

BALLUFF

PRODUCTS FOR EFFICIENT AUTOMATION

Products and
Services



B *innovating automation*

Sensors 1
Inductive Sensors, Capacitive Sensors,
Photoelectric Sensors, Magnetic Field Sensors,
Mechanical Cam Switches

1

Innovative solutions

TO MEET YOUR AUTOMATION NEEDS

Steel and
Metallurgical
Industry

Life Science

Semiconductor
Industry

Metal Working



Plastics, Rubber
and Tires

Mobility

Packaging,
Foods and Beverages

Energy Generation



INNOVATIVE SOLUTIONS FOR ANY REQUIREMENT

To give you an overview of our range of offerings we have condensed our product portfolio into five volumes. This overview provides a list of topics contained in each volume.

1



Sensors 1

- Inductive Sensors
- Capacitive Sensors
- Photoelectric Sensors
- Magnetic Sensors
- Mechanical Cam Switches

2



Sensors 2

- Ultrasonic Sensors
- Magnetically Coded Sensors
- Magnetostrictive Sensors
- Inclination Sensors
- Pressure Sensors
- Temperature Sensors
- Microwave Sensors
- Flow Sensors

3

4

5



- RFID
- Machine Vision and Optical Identification
- Human Machine Interfaces
- Systems



- Safety
- Industrial Networking
- Power Supplies



- Connectivity
- Accessories

Do you need more details? Our Product Finder at www.balluff.com provides you with product-specific information, including technical drawings, data sheets, user guides and more for each individual product. All items are available for download.



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SENSORS



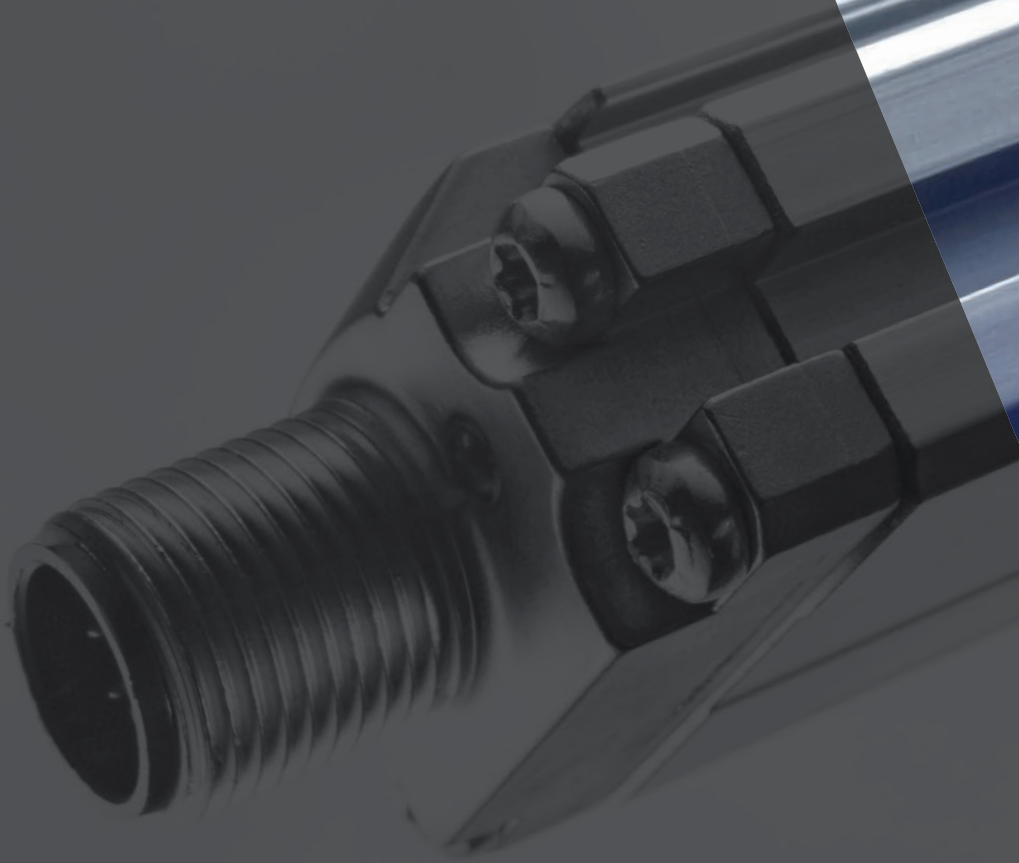
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- 354 Photoelectric Sensors
- 632 Magnetic Field Sensors
- 690 Mechanical Cam Switches

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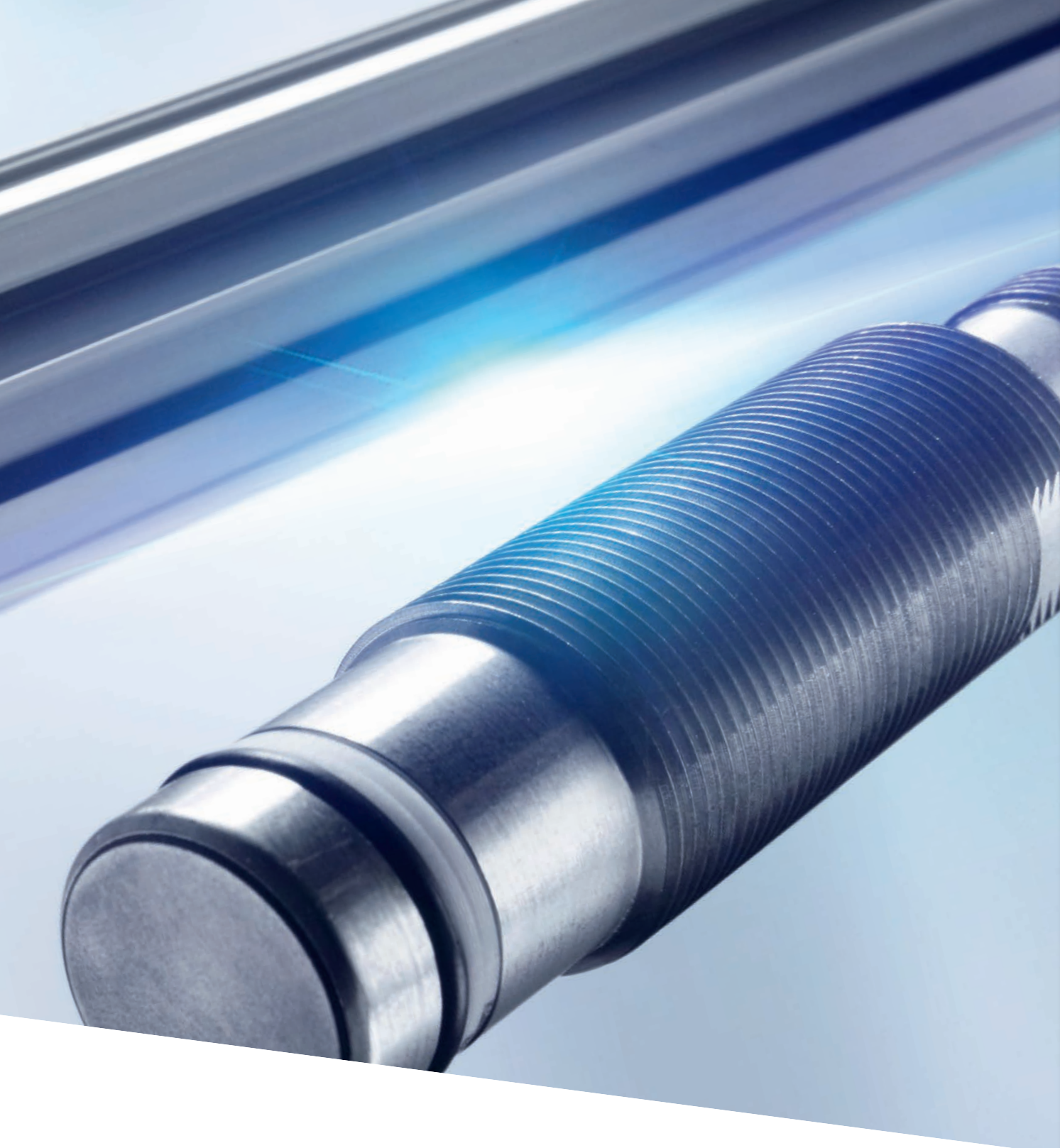
ABOUT BALLUFF 798



Comprehensive solutions for industrial automation

SENSORS

 *innovating automation*



In the field of sensor technology, Balluff handles the entire range of technological diversity with its various operating principles. We provide you with high-quality sensors for any application or requirement: from distance measurement to object detection and level, temperature and pressure monitoring. For everyday industrial uses as well for tough applications in critical environments.

Our quality management regime is DIN EN ISO 9001:2015 certified. All Balluff sensors are tested in our in-house, accredited laboratory. Balluff sensors meet regional as well as international standards and are used throughout the world.

Your Balluff solutions

- Inductive Sensors
- Photoelectric Sensors
- Capacitive Sensors
- Magnetic Sensors
- Ultrasonic Sensors
- Mechanical Cam Switches
- Magnetostrictive Sensors
- Magnetically Coded Sensors
- Inclination Sensors
- Pressure Sensors
- Temperature Sensors
- Flow Sensors
- Microwave Sensors

SENSORS 1



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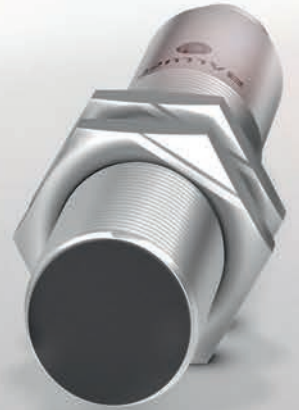
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BASICS AND GLOSSARY



Highest quality and
accuracy for automation

INDUCTIVE SENSORS



Automation is almost inconceivable without inductive sensors. Wherever processes are automated, non-contact position detection of metallic objects, freedom from wear, and reliability are in demand. Whether in machine building, electronics production, in the automobile, foods or plastics industry.

At Balluff you are offered a wide range of inductive sensors in various form factors for virtually any application: from standard sensors to sensors with extended switching distance, hygiene-approved, high-pressure and Ex sensors, Factor 1 or all-metal sensors. They are also available with additional ceramic or PTFE coating, for example to prevent weld splatter from adhering. You will also find all-metal with Factor 1 in our range.

Balluff inductive sensors are used to monitor, control and automate your processes and conditions. With the highest level of quality – even in extreme environments.

The most important benefits

- Suitable for a variety of applications
- Contact-free and therefore wear-free
- Resistant to dirt
- Short-circuit protected
- In configurations from 3 mm Ø to 80 x 80 mm square dimensions



| | BES0376 BES G03EC-PSC10B-EP02 | BES0409 BES G03EC-PSC10B-EP00,3-GS49 | |
|--------------------------|---|--|--|
| PNP normally open | | | |
| PNP normally closed | | | |
| Dimension | Ø 3 x 22 mm | Ø 3 x 22 mm | |
| Style | D3.0 | D3.0 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1 mm | 1 mm | |
| Switching frequency | 3500 Hz | 3500 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES0122 BES G04EC-PSC08B-S26G | BES012F BES G04ED-PSC15B-S26G | BES012H BES G04ED-PSC50F-EP02 | BES012J BES G04ED-PSC50F-EP05 |
|--|---|---|---|---|
| | BES0120 BES G04EC-POC08B-S26G | | | |
| | Ø 4 x 29 mm | Ø 4 x 35 mm | Ø 4 x 35 mm | Ø 4 x 35 mm |
| | D4.0 | D4.0 | D4.0 | D4.0 |
| | for flush mounting | for flush mounting | non-flush | non-flush |
| | 0.8 mm | 1.5 mm | 5 mm | 5 mm |
| | 3000 Hz | 3000 Hz | 3000 Hz | 3000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | PBT | PBT | PET-C | PET-C |
| | Connector, M5x0.5 plug | Connector, M5x0.5 plug | Cable, 2.00 m, PUR | Cable, 5.00 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

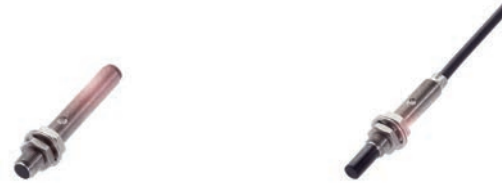
Accessories



| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES012K BES G04ED-PSC50F-S26G | BES01P0 BES M04EC-PSD06B-BP02 | |
| PNP normally closed | | | |
| NPN normally open | | BES03ZJ BES M04EC-NSC10B-EP02 | |
| Dimension | Ø 4 x 44 mm | Ø 4 x 22 mm | |
| Style | D4.0 | M4x0.5 | |
| Installation | non-flush | for flush mounting | |
| Range | 5 mm | 0.6 mm | |
| Switching frequency | 3000 Hz | 3500 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PET-C | PBT | |
| Connection | Connector, M5x0.5 plug | Cable, 2.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 114 | Page 114 | |



| | | | | |
|--|---|--|---|---|
| | BES03Z8 BES M04EC-PSC10B-EP02 | BES040R BES M04EC-PSC10B-EP00,3-GS49 | BES051J BES M05ED-PSC10B-EP00,2-097 | BES012Z BES M05EC-PSC08B-S26G |
| | | | BES051L BES M05ED-POC10B-EP00,3-097 | |
| | | | | BES012W BES M05EC-NSC08B-S26G |
| | Ø 4 x 22 mm | Ø 4 x 22 mm | Ø 5 x 27 mm | Ø 5 x 29 mm |
| | M4x0.5 | M4x0.5 | M5x0.5 | M5x0.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 1 mm | 1 mm | 1 mm | 0.8 mm |
| | 3500 Hz | 3500 Hz | 5000 Hz | 3000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | PBT | PBT | PBT | PBT |
| | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Cable, 0.20 m, PUR | Connector, M5x0.5 plug |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES013A BES M05ED-PSC15B-S26G | BES013E BES M05ED-PSC50F-EP02 | |
| PNP normally closed | BES0137 BES M05ED-POC15B-S26G | | |
| NPN normally closed | BES0130 BES M05ED-NOC15B-S26G | | |
| Dimension | Ø 5 x 35 mm | Ø 5 x 35 mm | |
| Style | M5x0.5 | M5x0.5 | |
| Installation | for flush mounting | non-flush | |
| Range | 1.5 mm | 5 mm | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PET-C | |
| Connection | Connector, M5x0.5 plug | Cable, 2.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES013F BES M05ED-PSC50F-EP05 | BES013C BES M05ED-PSC50F-EP00,3-GS04 | BES013H BES M05ED-PSC50F-S26G | BES025U BES G06K40-PSC15B-FP02 |
|--|---|---|---|--|
| | | | BES0139 BES M05ED-POC50F-S26G | |
| | | | | |
| | Ø 5 x 35 mm | Ø 5 x 35 mm | Ø 5 x 44 mm | Ø 6.5 x 6 mm |
| | M5x0.5 | M5x0.5 | M5x0.5 | D6.5 |
| | non-flush | non-flush | non-flush | for flush mounting |
| | 5 mm | 5 mm | 5 mm | 1.5 mm |
| | 3000 Hz | 3000 Hz | 3000 Hz | 3000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | PBT |
| | — | — | — | — |
| | PET-C | PET-C | PET-C | PBT |
| | Cable, 5.00 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Connector, M5x0.5 plug | Cable, 2.00 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP65 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|--|---|--|
| PNP normally open | BES0256 BES G06E60-PSC15B-EP02 | BES025L BES G06EA-PSC15B-EP01 | |
| PNP normally closed | BES0251 BES G06E60-POC15B-EP02 | | |
| Dimension | Ø 6.5 x 6 mm | Ø 6.5 x 10 mm | |
| Style | D6.5 | D6.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 2.00 m, PUR | Cable, 1.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES025M BES G06EA-PSC15B-EP02 | BES0258 BES G06E60-PSC20B-EP02 | BES03ZA BES G06K40-PSC20B-FP02 | BES0254 BES G06E60-PSC15B-EP00,3-GS49 |
|--|---|--|--|--|
| | BES025H BES G06EA-POC15B-EP02 | | | |
| | Ø 6.5 x 10 mm | Ø 6.5 x 6 mm | Ø 6.5 x 6 mm | Ø 6.5 x 6 mm |
| | D6.5 | D6.5 | D6.5 | D6.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 1.5 mm | 2 mm | 2 mm | 1.5 mm |
| | 3000 Hz | 3000 Hz | 1500 Hz | 3000 Hz |
| | Stainless steel | Stainless steel | PBT | Stainless steel |
| | — | — | — | — |
| | PBT | PBT | PBT | PBT |
| | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP65 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | | BES0257 BES G06E60-PSC20B-EP00,3-GS49 | |
| PNP normally closed | BES051H BES G06E60-POC15B-EP01-GS49 | | |
| Dimension | Ø 6.5 x 6 mm | Ø 6.5 x 6 mm | |
| Style | D6.5 | D6.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 2 mm | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 1.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES025N BES G06EA-PSD15B-S49G | BES03R9 BES G06EE-PSC20B-S49G-003 | BES03P4 BES G06EH-PSC20B-S49G | BES038Y BES G06EI-PSC30B-S49G |
|--|---|---|---|---|
| | Ø 6.5 x 18 mm | Ø 6.5 x 40 mm | Ø 6.5 x 55 mm | Ø 6.5 x 60 mm |
| | D6.5 | D6.5 | D6.5 | D6.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 1.5 mm | 2 mm | 2 mm | 3 mm |
| | 3000 Hz | 700 Hz | 1500 Hz | 1200 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | PBT | PBT | PBT | PBT |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP68 |
| | CE, cULus, EAC | cULus, CE, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES000E BES G06ED-PSC40F-BP02 | BES0005 BES G06EB-PSC40F-S49G | |
| NPN normally open | BES0008 BES G06ED-NSC40F-BP02 | | |
| Dimension | Ø 6.5 x 30 mm | Ø 6.5 x 30 mm | |
| Style | D6.5 | D6.5 | |
| Installation | non-flush | non-flush | |
| Range | 4 mm | 4 mm | |
| Switching frequency | 1500 Hz | 1500 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PA 12 | |
| Connection | Cable, 2.00 m, PUR | Connector, M8x1 connector, 3-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP68 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES01NP BES G06EF-PSC40F-S49G | BES03P5 BES G06EH-PSC40F-S49G | BES03EJ BES G06MH-PSC30B-BP00,3-GS49 | BES02UR BES G06MH1-PSC30B-S04G |
|--|---|---|--|--|
| | Ø 6.5 x 49.5 mm | Ø 6.5 x 60 mm | Ø 6.5 x 45 mm | Ø 6.5 x 66 mm |
| | D6.5 | D6.5 | D6.5 | D6.5 |
| | non-flush | non-flush | quasi-flush | quasi-flush |
| | 4 mm | 4 mm | 3 mm | 3 mm |
| | 1500 Hz | 1500 Hz | 1000 Hz | 1000 Hz |
| | Stainless steel | Stainless steel | Brass | Brass |
| | — | — | Chrome-plated | Chrome-plated |
| | PBT | PBT | PBT | PBT |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, EAC | CE, EAC |
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| PNP normally open | BES01NT BES G06MI-PSC40B-S49G | BES012R BES G08EG-PSC15B-BP05 | |
|----------------------------------|---|---|--|
| Dimension | Ø 6.5 x 59 mm | Ø 8 x 45 mm | |
| Style | D6.5 | D8.0 | |
| Installation | quasi-flush | for flush mounting | |
| Range | 4 mm | 1.5 mm | |
| Switching frequency | 700 Hz | 3000 Hz | |
| Housing material | Brass | Stainless steel | |
| Surface protection | nickel plated | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M8x1 connector, 3-pin | Cable, 5.00 m, PUR | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | 0...60 °C | -25...70 °C | |
| Protection degree | IP65 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES01NY BES G08EG-PSC15B-BV02 | BES012T BES G08EG-PSC15B-BV05 | BES012L BES G08EE-PSC20B-BP02 | BES026M BES M08E60-PSC15B-EP02 |
|--|---|---|---|--|
| | Ø 8 x 45 mm | Ø 8 x 45 mm | Ø 8 x 35 mm | Ø 8 x 6 mm |
| | D8.0 | D8.0 | D8.0 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 1.5 mm | 1.5 mm | 2 mm | 1.5 mm |
| | 3000 Hz | 3000 Hz | 1500 Hz | 3000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | PBT | PBT | PBT | PBT |
| | Cable, 2.00 m, PVC | Cable, 5.00 m, PVC | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES0275 BES M08EA-PSC15B-EP02 | | |
| PNP normally closed | | BES00CR BES M08EF-POC15B-BP02-003 | |
| NPN normally open | | BES00CN BES M08EF-NSC15B-BP02-003 | |
| Dimension | Ø 8 x 10 mm | Ø 8 x 40 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 3000 Hz | 1000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|--|---|---|---|---|
| | BES014K BES M08EF-PSC15B-BP02 | BES0034 BES M08MI-PSC15B-BP02 | BES0036 BES M08MI-PSC15B-BP05 | |
| | | | | BES0031 BES M08MI-POC15B-BV03 |
| | | BES002H BES M08MI-NSC15B-BV03 | | |
| | Ø 8 x 40 mm | Ø 8 x 50 mm | Ø 8 x 50 mm | Ø 8 x 50 mm |
| | M8x1 | M8x1 | M8x1 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 1.5 mm | 1.5 mm | 1.5 mm | 1.5 mm |
| | 3000 Hz | 1000 Hz | 1000 Hz | 5000 Hz |
| | Stainless steel | Brass | Brass | Brass |
| | — | nickel plated | nickel plated | Nickel-free coated |
| | PBT | PA 12 | PA 12 | PBT |
| | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | Cable, 5.00 m, PUR | Cable, 3.00 m, PVC |
| | 10...30 VDC | 12...30 VDC | 12...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP67 | IP67 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|----------------------------------|---|---|--|
| PNP normally open | | BES0037 BES M08MI-PSC15B-BV02 | |
| PNP normally closed | BES0032 BES M08MI-POC15B-BV05 | | |
| NPN normally open | | | |
| Dimension | Ø 8 x 50 mm | Ø 8 x 50 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 1000 Hz | 5000 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | Nickel-free coated | |
| Material sensing surface | PA 12 | PBT | |
| Connection | Cable, 5.00 m, PVC | Cable, 2.00 m, PVC | |
| Operating voltage U _b | 12...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 118 | Page 118 | |



