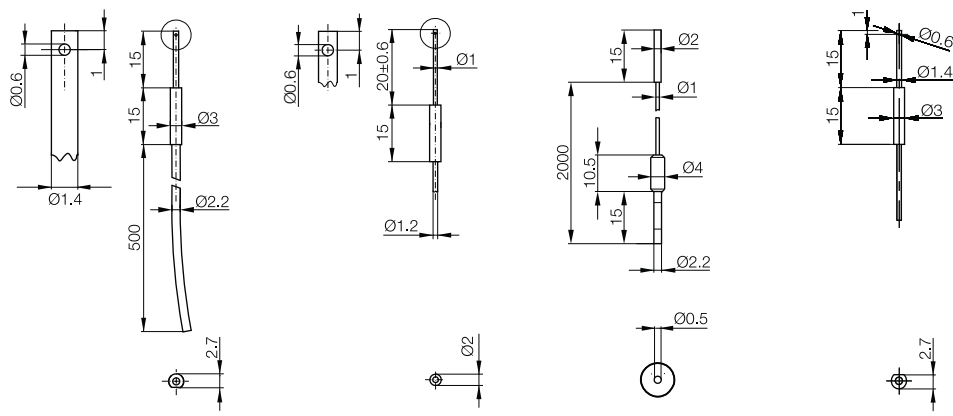
Optics BFO

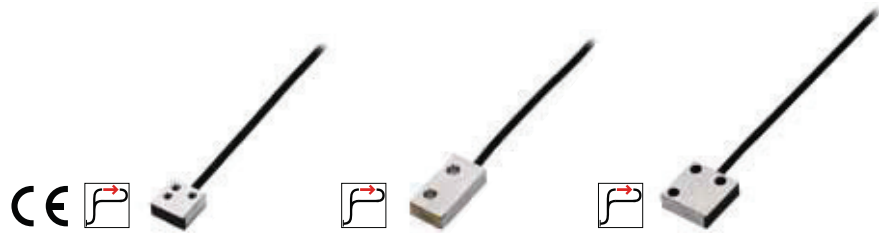
Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



| | Ø 3 Light exit on side | Ø 3 Light exit on side | Ø 2 Precision BFO0051 | Ø 2 Standard BFO0057 | |
|--|---|---|-----------------------------|---|--|
| | | | BFO D10-LA-CB-EAK-05-02 | | |
| | BFO005P BFO D22-LA-QB-PAK-05-02 | BFO0056 BFO D13-LA-QB-EAK-05-02 | | BFO0057 BFO D13-LA-WB-EAK-05-02 | |
| | 2.2 mm | 1.3 mm | 1 mm | 1.3 mm | |
| | 1 mm | 0.5 mm | 0.5 mm | 1 mm | |
| | 2 m | 2 m | 2 m | 2 m | |
| | ≥ 25 mm | ≥ 15 mm | ≤ 15 m | ≥ 25 mm | |
| | -40...+70 °C | -35...+65 °C | -55...+70 °C | -40...+70 °C | |
| | 120 mm | 110 mm | 130 mm | 75 mm | |
| | 120 mm | 110 mm | 130 mm | 75 mm | |
| | 115 mm | 105 mm | 120 mm | 70 mm | |
| | 65 mm | - | - | - | |
| | 35 mm | 25 mm | - | 20 mm | |