| | BES0389 BES M08EE-PSC20B-EP05-511 | BES00CW BES M08EF-PSC20B-BP02-003 | BES003F BES M08MI-PSC20B-BP02 | BES003J BES M08MI-PSC20B-BP05 |
|--|---|---|---|---|
| | | | | |
| | | | BES002P BES M08MI-NSC20B-BV02 | |
| | Ø 8 x 30 mm | Ø 8 x 40 mm | Ø 8 x 50 mm | Ø 8 x 50 mm |
| | M8x1 | M8x1 | M8x1 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 2 mm | 2 mm | 2 mm | 2 mm |
| | 1000 Hz | 700 Hz | 700 Hz | 700 Hz |
| | Stainless steel | Stainless steel | Brass | Brass |
| | — | — | nickel plated | nickel plated |
| | PBT | PBT | PA 12 | PA 12 |
| | Cable, 5.00 m, PUR | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | Cable, 5.00 m, PUR |
| | 10...30 VDC | 10...30 VDC | 12...30 VDC | 12...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES03TL BES M08MI-PSC20B-BP10 | BES003K BES M08MI-PSC20B-BV02 | |
| PNP normally closed | | | |
| Dimension | Ø 8 x 50 mm | Ø 8 x 50 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 2 mm | |
| Switching frequency | 700 Hz | 5000 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | Nickel-free coated | |
| Material sensing surface | PA 12 | PBT | |
| Connection | Cable, 10.00 m, PUR | Cable, 2.00 m, PVC | |
| Operating voltage U_b | 12...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| BES003M BES M08MI-PSC20B-BV05 | BES03TH BES M08MI-POC20B-BV02 | BES0276 BES M08EA-PSC20B-EP00,3-GS49 | BES0277 BES M08EA-PSD15B-S49G |
|----------------------------------|----------------------------------|--|----------------------------------|
| Ø 8 x 50 mm | Ø 8 x 50 mm | Ø 8 x 10 mm | Ø 8 x 18 mm |
| M8x1 | M8x1 | M8x1 | M8x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 2 mm | 2 mm | 2 mm | 1.5 mm |
| 700 Hz | 5000 Hz | 3000 Hz | 3000 Hz |
| Brass | Brass | Stainless steel | Stainless steel |
| nickel plated | Nickel-free coated | — | — |
| PA 12 | PBT | PBT | PBT |
| Cable, 5.00 m, PVC | Cable, 2.00 m, PVC | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Connector, M8x1 connector, 3-pin |
| 12...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP68 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES013N BES M08EC-PSC15B-S49G | BES013M BES M08EC-PSC15B-S04G | |
| PNP normally closed | BES013K BES M08EC-POC15B-S49G | | |
| NPN normally open | BES013J BES M08EC-NSC15B-S49G | | |
| Dimension | Ø 8 x 30 mm | Ø 8 x 33 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|--|---|---|---|---|
| | BES0147 BES M08EE-PSC15B-S49G | BES0146 BES M08EE-PSC15B-S04G | BES01P7 BES M08EG-PSC15B-S49G | |
| | BES0143 BES M08EE-POC15B-S49G | BES0142 BES M08EE-POC15B-S04G | | BES01PE BES M08EH-POC15B-S04G |
| | | BES013Y BES M08EE-NSC15B-S04G | | BES01PC BES M08EH-NSC15B-S04G |
| | Ø 8 x 40 mm | Ø 8 x 43 mm | Ø 8 x 50 mm | Ø 8 x 58 mm |
| | M8x1 | M8x1 | M8x1 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 1.5 mm | 1.5 mm | 1.5 mm | 1.5 mm |
| | 3000 Hz | 3000 Hz | 3000 Hz | 3000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | PBT | PBT | PBT | PBT |
| | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP68 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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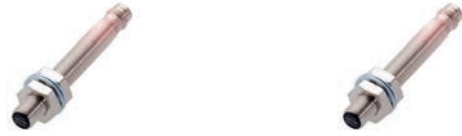
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|--------------------------|---|---|--|
| PNP normally open | | BES003C BES M08MI-PSC15B-S49G | |
| PNP normally closed | BES03P6 BES M08MI-POC15B-S49G | | |
| NPN normally open | BES002K BES M08MI-NSC15B-S49G | | |
| Dimension | Ø 8 x 59 mm | Ø 8 x 60 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 1000 Hz | 5000 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | Nickel-free coated | |
| Material sensing surface | PA 12 | PBT | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Operating voltage U_b | 12...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES0026 BES M08MH1-POC15B-S04G | BES0027 BES M08MH1-PSC15B-S04G | BES0278 BES M08EA-PSD20B-S49G | BES013P BES M08EC-PSC20B-S49G |
|--|--|--|---|---|
| | BES0026 BES M08MH1-POC15B-S04G | | | BES013L BES M08EC-POC20B-S49G |
| | BES0024 BES M08MH1-NSC15B-S04G | | | |
| | Ø 8 x 65 mm | Ø 8 x 65 mm | Ø 8 x 18 mm | Ø 8 x 30 mm |
| | M8x1 | M8x1 | M8x1 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 1.5 mm | 1.5 mm | 2 mm | 2 mm |
| | 1000 Hz | 1000 Hz | 3000 Hz | 1500 Hz |
| | Brass | Brass | Stainless steel | Stainless steel |
| | nickel plated | nickel plated | — | — |
| | PA 12 | PA 12 | PBT | PBT |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | 12...30 VDC | 12...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES014A BES M08EE-PSC20B-S49G | BES0149 BES M08EE-PSC20B-S04G-101 | |
| PNP normally closed | BES0145 BES M08EE-POC20B-S49G | | |
| NPN normally open | | | |
| Dimension | Ø 8 x 40 mm | Ø 8 x 43 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 2 mm | |
| Switching frequency | 1500 Hz | 1500 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | ceramic coated | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|--|---|---|---|--|
| | BES01PH BES M08EH-PSC20B-S04G | | BES003P BES M08MI-PSC20B-S49G | BES0028 BES M08MH1-PSC20B-S04G |
| | | | BES0033 BES M08MI-POC20B-S49G | BES03T5 BES M08MH1-POC20B-S04G |
| | | BES002U BES M08MI-NSC20B-S49G | | BES0025 BES M08MH1-NSC20B-S04G |
| | Ø 8 x 58 mm | Ø 8 x 59 mm | Ø 8 x 60 mm | Ø 8 x 65 mm |
| | M8x1 | M8x1 | M8x1 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 2 mm | 2 mm | 2 mm | 2 mm |
| | 1500 Hz | 700 Hz | 5000 Hz | 700 Hz |
| | Stainless steel | Brass | Brass | Brass |
| | — | nickel plated | Nickel-free coated | nickel plated |
| | PBT | PA 12 | PBT | PA 12 |
| | Connector, M12x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 12...30 VDC | 10...30 VDC | 12...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP67 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | BES0427 BES M08EE-PSC25B-S49G | BES054N BES M08MI-PSC30B-S49G | |
|----------------------------------|---|---|--|
| PNP normally open | | | |
| PNP normally closed | | | |
| NPN normally open | | | |
| Dimension | Ø 8 x 40 mm | Ø 8 x 60 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2.5 mm | 3 mm | |
| Switching frequency | 1000 Hz | 1200 Hz | |
| Housing material | Stainless steel | Brass | |
| Surface protection | — | Nickel-free coated | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | 0...60 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|--|--|---|---|---|
| | BES02W9 BES M08MH1-PSC30B-S04G | BES000Y BES M08ED-PSC40F-BP02 | | BES0016 BES M08EG-PSC40F-BP02 |
| | | | | BES0014 BES M08EG-POC40F-BP02 |
| | BES02W7 BES M08MH1-NSC30B-S04G | BES000T BES M08ED-NSC40F-BV02 | BES0013 BES M08EG-NSC40F-BV02 | |
| | Ø 8 x 63 mm | Ø 8 x 30 mm | Ø 8 x 50 mm | Ø 8 x 50 mm |
| | M8x1 | M8x1 | M8x1 | M8x1 |
| | for flush mounting | non-flush | non-flush | non-flush |
| | 3 mm | 4 mm | 4 mm | 4 mm |
| | 1200 Hz | 1500 Hz | 1500 Hz | 1500 Hz |
| | Brass | Stainless steel | Stainless steel | Stainless steel |
| | Nickel-free coated | — | — | — |
| | PBT | PA 12 | PBT | PBT |
| | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PUR | Cable, 2.00 m, PVC | Cable, 2.00 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP68 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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|--------------------------|---|---|--|
| PNP normally open | BES01P3 BES M08ED-PSC25F-S04G | BES01P8 BES M08EG-PSC25F-S04G | |
| PNP normally closed | | BES01P6 BES M08EG-POC25F-S04G | |
| NPN normally open | | BES01P5 BES M08EG-NSC25F-S04G | |
| Dimension | Ø 8 x 43 mm | Ø 8 x 58 mm | |
| Style | M8x1 | M8x1 | |
| Installation | non-flush | non-flush | |
| Range | 2.5 mm | 2.5 mm | |
| Switching frequency | 2000 Hz | 2000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | |
|---|---|---|--|
| BES000M BES M08EB-PSC40F-S49G | BES014M BES M08EF-PSC40F-S49G | BES001J BES M08EH-PSC40F-S49G | BES01P9 BES M08EG1-PSC40F-S04G |
| BES000L BES M08EB-POC40F-S49G | | BES001F BES M08EH-POC40F-S49G | |
| | | BES001C BES M08EH-NSC40F-S49G | |
| Ø 8 x 30 mm | Ø 8 x 49.5 mm | Ø 8 x 60 mm | Ø 8 x 64 mm |
| M8x1 | M8x1 | M8x1 | M8x1 |
| non-flush | non-flush | non-flush | non-flush |
| 4 mm | 4 mm | 4 mm | 4 mm |
| 1500 Hz | 1500 Hz | 1500 Hz | 5000 Hz |
| Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| — | — | — | — |
| PBT | PBT | PBT | PBT |
| Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP68 | IP68 | IP68 | IP68 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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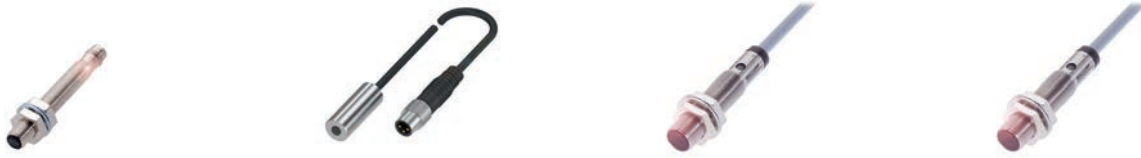
| | | | |
|--------------------------|---|--|--|
| PNP normally open | BES001H BES M08EH-PSC40F-S04G | BES054Z BES M08EH1-PSC60F-S49G | |
| PNP normally closed | BES001E BES M08EH-POC40F-S04G | BES0550 BES M08EH1-POC60F-S49G | |
| NPN normally open | BES001A BES M08EH-NSC40F-S04G | | |
| Dimension | Ø 8 x 65.5 mm | Ø 8 x 60 mm | |
| Style | M8x1 | M8x1 | |
| Installation | non-flush | non-flush | |
| Range | 4 mm | 6 mm | |
| Switching frequency | 1500 Hz | 1200 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES02W4 BES M08MG1-PSC60F-S49G | BES058J BES M08EH1-PSC60F-S04G | BES02W3 BES M08MG1-PSC60F-S04G | BES01ZU BES M08MI-PSC40B-BP00,2-GS04 |
|--|--|--|--|---|
| | | | | |
| | | | BES02W0 BES M08MG1-NSC60F-S04G | BES01ZR BES M08MI-NSC40B-BP00,2-GS04 |
| | Ø 8 x 60 mm | Ø 8 x 63 mm | Ø 8 x 66 mm | Ø 8 x 51.5 mm |
| | M8x1 | M8x1 | M8x1 | M8x1 |
| | non-flush | non-flush | non-flush | quasi-flush |
| | 6 mm | 6 mm | 6 mm | 4 mm |
| | 500 Hz | 1200 Hz | 500 Hz | 800 Hz |
| | Brass | Stainless steel | Brass | Brass |
| | Chrome-plated | — | Chrome-plated | nickel plated |
| | PBT | PBT | PBT | PBT |
| | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Cable with connector, M12x1 connector, 4-pin, 0.20 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | 0...60 °C |
| | IP67 | IP68 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|--|---|--|
| PNP normally open | BES003R BES M08MI-PSC40B-BP00,3-GS49 | BES01ZW BES M08MI-PSC40B-S49G | |
| NPN normally open | | BES01ZT BES M08MI-NSC40B-S49G | |
| normally open | | | |
| Dimension | Ø 8 x 51.5 mm | Ø 8 x 59 mm | |
| Style | M8x1 | M8x1 | |
| Installation | quasi-flush | quasi-flush | |
| Range | 4 mm | 4 mm | |
| Switching frequency | 800 Hz | 800 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Connector, M8x1 connector, 3-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | 0...60 °C | 0...60 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES02W6 BES M08MH-PSC40B-S49G-507 | BES04TU BES G10ED-PSC08B-EP00,3-GS49 | | |
|--|---|--|---------------------------------------|---------------------------------------|
| | | | | |
| | | | BES02C9 BES 516-449-B0-L-05 | BES027M BES 516-207-B0-E-03 |
| | Ø 8 x 60 mm | Ø 10 x 27 mm | Ø 12 x 60 mm | Ø 12 x 60 mm |
| | M8x1 | D10.0 | M12x1 | M12x1 |
| | quasi-flush | for flush mounting | for flush mounting | for flush mounting |
| | 4 mm | 0.8 mm | 2 mm | 2 mm |
| | 500 Hz | 5000 Hz | 25 Hz | 1000 Hz |
| | Brass | Stainless steel | Brass | Stainless steel |
| | Chrome-plated | — | nickel plated | — |
| | PBT | PBT | PA 12 | PA 12 |
| | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Cable, 5.00 m, PVC | Cable, 3.00 m, PVC |
| | 10...30 VDC | 10...30 VDC | 20...250 VAC | 20...250 VDC/20...250 VAC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|----------------------------------|---------------------------------------|---|--|
| PNP normally open | | BES00E5 BES M12MD-PSC40B-BP02-003 | |
| NPN normally open | | | |
| Normally open | BES027N BES 516-207-B0-E-05 | | |
| Dimension | Ø 12 x 60 mm | Ø 12 x 33 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 4 mm | |
| Switching frequency | 1000 Hz | 300 Hz | |
| Housing material | Stainless steel | Brass | |
| Surface protection | — | Nickel-free coated | |
| Material sensing surface | PA 12 | LCP | |
| Connection | Cable, 5.00 m, PVC | Cable, 2.00 m, PUR | |
| Operating voltage U _b | 20...250 VDC/20...250 VAC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | BES0062 BES M12MI-PSC40B-BP03 | BES0064 BES M12MI-PSC40B-BV02 |
|--|---|---|---|---|
| | BES0057 BES M12MI-NSC40B-BV03 | BES0058 BES M12MI-NSC40B-BV05 | | |
| | Ø 12 x 53 mm | Ø 12 x 53 mm | Ø 12 x 53 mm | Ø 12 x 53 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 4 mm | 4 mm | 4 mm | 4 mm |
| | 2500 Hz | 2500 Hz | 2500 Hz | 2500 Hz |
| | Brass | Brass | Brass | Brass |
| | Nickel-free coated | Nickel-free coated | Nickel-free coated | Nickel-free coated |
| | PBT | PBT | PBT | PBT |
| | Cable, 3.00 m, PVC | Cable, 5.00 m, PVC | Cable, 3.00 m, TPU | Cable, 2.00 m, PVC |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP68 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | BES0001 BES M12MI-PSC40B-BV03 | BES0065 BES M12MI-PSC40B-BV05 | |
|-----------------------------------|---|---|--|
| PNP normally open | | | |
| PNP normally closed | | | |
| PNP normally open/normally closed | | | |
| Dimension | Ø 12 x 53 mm | Ø 12 x 53 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 4 mm | 4 mm | |
| Switching frequency | 2500 Hz | 2500 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 3.00 m, PVC | Cable, 5.00 m, PVC | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES00PW BES 516-325-G-E4-C-S4-00,5 | | BES035E BES 516-325-SA45 | BES00PK BES 516-325-E5-C-S4 |
|--|---|--|------------------------------------|---------------------------------------|
| | | | | BES00YT BES 516-370-E5-C-S4 |
| | | BES032M BES 516-113-SA3-S4-C | | |
| | Ø 12 x 33 mm | Ø 12 x 70 mm | Ø 12 x 31 mm | Ø 12 x 45 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 4 mm | 1.5 mm | 2 mm | 2 mm |
| | 2500 Hz | 2000 Hz | 1000 Hz | 5000 Hz |
| | Brass | Stainless steel | Brass | Brass |
| | Nickel-free coated | — | nickel plated | Nickel-free coated |
| | LCP | PA 12 | PA 12 | PBT |
| | Cable with connector, M12x1 connector, 4-pin, 0.50 m, PUR | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...85 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP67 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|--|--|
| PNP normally open | BES0060 BES M12MI-PSC20B-S04G | | |
| Normally open | | | |
| IO-Link | | BES04FK BES M12MI-PSIC20C-S04G | |
| Dimension | Ø 12 x 65 mm | Ø 12 x 65 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 0.5...2 mm | |
| Switching frequency | 5000 Hz | 2000 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PBT | LCP | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 12...30 VDC | |
| Ambient temperature | -25...70 °C | -25...85 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | BES01C8 BES 516-325-S4-C |
|--|---------------------------------------|-------------------------------------|-------------------------------------|------------------------------------|
| | BES02FP BES 515-449-SA7-S21 | BES027U BES 516-207-S21-E | BES027W BES 516-207-S27-E | |
| | Ø 12 x 70 mm | Ø 12 x 70 mm | Ø 12 x 70 mm | Ø 12 x 70 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 2 mm | 2 mm | 2 mm | 2 mm |
| | 10 Hz | 1000 Hz | 1000 Hz | 5000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | PA 12 | PA 12 | PA 12 | PBT |
| | Connector, 1/2"-20 UNF2A-Male | Connector, 1/2"-20 UNF2A-Male | Connector, M12x1 connector | Connector, M12x1 connector, 4-pin |
| | 35...250 VAC | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -40...85 °C |
| | IP67 | IP67 | IP67 | IP68 |
| | CE, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|-----------------------------------|--------------------------------------|--------------------------------------|--|
| PNP normally open | | | |
| PNP normally closed | | BES01K6 BES 516-370-S4-C | |
| PNP normally open/normally closed | BES0161 BES 516-113-S4-C | | |
| Dimension | Ø 12 x 70 mm | Ø 12 x 70 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 2 mm | |
| Switching frequency | 5000 Hz | 5000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -40...85 °C | -40...85 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES00PZ BES 516-325-G-E5-C-S49 | BES00EF BES M12ME-PSC40B-S04G-003 | BES00PY BES 516-325-G-E5-C-S4 | BES014W BES M12EE-PSC40B-S04G |
|--|--|---|---|---|
| | | | | |
| | | | | |
| | Ø 12 x 44 mm | Ø 12 x 45 mm | Ø 12 x 45 mm | Ø 12 x 45 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 4 mm | 4 mm | 4 mm | 4 mm |
| | 2500 Hz | 2500 Hz | 2500 Hz | 2000 Hz |
| | Brass | Brass | Brass | Stainless steel |
| | Nickel-free coated | Nickel-free coated | Nickel-free coated | — |
| | LCP | PBT | PBT | LCP |
| | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...85 °C |
| | IP67 | IP68 | IP68 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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|--------------------------|---|---|--|
| PNP normally open | | BES0068 BES M12MI-PSC40B-S04G | |
| PNP normally closed | BES0070 BES 516-370-G-E5-C-S4 | BES005N BES M12MI-POC40B-S04G | |
| NPN normally open | | BES0059 BES M12MI-NSC40B-S04G | |
| Normally open | | | |
| Dimension | Ø 12 x 45 mm | Ø 12 x 65 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 4 mm | 4 mm | |
| Switching frequency | 2500 Hz | 2500 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 3-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES02FU BES M12EI-PSC40B-S04G | | BES01C7 BES 516-325-G-S4-C | BES03AR BES 516-325-G-S4-L |
|--|---|---------------------------------------|--------------------------------------|--------------------------------------|
| | | | | |
| | | | | |
| | | BES027T BES 516-207-G-S21-E | | |
| | Ø 12 x 65 mm | Ø 12 x 70 mm | Ø 12 x 70 mm | Ø 12 x 70 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 4 mm | 4 mm | 4 mm | 4 mm |
| | 1000 Hz | 500 Hz | 2500 Hz | 600 Hz |
| | Stainless steel | Stainless steel | Brass | Brass |
| | — | — | Nickel-free coated | nickel plated |
| | LCP | PA 12 | PBT | LCP |
| | Connector, M12x1 connector, 4-pin | Connector, 1/2"-20 UNF2A-Male | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 20...250 VDC/20...250 VAC | 10...30 VDC | 10...30 VDC |
| | -25...85 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP67 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---------------------------------------|---------------------------------------|--|
| PNP normally open | | | |
| Normally open | BES0285 BES 516-209-B0-E-03 | BES0286 BES 516-209-B0-E-05 | |
| Normally closed | BES028F BES 516-210-B0-E-03 | | |
| Dimension | Ø 12 x 60 mm | Ø 12 x 60 mm | |
| Style | M12x1 | M12x1 | |
| Installation | non-flush | non-flush | |
| Range | 4 mm | 4 mm | |
| Switching frequency | 600 Hz | 600 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 3.00 m, PVC | Cable, 5.00 m, PVC | |
| Operating voltage U_b | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| BES00UY BES 516-356-E5-C-S4 | BES036T BES 516-356-SA26-S4-C | | BES028A BES 516-209-S21-E | BES0330 BES 516-209-SA1-S21-E |
|--------------------------------------|--------------------------------------|--|-------------------------------|----------------------------------|
| Ø 12 x 50 mm | Ø 12 x 61 mm | | Ø 12 x 70 mm | Ø 12 x 70 mm |
| M12x1 | M12x1 | | M12x1 | M12x1 |
| non-flush | non-flush | | non-flush | non-flush |
| 4 mm | 4 mm | | 4 mm | 4 mm |
| 2500 Hz | 1000 Hz | | 600 Hz | 600 Hz |
| Brass | Stainless steel | | Stainless steel | Stainless steel |
| Nickel-free coated | — | | — | — |
| PBT | PA 12 | | PA 12 | PA 12 |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | | Connector, 1/2"-20 UNF2A-Male | Connector, 1/2"-20 UNF2A-Male |
| 10...30 VDC | 10...30 VDC | | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC |
| -25...70 °C | -25...70 °C | | -25...70 °C | -25...70 °C |
| IP68 | IP68 | | IP67 | IP67 |
| CE, cULus, EAC | CE, EAC | | CE, cULus, EAC | CE, EAC |
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| | | | |
|-----------------------------------|--------------------------------------|---|--|
| PNP normally open | BES01H6 BES 516-356-S4-C | BES036R BES 516-356-SA24-S4-C | |
| PNP normally open/normally closed | | | |
| Dimension | Ø 12 x 70 mm | Ø 12 x 70 mm | |
| Style | M12x1 | M12x1 | |
| Installation | non-flush | non-flush | |
| Range | 4 mm | 4 mm | |
| Switching frequency | 2500 Hz | 1500 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PA 12 | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -40...85 °C | -40...85 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, EAC | |
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| | BES0178 BES 516-131-S4-C | BES01PY BES M12MD-PSC80F-S04G | BES01PN BES M12EG-PSC80F-S04G | BES004N BES M12MG-PSC80F-S04G |
|--|--------------------------------------|---|---|---|
| | Ø 12 x 70 mm | Ø 12 x 45 mm | Ø 12 x 60 mm | Ø 12 x 60 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | non-flush | non-flush | non-flush | non-flush |
| | 4 mm | 8 mm | 8 mm | 8 mm |
| | 2500 Hz | 1000 Hz | 1000 Hz | 1000 Hz |
| | Stainless steel | Brass | Stainless steel | Brass |
| | — | Nickel-free coated | — | Nickel-free coated |
| | PBT | PBT | PBT | PBT |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -40...85 °C | -25...70 °C | -40...85 °C | -25...70 °C |
| | IP68 | IP68 | IP68 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|----------------------------------|---------------------------------------|--|--|
| PNP normally open | | BES02WK BES M12MC1-PSC10F-S04G | |
| PNP normally closed | | | |
| Normally open | BES0289 BES 516-209-G-S21-E | | |
| Dimension | Ø 12 x 70 mm | Ø 12 x 45 mm | |
| Style | M12x1 | M12x1 | |
| Installation | non-flush | non-flush | |
| Range | 8 mm | 10 mm | |
| Switching frequency | 600 Hz | 600 Hz | |
| Housing material | Stainless steel | Brass | |
| Surface protection | — | Nickel-free coated | |
| Material sensing surface | PA 12 | PBT | |
| Connection | Connector, 1/2"-20 UNF2A-Male | Connector, M12x1 connector, 3-pin | |
| Operating voltage U _b | 20...250 VDC/20...250 VAC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...85 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES02WR BES M12MF1-PSC10F-S04G | BES02WM BES M12MD1-PSC60B-S04G | BES02WZ BES M12MG1-PSC60B-S04G | BES01ZN BES M12MI-PSH80B-S04G |
|--|--|--|--|---|
| | | | BES02WY BES M12MG1-POC60B-S04G | |
| | Ø 12 x 60 mm | Ø 12 x 45 mm | Ø 12 x 60 mm | Ø 12 x 65 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | non-flush | quasi-flush | quasi-flush | quasi-flush |
| | 10 mm | 6 mm | 6 mm | 8 mm |
| | 600 Hz | 1000 Hz | 1000 Hz | 300 Hz |
| | Brass | Brass | Brass | Brass |
| | Nickel-free coated | Nickel-free coated | Nickel-free coated | nickel plated |
| | PBT | PBT | PBT | LCP |
| | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...55 VDC |
| | -25...85 °C | -25...85 °C | -25...85 °C | 0...60 °C |
| | IP68 | IP68 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, EAC |
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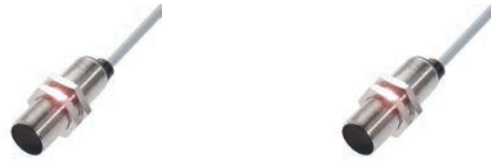
Safety

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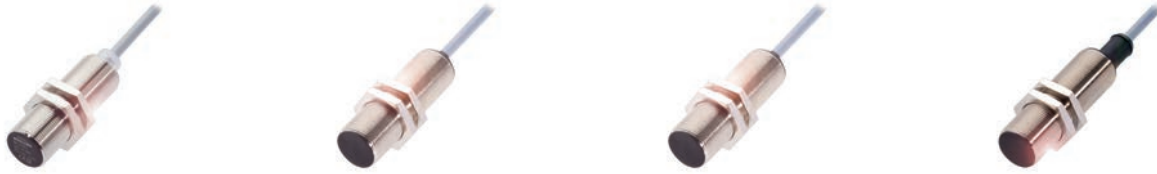
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| | | | |
|----------------------------------|---------------------------------------|---------------------------------------|--|
| PNP normally open | | | |
| Normally open | BES02AU BES 516-420-E4-L-02 | BES02AW BES 516-420-E4-L-05 | |
| Dimension | Ø 18 x 56 mm | Ø 18 x 56 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 5 mm | 5 mm | |
| Switching frequency | 25 Hz | 25 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 2.00 m, PVC | Cable, 5.00 m, PVC | |
| Operating voltage U _b | 20...250 VAC | 20...250 VAC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| BES0083 BES M18MI-PSC50B-BV03 | | BES028L BES 516-211-E4-E-03 | BES028N BES 516-211-E4-E-PU-05 | BES028U BES 516-211-E6-E-05 |
|----------------------------------|--|--------------------------------|-----------------------------------|--------------------------------|
| Ø 18 x 56 mm | | Ø 18 x 61.5 mm | Ø 18 x 61.5 mm | Ø 18 x 71 mm |
| M18x1 | | M18x1 | M18x1 | M18x1 |
| for flush mounting | | for flush mounting | for flush mounting | for flush mounting |
| 5 mm | | 5 mm | 5 mm | 5 mm |
| 700 Hz | | 250 Hz | 250 Hz | 250 Hz |
| Brass | | Brass | Brass | Brass |
| nickel plated | | nickel plated | nickel plated | nickel plated |
| PA 12 | | PA 12 | PA 12 | PA 12 |
| Cable, 3.00 m, PVC | | Cable, 3.00 m, PVC | Cable, 5.00 m, PUR | Cable, 5.00 m, PVC |
| 12...30 VDC | | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC |
| -25...70 °C | | -25...70 °C | -25...70 °C | -25...70 °C |
| IP68 | | IP67 | IP67 | IP67 |
| CE, cULus, EAC | | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES04F1 BES M18MD-PSC80B-BP05-003 | BES008E BES M18MI-PSC80B-BV02 | |
| NPN normally open | | | |
| Dimension | Ø 18 x 36 mm | Ø 18 x 56 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 8 mm | 8 mm | |
| Switching frequency | 150 Hz | 150 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PBT | PA 12 | |
| Connection | Cable, 5.00 m, PUR | Cable, 2.00 m, PVC | |
| Operating voltage U_b | 10...30 VDC | 12...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | BES0089 BES M18MI-PSC80B-BP03 | BES008F BES M18MI-PSC80B-BV03 |
|--|---|---|---|---|
| | BES007H BES M18MI-NSC80B-BP03 | BES007J BES M18MI-NSC80B-BV03 | | |
| | Ø 18 x 56 mm | Ø 18 x 56 mm | Ø 18 x 56 mm | Ø 18 x 56 mm |
| | M18x1 | M18x1 | M18x1 | M18x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 8 mm | 8 mm | 8 mm | 8 mm |
| | 150 Hz | 150 Hz | 150 Hz | 150 Hz |
| | Brass | Brass | Brass | Brass |
| | nickel plated | nickel plated | nickel plated | nickel plated |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | Cable, 3.00 m, PUR | Cable, 3.00 m, PVC | Cable, 3.00 m, PUR | Cable, 3.00 m, PVC |
| | 12...30 VDC | 12...30 VDC | 12...30 VDC | 12...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP68 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| PNP normally open | BES008H BES M18MI-PSC80B-BV05 | BES00R5 BES 516-326-E4-C-S4-00,2 | |
|--------------------------|---|---|--|
| Dimension | Ø 18 x 56 mm | Ø 18 x 36 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 8 mm | 5 mm | |
| Switching frequency | 150 Hz | 1000 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 5.00 m, PVC | Cable with connector, M12x1 connector, 4-pin, 0.20 m, PUR | |
| Operating voltage U_b | 12...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP68 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 126 | Page 126 | |