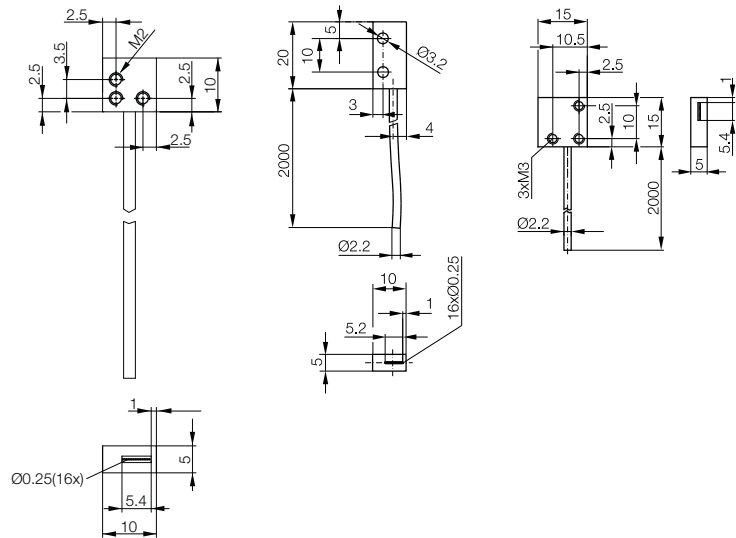




| Optical head | | 10×10 mm | 20×10 mm | 15×15 mm |
|----------------------|----------------------|-------------------------|-------------------------|-------------------------|
| Features | | Light grids | Light grids | Light grids |
| Straight light exit | Ordering code | BFO00AP | BFO005H | |
| | Part number | BFO D22-LA-GD-EAK-52-02 | BFO D22-LA-AD-EAK-52-02 | |
| 90° light exit | Ordering code | | | BFO005K |
| | Part number | | | BFO D22-LA-BD-EAK-52-02 |
| Sheathing Ø | | 2.2 mm | 2.2 mm | 2.2 mm |
| Core Ø | | 16×0.25 mm | 16×0.25 mm | 16×0.25 mm |
| Fiber length | | 2 m | 2 m | 2 m |
| Fiber bending radius | | ≥ 25 mm | ≥ 25 mm | ≥ 25 mm |
| Temperature range | | -55...+70 °C | -35...+65 °C | -55...+70 °C |
| Range | with BFB 75K-001 | 600 mm | 450 mm | 400 mm |
| | with BFB 75K-002* | 600 mm | 450 mm | 400 mm |
| | with BFB 73K | 600 mm | 400 mm | 350 mm |
| | with BFB 6K | 350 mm | 220 mm | 180 mm |
| | with BFB 18KF | 230 mm | 130 mm | 110 mm |

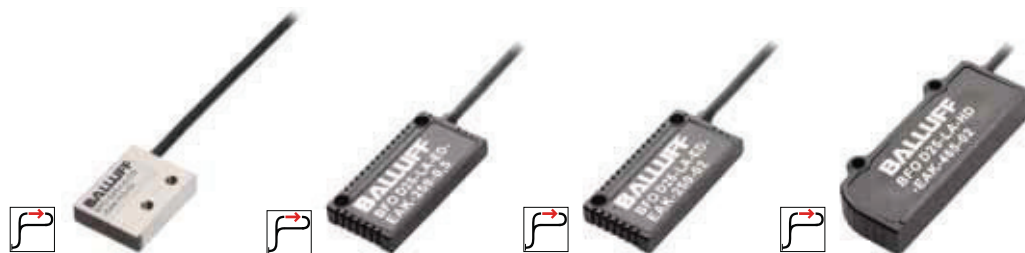
Packaging unit: 2 pcs.

*Max. range in standard mode

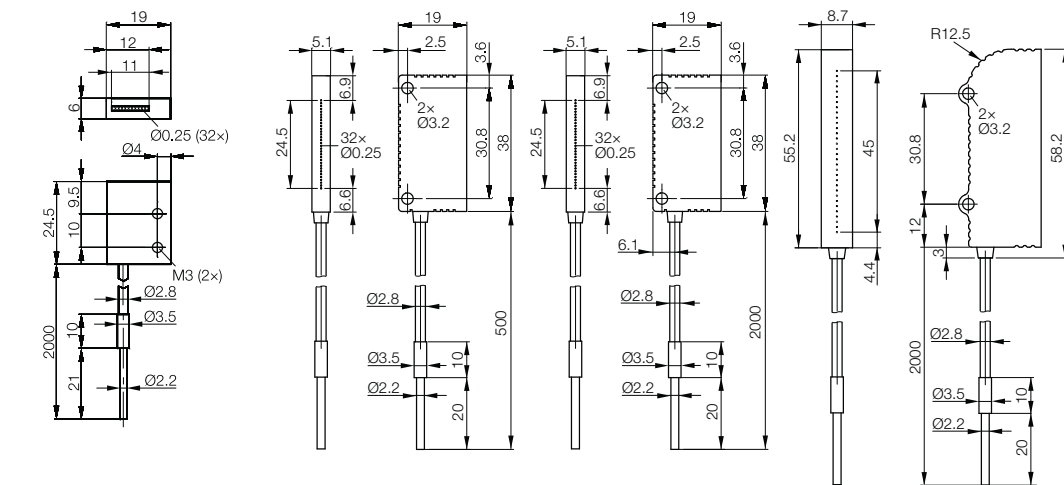


Photoelectric Sensors with Special Properties

Plastic fiber optics BFO Through-beam principle



| 19x25 mm | 19x38 mm | 19x38 mm | 23x55 mm |
|--------------------------|---------------------------|--------------------------|--------------------------|
| Light grids | Light grids | Light grids | Light grids |
| BFO0067 | | | |
| BFO D25-LA-CD-EAK-110-02 | | | |
| | BFO00C5 | BFO0068 | BFO00C8 |
| | BFO D25-LA-ED-EAK-250-0,5 | BFO D25-LA-ED-EAK-250-02 | BFO D25 LA-HD-EAK-465-02 |
| 2.8 mm | 2.8 mm | 2.8 mm | 2.8 mm |
| 32x0.25 mm | 32x0.25 mm | 32x0.25 mm | 32x0.25 mm |
| 2 m | 0.5 m | 2 m | 2 m |
| ≥ 10 mm | ≥ 60 mm | ≥ 60 mm | ≥ 60 mm |
| -55...+70 °C | -55...+70 °C | -55...+70 °C | -55...+70 °C |
| 600 mm | 550 mm | 550 mm | 550 mm |
| 600 mm | 550 mm | 550 mm | 550 mm |
| 600 mm | 550 mm | 550 mm | 550 mm |
| 350 mm | 360 mm | 360 mm | 360 mm |
| 230 mm | 210 mm | 210 mm | 210 mm |