| BES00EY BES M18ME-PSC50B-S04G-003 | BES00R6 BES 516-326-E5-C-S4 | BES02ET BES 515-326-E5-T-S4 | BES0086 BES M18MI-PSC50B-S04G |
|---|---------------------------------------|---------------------------------------|---|
| Ø 18 x 44.5 mm | Ø 18 x 44.5 mm | Ø 18 x 45 mm | Ø 18 x 65 mm |
| M18x1 | M18x1 | M18x1 | M18x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 5 mm | 5 mm | 5 mm | 5 mm |
| 700 Hz | 1000 Hz | 500 Hz | 700 Hz |
| Brass | Brass | Stainless steel | Brass |
| nickel plated | nickel plated | — | nickel plated |
| PBT | PBT | PA 12 | PA 12 |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 12...30 VDC |
| -25...70 °C | -25...70 °C | -40...105 °C | -25...70 °C |
| IP67 | IP67 | IP68 | IP68 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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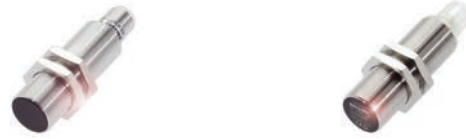
Accessories



| | | | |
|-----------------------------------|--|--------------------------------------|--|
| PNP normally open | | BES02EU BES 515-326-S4-C | |
| PNP normally closed | | | |
| PNP normally open/normally closed | | | |
| Normally open | BES028R BES 516-211-E5-E-S27 | | |
| Dimension | Ø 18 x 70.5 mm | Ø 18 x 83 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 5 mm | 5 mm | |
| Switching frequency | 400 Hz | 900 Hz | |
| Housing material | Brass | Stainless steel | |
| Surface protection | nickel plated | — | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Connector, M12x1 connector | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 20...250 VDC/20...250 VAC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -40...85 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|--|--------------------------------------|--------------------------------------|---|--|
| | BES01CW BES 516-326-S4-C | | BES00RC BES 516-326-G-E5-C-S4 | BES02P3 BES 516-326-SA96-G-E5-Y-S4 |
| | BES01JW BES 516-367-S4-C | | | |
| | | BES015N BES 516-105-S4-C | | |
| | | | | |
| | Ø 18 x 83 mm | Ø 18 x 83 mm | Ø 18 x 44.5 mm | Ø 18 x 44.5 mm |
| | M18x1 | M18x1 | M18x1 | M18x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 5 mm | 5 mm | 8 mm | 8 mm |
| | 900 Hz | 500 Hz | 200 Hz | 200 Hz |
| | Brass | Brass | Brass | Brass |
| | nickel plated | nickel plated | nickel plated | nickel plated |
| | PA 12 | PA 12 | PBT | ceramic coated |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | BES008L BES M18MI-PSC80B-S04G | BES008M BES M18MI-PSC80B-S04K | |
| PNP normally closed | | BES007Y BES M18MI-POC80B-S04K | |
| NPN normally open | | BES007M BES M18MI-NSC80B-S04K | |
| Normally open | | | |
| Dimension | Ø 18 x 65 mm | Ø 18 x 65 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 8 mm | 8 mm | |
| Switching frequency | 1000 Hz | 150 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | nickel plated | |
| Material sensing surface | PBT | PA 12 | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 12...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES02H0 BES M18EI-PSC80B-S04G | | BES0496 BES M18MI2-PSC80B-S04G | |
|--|---|---|--|---------------------------------------|
| | | | | |
| | | | | |
| | | BES02ZE BES M18MN-USU80B-S21G | | BES02C5 BES 516-437-E4-L-02 |
| | Ø 18 x 65 mm | Ø 18 x 70 mm | Ø 18 x 83 mm | Ø 18 x 61.5 mm |
| | M18x1 | M18x1 | M18x1 | M18x1 |
| | for flush mounting | for flush mounting | for flush mounting | non-flush |
| | 8 mm | 8 mm | 8 mm | 8 mm |
| | 700 Hz | 30 Hz | 1000 Hz | 25 Hz |
| | Stainless steel | Brass | Brass | Brass |
| | Ceramic | nickel plated | Nickel-free coated | nickel plated |
| | PBT | PBT | PBT | PA 12 |
| | Connector, M12x1 connector, 4-pin | Connector, 1/2"-20 UNF2A-Male | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PVC |
| | 10...30 VDC | 20...300 VDC/20...250 VAC | 10...30 VDC | 20...250 VAC |
| | -40...85 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP67 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--------------------------|---------------------------------------|---------------------------------------|--|
| PNP normally open | | BES00WM BES 516-360-E5-Y-S4 | |
| Normally open | BES0292 BES 516-213-E4-E-03 | | |
| Dimension | Ø 18 x 61.5 mm | Ø 18 x 54 mm | |
| Style | M18x1 | M18x1 | |
| Installation | non-flush | non-flush | |
| Range | 8 mm | 8 mm | |
| Switching frequency | 250 Hz | 200 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 3.00 m, PVC | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 20...250 VDC/20...250 VAC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES02C7 BES 516-437-E5-L-S21 | BES0296 BES 516-213-E5-E-S21 | BES0297 BES 516-213-E5-E-S27 | BES0298 BES 516-213-E5-E-S5 |
|--|--|--|--|---------------------------------------|
| | Ø 18 x 65 mm | Ø 18 x 70.5 mm | Ø 18 x 70.5 mm | Ø 18 x 80 mm |
| | M18x1 | M18x1 | M18x1 | M18x1 |
| | non-flush | non-flush | non-flush | non-flush |
| | 8 mm | 8 mm | 8 mm | 8 mm |
| | 25 Hz | 250 Hz | 250 Hz | 250 Hz |
| | Brass | Brass | Brass | Brass |
| | nickel plated | nickel plated | nickel plated | nickel plated |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | Connector, 1/2"-20 UNF2A-Male | Connector, 1/2"-20 UNF2A-Male | Connector, M12x1 connector | Connector, 7/8"-16 UN plug |
| | 20...250 VAC | 20...250 VAC | 20...250 VAC | 20...250 VDC/20...250 VAC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|-----------------------------------|--------------------------------------|---|--|
| PNP normally open | BES01HY BES 516-360-S4-C | BES03RM BES M18MG-PSC16F-S04G | |
| PNP normally open/normally closed | | | |
| Normally open | | | |
| Dimension | Ø 18 x 83 mm | Ø 18 x 65 mm | |
| Style | M18x1 | M18x1 | |
| Installation | non-flush | non-flush | |
| Range | 8 mm | 16 mm | |
| Switching frequency | 600 Hz | 800 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | Nickel-free coated | |
| Material sensing surface | PA 12 | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP68 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | |
|---|--|--------------------------------------|--------------------------------------|
| BES0070 BES M18MG-PSC16F-S04K | | BES01HW BES 516-360-G-S4-H | |
| | | | BES016W BES 516-123-G-S4-H |
| | BES029A BES 516-213-G-E5-E-S21 | | |
| Ø 18 x 65 mm | Ø 18 x 70.5 mm | Ø 18 x 83 mm | Ø 18 x 83 mm |
| M18x1 | M18x1 | M18x1 | M18x1 |
| non-flush | non-flush | non-flush | non-flush |
| 16 mm | 16 mm | 16 mm | 16 mm |
| 800 Hz | 250 Hz | 80 Hz | 80 Hz |
| Brass | Brass | Brass | Brass |
| Nickel-free coated | nickel plated | nickel plated | nickel plated |
| PBT | PA 12 | PA 12 | PA 12 |
| Connector, M12x1 connector, 4-pin | Connector, 1/2"-20 UNF2A-Male | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 20...250 VDC/20...250 VAC | 10...55 VDC | 10...55 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP68 | IP68 |
| CE, cULus, EAC | CE, cULus, EAC | CE, EAC | CE, EAC |
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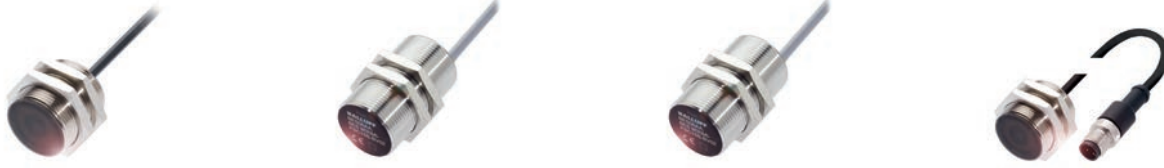
| | BES02Y7 BES M18ME1-PSC20F-S04G | BES02Y5 BES M18MD1-PSC12B-S04G | |
|--------------------------|--|--|--|
| PNP normally open | | | |
| NPN normally open | | | |
| Normally open | | | |
| Dimension | Ø 18 x 63.5 mm | Ø 18 x 48.5 mm | |
| Style | M18x1 | M18x1 | |
| Installation | non-flush | quasi-flush | |
| Range | 20 mm | 12 mm | |
| Switching frequency | 200 Hz | 500 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Chrome-plated | Chrome-plated | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|--|--|---|---|---------------------------------------|
| | BES02Y9 BES M18MG1-PSC12B-S04G | BES00RE BES 516-327-E4-Y-01,5 | BES00A1 BES M30MI-PSC10B-BV03 | |
| | | | BES009E BES M30MI-NSC10B-BV03 | |
| | | | | BES029L BES 516-215-E4-E-03 |
| | Ø 18 x 63.5 mm | Ø 30 x 36 mm | Ø 30 x 56 mm | Ø 30 x 61.5 mm |
| | M18x1 | M30x1.5 | M30x1.5 | M30x1.5 |
| | quasi-flush | for flush mounting | for flush mounting | for flush mounting |
| | 12 mm | 10 mm | 10 mm | 10 mm |
| | 500 Hz | 200 Hz | 400 Hz | 150 Hz |
| | Brass | Brass | Brass | Brass |
| | Chrome-plated | nickel plated | nickel plated | nickel plated |
| | PBT | PA 12 | PA 12 | PA 12 |
| | Connector, M12x1 connector, 4-pin | Cable, 1.50 m, PVC | Cable, 3.00 m, PVC | Cable, 3.00 m, PVC |
| | 10...30 VDC | 10...30 VDC | 12...30 VDC | 20...250 VDC/20...250 VAC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP68 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|----------------------------------|---------------------------------------|---|--|
| PNP normally open | | BES00RT BES 516-327-G-E4-Y-03 | |
| PNP normally closed | | | |
| Normally open | BES029M BES 516-215-E4-E-05 | | |
| Dimension | Ø 30 x 61.5 mm | Ø 30 x 36 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 10 mm | 15 mm | |
| Switching frequency | 150 Hz | 100 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 5.00 m, PVC | Cable, 3.00 m, PVC | |
| Operating voltage U _b | 20...250 VDC/20...250 VAC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES00LR BES 516-3028-G-E4-Y-PU-05 | BES00AA BES M30MI-PSC15B-BV02 | BES00AC BES M30MI-PSC15B-BV03 | BES00LT BES 516-3028-G-E4-Y-S4-01 |
|--|---|---|---|---|
| | Ø 30 x 36 mm | Ø 30 x 53 mm | Ø 30 x 53 mm | Ø 30 x 36 mm |
| | M30x1.5 | M30x1.5 | M30x1.5 | M30x1.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 15 mm | 15 mm | 15 mm | 15 mm |
| | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| | Brass | Brass | Brass | Brass |
| | nickel plated | Nickel-free coated | Nickel-free coated | nickel plated |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | Cable, 5.00 m, TPU | Cable, 2.00 m, PVC | Cable, 3.00 m, PVC | Cable with connector, M12x1 connector, 4-pin, 1.00 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP67 | IP67 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| PNP normally open | BES00RP BES 516-327-E5-Y-S4 | BES02F0 BES 515-327-E5-T-S4 | |
|--------------------------|---------------------------------------|---------------------------------------|--|
| Normally open | | | |
| Dimension | Ø 30 x 44.5 mm | Ø 30 x 45 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 10 mm | 10 mm | |
| Switching frequency | 200 Hz | 200 Hz | |
| Housing material | Brass | Stainless steel | |
| Surface protection | nickel plated | — | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -40...105 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| BES00A3 BES M30MI-PSC10B-S04G | BES00A4 BES M30MI-PSC10B-S04K | | BES0316 BES 516-418-E5-L-S27 | BES02E9 BES 515-215-E5-E-S21 |
|--------------------------------------|--------------------------------------|--|---------------------------------|---------------------------------|
| Ø 30 x 65 mm | Ø 30 x 65 mm | | Ø 30 x 65 mm | Ø 30 x 70.5 mm |
| M30x1.5 | M30x1.5 | | M30x1.5 | M30x1.5 |
| for flush mounting | for flush mounting | | for flush mounting | for flush mounting |
| 10 mm | 10 mm | | 10 mm | 10 mm |
| 400 Hz | 400 Hz | | 25 Hz | 150 Hz |
| Brass | Brass | | Brass | Stainless steel |
| nickel plated | nickel plated | | nickel plated | — |
| PA 12 | PA 12 | | PA 12 | PA 12 |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | | Connector, M12x1 connector | Connector, 1/2"-20 UNF2A-Male |
| 12...30 VDC | 12...30 VDC | | 20...250 VAC | 20...250 VDC/20...250 VAC |
| -25...70 °C | -25...70 °C | | -25...70 °C | -25...70 °C |
| IP67 | IP68 | | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|-----------------------------------|---------------------------------------|------------------------------------|--|
| PNP normally open | | BES02F1 BES 515-327-S4-C | |
| PNP normally closed | | | |
| PNP normally open/normally closed | | | |
| Normally open | BES029W BES 516-215-E5-E-S5 | | |
| Dimension | Ø 30 x 80 mm | Ø 30 x 83 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 10 mm | 10 mm | |
| Switching frequency | 150 Hz | 300 Hz | |
| Housing material | Brass | Stainless steel | |
| Surface protection | nickel plated | — | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Connector, 7/8"-16 UN plug | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 20...250 VDC/20...250 VAC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|--|--------------------------------------|--------------------------------------|--|---|
| | BES01EE BES 516-327-S4-C | | BES00RW BES 516-327-G-E5-Y-S4 | BES00AF BES M30MI-PSC15B-S04G |
| | | | BES00LU BES 516-3028-G-E5-Y-S4 | |
| | | BES0167 BES 516-114-S4-C | | |
| | | | | |
| | Ø 30 x 83 mm | Ø 30 x 83 mm | Ø 30 x 44.5 mm | Ø 30 x 65 mm |
| | M30x1.5 | M30x1.5 | M30x1.5 | M30x1.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 10 mm | 10 mm | 15 mm | 15 mm |
| | 300 Hz | 300 Hz | 100 Hz | 100 Hz |
| | Brass | Brass | Brass | Brass |
| | nickel plated | nickel plated | nickel plated | Nickel-free coated |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | BES01EA BES 516-327-G-S4-C | BES01EC BES 516-327-G-S4-H | |
|-----------------------------------|--------------------------------------|--------------------------------------|--|
| PNP normally open | | | |
| PNP normally open/normally closed | | | |
| Normally open | | | |
| Dimension | Ø 30 x 83 mm | Ø 30 x 83 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 15 mm | 15 mm | |
| Switching frequency | 100 Hz | 150 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U _b | 10...30 VDC | 10...55 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, EAC | |
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| | | | BES00AY BES M30MM-PSC30F-BV02 | BES00Y0 BES 516-362-E5-Y-S4 |
|--|--------------------------------------|---------------------------------------|---|---------------------------------------|
| | BES0166 BES 516-114-G-S4-H | | | |
| | | BES02A5 BES 516-217-E4-E-03 | | |
| | Ø 30 x 83 mm | Ø 30 x 61.5 mm | Ø 30 x 76.5 mm | Ø 30 x 57 mm |
| | M30x1.5 | M30x1.5 | M30x1.5 | M30x1.5 |
| | for flush mounting | non-flush | non-flush | non-flush |
| | 15 mm | 15 mm | 30 mm | 15 mm |
| | 150 Hz | 100 Hz | 300 Hz | 100 Hz |
| | Brass | Brass | Brass | Brass |
| | Nickel-free coated | nickel plated | Nickel-free coated | nickel plated |
| | PA 12 | PA 12 | PBT | PA 12 |
| | Connector, M12x1 connector, 4-pin | Cable, 3.00 m, PVC | Cable, 2.00 m, PVC | Connector, M12x1 connector, 4-pin |
| | 10...55 VDC | 20...250 VDC/20...250 VAC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP67 | IP67 | IP67 |
| | CE, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|----------------------------------|--|---------------------------------------|--|
| PNP normally open | | | |
| Normally open | BES02AC BES 516-217-E5-E-S27 | BES02AE BES 516-217-E5-E-S5 | |
| Dimension | Ø 30 x 70.5 mm | Ø 30 x 80 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | non-flush | non-flush | |
| Range | 15 mm | 15 mm | |
| Switching frequency | 100 Hz | 100 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Connector, M12x1 connector | Connector, 7/8"-16 UN plug | |
| Operating voltage U _b | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES02FN BES 515-362-S4-C | BES01JE BES 516-362-S4-C | BES00AZ BES M30MM-PSC30F-S04K | BES01JC BES 516-362-G-S4-H |
|--|------------------------------------|------------------------------------|---|--------------------------------------|
| | Ø 30 x 83 mm | Ø 30 x 83 mm | Ø 30 x 83 mm | Ø 30 x 83 mm |
| | M30x1.5 | M30x1.5 | M30x1.5 | M30x1.5 |
| | non-flush | non-flush | non-flush | non-flush |
| | 15 mm | 15 mm | 30 mm | 30 mm |
| | 100 Hz | 100 Hz | 300 Hz | 70 Hz |
| | Stainless steel | Brass | Brass | Brass |
| | — | nickel plated | Nickel-free coated | nickel plated |
| | PA 12 | PA 12 | PBT | PA 12 |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...55 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP68 | IP68 | IP67 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, EAC |
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| | | | |
|--------------------------|--|--|--|
| PNP normally open | BES02YJ BES M30MG1-PSC40F-S04G | BES02YM BES M30MI1-PSC22B-S04G | |
| PNP normally closed | | BES02YL BES M30MI1-POC22B-S04G | |
| Dimension | Ø 30 x 73.5 mm | Ø 30 x 73.5 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | non-flush | quasi-flush | |
| Range | 40 mm | 22 mm | |
| Switching frequency | 100 Hz | 200 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Chrome-plated | Chrome-plated | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP54 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | cULus, CE, EAC | |
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| | BES0341 BES 516-3009-SA2-M0-C-05 | BES01FJ BES 516-347-M0-C-03 | BES01FK BES 516-347-M0-C-05 | BES01FM BES 516-347-M0-C-PU-05 |
|--|--|---------------------------------------|---------------------------------------|--|
| | 50 x 25 x 10 mm | 50 x 25 x 10 mm | 50 x 25 x 10 mm | 50 x 25 x 10 mm |
| | block style | block style | block style | block style |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 2.5 mm | 5 mm | 5 mm | 5 mm |
| | 1000 Hz | 500 Hz | 500 Hz | 500 Hz |
| | Aluminum | Aluminum, die-cast | Aluminum, die-cast | Aluminum |
| | — | — | — | — |
| | PBT | PBT | PBT | PBT |
| | Cable, 5.00 m, PUR | Cable, 3.00 m, PVC | Cable, 5.00 m, PVC | Cable, 5.00 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, EAC | CE, EAC | CE, EAC | CE, EAC |
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| | | | |
|-----------------------------------|--|---|--|
| PNP normally open | | | |
| PNP normally open/normally closed | BES017H BES 516-133-M0-C-PU-05 | BES032R BES 516-133-SA3-C-PU-04 | |
| Dimension | 50 x 25 x 10 mm | 50 x 25 x 10 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 5 mm | 5.6 mm | |
| Switching frequency | 500 Hz | 500 Hz | |
| Housing material | Aluminum | Aluminum | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 5.00 m, PUR | Cable, 4.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
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| BES01FN BES 516-347-M0-C-S4-00,2 | BES01FT BES 516-347-M0-C-S49-00,2 | BES0153 BES 516-133-M0-C-S4-00,2 | BES01FR BES 516-347-M0-C-S49 |
|---|--|---|----------------------------------|
| 50 x 25 x 10 mm | 50 x 25 x 10 mm | 50 x 25 x 10 mm | 59 x 25 x 10 mm |
| block style | block style | block style | block style |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 5 mm | 5 mm | 5 mm | 5 mm |
| 500 Hz | 500 Hz | 500 Hz | 500 Hz |
| Aluminum | Aluminum | Aluminum | Aluminum |
| — | — | — | — |
| PBT | PBT | PBT | PBT |
| Cable with connector, M12x1 connector, 4-pin, 0.20 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.20 m, PUR | Connector, M8x1 connector, 3-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP67 | IP65 |
| CE, EAC | CE, EAC | CE, EAC | CE, EAC |
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| | | | |
|--------------------------|---|---|--|
| PNP normally open | | | |
| NPN normally open | | | |
| Normally open | BES02CT BES R05KB-USU20B-EV02 | BES02CU BES R05KB-USU20B-EV03 | |
| Dimension | 40 x 12 x 26 mm | 40 x 12 x 26 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 2 mm | |
| Switching frequency | 400 Hz | 400 Hz | |
| Housing material | PA 12 | PA 12 | |
| Surface protection | — | — | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 2.00 m, PVC | Cable, 3.00 m, PVC | |
| Operating voltage U_b | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
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| | | BES01Z5 BES R05KB-PSC20B-EP05 | | BES01ZA BES R05KB-PSC40B-EV02 |
|--|---|---|---|---|
| | BES01YZ BES R05KB-NSC20B-EP05 | | | |
| | | | BES02CY BES R05KB-USU40B-EV02 | |
| | 40 x 12 x 26 mm | 40 x 12 x 26 mm | 40 x 12 x 26 mm | 40 x 12 x 26 mm |
| | block style | block style | block style | block style |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 2 mm | 2 mm | 4 mm | 4 mm |
| | 2000 Hz | 400 Hz | 400 Hz | 400 Hz |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | — | — | — | — |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | Cable, 5.00 m, PUR | Cable, 5.00 m, PUR | Cable, 2.00 m, PVC | Cable, 2.00 m, PVC |
| | 10...30 VDC | 10...30 VDC | 20...250 VDC/20...250 VAC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, EAC | CE, cULus, EAC |
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| | BES01ZC BES R05KB-PSC40B-EV03 | BES01Z8 BES R05KB-PSC40B-EP00,3-GS04 | |
|--------------------------|---|---|--|
| PNP normally open | | | |
| PNP normally closed | | | |
| NPN normally open | | | |
| Dimension | 40 x 12 x 26 mm | 40 x 12 x 26 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 4 mm | 4 mm | |
| Switching frequency | 400 Hz | 400 Hz | |
| Housing material | PA 12 | PA 12 | |
| Surface protection | — | — | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 3.00 m, PVC | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|--|---|---|---------------------------------------|---------------------------------------|
| | BES01Z7 BES R05KB-PSC20B-S49A | BES01ZE BES R05KB-PSC40B-S49A | BES01N5 BES 517-398-N0-C-03 | BES01N6 BES 517-398-N0-C-05 |
| | BES048A BES R05KB-POC20B-S49A | BES01Z2 BES R05KB-POC40B-S49A | | |
| | | | BES01NH BES 517-399-N0-C-03 | |
| | 40 x 12 x 26 mm | 40 x 12 x 26 mm | 30 x 10.5 x 16.5 mm | 30 x 10.5 x 16.5 mm |
| | block style | block style | block style | block style |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 2 mm | 4 mm | 2 mm | 2 mm |
| | 400 Hz | 400 Hz | 2500 Hz | 2500 Hz |
| | PA 12 | PA 12 | PBT, GF20 | PBT, GF20 |
| | — | — | — | — |
| | PA 12 | PA 12 | PBT, GF20 | PBT, GF20 |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Cable, 3.00 m, PVC | Cable, 5.00 m, PVC |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP65 | IP65 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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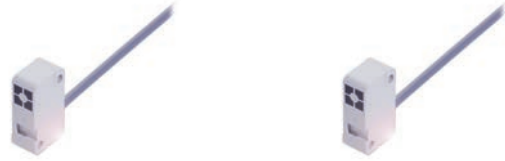
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| | | | |
|--------------------------|--|--|--|
| PNP normally open | BES01N8 BES 517-398-N0-C-PU-03 | BES01N9 BES 517-398-N0-C-PU-05 | |
| PNP normally closed | | | |
| Dimension | 30 x 10.5 x 16.5 mm | 30 x 10.5 x 16.5 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 2 mm | |
| Switching frequency | 2500 Hz | 2500 Hz | |
| Housing material | PBT, GF20 | PBT, GF20 | |
| Surface protection | — | — | |
| Material sensing surface | PBT, GF20 | PBT, GF20 | |
| Connection | Cable, 3.00 m, PUR | Cable, 5.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP65 | IP65 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
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| | BES01NA BES 517-398-N0-C-S49-00,2 | BES01N1 BES 517-398-N1-C | BES01N2 BES 517-398-N2-C |
|---------------------------------------|--|------------------------------------|------------------------------------|
| BES01MM BES 517-351-N0-C-03 | BES01MT BES 517-351-N0-C-S49-00,2 | | |
| 30 x 10.5 x 16.5 mm | 30 x 10.5 x 16.5 mm | 30 x 10.5 x 16.5 mm | 30 x 10.5 x 16.5 mm |
| block style | block style | block style | block style |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 2 mm | 2 mm | 2 mm | 2 mm |
| 2500 Hz | 2500 Hz | 2500 Hz | 2500 Hz |
| PBT, GF20 | PBT, GF20 | PBT, GF20 | PBT, GF20 |
| — | — | — | — |
| PBT, GF20 | PBT, GF20 | PBT, GF20 | PBT, GF20 |
| Cable, 3.00 m, PVC | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Connector, DIN 46244 | Connector, DIN 46244 |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP65 | IP65 | IP00 | IP00 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, EAC |
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| | | | |
|-----------------------------------|------------------------------------|---|--|
| PNP normally open | BES033J BES 516-300-S279 | | |
| PNP normally open/normally closed | | | |
| NPN normally open | BES033H BES 516-300-S255 | | |
| NPN normally open/normally closed | | BES01W0 BES R01ZC-NAC70B-BP05 | |
| Dimension | 30 x 20 x 10 mm | 32 x 20 x 8 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 7 mm | |
| Switching frequency | 1500 Hz | 150 Hz | |
| Housing material | Aluminum | Zinc, die-cast | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PA 12 | |
| Connection | Cable, 5.00 m, PVC | Cable, 5.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP65 | IP67 | |
| Approval/Conformity | CE, EAC | CE, cULus, EAC | |
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| | BES01WE BES R01ZC-PSC70B-BP00.2-GS49 | BES01WF BES R01ZC-PSC70B-BP00.3-GS49 | BES048Z BES R01ZC-PSC70B-BZ00.2-GS04-110 |
|---|--|--|---|
| BES01W4 BES R01ZC-PAC70B-BP03 | | | |
| | | | |
| | | | |
| 32 x 20 x 8 mm | 32 x 20 x 8 mm | 32 x 20 x 8 mm | 32 x 20 x 8 mm |
| block style | block style | block style | block style |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 7 mm | 7 mm | 7 mm | 7 mm |
| 150 Hz | 150 Hz | 150 Hz | 150 Hz |
| Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| — | — | — | — |
| PA 12 | PA 12 | PA 12 | ceramic coated |
| Cable, 3.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.20 m, TPU |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|-----------------------------------|---|---|--|
| PNP normally open | | | |
| PNP normally open/normally closed | BES01W2 BES R01ZC-PAC70B-BP00.2-GS04 | BES0314 BES R01ZC-PAC70B-BP00.2-GS04-107 | |
| Polarized normally open | | | |
| Dimension | 32 x 20 x 8 mm | 32 x 20 x 8 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 7 mm | 7 mm | |
| Switching frequency | 150 Hz | 150 Hz | |
| Housing material | Zinc, die-cast | Zinc, die-cast | |
| Surface protection | — | — | |
| Material sensing surface | PA 12 | ceramic coated | |
| Connection | Cable with connector, M12x1 connector, 4-pin, 0.20 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.20 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | BES022Z BES 517-3036-I02-C-S4 |
|--|---|---|---|---|
| | BES01W3 BES R01ZC-PAC70B-BP00.5-GS04 | | | |
| | | BES030E BES Z03K-GSS10B-EP00,15-GS04-006 | BES030F BES Z03K-GSS10B-EP00,8-GS04-006 | |
| | 32 x 20 x 8 mm | 26 x 26 x 26 mm | 26 x 26 x 26 mm | 68.5 x 26 x 26 mm |
| | block style | block style | block style | block style |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 7 mm | 10 mm | 10 mm | 10 mm |
| | 150 Hz | 250 Hz | 250 Hz | 500 Hz |
| | Zinc, die-cast | PA | PA | PA 12 |
| | — | — | — | — |
| | PA 12 | PA | PA | PA 12 |
| | Cable with connector, M12x1 connector, 4-pin, 0.50 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.15 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.80 m, PUR | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...36 VDC | 10...36 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, EAC | CE, EAC | CE, EAC |
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| | | | |
|-----------------------------------|--------------------------------------|--|--|
| PNP normally open | | BES052M BES Q40KFA-PSY20B-DV02 | |
| PNP normally open/normally closed | BES02TN BES IKU-031.28-S4 | | |
| Normally open/normally closed | | | |
| Dimension | 300 x 35 x 47 mm | 40 x 40 x 54.5 mm | |
| Style | block style | block style | |
| Installation | non-flush | for flush mounting | |
| Range | 30 mm | 20 mm | |
| Switching frequency | 50 Hz | 40 Hz ±15 Hz | |
| Housing material | Plastic | PBT | |
| Surface protection | — | — | |
| Material sensing surface | Plastic | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PVC | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP65 | IP67 | |
| Approval/Conformity | CE, EAC | CE, cULus, EAC | |
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| | | | | |
|--|---------------------------|------------------------------------|------------------------------------|------------------------------------|
| BES0555 BES Q40KFC-PSY20B-DV02 | | | | |
| | | | | BES0201 BES 517-132-M3-H |
| | | BES020Y BES 517-223-M3-E | BES0241 BES 517-223-U3-E | |
| 40 x 40 x 54.5 mm | 120 x 40 x 40 mm | 120 x 40 x 40 mm | 120 x 40 x 40 mm | 120 x 40 x 40 mm |
| block style | block style | block style | block style | block style |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 20 mm | 15 mm | 15 mm | 15 mm | 15 mm |
| 40 Hz ±15 Hz | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| PBT | PBT | Aluminum, Die casting PBT | PBT | PBT |
| — | — | — | — | — |
| PBT | PBT | PBT | PBT | PBT |
| Cable, 2.00 m, PVC | Screw terminal | Screw terminal | Screw terminal | Screw terminal |
| 10...30 VDC | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC | 10...55 VDC | 10...55 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, EAC | CE, EAC |
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| | | | |
|-----------------------------------|------------------------------------|---------------------------------------|--|
| PNP normally open | | | |
| PNP normally open/normally closed | BES0209 BES 517-132-M6-H | BES020A BES 517-132-M6-H-S4 | |
| Normally open/normally closed | | | |
| Dimension | 120 x 40 x 40 mm | 132.5 x 40 x 40 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 20 mm | 20 mm | |
| Switching frequency | 50 Hz | 50 Hz | |
| Housing material | PBT | PBT | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Screw terminal | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...55 VDC | 10...55 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
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| | | | |
|--|--|--|------------------------------------|
| BES021W BES Q40KFU-PSC20B-S04G | | | |
| | BES0217 BES Q40KFU-PAC20B-S04G | BES03PN BES Q40KHU-PAC20B-S04G | |
| | | | BES020Z BES 517-223-M4-E |
| 40 x 40 x 62 mm | 40 x 40 x 62 mm | 40 x 40 x 65 mm | 120 x 40 x 40 mm |
| block style | block style | block style | block style |
| for flush mounting | for flush mounting | for flush mounting | non-flush |
| 20 mm | 20 mm | 20 mm | 20 mm |
| 50 Hz | 50 Hz | 50 Hz | 100 Hz |
| PBT | PBT | Zinc, Die casting PBT | PBT |
| — | — | — | — |
| PBT | PBT | PBT | PBT |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Screw terminal |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 20...250 VDC/20...250 VAC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| Page 136 | Page 136 | Page 136 | Page 136 |