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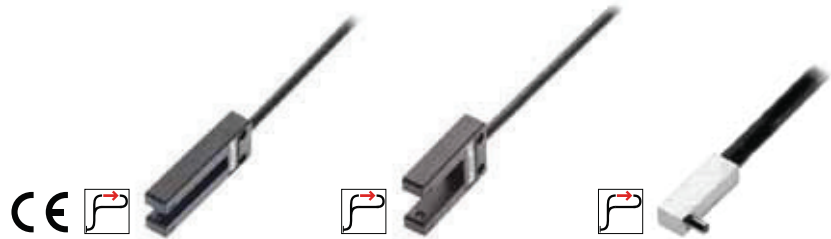
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Photoelectric Distance Sensors for Analog Distance Measurement

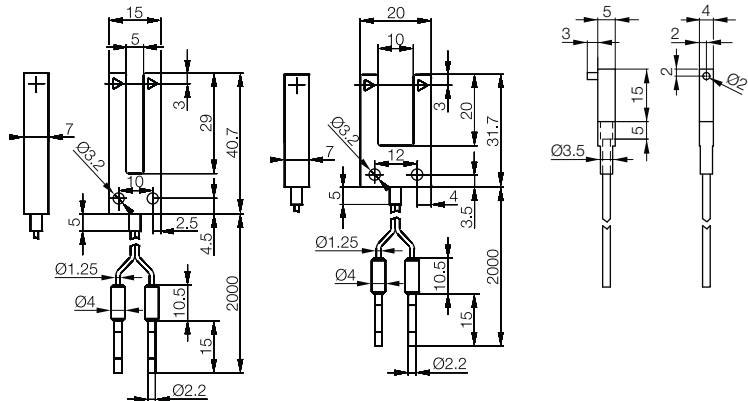
Accessories for Photoelectric Sensors



| | | | | | |
|----------------------|----------------------|-------------------------|-------------------------|--------------------------|--|
| Optical head | | 15x41 mm | 20x32 mm | 5x4 mm | |
| Features | | Fork | Fork | Highly flexible | |
| Straight light exit | Ordering code | | | | |
| | Part number | | | | |
| 90° light exit | Ordering code | BFO0058 | BFO0059 | BFO000E | |
| | Part number | BFO D13-LG-05-EAK-30-02 | BFO D13-LG-10-EAK-30-02 | BFO D22-LAH-ZB-EAK-10-02 | |
| Sheathing Ø | | 2x1.25 mm | 2x1.25 mm | 2.2 mm | |
| Core Ø | | 2x0.25 mm | 2x0.25 mm | 1 mm | |
| Fiber length | | 2 m | 2 m | 2 m | |
| Fiber bending radius | | ≥ 10 mm | ≥ 10 mm | ≥ 2 mm | |
| Temperature range | | -55...+70 °C | -55...+70 °C | -55...+70 °C | |
| Range | with BFB 75K-001 | 5 mm | 10 mm | 300 mm | |
| | with BFB 75K-002* | 5 mm | 10 mm | 300 mm | |
| | with BFB 73K | 5 mm | 10 mm | 300 mm | |
| | with BFB 6K | 5 mm | 10 mm | 200 mm | |
| | with BFB 18KF | 5 mm | 10 mm | 90 mm | |

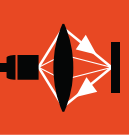
Packaging unit: 2 pcs.

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Plastic fiber optics BFO Through-beam principle



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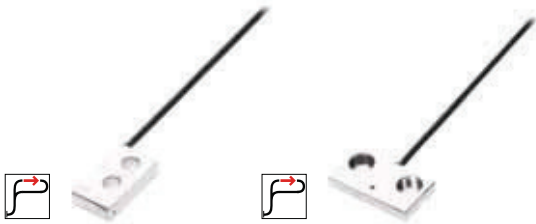
Optical Fiber Base Units BFB/ BOS

Plastic Fiber Optics BFO

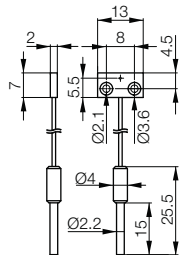
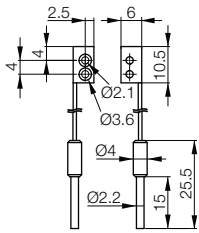
Glass Fiber Optics BFO