| | | | |
|-----------------------------------|------------------------------------|------------------------------------|--|
| PNP normally open | | | |
| PNP normally open/normally closed | | | |
| Normally open/normally closed | BES0244 BES 517-223-U4-E | BES023Y BES 517-223-M5-E | |
| Dimension | 120 x 40 x 40 mm | 120 x 40 x 40 mm | |
| Style | block style | block style | |
| Installation | non-flush | non-flush | |
| Range | 20 mm | 30 mm | |
| Switching frequency | 100 Hz | 100 Hz | |
| Housing material | Aluminum, Die casting PBT | PBT | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Screw terminal | Screw terminal | |
| Operating voltage U_b | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 136 | Page 136 | |



| | | | | |
|------------------------------------|------------------|------------------------------------|------------------------------------|--------------------------------------|
| | | | | BES0236 BES 517-385-V-C-S4 |
| | | BES0206 BES 517-132-M5-H | BES020C BES 517-132-M7-H | |
| BES0247 BES 517-223-U5-E | | | | |
| 120 x 40 x 40 mm | 120 x 40 x 40 mm | 120 x 40 x 40 mm | 120 x 40 x 40 mm | 132.5 x 40 x 40 mm |
| block style | block style | block style | block style | block style |
| non-flush | non-flush | non-flush | non-flush | non-flush |
| 30 mm | 30 mm | 40 mm | 40 mm | 25 mm |
| 100 Hz | 60 Hz | 50 Hz | 50 Hz | 50 Hz |
| Aluminum, Die casting PBT | PBT | PBT | PBT | PBT |
| — | — | — | — | — |
| PBT | PBT | PBT | PBT | PBT |
| Screw terminal | Screw terminal | Screw terminal | Screw terminal | Connector, M12x1 connector, 4-pin |
| 20...250 VDC/20...250 VAC | 10...55 VDC | 10...55 VDC | 10...55 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, EAC | CE, EAC | CE, EAC | CE, EAC |
| Page 136 | Page 136 | Page 136 | Page 136 | Page 136 |



| | | | |
|-----------------------------------|--|--|--|
| PNP normally open | BES021Z BES Q40KFU-PSC30F-S04G | | |
| PNP normally open/normally closed | | BES021E BES Q40KFU-PAC30F-S04G | |
| Dimension | 40 x 40 x 62 mm | 40 x 40 x 62 mm | |
| Style | block style | block style | |
| Installation | non-flush | non-flush | |
| Range | 30 mm | 30 mm | |
| Switching frequency | 50 Hz | 50 Hz | |
| Housing material | PBT | PBT | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 136 | Page 136 | |



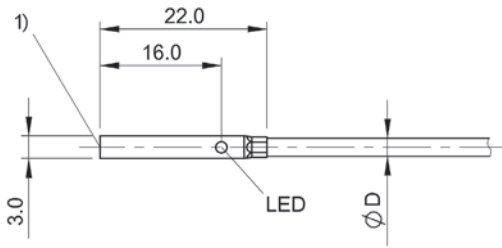
| | BES020E BES 517-132-M7-H-S4 | BES0308 BES Q40KFU-PSC40F-S04G-012 | BES030C BES Q80KA-PAC50B-S04Q-U | |
|--|---------------------------------------|--|---|--|
| | 132.5 x 40 x 40 mm | 40 x 40 x 66 mm | 112 x 80 x 40 mm | |
| | block style | block style | block style | |
| | non-flush | non-flush | for flush mounting | |
| | 40 mm | 40 mm | 50 mm | |
| | 50 Hz | 60 Hz | 70 Hz | |
| | PBT | PA | PPE | |
| | — | — | — | |
| | PBT | PA | PPE | |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| | 10...55 VDC | 10...30 VDC | 10...36 VDC | |
| | -25...70 °C | -25...70 °C | -25...70 °C | |
| | IP67 | IP67 | IP67 | |
| | CE, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| | Page 136 | Page 137 | Page 137 | |



| | | | |
|-----------------------------------|------------------------------------|--------------------------------------|--|
| PNP normally open/normally closed | BES023P BES 517-139-M4-H | | |
| Normally open/normally closed | | BES022R BES 517-460-U5-L-D | |
| Dimension | 80 x 80 x 40 mm | 80 x 80 x 40 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | non-flush | |
| Range | 40 mm | 50 mm | |
| Switching frequency | 50 Hz | 10 Hz | |
| Housing material | PBT | PBT | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Screw terminal | Screw terminal | |
| Operating voltage U_b | 10...55 VDC | 20...250 VAC | |
| Ambient temperature | -15...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
| Productview | Page 137 | Page 137 | |

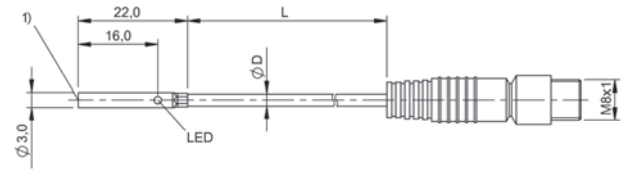


| | BES023R BES 517-139-M5-H | BES024F BES 517-224-M5-E | BES023W BES 517-139-U5-H-S4 | |
|--|------------------------------------|------------------------------------|---------------------------------------|--|
| | 80 x 80 x 40 mm | 40 x 80 x 80 mm | 80 x 80 x 40 mm | |
| | block style | block style | block style | |
| | non-flush | non-flush | non-flush | |
| | 50 mm | 50 mm | 50 mm | |
| | 100 Hz | 10 Hz | 100 Hz | |
| | PBT | PBT | PBT | |
| | — | — | — | |
| | PBT | PBT | PBT | |
| | Screw terminal | Screw terminal | Connector, M12x1 connector, 4-pin | |
| | 10...55 VDC | 20...250 VAC | 10...55 VDC | |
| | -25...70 °C | -25...70 °C | -25...70 °C | |
| | IP67 | IP67 | IP67 | |
| | CE, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| | Page 137 | Page 137 | Page 137 | |



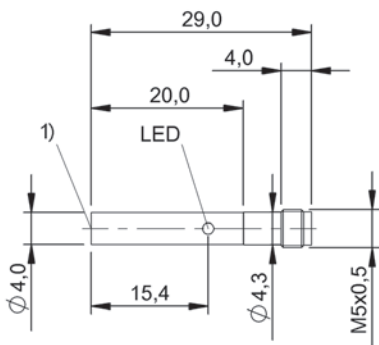
1) Sensing surface

BES03Z6



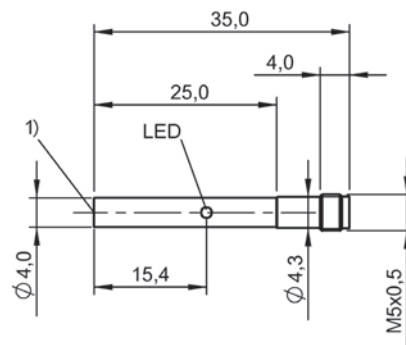
1) Sensing surface

BES0409



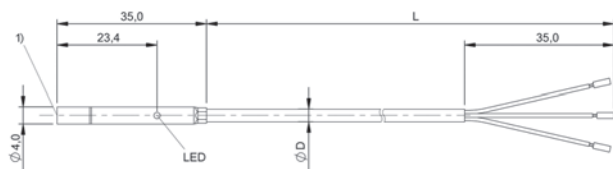
1) Sensing surface

BES0122, BES0120



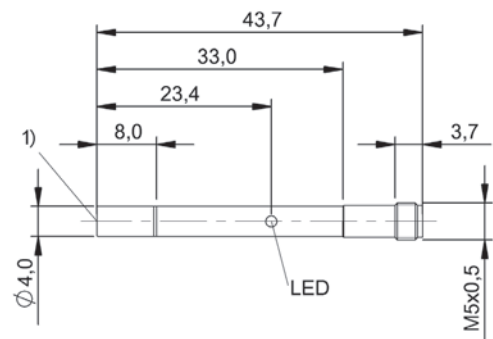
1) Sensing surface

BES012F



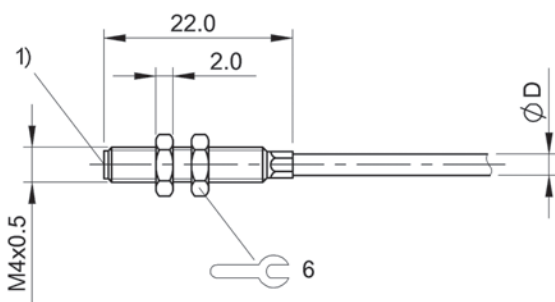
1) Sensing surface

BES012H, BES012J



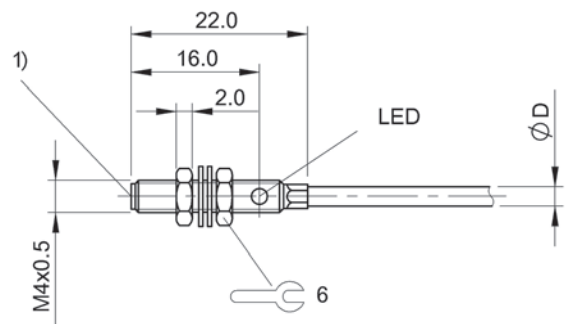
1) Sensing surface

BES012K

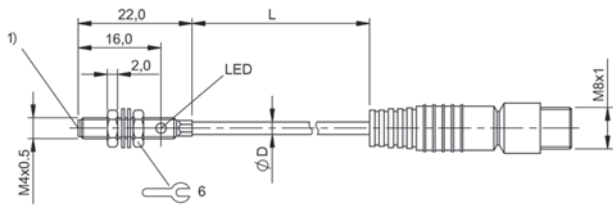


1) Sensing surface

BES01P0

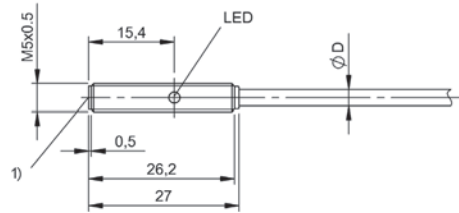


BES03ZJ, BES03Z8



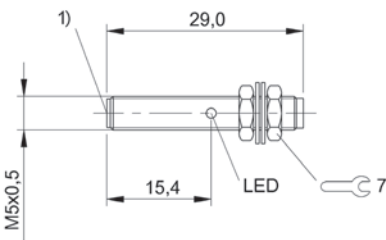
1) Sensing surface

BES040R



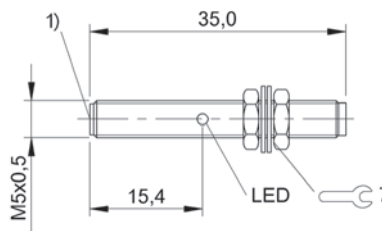
1) Sensing surface

BES051J, BES051L



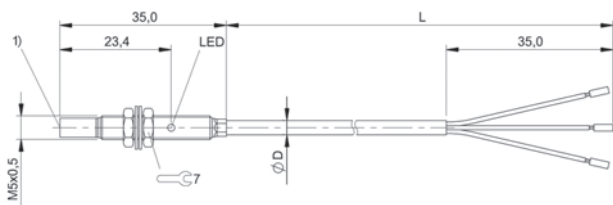
1) Sensing surface

BES012W, BES012Z



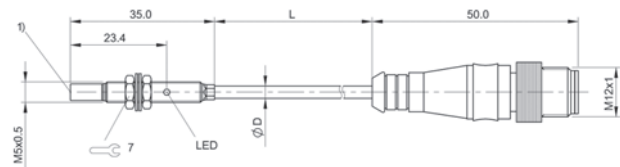
1) Sensing surface

BES0130, BES013A, BES0137



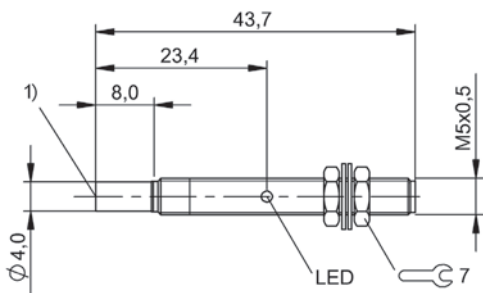
1) Sensing surface

BES013E, BES013F



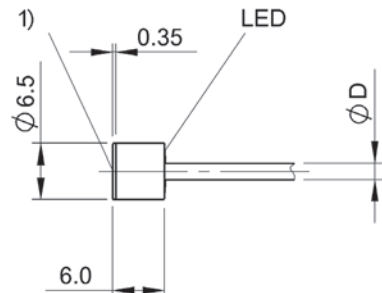
1) Sensing surface

BES013C



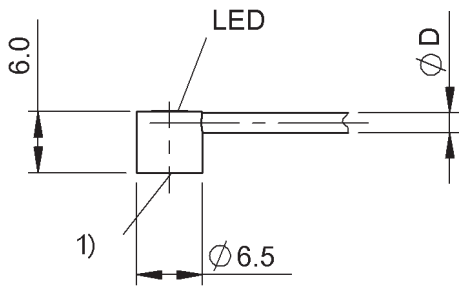
1) Sensing surface

BES013H, BES0139



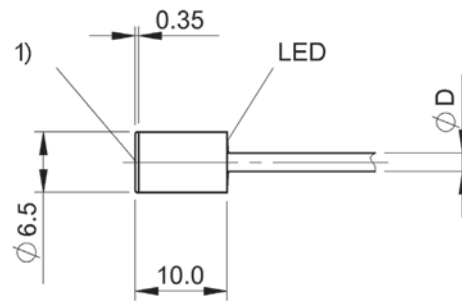
1) Sensing surface

BES0256, BES0251, BES0258



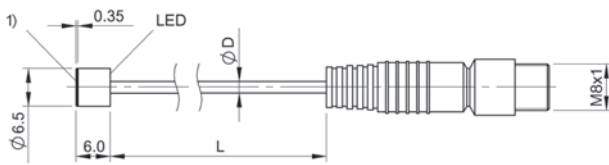
1) Sensing surface

BES025U, BES03ZA



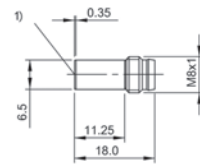
1) Sensing surface

BES025L, BES025M, BES025H



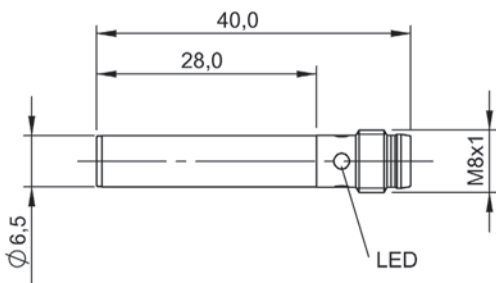
1) Sensing surface

BES0254, BES051H, BES0257

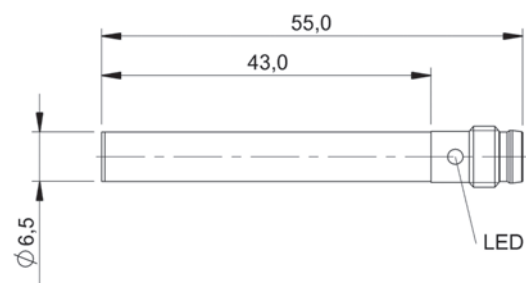


1) Sensing surface

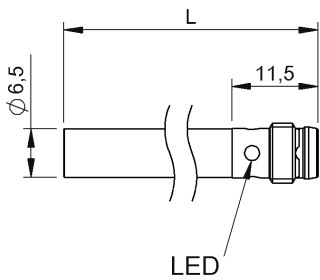
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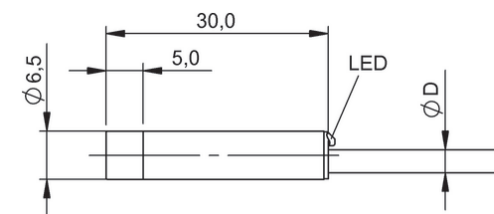
BES03R9



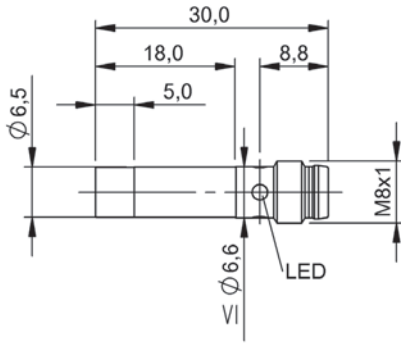
BES03P4



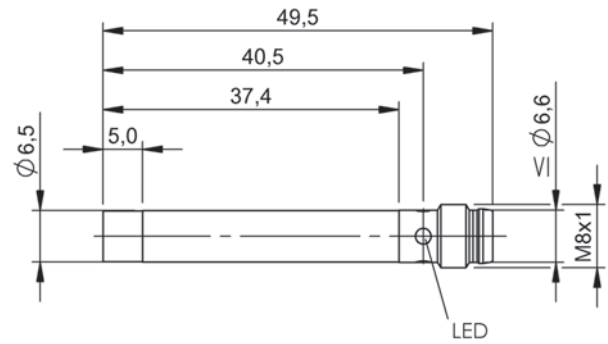
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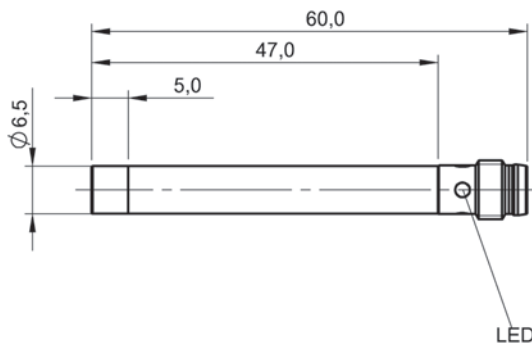
BES0008, BES000E



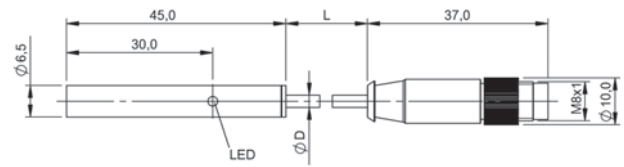
BES0005



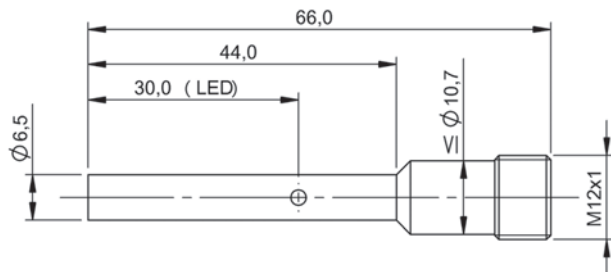
BES01NP



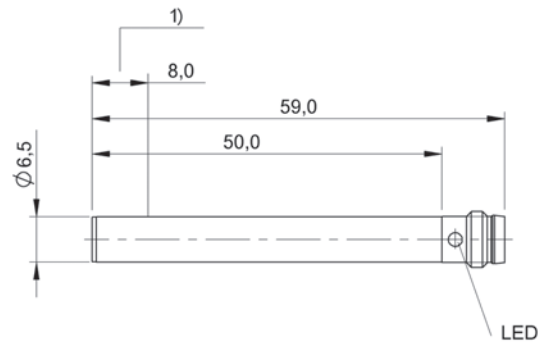
BES03P5



BES03EJ

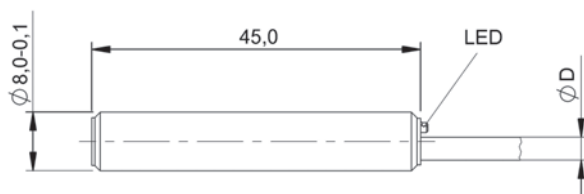


BES02UR

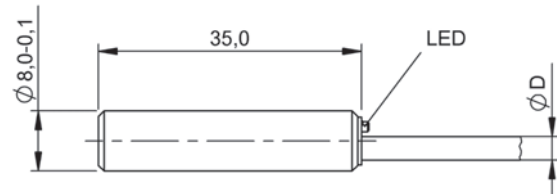


BES01NT

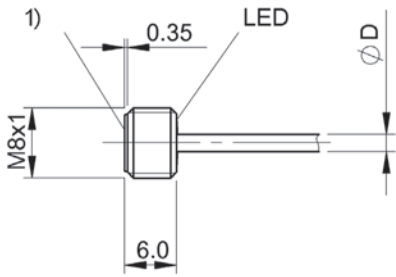
1) siehe Bemerkungen



BES012R, BES01NY, BES012T

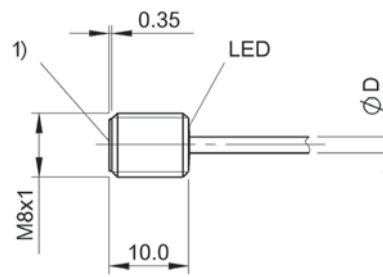


BES012L



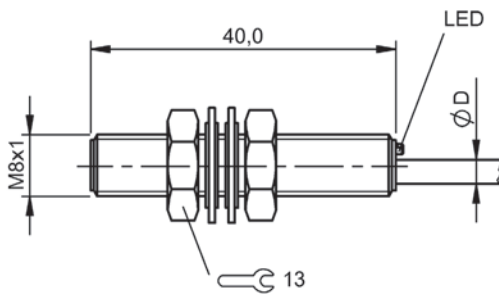
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BES026M