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



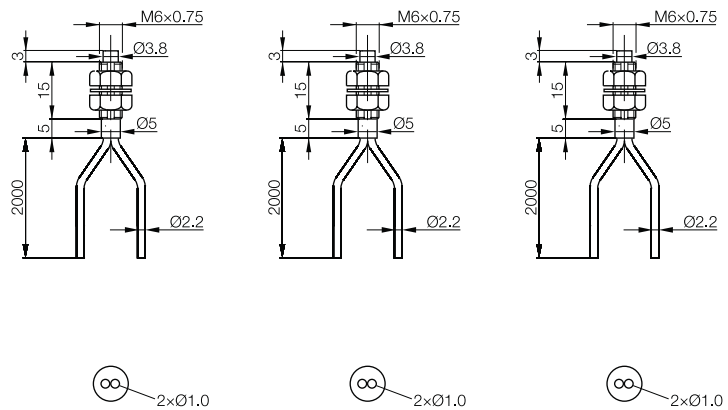
| | 11x6 mm Highly flexible | 13x7 mm Highly flexible | | | |
|--|-----------------------------------|-----------------------------------|--|--|--|
| | | | | | |
| | | | | | |
| | BFO00C6 | BFO00C7 | | | |
| | BFO D10-LAH-CK-EAK-05-02 | BFO D10-LAH-DK-EAK-05-02 | | | |
| | 1 mm | 1 mm | | | |
| | 0.5 mm | 0.5 mm | | | |
| | 2 m | 2 m | | | |
| | ≥ 1 mm | ≥ 1 mm | | | |
| | -40...+70 °C | -40...+70 °C | | | |
| | 55 mm | 50 mm | | | |
| | 55 mm | 50 mm | | | |
| | 45 mm | 40 mm | | | |
| | - | - | | | |
| | 20 mm | 20 mm | | | |





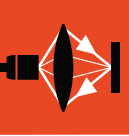
| Optical head | | M6 thread | M6 thread | M6 thread | |
|----------------------|----------------------|-------------------------|--------------------------|--------------------------|--|
| Features | | Standard | Highly flexible | Temperature rated | |
| Straight light exit | Ordering code | BFO0061 | BFO0063 | BFO0065 | |
| | Part number | BFO D22-XA-LB-EAK-20-02 | BFO D22-XAH-LB-EAK-20-02 | BFO D22-XAT-LB-EAK-20-02 | |
| Sheathing Ø | | 2x2.2 mm | 2x2.2 mm | 2x2.2 mm | |
| Core Ø | | 2x1 mm | 2x1 mm | 2x1 mm | |
| Fiber bending radius | | ≥ 25 mm | ≥ 2 mm | ≥ 25 mm | |
| Head bending radius | | | | | |
| Temperature range | | -55...+70 °C | -40...+70 °C | -55...+115 °C | |
| Range | with BFB 75K-001 | 150 mm | 120 mm | 130 mm | |
| | with BFB 75K-002* | 150 mm | 120 mm | 130 mm | |
| | with BFB 73K | 150 mm | 120 mm | 130 mm | |
| | with BFB 6K | 100 mm | 70 mm | 90 mm | |
| | with BFB 18KF | 50 mm | 30 mm | 50 mm | |

*Max. range in standard mode



Photoelectric Sensors with Special Properties

Plastic fiber optics BFO Sensor principle



Photoelectric Sensors

Photoelectric Sensors

Photoelectric Sensors with Special Properties

Analog Fork Sensors BGL_C

Optical Window Sensors BOW

Light Grids BLG

Color Sensors BFS

Contrast Sensors BKT

Luminescence Sensors BLT

Optical Fiber Base Units BFB/ BOS

Plastic Fiber Optics BFO

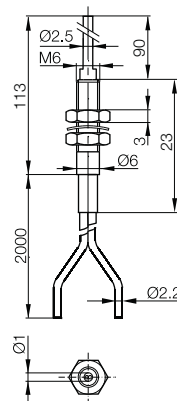
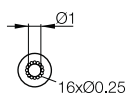
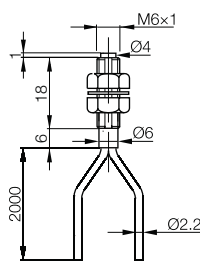
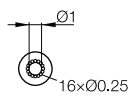
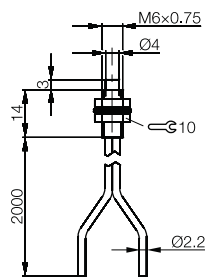
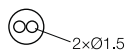
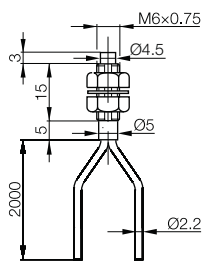
Glass Fiber Optics BFO

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



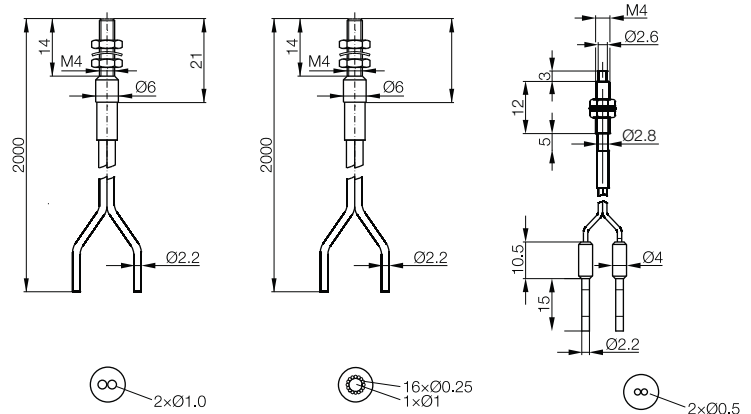
| M6 thread Long range BFO0064 | M6 thread Coaxial BFO0066 | M6 thread Coaxial, flexible BFO0007 | M6 thread Bendable optical tip BFO0004 |
|---|--|--|---|
| BFO D22-XAP-LB-EAK-30-02 | BFO D22-XB-LB-EAK-15-02 | BFO D22-XBF-LB-EAK-15-02 | BFO D22-XA-SB-EAK-20-02 |
| 2x2.2 mm | 2x2.2 mm | 2x2.2 mm | 2x2.2 mm |
| 2x1.5 mm | 1x1 mm/16x0.25 mm | 1x1 mm/16x0.25 mm | 2x1 mm |
| ≥ 40 mm | ≥ 25 mm | ≥ 5 mm | ≥ 25 mm |
| -55...+70 °C | -55...+70 °C | -40...+60 °C | -35...+65 °C |
| 180 mm | 120 mm | 110 mm | 130 mm |
| 180 mm | 120 mm | 110 mm | 130 mm |
| 180 mm | 120 mm | 120 mm | 130 mm |
| 130 mm | 80 mm | 70 mm | 90 mm |
| 100 mm | 50 mm | 30 mm | 40 mm |





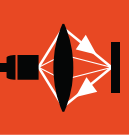
| Optical head | | M4 thread | M4 thread | M4 thread | |
|----------------------|----------------------|-------------------------|-------------------------|--------------------------|--|
| Features | | Standard | Coaxial | Highly flexible | |
| Straight light exit | Ordering code | BFO0005 | BFO0006 | BFO0055 | |
| | Part number | BFO D22-XA-UB-EAK-20-02 | BFO D22-XB-UB-EAK-15-02 | BFO D10-XAH-KB-EAK-10-02 | |
| Sheathing Ø | | 2x2.2 mm | 2x2.2 mm | 2x1 mm | |
| Core Ø | | 2x1 mm | 1x1 mm/16x0.25 mm | 2x0.5 mm | |
| Fiber bending radius | | ≥ 25 mm | ≥ 25 mm | ≥ 1 mm | |
| Head bending radius | | | | | |
| Temperature range | | -35...+65 °C | -40...+60 °C | -40...+70 °C | |
| Range | with BFB 75K-001 | 120 mm | 130 mm | 40 mm | |
| | with BFB 75K-002* | 120 mm | 130 mm | 40 mm | |
| | with BFB 73K | 120 mm | 130 mm | 30 mm | |
| | with BFB 6K | 80 mm | 90 mm | - | |
| | with BFB 18KF | 40 mm | 50 mm | 10 mm | |

*Max. range in standard mode



Photoelectric Sensors with Special Properties

Plastic fiber optics BFO Sensor principle



Photoelectric Sensors

Photoelectric Sensors

Photoelectric Sensors with Special Properties

Analog Fork Sensors BGL_C

Optical Window Sensors BOW

Light Grids BLG

Color Sensors BFS

Contrast Sensors BKT

Luminescence Sensors BLT

Optical Fiber Base Units BFB/ BOS

Plastic Fiber Optics BFO

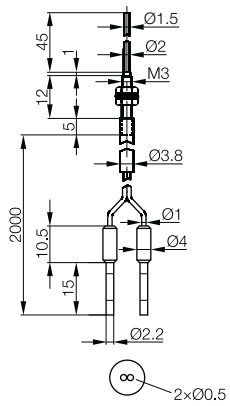
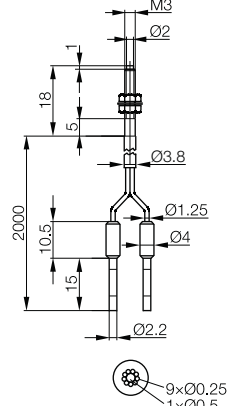
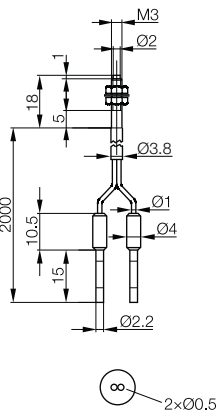
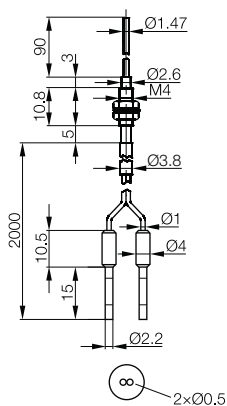
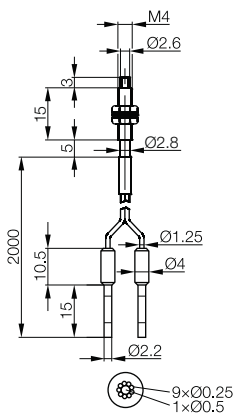
Glass Fiber Optics BFO