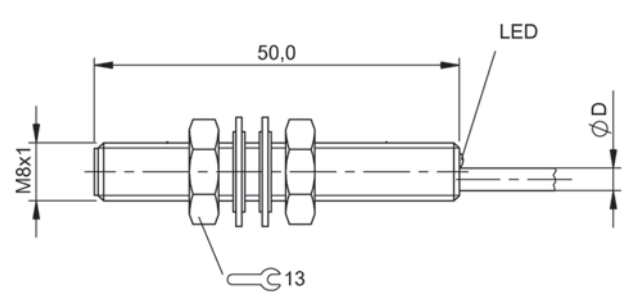


1) Sensing surface

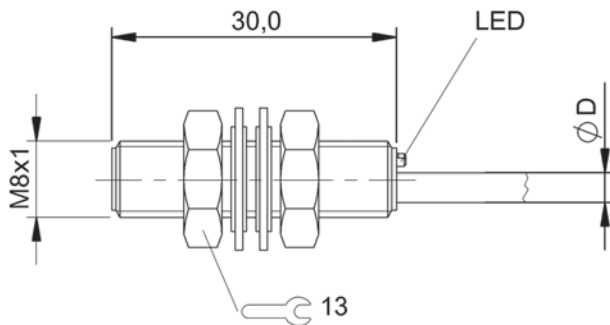
BES0275



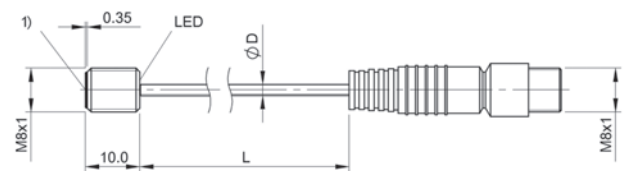
BES00CN, BES014K, BES00CR, BES00CW



BES002H, BES0034, BES0036, BES0031, BES0032, BES0037, BES002P, BES003F, BES003J, BES03TL, BES003K, BES003M, BES03TH

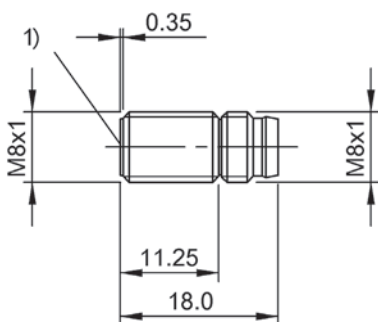


BES0389



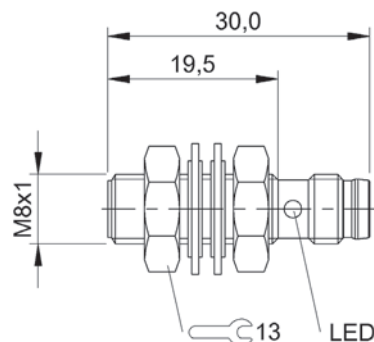
1) Sensing surface

BES0276

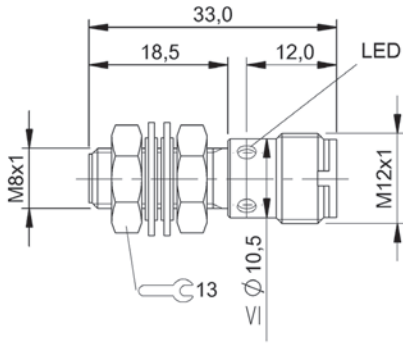


1) Sensing surface

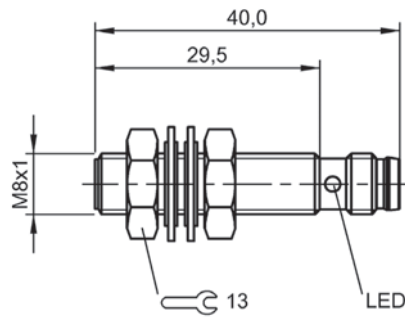
BES0277, BES0270, BES0278



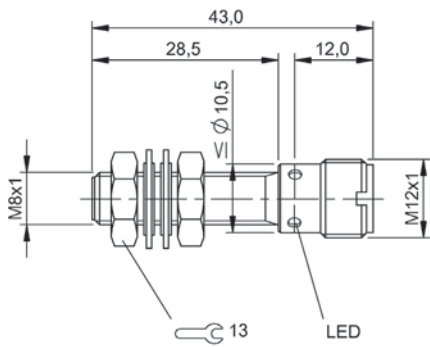
BES013J, BES013N, BES013K, BES013P, BES013L



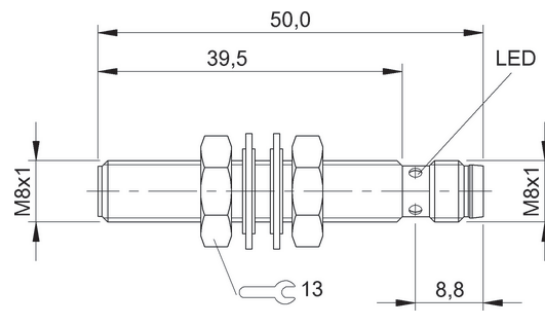
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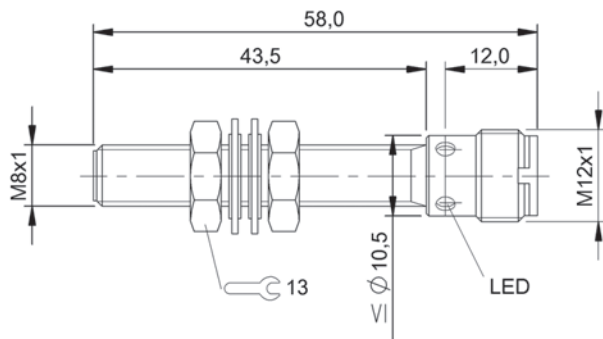
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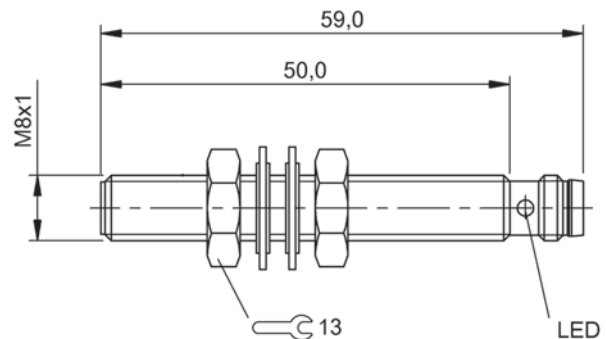
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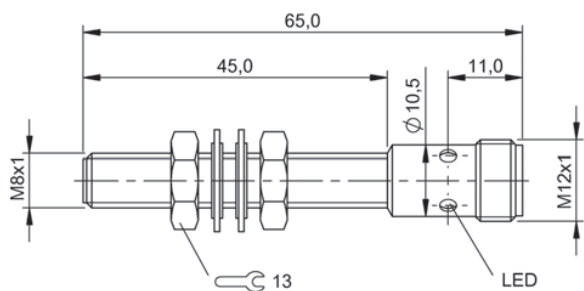
BES01P7



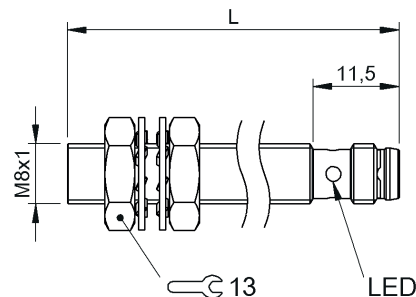
BES01PC, BES01PE, BES01PH



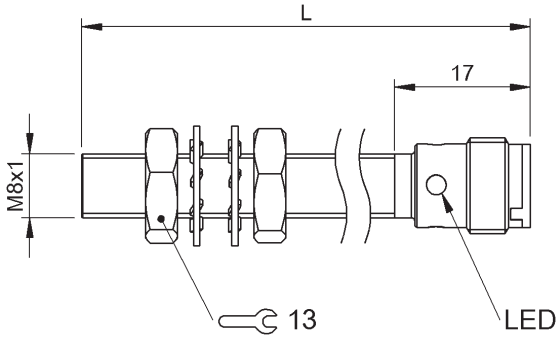
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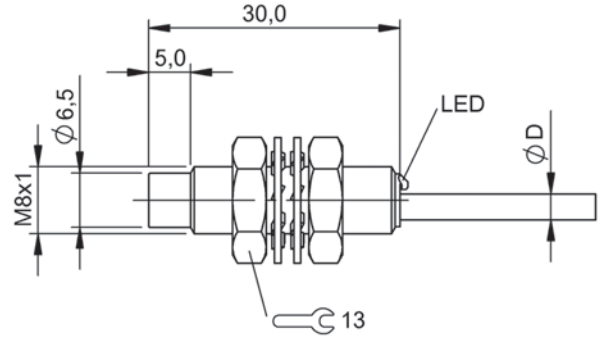
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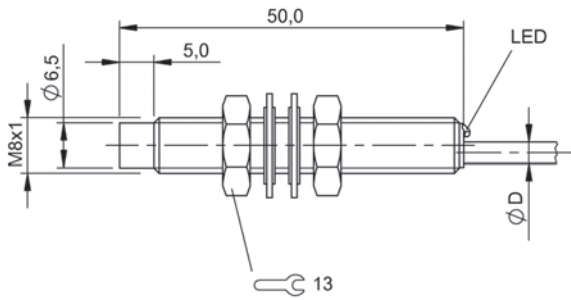
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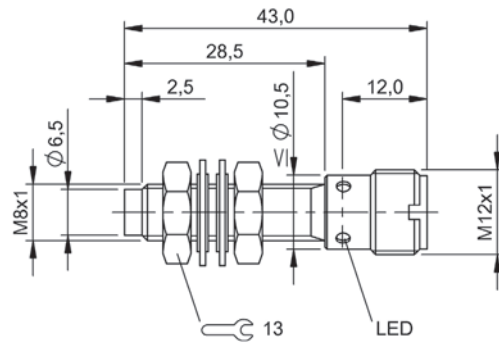
BES02W7, BES02W9



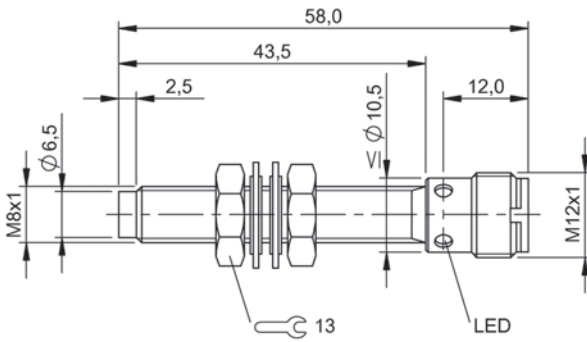
BES000T, BES000Y



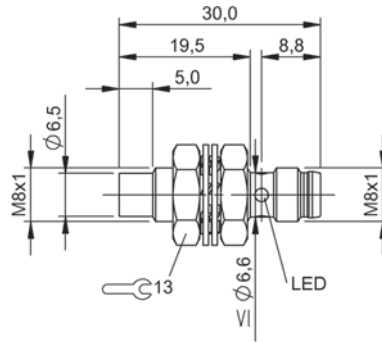
BES0013, BES0016, BES0014



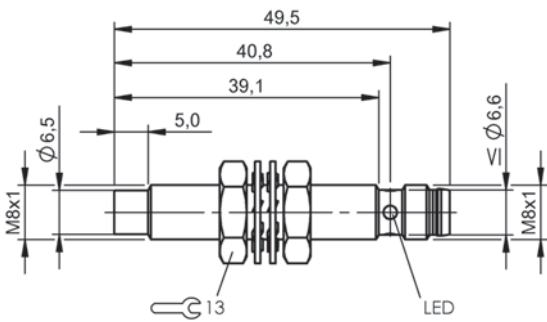
BES01P3



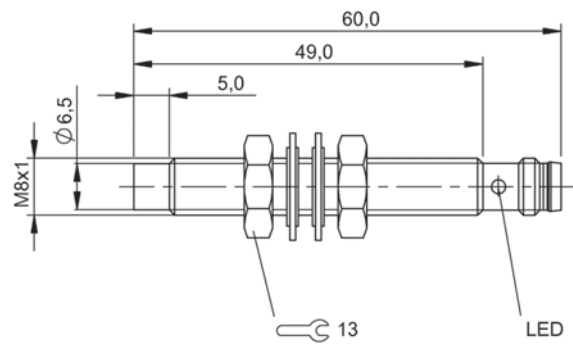
BES01P5, BES01P8, BES01P6



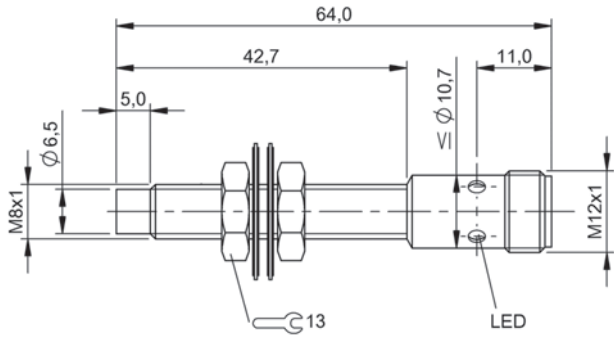
BES000M, BES000L



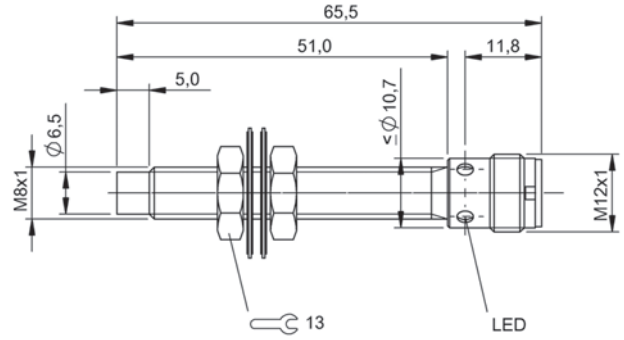
BES014M



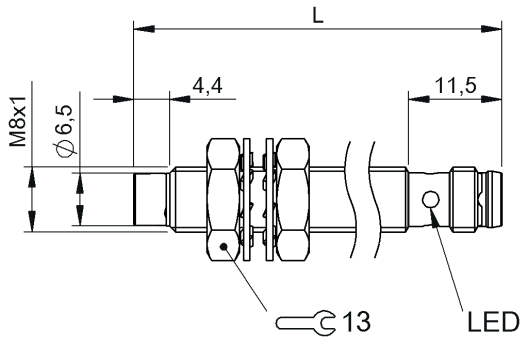
BES001C, BES001J, BES001F



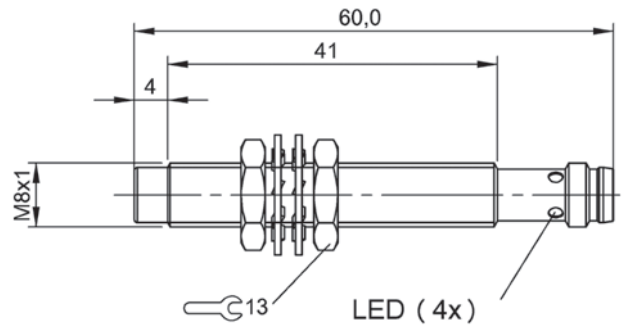
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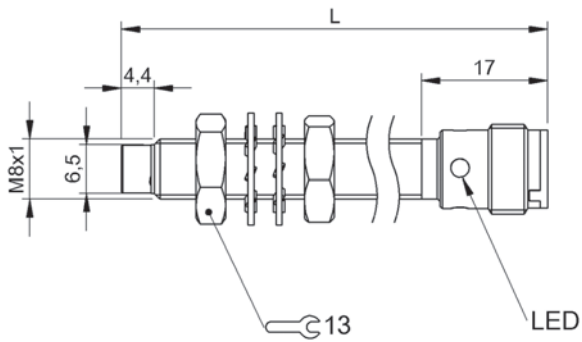
BES001A, BES001H, BES001E



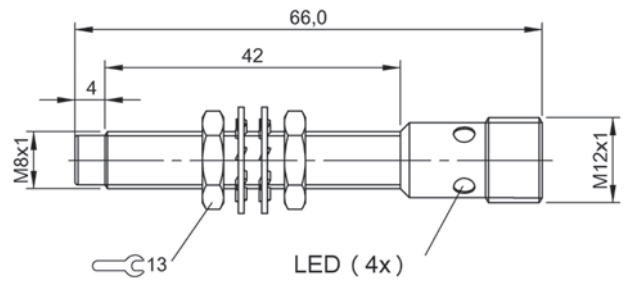
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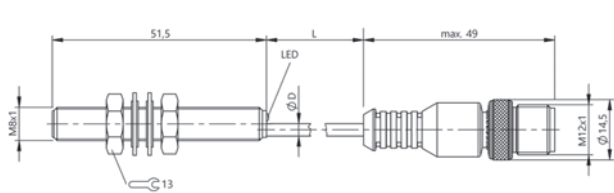
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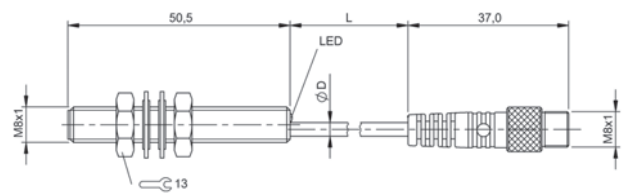
BES058J



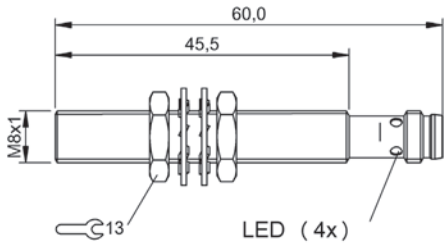
BES02W0, BES02W3



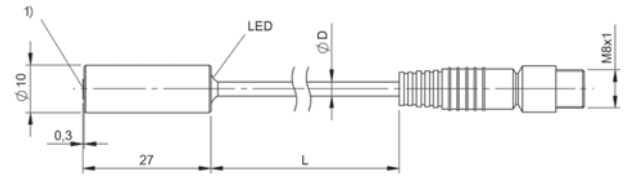
BES01ZR, BES01ZU



BES003R

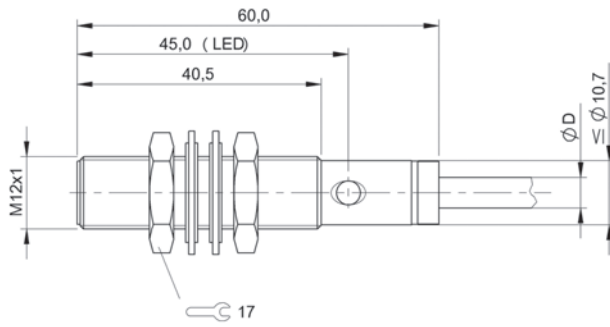


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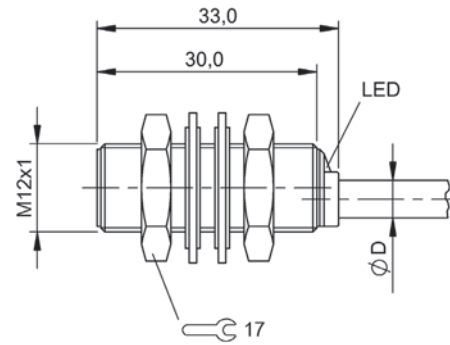


1) Sensing surface

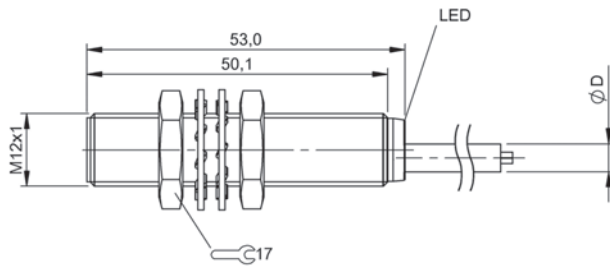
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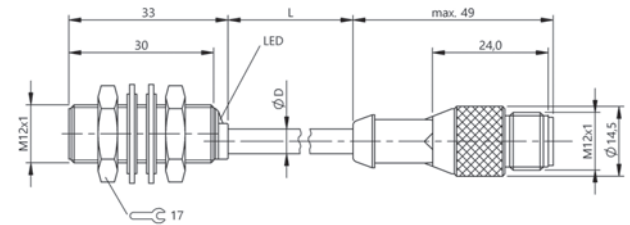
BES02C9, BES027M, BES027N



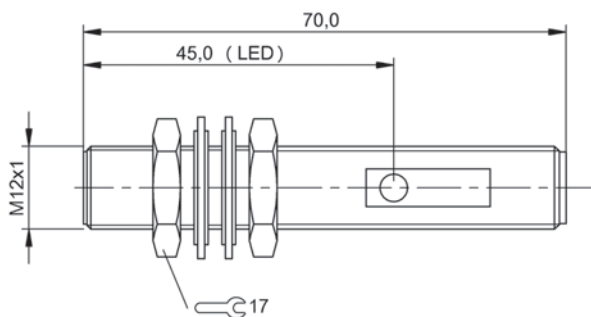
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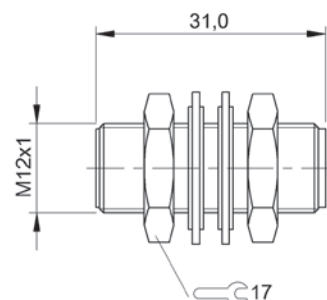
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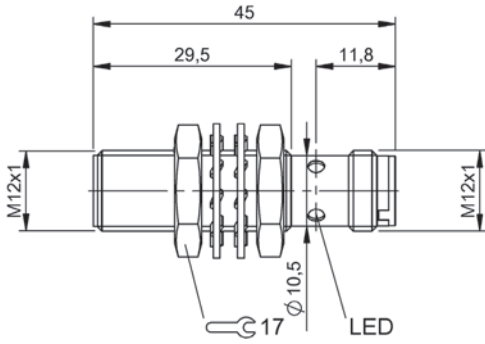
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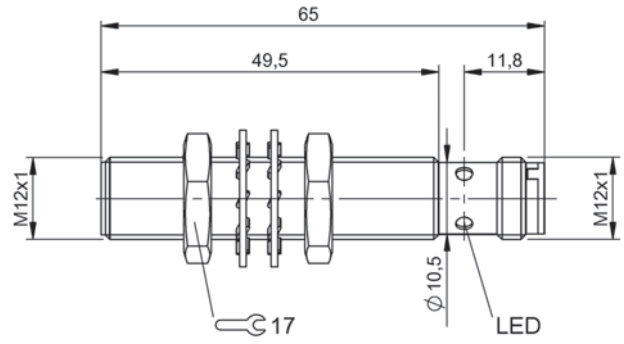
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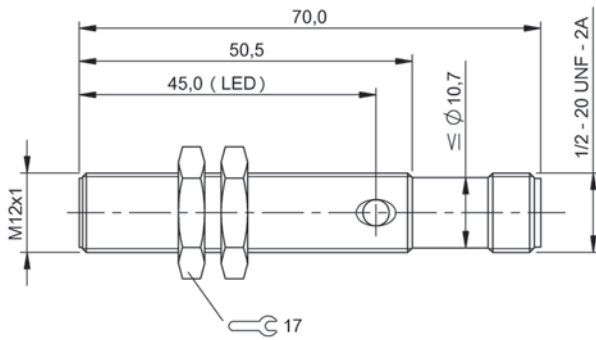
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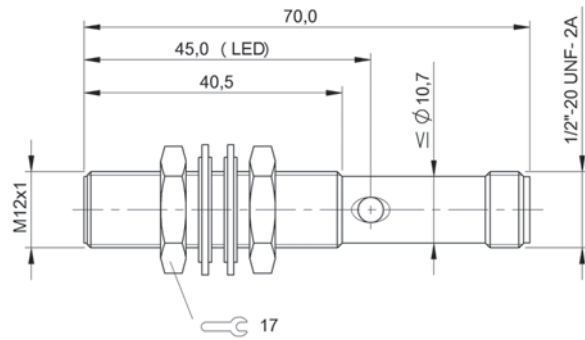
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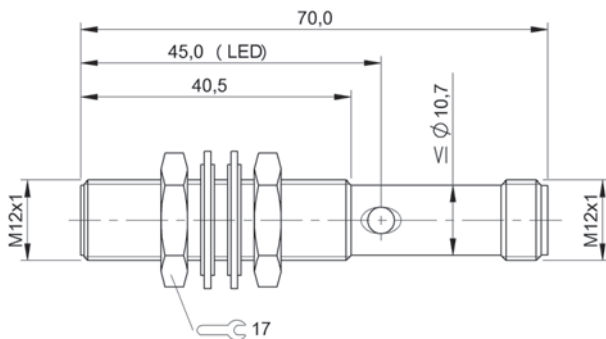
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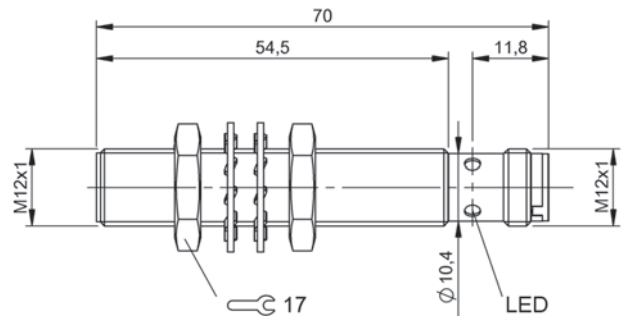
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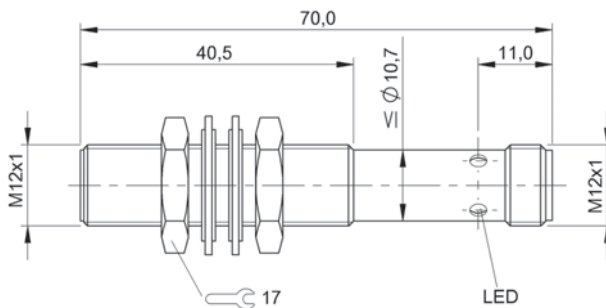
BES027U, BES027T



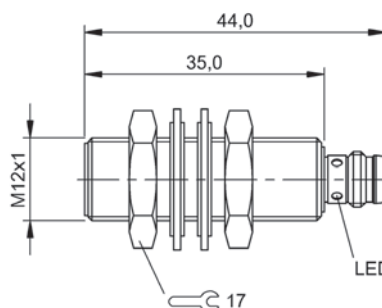
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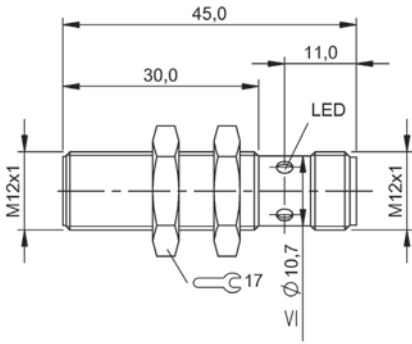
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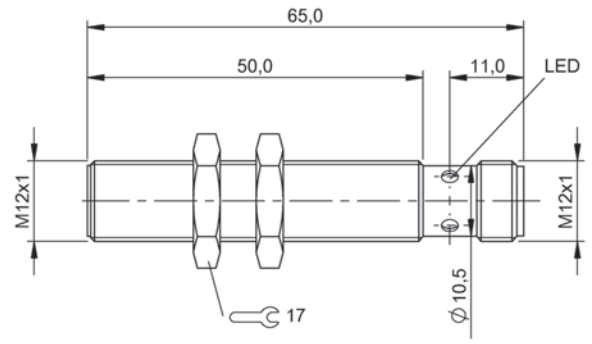
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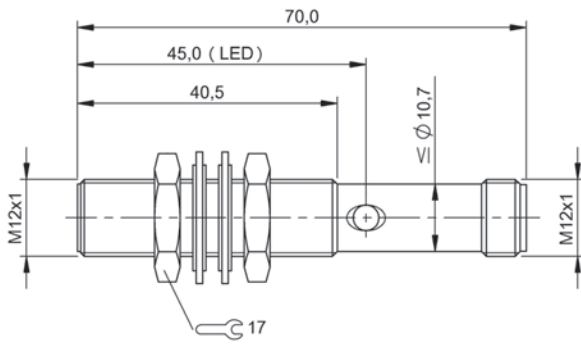
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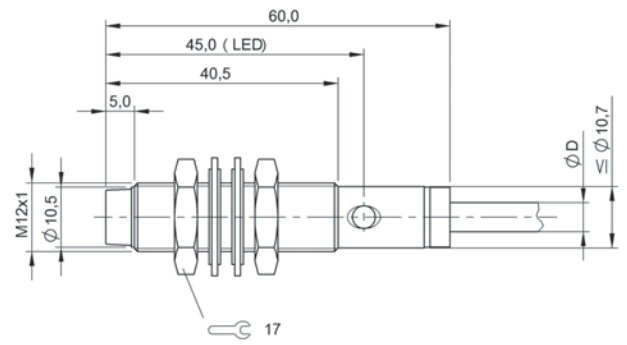
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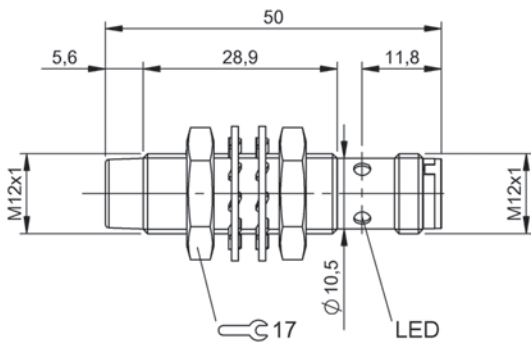
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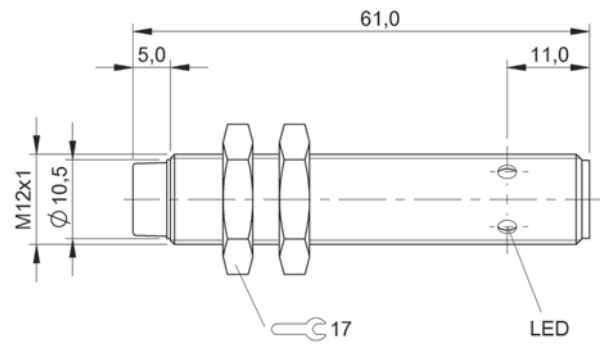
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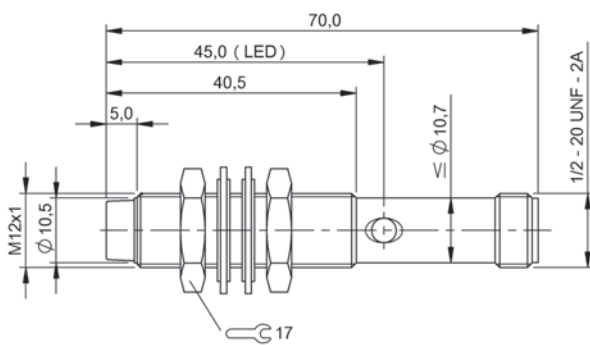
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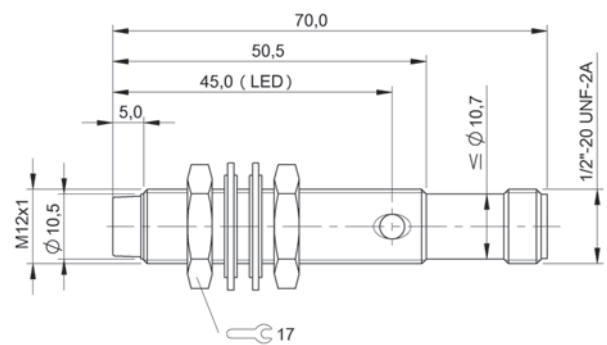
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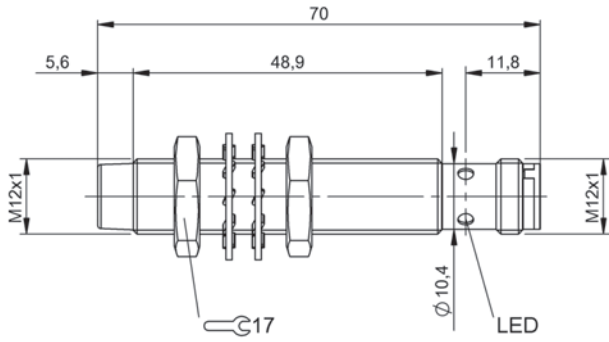
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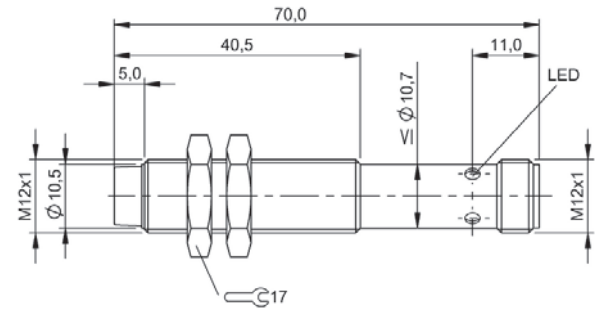
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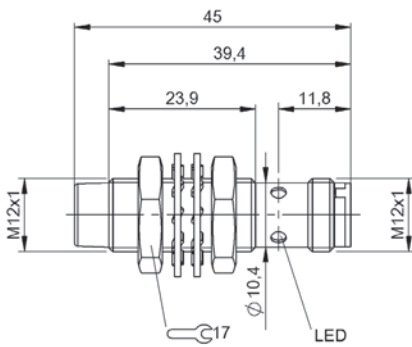
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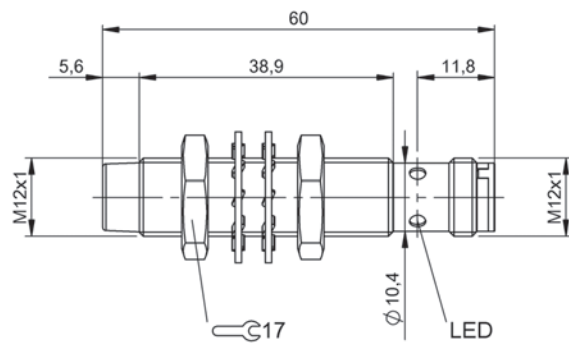
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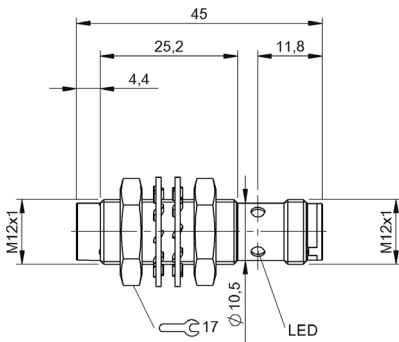
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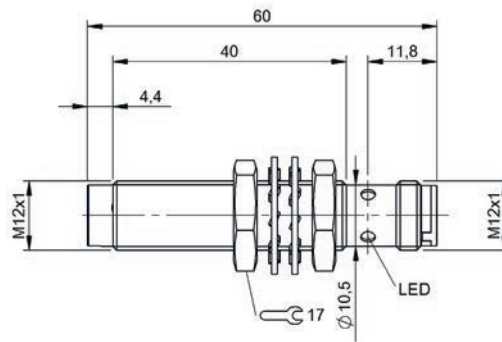
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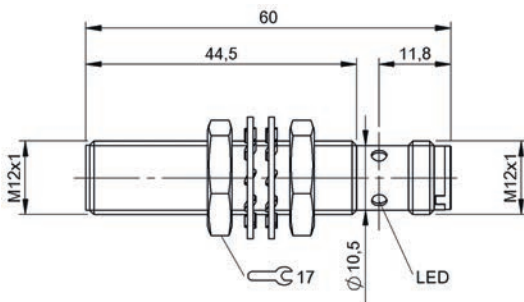
BES01PN, BES004N



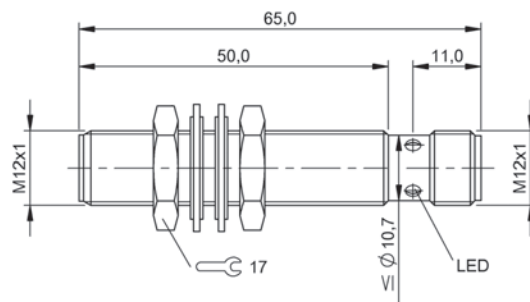
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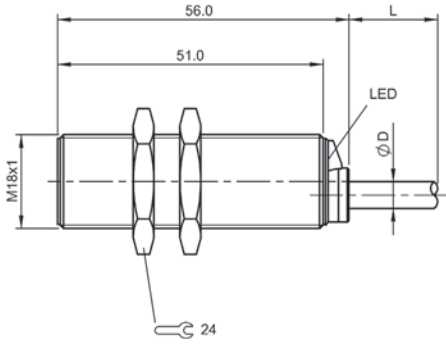
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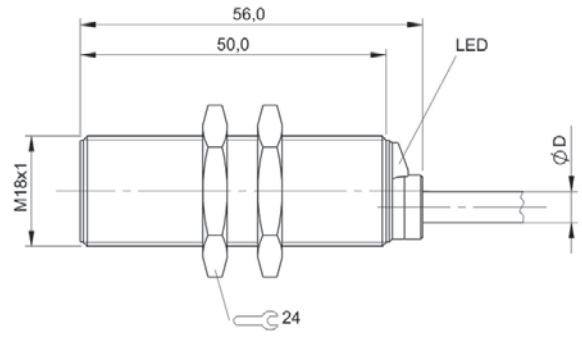
BES02WZ, BES02WY



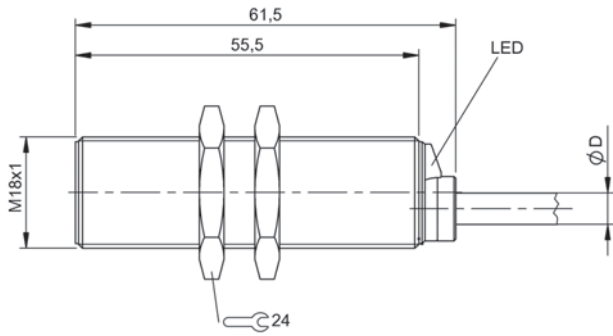
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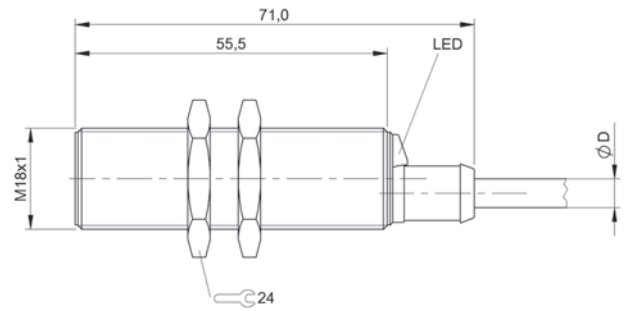
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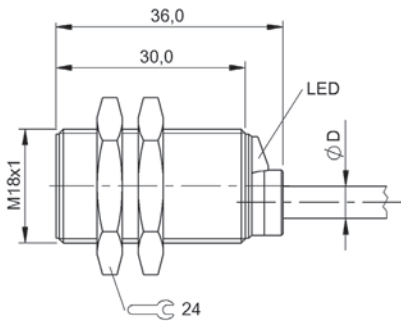
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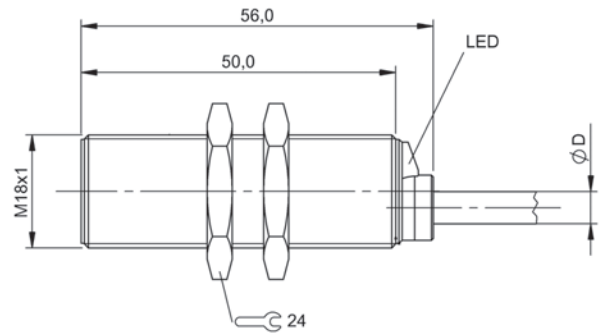
BES028L, BES028N



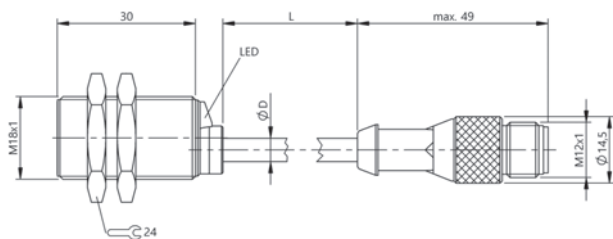
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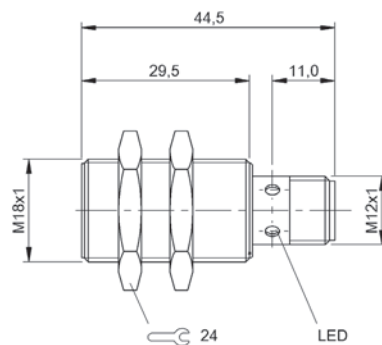
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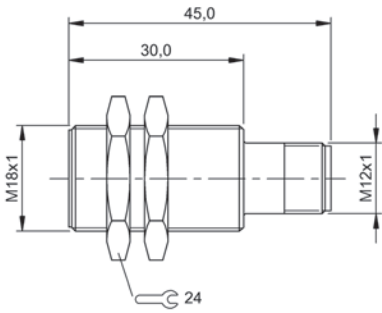
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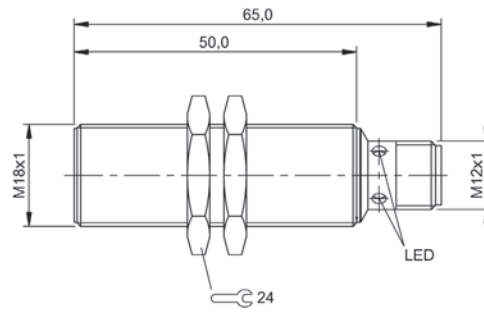
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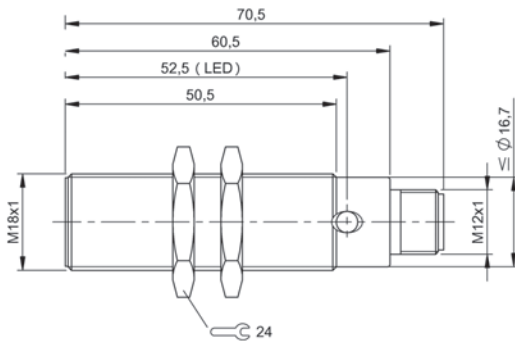
BES00EY, BES00R6, BES00RC, BES02P3



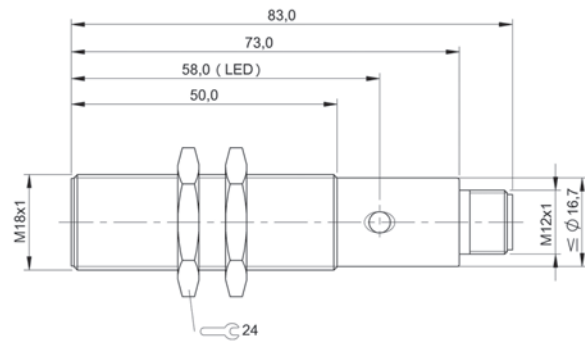
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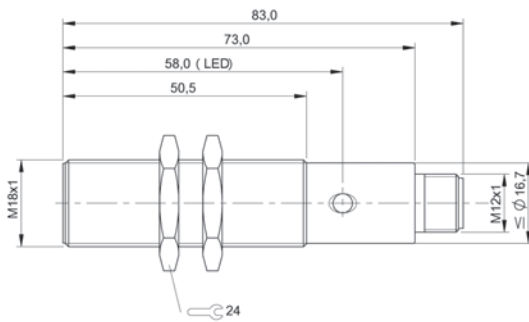
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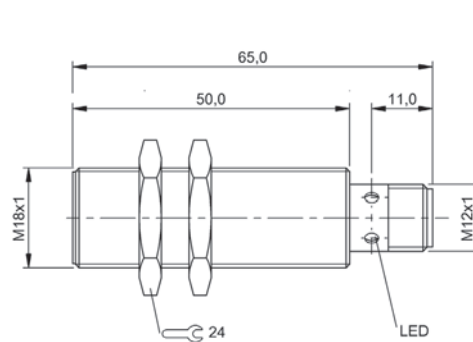
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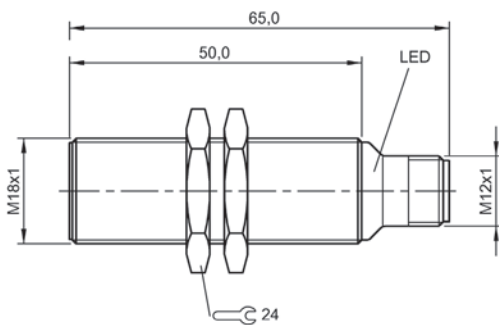
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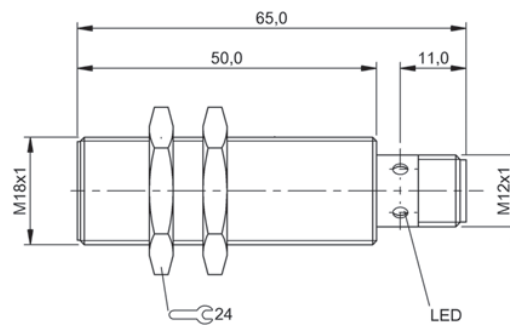
BES01CW, BES015N, BES01JW



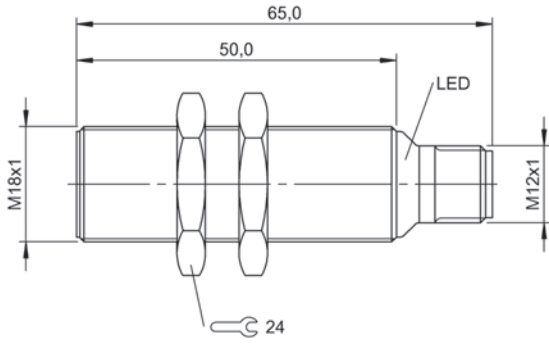
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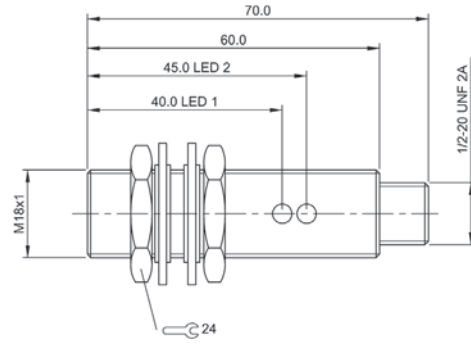
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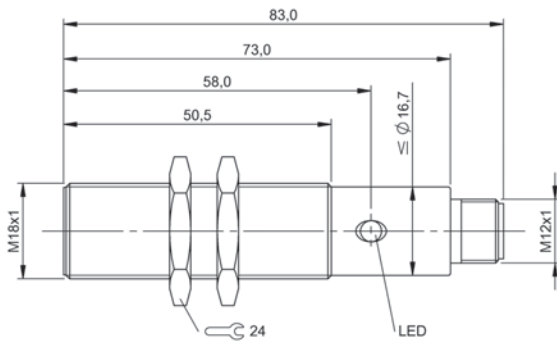
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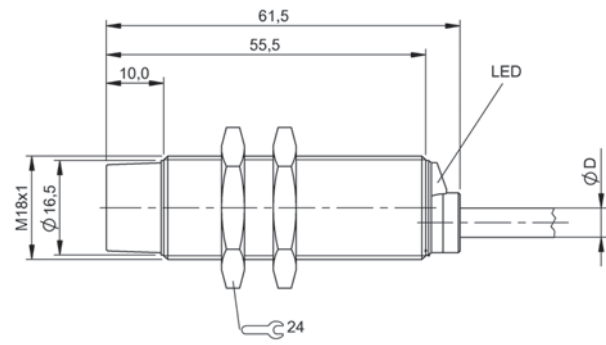
BES008M, BES007Y



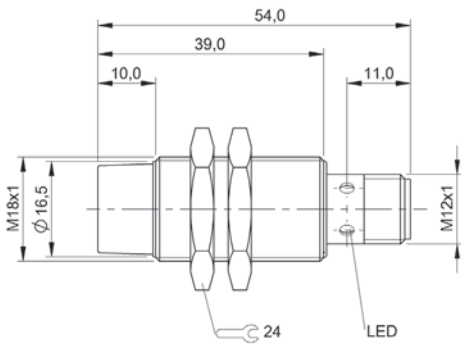
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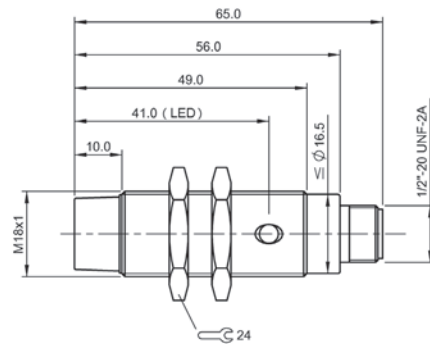
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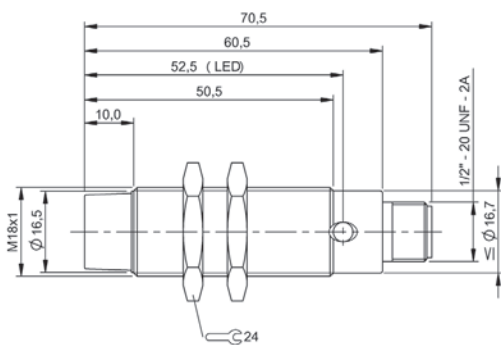
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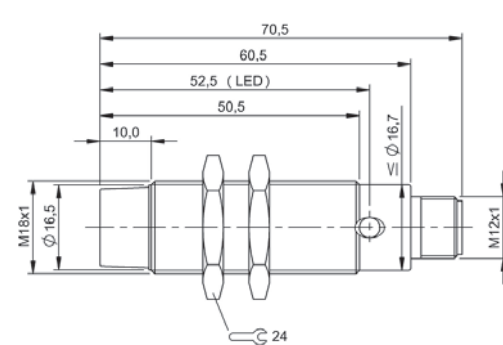
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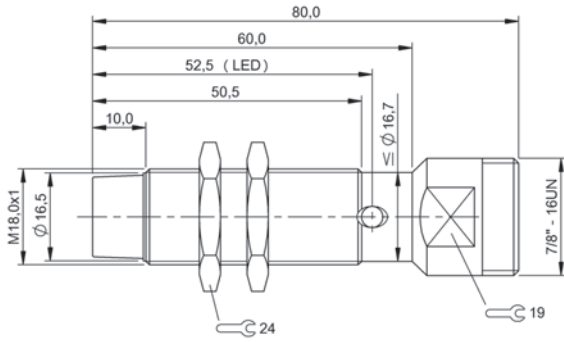
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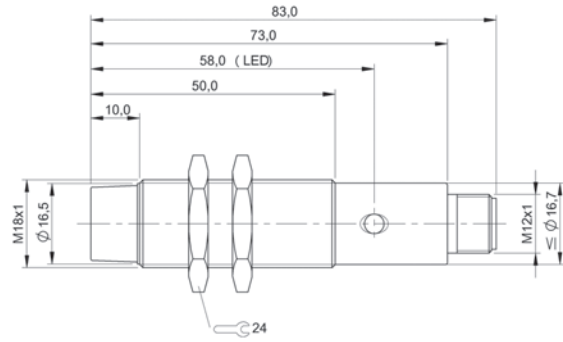
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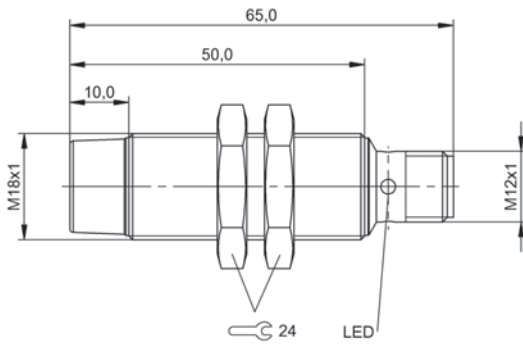
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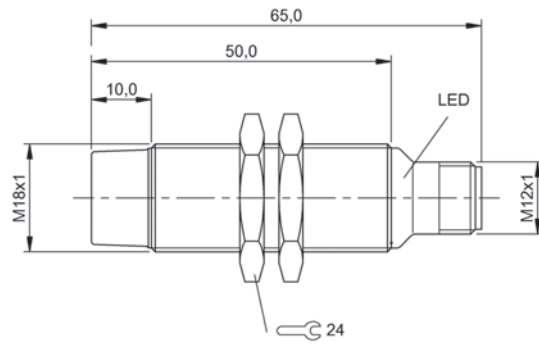
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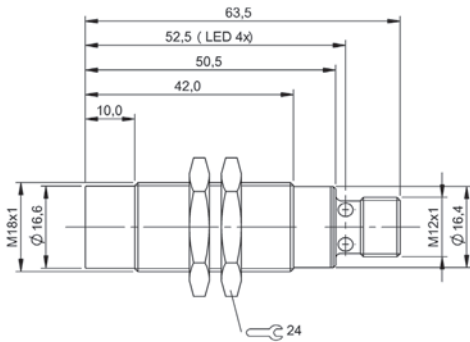
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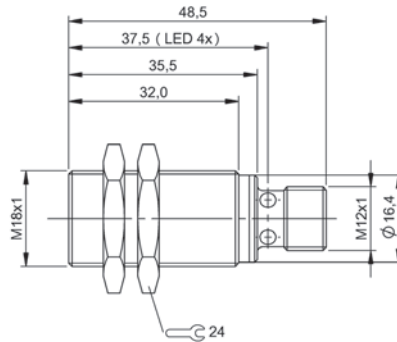
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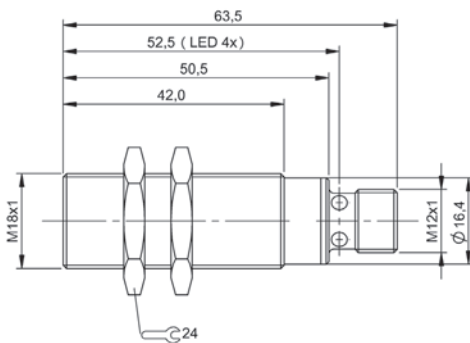
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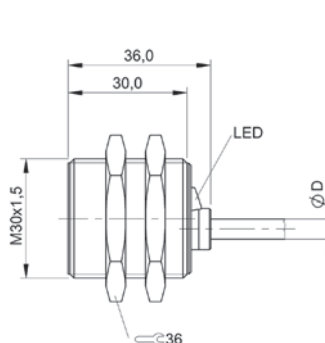
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BES02Y5