Photoelectric Distance Sensors for Analog Distance Measurement

Accessories for Photoelectric Sensors



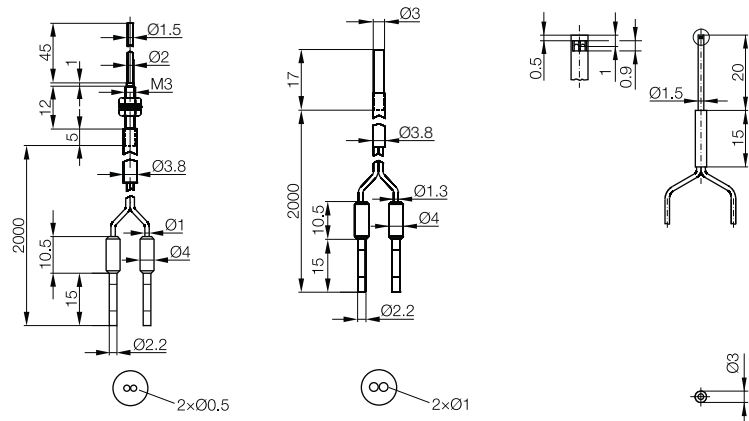
| M4 thread Coaxial BFO005C | M4 thread Bendable optical tip BFO0053 | M3 thread Standard BFO0054 | M3 thread Coaxial BFO005E | M3 thread Bendable optical tip BFO00C3 |
|---------------------------------|--|----------------------------------|---------------------------------|--|
| BFO D13-XB-KB-EAK-10-02 | BFO D10-XA-HB-EAK-10-02 | BFO D10-XA-RB-EAK-10-02 | BFO D13-XB-RB-EAK-10-02 | BFO D10-XA-VB-EAK-10-02 |
| 2x1.25 mm | 2x1 mm | 2x1 mm | 2x1.25 mm | 2x1 mm |
| 1x0.5 mm/9x0.25 mm | 2x0.5 mm | 2x0.5 mm | 1x0.5 mm/9x0.25 mm | 2x0.5 mm |
| ≥ 15 mm | ≥ 15 mm | ≥ 15 mm | ≥ 15 mm | ≥ 15 mm |
| ≥ 10 mm | ≥ 10 mm | ≥ 10 mm | ≥ 10 mm | ≥ 10 mm |
| -55...+70 °C | -55...+70 °C | -55...+70 °C | -40...+60 °C | -55...+70 °C |
| 60 mm | 50 mm | 50 mm | 60 mm | 50 mm |
| 60 mm | 50 mm | 50 mm | 60 mm | 50 mm |
| 60 mm | 40 mm | 40 mm | - | 40 mm |
| - | - | - | - | - |
| 20 mm | 10 mm | 10 mm | 20 mm | 10 mm |





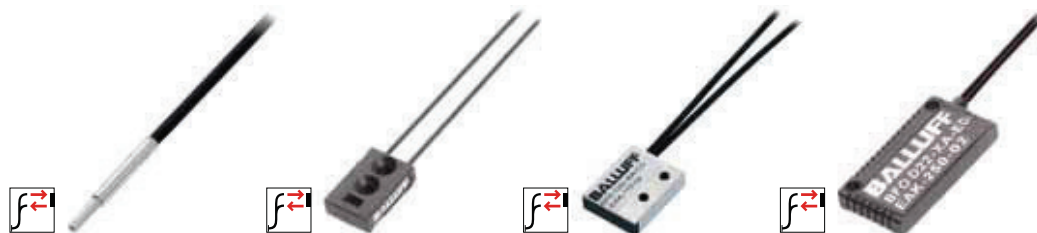
| | | | | | |
|----------------------|----------------------|-------------------------|-------------------------|-------------------------|--|
| Optical head | | M3 thread | Ø 3 mm | Ø 3 mm | |
| Features | | Standard | Standard | Standard | |
| Straight light exit | Ordering code | BFO0052 | BFO005A | | |
| | Part number | BFO D10-XA-GB-EAK-10-02 | BFO D13-XA-JB-EAK-20-02 | | |
| 90° light exit | Ordering code | | | BFO0062 | |
| | Part number | | | BFO D22-XA-MB-PAK-10-02 | |
| Sheathing Ø | | 2×1 mm | 2×1.3 mm | 2×1 mm | |
| Core Ø | | 2×0.5 mm | 2×1 mm | 2×0.5 mm | |
| Fiber bending radius | | ≥ 15 mm | ≥ 25 mm | ≥ 25 mm | |
| Head bending radius | | ≥ 10 mm | | | |
| Temperature range | | -55...+70 °C | -55...+70 °C | -40...+70 °C | |
| Range | with BFB 75K-001 | 50 mm | 130 mm | 35 mm | |
| | with BFB 75K-002* | 50 mm | 130 mm | 35 mm | |
| | with BFB 73K | 40 mm | 130 mm | 25 mm | |
| | with BFB 6K | - | - | - | |
| | with BFB 18KF | 10 mm | 50 mm | - | |