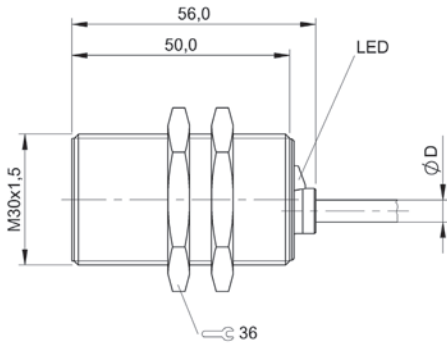


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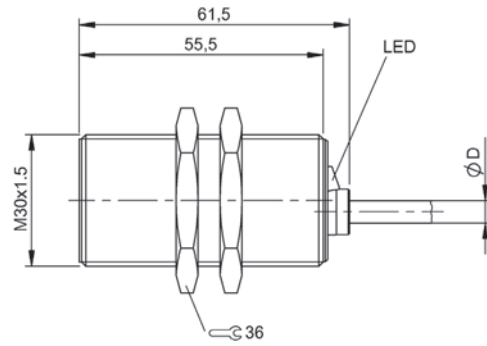


BES00RE, BES00RT, BES00LR

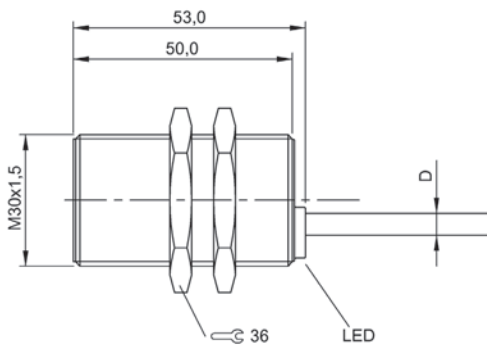
130 | Sensors | Inductive Sensors



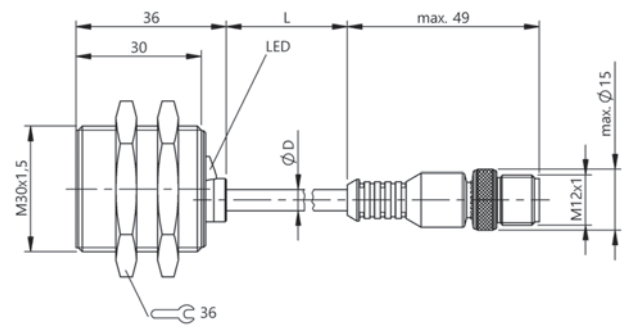
BES009E, BES00A1



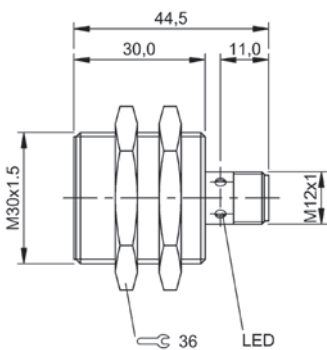
BES029L, BES029M



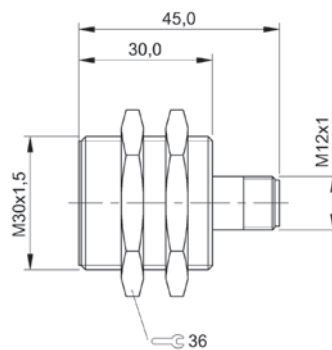
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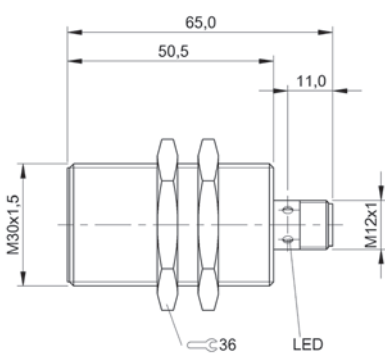
BES00LT



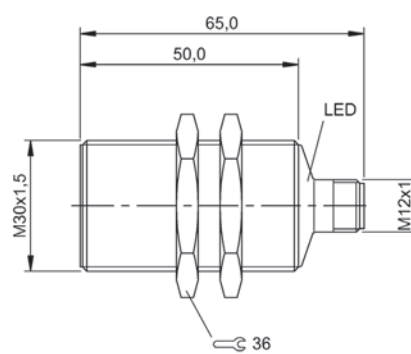
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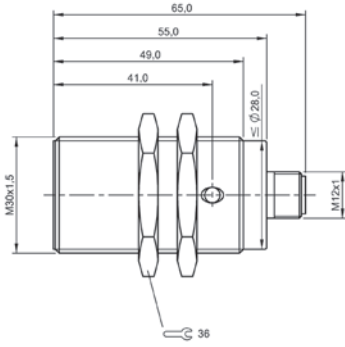
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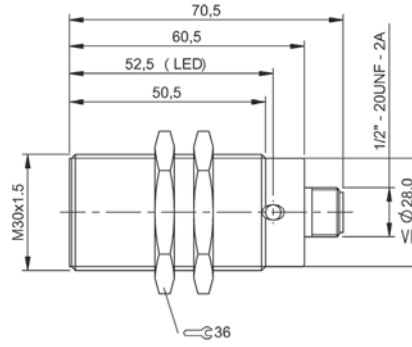
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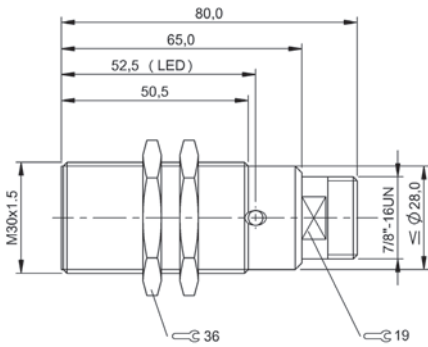
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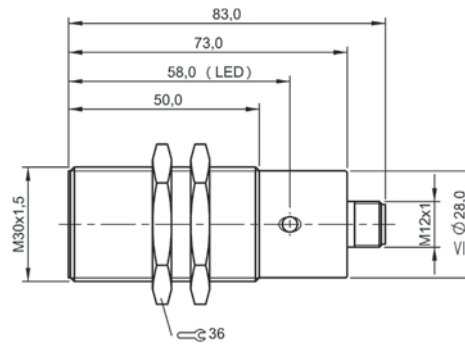
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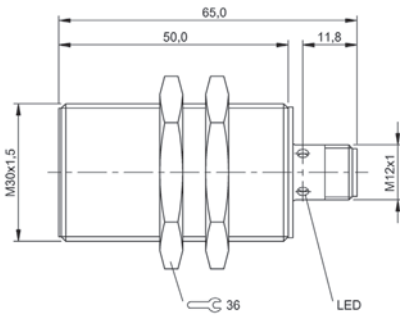
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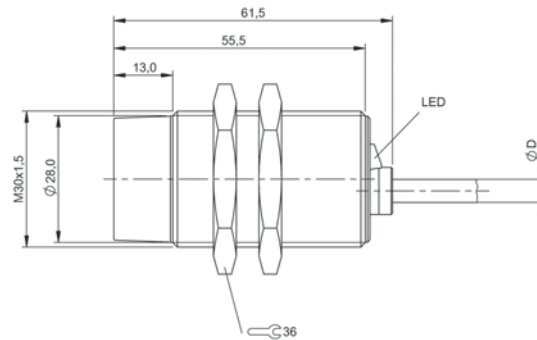
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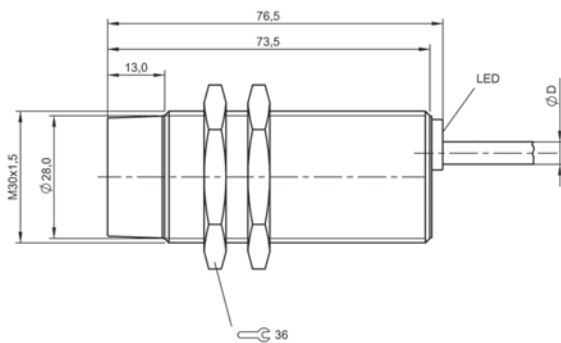
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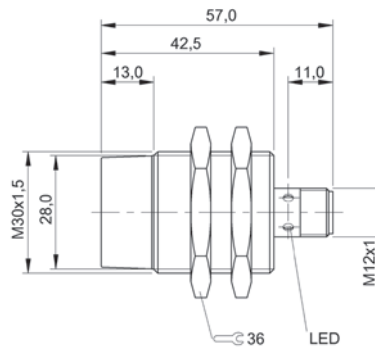
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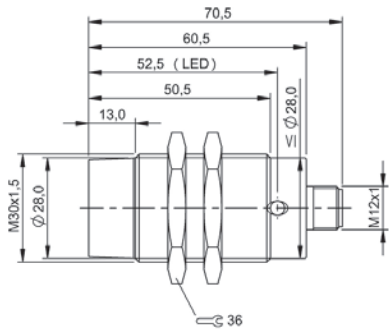
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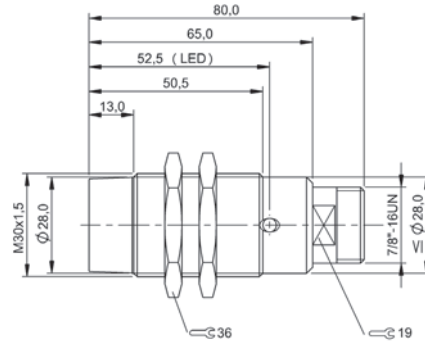
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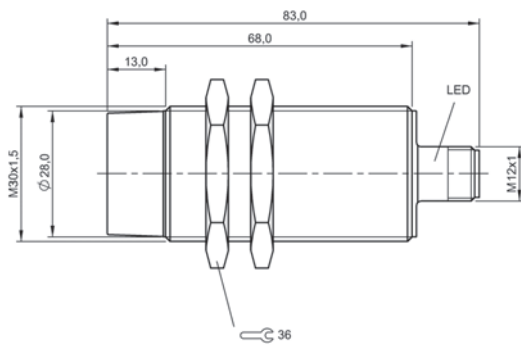
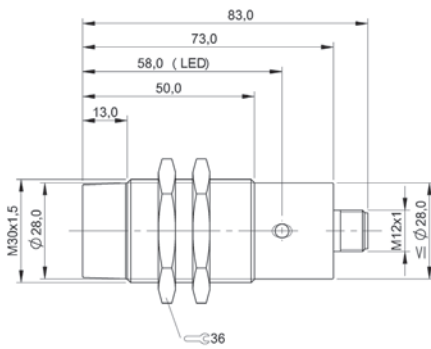
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BES02AC

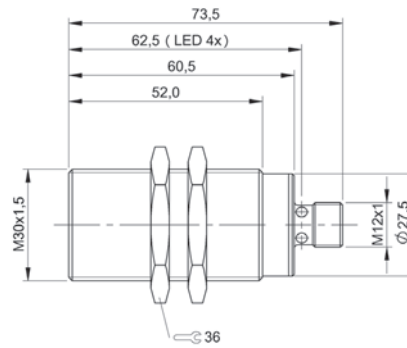
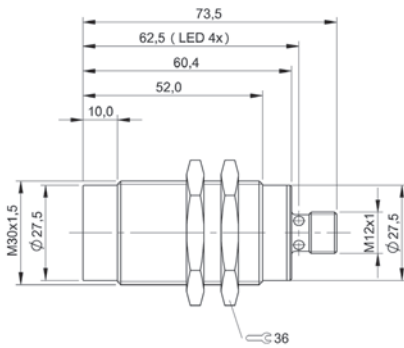


BES02AE



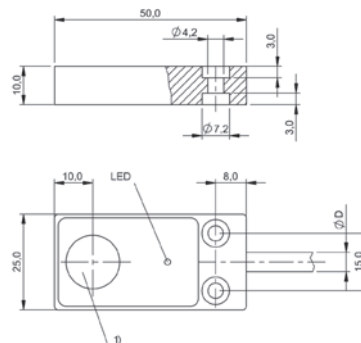
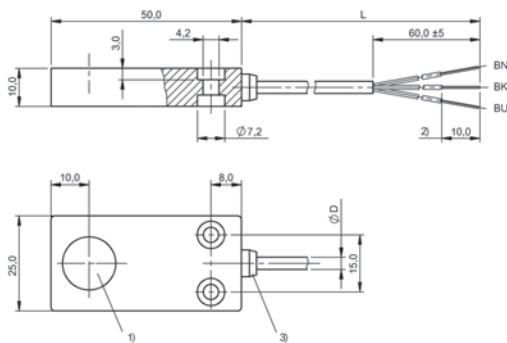
BES02FN, BES01JE, BES01JC

BES00AZ



BES02YJ

BES02YM, BES02YL

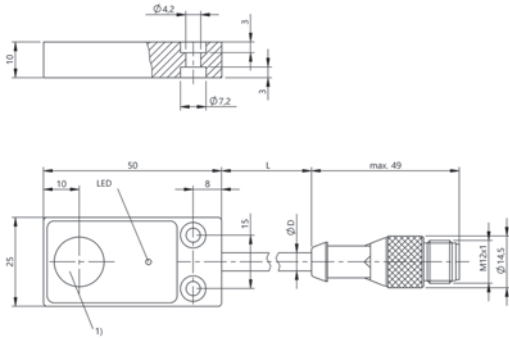


1) Sensing surface, 2) verzinkt, 3) LED rot

1) Sensing surface

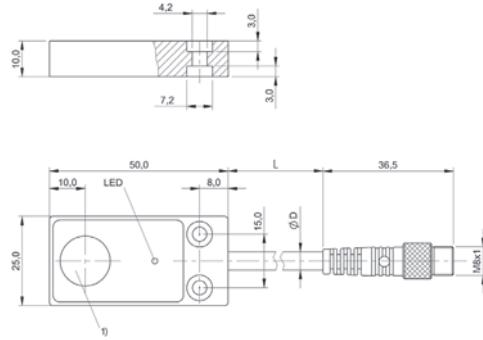
BES0341

BES01FJ, BES01FK, BES01FM, BES017H, BES032R



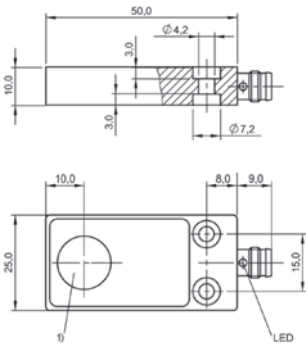
1) Sensing surface

BES01FN, BES0153



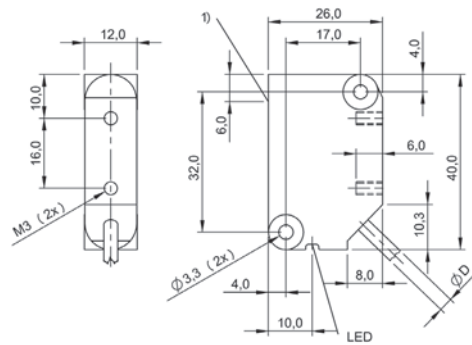
1) Sensing surface

BES01FT



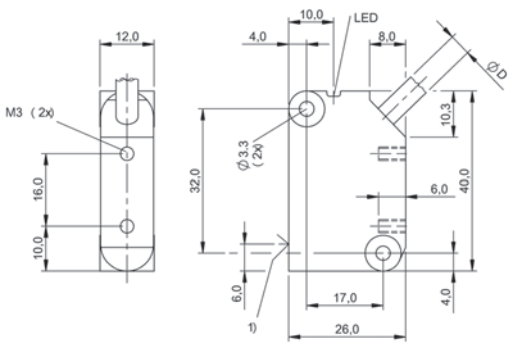
1) Sensing surface

BES01FR



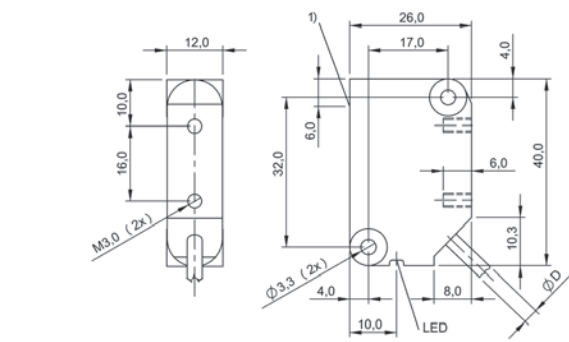
1) Sensing surface Ø8

BES02CT, BES02CU, BES01Z5



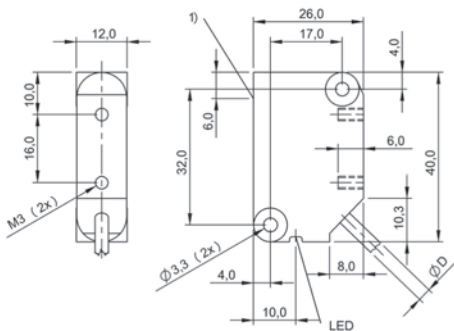
1) Sensing surface Ø8

BES01YZ



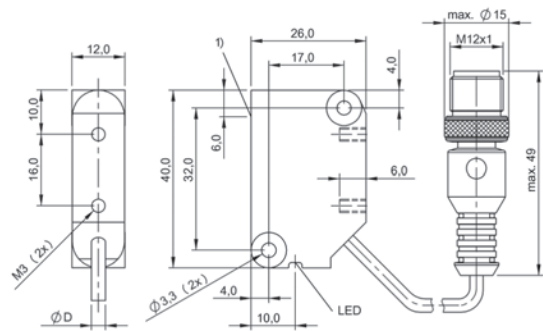
1) Sensing surface Ø8

BES02CY



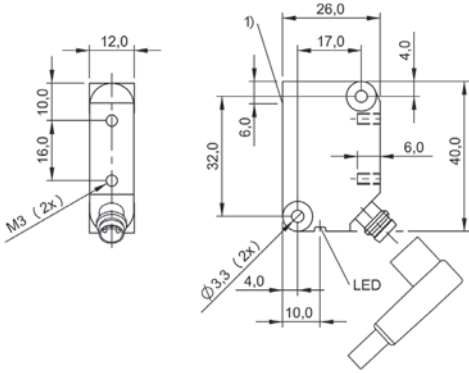
1) Sensing surface Ø8

BES01ZA, BES01ZC



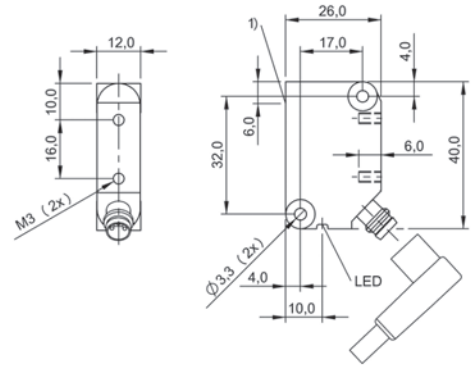
1) Sensing surface Ø8

BES01Z8



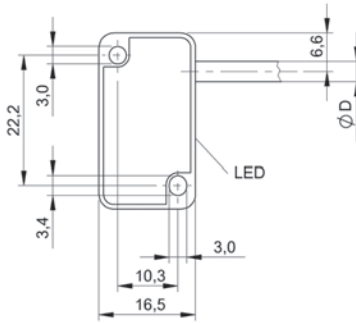
1) Sensing surface Ø8

BES01Z7, BES048A



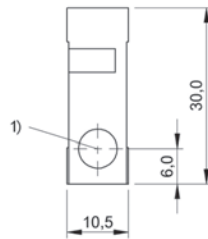
1) Sensing surface Ø8

BES01ZE, BES01Z2



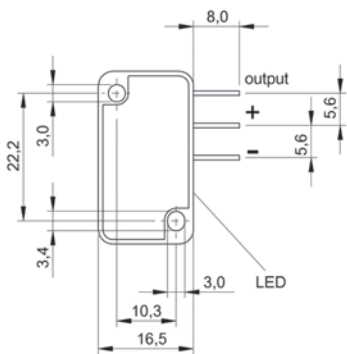
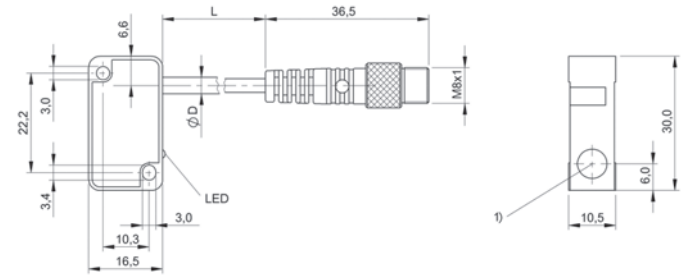
1) Sensing surface

BES01NH, BES01N5, BES01N6, BES01N8, BES01N9, BES01MM



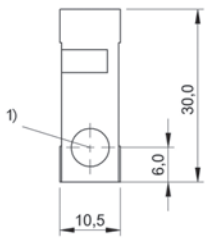
1) Sensing surface

BES01NA, BES01MT



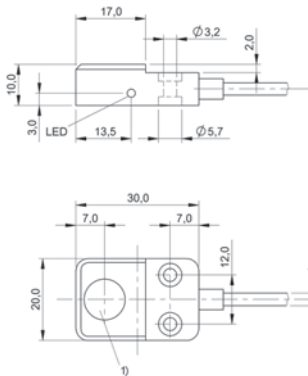
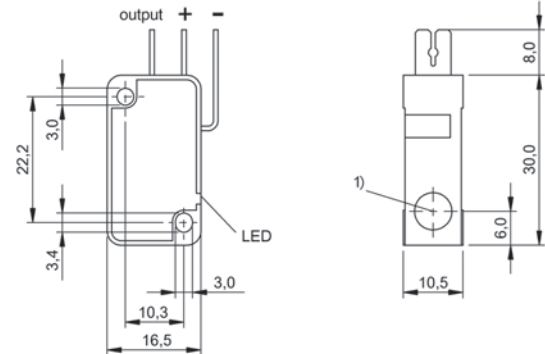
1) Sensing surface

BES01N1



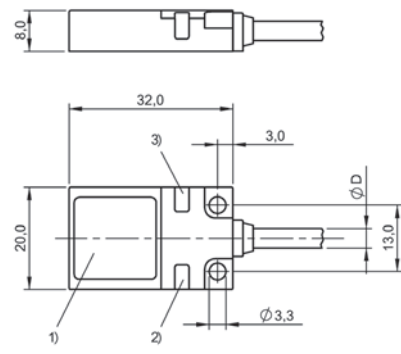
1) Sensing surface

BES01N2



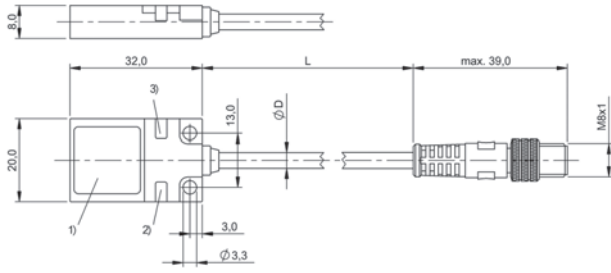
1) Sensing surface

BES033H, BES033J



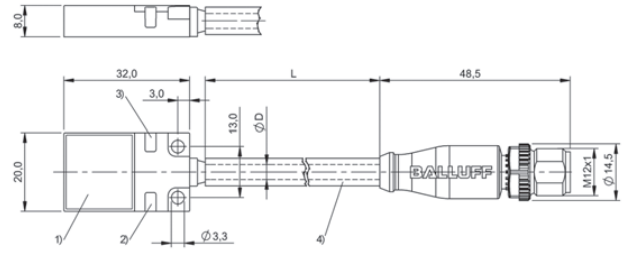
1) Sensing surface, 2) LED green, 3) LED yellow