*Max. range in standard mode

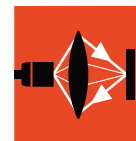


Photoelectric Sensors with Special Properties

Plastic fiber optics BFO Sensor principle



| | Ø 2.5 mm Coaxial | 13x20 mm Standard | 19x25 mm Light grids | 19x38 mm Light grids | |
|--|-------------------------|-------------------------|--------------------------|--------------------------|--|
| | BFO00AT | | BFO005Z | | |
| | BFO D13-XB-AB-EAK-10-01 | | BFO D22-XA-CD-EAK-110-02 | | |
| | | BFO00AR | | BFO0060 | |
| | | BFO D13-XV-AK-EAK-50-02 | | BFO D22-XA-ED-EAK-250-02 | |
| | 2x1.3 mm | 2x1.3 mm | 2.2 mm | 2.2 mm | |
| | 1x0.5 mm/9x0.25 mm | 2x1 mm | 32x0.25 mm | 32x0.25 mm | |
| | ≥ 15 mm | ≥ 25 mm | ≥ 25 mm | ≥ 25 mm | |
| | -55...+70 °C | -55...+70 °C | -55...+70 °C | -55...+70 °C | |
| | 50 mm | 1...6 mm | 100 mm | 90 mm | |
| | 50 mm | 1...6 mm | 100 mm | 90 mm | |
| | 40 mm | 1...6 mm | 100 mm | 90 mm | |
| | - | - | 70 mm | 60 mm | |
| | 10 mm | - | 40 mm | 30 mm | |



Photoelectric
Sensors

Photoelectric
Sensors

Photoelectric
Sensors with
Special Proper-
ties

Analog Fork
Sensors BGL_C

Optical Window
Sensors BOW

Light Grids BLG

Color Sensors
BFS

Contrast Sensors
BKT

Luminescence
Sensors BLT

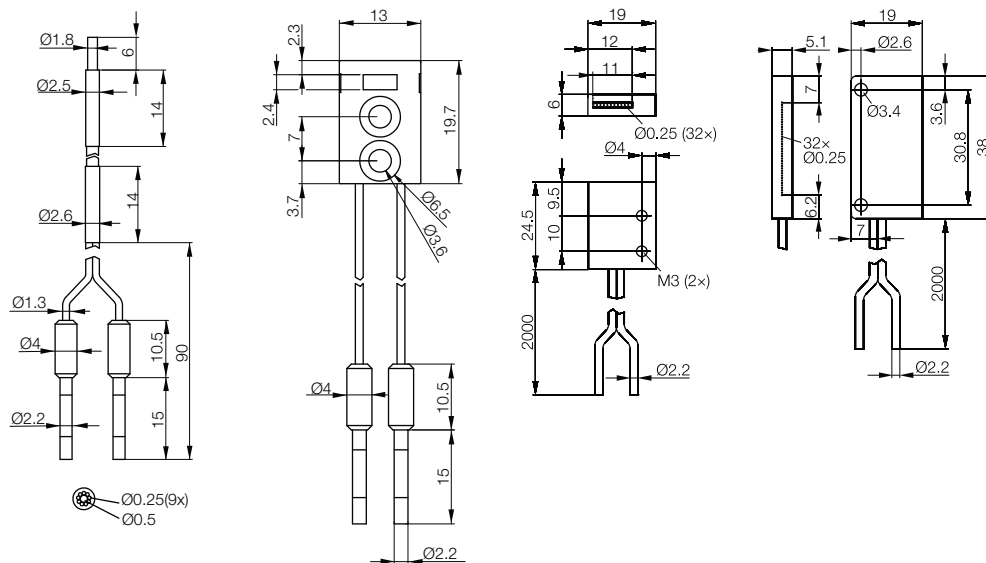
Optical Fiber
Base Units BFB/
BOS

**Plastic
Fiber Optics
BFO**

Glass Fiber
Optics
BFO

Photoelectric
Distance
Sensors
for Analog
Distance
Measurement

Accessories for
Photoelectric
Sensors



Plastic fiber optics BFO Can be fabricated

Customized solutions with plastic fiber optics for user assembly

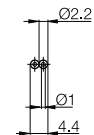
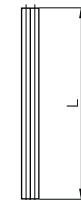
If you are not satisfied with "off-the-shelf" solutions, we have a better suggestion here.

Optical fibers can be user-cut to the desired length from a 20 m roll. This way you only use as much plastic optical fiber as you actually need. Considerable savings, especially if multiple sensors are used. For simple applications you may not need an end piece. A simple clamp will suffice. Or for convenience and flexibility, select from among the available end pieces. The plastic optical fiber is simply crimped into the end piece. Tedious gluing is eliminated. The end piece can be removed at any time.



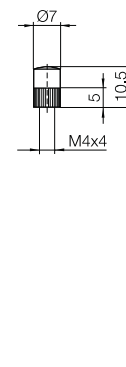
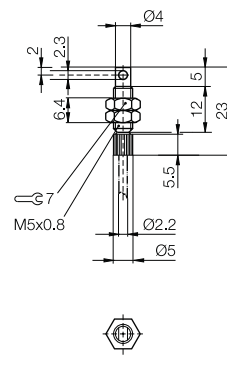
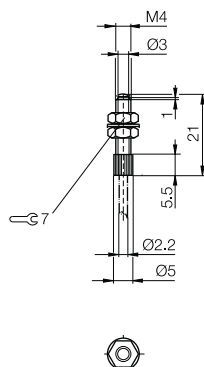
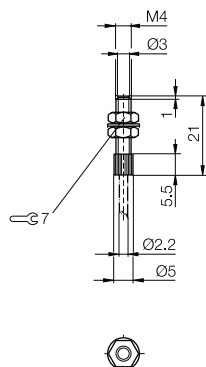
| | |
|--|--------------------------------|
| Size | 2.2x4.4 mm duplex cable |
| Through-beam sensor range with L = 2 m | 150 mm |
| Cable length | 20 m |
| Ordering code | BFO005Y |
| Part number | BFO D22-LD-EAK-10-20 |
| Sheathing Ø | 2x1 mm |
| Core Ø | 2.2 mm |
| Ambient temperature Ta | -40...+85 °C |
| Tension on optical fiber and connection parts at 20 °C | 6 N |

Cutting tool BFO CT is included.



| | | | | |
|----------------------|---|--|--|--|
| Size | M4 | M4 | Ø 4 mm/M5 | Ø 7 mm |
| Features | End piece without lens | End piece with lens | 90° end piece | Adapter lens |
| Used with | BFO D22-LD-EAK-10-.. | BFO D22-LD-EAK-10-.. | BFO D22-LD-EAK-10-.. | BFO D22-LD-BC-10 |
| Range | 150 mm | 450 mm | 150 mm | 1500 mm |
| Ordering code | BFO005J | BFO005L | BFO005F | BAM00NW |
| Part number | BFO D22-LA-BC-10 | BFO D22-LA-CC-30 | BFO D22-LA-AC-20 | BFO D22-LA-AC-20 |
| Material | Optical surface: Plastic (fibers) Threaded tube: Stainless steel | Optical surface: Glass Threaded tube: Stainless steel | Optical surface: Glass Threaded tube: Stainless steel | Optical surface: Glass Threaded tube: Stainless steel |
| Packaging unit | 1 pc. | 1 pc. | 1 pc. | 1 pc. |

Range when used with 2 m plastic fiber cable.



Photoelectric Sensors with Special Properties

Adapter lens, deflection head, focus lens, adapter, cutting tool



Photoelectric
Sensors

Photoelectric
Sensors

Photoelectric
Sensors with
Special Proper-
ties

Analog Fork
Sensors BGL_C

Optical Window
Sensors BOW

Light Grids BLG

Color Sensors
BFS

Contrast Sensors
BKT

Luminescence
Sensors BLT

Optical Fiber
Base Units BFB/
BOS

Plastic
Fiber Optics
BFO

Glass Fiber
Optics
BFO

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Optics
BFO

Glass Fiber
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Photoelectric
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Sensors
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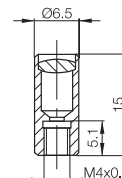
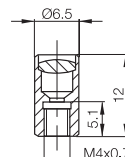
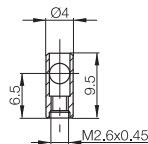
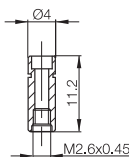
Photoelectric
Distance
Sensors
for Analog
Distance
Measurement



Adapter lens, deflection head, focus lens,
adapter and cutting tool are assigned to
accessories, which we mark in gray.



| Description | Adapter lens | 90° deflection head | Focus lens | Focus lens |
|---|---|---|--|--|
| Use | For through-beam optical fibers M2.6x0.45 | For through-beam optical fibers M2.6x0.45 | For coaxial diffuse sensor optical fibers M4x0.7 | For coaxial diffuse sensor optical fibers M4x0.7 |
| Ordering code | BAM00NN | BAM00NP | BAM00NR | BAM00NT |
| Part number | BFO 02-PK-1 | BFO 02-UK-1 | BFO 04-FL-1 | BFO 04-FL-2 |
| Sensing distance/range distance with corresponding fiber optics | x10 | x0.7 | 19 mm±2 mm | 7 mm±2 mm |
| Packaging unit | 2 pcs. | 2 pcs. | 1 pc. | 1 pc. |



| Description | Adapter | Adapter | Cutting tool |
|----------------------|--|--|--|
| Use | For plastic fiber optics Ø 1 mm for connecting to fiber optic base units | For plastic fiber optics Ø 1.3 mm for connecting to fiber optic base units | For trimming plastic fiber optics Ø 1 mm or Ø 2.2 mm |
| Ordering code | BAM000J | BAM00P1 | BAM000E |
| Part number | BFO D10-LA-DC-10 | BFO D13-LA-EC-10 | BFO CT |
| Packaging unit | 2 pcs. | 2 pcs. | 1 pc. |