BES01W0, BES01W4



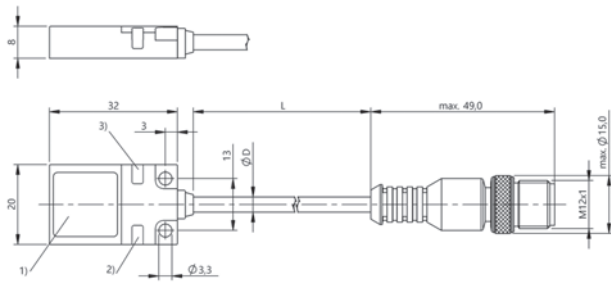
1) Sensing surface, 2) LED green 3) LED yellow

BES01WE, BES01WF



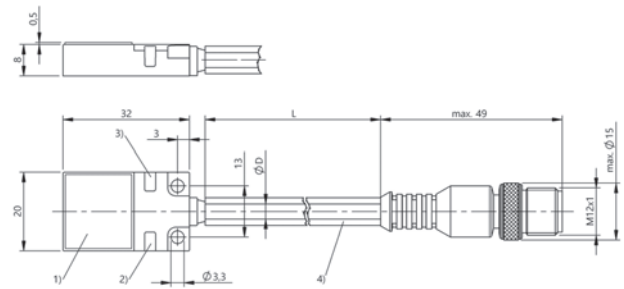
1) Sensing surface, 2) LED green, 3) LED yellow, 4) Silicon tube D=7mm

BES048Z



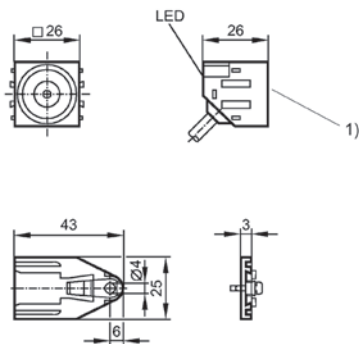
1) Sensing surface, 2) LED green, 3) LED yellow

BES01W2, BES01W3



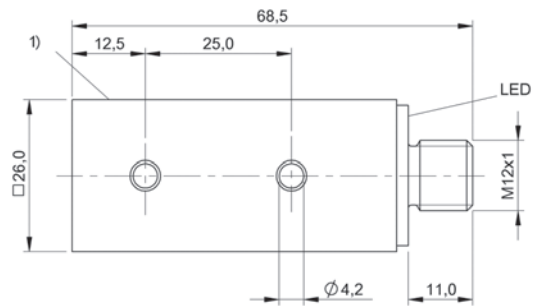
1) Sensing surface, 2) LED green, 3) LED yellow, 4) Silicon tube D=7mm

BES0314



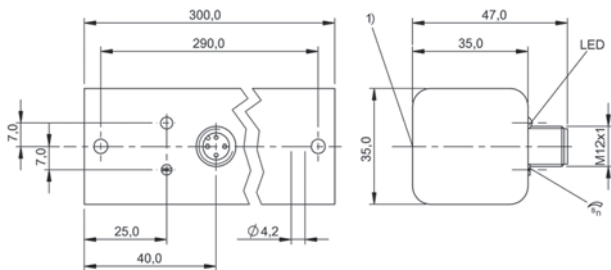
1) Sensing surface

BES030E, BES030F



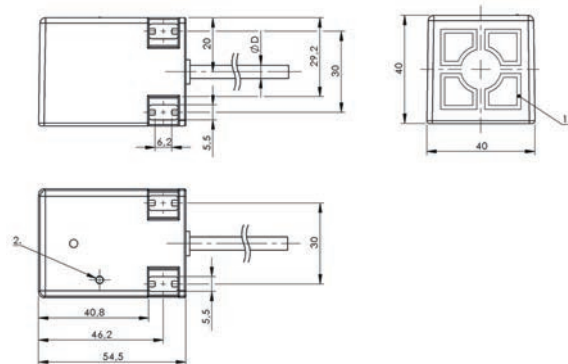
1) Sensing surface

BES022Z



1) Sensing surface

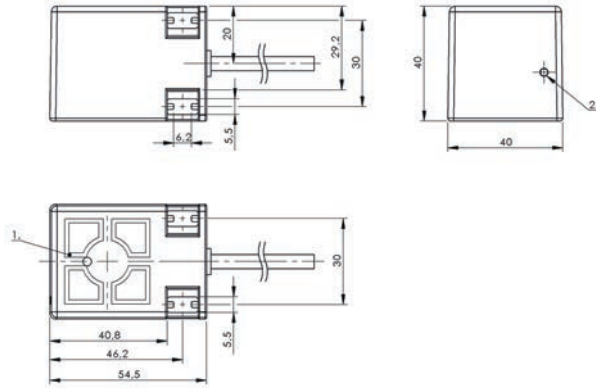
BES02TN



1) Sensing surface, 2) LED yellow

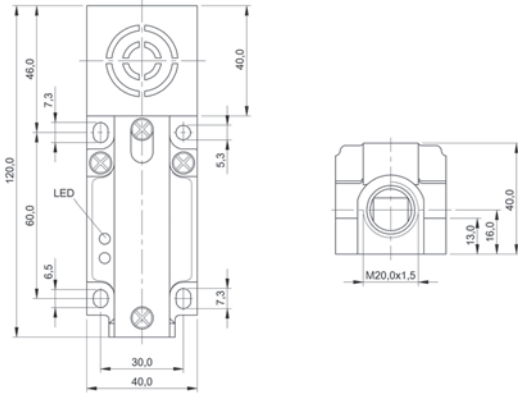
BES052M

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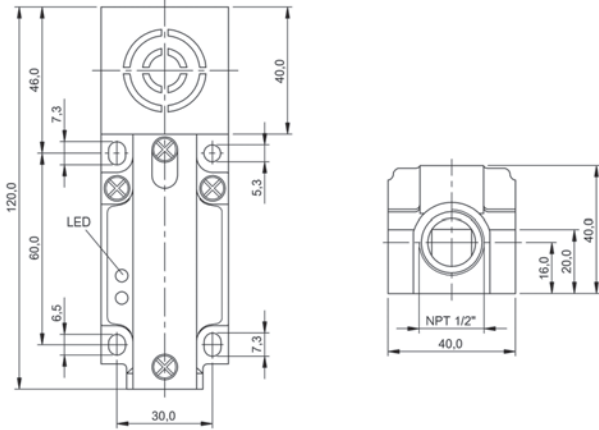


1) Sensing surface, 2) LED yellow

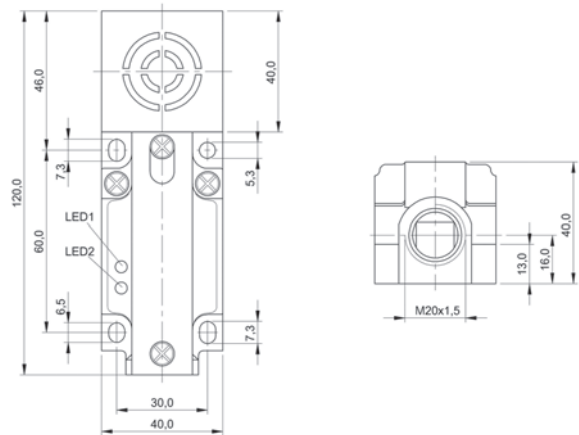
BES0555



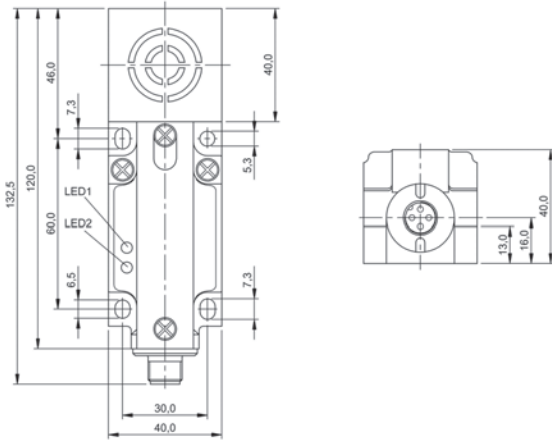
BES020Y, BES020Z, BES023Y



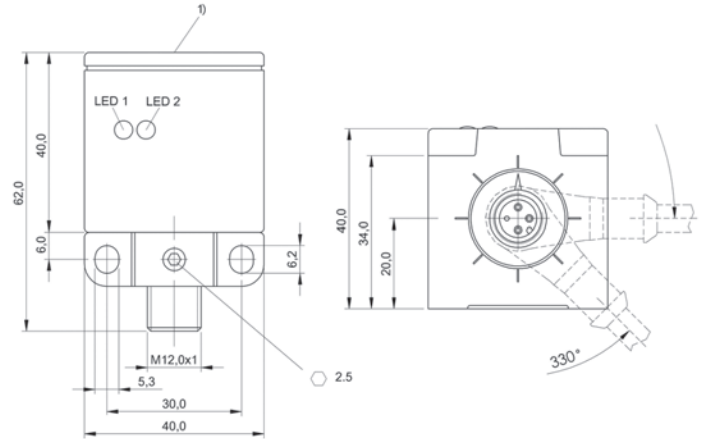
BES0241, BES0244, BES0247



BES0201, BES0209, BES0206, BES020C

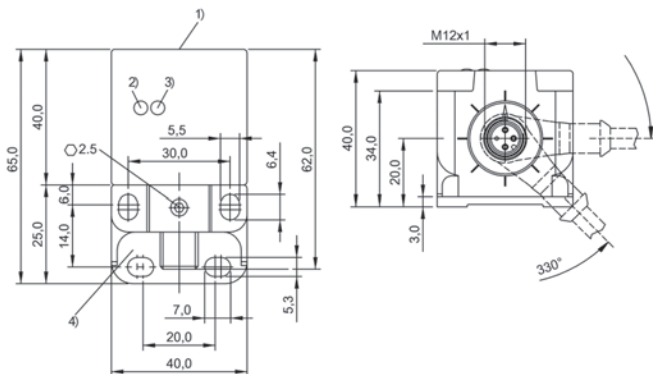


BES020A, BES0236, BES020E



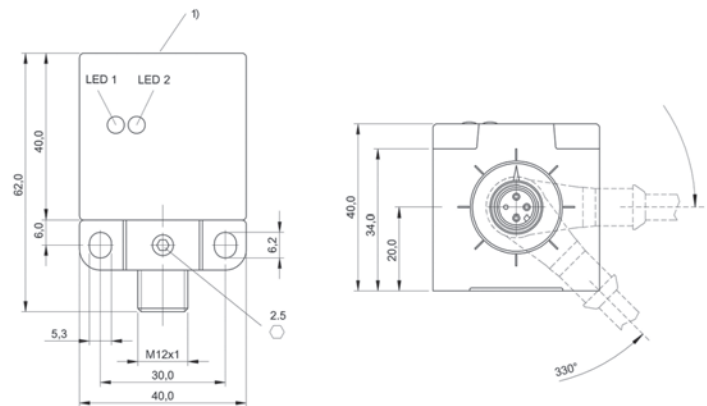
1) Sensing surface

BES021W, BES0217



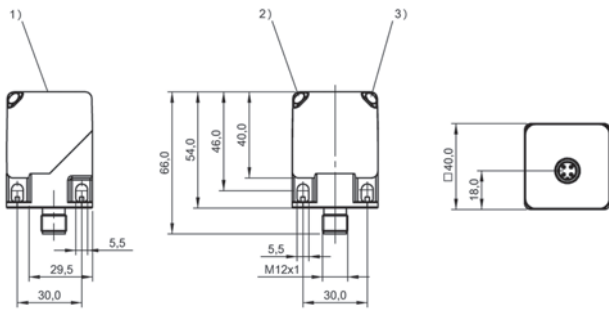
1) Sensing surface, 2) LED function indicator, 3) LED Power 4) Metal

BES03PN



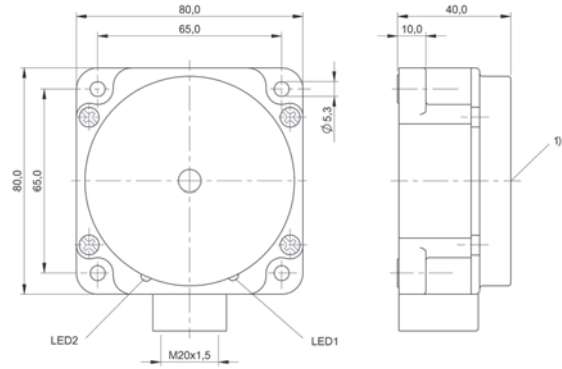
1) Sensing surface

BES021Z, BES021E



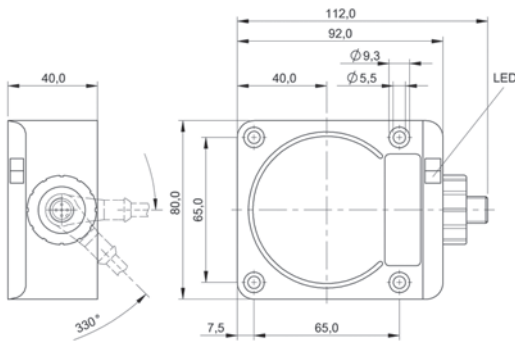
1) Sensing surface, 2) LED yellow, 3) LED green

BES0308

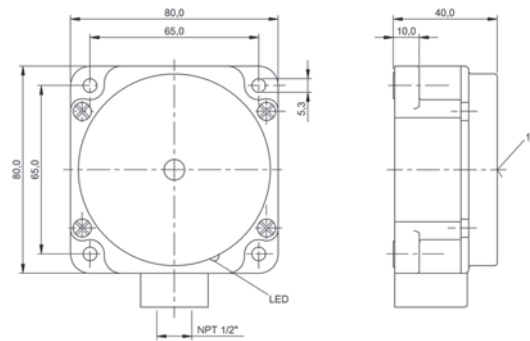


1) Sensing surface

BES023P, BES023R

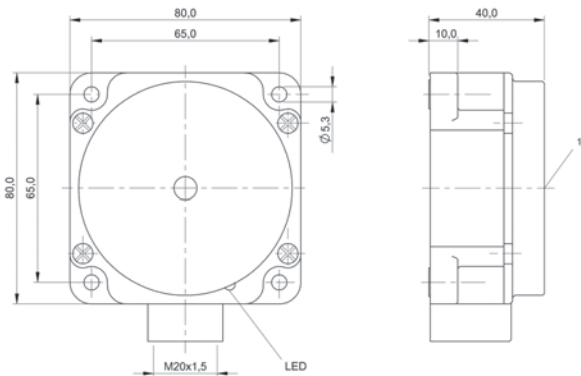


BES030C



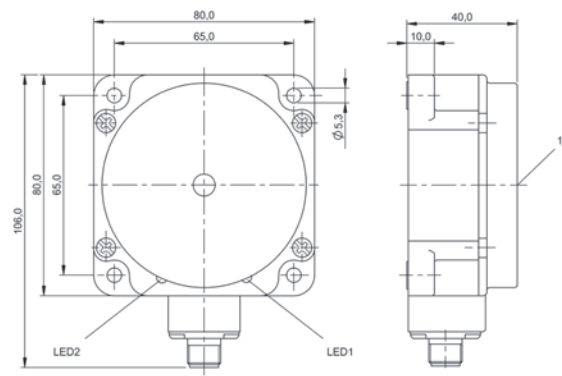
1) Sensing surface

BES022R



1) Sensing surface

BES024F



1) Sensing surface

BES023W



| | | | |
|-----------------------------|---|---|--|
| Polarized normally open | BES001L BES M08MG-GSC20B-BV02 | | |
| Non-polarized normally open | | BES001P BES M08MG-USC20B-BP03 | |
| Dimension | Ø 8 x 40 mm | Ø 8 x 40 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 2 mm | |
| Switching output | polarized normally open (NO) | non-polarized normally open (NO) | |
| Switching frequency | 1500 Hz | 1500 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 2.00 m, PVC | Cable, 3.00 m, PUR | |
| Operating voltage U_b | 10...36 VDC | 10...36 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP66 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | BES0021 BES M08MG-GSC20B-BP03 | |
|--|---|---|---|---|
| | BES001T BES M08MG-USC20B-BV02 | BES001U BES M08MG-USC20B-BV03 | | BES001W BES M08MG-USC20B-BV05 |
| | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 40 mm |
| | M8x1 | M8x1 | M8x1 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 2 mm | 2 mm | 2 mm | 2 mm |
| | non-polarized normally open (NO) | non-polarized normally open (NO) | polarized normally open (NO) | non-polarized normally open (NO) |
| | 1500 Hz | 1500 Hz | 1500 Hz | 1500 Hz |
| | Brass | Brass | Brass | Brass |
| | Nickel-free coated | Nickel-free coated | Nickel-free coated | Nickel-free coated |
| | PBT | PBT | PBT | PBT |
| | Cable, 2.00 m, PVC | Cable, 3.00 m, PVC | Cable, 3.00 m, PUR | Cable, 5.00 m, PVC |
| | 10...36 VDC | 10...36 VDC | 10...36 VDC | 10...36 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP66 | IP66 | IP67 | IP66 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|-------------------------------|---|---|--|
| Polarized normally open | | | |
| Non-polarized normally open | | | |
| Non-polarized normally closed | BES004T BES M12MG-USC30B-BV02 | BES03HH BES M08MG-UOC20B-BV03 | |
| Dimension | Ø 12 x 43 mm | Ø 8 x 40 mm | |
| Style | M12x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 3 mm | 2 mm | |
| Switching output | non-polarized normally open (NO) | non-polarized normally closed (NC) | |
| Switching frequency | 1300 Hz | 1500 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PA 12 | PBT | |
| Connection | Cable, 2.00 m, PVC | Cable, 3.00 m, PVC | |
| Operating voltage U_b | 10...36 VDC | 10...36 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | |
|---|---|--|--|
| BES001Z BES M08MG-GSC20B-BP00,3-GS04 | BES0324 BES M08MG-GSC20B-BP00,3-GS04-101 | BES0022 BES M08ME1-GSC20B-S04G | BES001Y BES M08ME1-USC20B-S04G |
| Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 50 mm | Ø 8 x 50 mm |
| M8x1 | M8x1 | M8x1 | M8x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 2 mm | 2 mm | 2 mm | 2 mm |
| polarized normally open (NO) | polarized normally open (NO) | polarized normally open (NO) | non-polarized normally open (NO) |
| 1500 Hz | 1500 Hz | 1500 Hz | 1500 Hz |
| Brass | Brass | Brass | Brass |
| Nickel-free coated | Nickel-free coated | Nickel-free coated | Nickel-free coated |
| PBT | ceramic coated | PBT | PBT |
| Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...36 VDC | 10...30 VDC | 10...36 VDC | 10...36 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|-------------------------------|---|---|--|
| Polarized normally open | | | |
| Polarized normally closed | | | |
| Non-polarized normally open | BES004P BES M12MG-USC30B-BP03 | BES004T BES M12MG-USC30B-BV02 | |
| Non-polarized normally closed | | | |
| Dimension | Ø 12 x 43 mm | Ø 12 x 43 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 3 mm | 3 mm | |
| Switching output | non-polarized normally open (NO) | non-polarized normally open (NO) | |
| Switching frequency | 1300 Hz | 1300 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 3.00 m, PUR | Cable, 2.00 m, PVC | |
| Operating voltage U_b | 10...36 VDC | 10...36 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | | |
|---|---|---|---|--|
| BES0046 BES M12MG-GSC30B-BV03 | | | | |
| BES0474 BES M12MG-GOC30B-BV03 | | | | |
| | BES004U BES M12MG-USC30B-BV03 | BES004W BES M12MG-USC30B-BV05 | | |
| | | | BES03HM BES M12MG-UOC30B-BV03 | |
| Ø 12 x 43 mm | Ø 12 x 43 mm | Ø 12 x 43 mm | Ø 12 x 43 mm | |
| M12x1 | M12x1 | M12x1 | M12x1 | |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting | |
| 3 mm | 3 mm | 3 mm | 3 mm | |
| polarized normally open (NO) | non-polarized normally open (NO) | non-polarized normally open (NO) | non-polarized normally closed (NC) | |
| 1300 Hz | 1300 Hz | 1300 Hz | 1300 Hz | |
| Brass | Brass | Brass | Brass | |
| Nickel-free coated | Nickel-free coated | Nickel-free coated | Nickel-free coated | |
| PA 12 | PA 12 | PA 12 | PA 12 | |
| Cable, 3.00 m, PVC | Cable, 3.00 m, PVC | Cable, 5.00 m, PVC | Cable, 3.00 m, PVC | |
| 10...36 VDC | 10...36 VDC | 10...36 VDC | 10...36 VDC | |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C | |
| IP67 | IP67 | IP67 | IP67 | |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
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| | | | |
|-----------------------------|--|--|--|
| Polarized normally open | BES0042 BES M12MG-GSC30B-BP00,3-GS04 | BES0326 BES M12MG-GSC30B-BP00,3-GS04-101 | |
| Non-polarized normally open | | | |
| Dimension | Ø 12 x 43 mm | Ø 12 x 43 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 3 mm | 3 mm | |
| Switching output | polarized normally open (NO) | polarized normally open (NO) | |
| Switching frequency | 1300 Hz | 1300 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PA 12 | LCP PTFE | |
| Connection | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | |
| Operating voltage U_b | 10...36 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| BES039W BES M12MG-GSC30B-BX00,3-GS04-U | BES003Z BES M12MF-GSC30B-S04G | | |
|--|---|---|---|
| | | BES0041 BES M12MF-USC30B-S04G | BES0073 BES M18MG-USC70B-BV02 |
| Ø 12 x 43 mm | Ø 12 x 50 mm | Ø 12 x 50 mm | Ø 18 x 46 mm |
| M12x1 | M12x1 | M12x1 | M18x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 3 mm | 3 mm | 3 mm | 7 mm |
| polarized normally open (NO) | polarized normally open (NO) | non-polarized normally open (NO) | non-polarized normally open (NO) |
| 1300 Hz | 1300 Hz | 1300 Hz | 600 Hz |
| Brass | Brass | Brass | Brass |
| coated, PTFE | Nickel-free coated | Nickel-free coated | Nickel-free coated |
| LCP PTFE | PA 12 | PA 12 | PA 12 |
| Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PVC |
| 10...36 VDC | 10...36 VDC | 10...36 VDC | 10...36 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|----------------------------------|---|---|--|
| Polarized normally open | | | |
| Non-polarized normally open | BES0074 BES M18MG-USC70B-BV03 | BES0071 BES M18MG-USC70B-BP03 | |
| Dimension | Ø 18 x 46 mm | Ø 18 x 46 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 7 mm | 7 mm | |
| Switching output | non-polarized normally open (NO) | non-polarized normally open (NO) | |
| Switching frequency | 600 Hz | 600 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 3.00 m, PVC | Cable, 3.00 m, PUR | |
| Operating voltage U _b | 10...36 VDC | 10...36 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| BES006C BES M18MG-GSC70B-BP00,3-GS04 | BES03FJ BES M18MG-GSC70B-BX00,3-GS04-U | BES0069 BES M18MF-GSC70B-S04K | BES006A BES M18MF-USC70B-S04K |
|---|---|-----------------------------------|-----------------------------------|
| Ø 18 x 46 mm | Ø 18 x 46 mm | Ø 18 x 50 mm | Ø 18 x 50 mm |
| M18x1 | M18x1 | M18x1 | M18x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 7 mm | 7 mm | 7 mm | 7 mm |
| polarized normally open (NO) | polarized normally open (NO) | polarized normally open (NO) | non-polarized normally open (NO) |
| 600 Hz | 600 Hz | 600 Hz | 600 Hz |
| Brass | Brass | Brass | Brass |
| Nickel-free coated | coated, PTFE | Nickel-free coated | Nickel-free coated |
| PA 12 | LCP PTFE | PA 12 | PA 12 |
| Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...36 VDC | 10...36 VDC | 10...36 VDC | 10...36 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | BES0328 BES M18MF-GSC70B-S04G | BES03FH BES M18MF-GSC70B-S04G-U | |
|----------------------------------|---|---|--|
| Polarized normally open | | | |
| Non-polarized normally open | | | |
| Dimension | Ø 18 x 51 mm | Ø 18 x 51 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 7 mm | 7 mm | |
| Switching output | polarized normally open (NO) | polarized normally open (NO) | |
| Switching frequency | 600 Hz | 600 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | coated, PTFE | |
| Material sensing surface | PA 12 | LCP PTFE | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U _b | 10...36 VDC | 10...36 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES02NR BES M18MF-USC70B-S04G | BES008R BES M30MF-GSC15B-BV02 | BES0091 BES M30MF-USC15B-BV02 | BES0092 BES M30MF-USC15B-BV03 |
|--|---|---|---|---|
| | Ø 18 x 51 mm | Ø 30 x 42.5 mm | Ø 30 x 42.5 mm | Ø 30 x 42.5 mm |
| | M18x1 | M30x1.5 | M30x1.5 | M30x1.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 7 mm | 15 mm | 15 mm | 15 mm |
| | non-polarized normally open (NO) | polarized normally open (NO) | non-polarized normally open (NO) | non-polarized normally open (NO) |
| | 600 Hz | 400 Hz | 400 Hz | 400 Hz |
| | Brass | Brass | Brass | Brass |
| | Nickel-free coated | Nickel-free coated | Nickel-free coated | Nickel-free coated |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PVC | Cable, 2.00 m, PVC | Cable, 3.00 m, PVC |
| | 10...36 VDC | 10...36 VDC | 10...36 VDC | 10...36 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|-----------------------------|---|--|--|
| Polarized normally open | | BES027K BES M30MF-GSC15B-BX00,3-GS04-U | |
| Non-polarized normally open | BES008Z BES M30MF-USC15B-BP03 | | |
| Dimension | Ø 30 x 42.5 mm | Ø 30 x 42.5 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 15 mm | 15 mm | |
| Switching output | non-polarized normally open (NO) | polarized normally open (NO) | |
| Switching frequency | 400 Hz | 400 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | coated, PTFE | |
| Material sensing surface | PA 12 | LCP PTFE | |
| Connection | Cable, 3.00 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | |
| Operating voltage U_b | 10...36 VDC | 10...36 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BES008W BES M30MF-GSC15B-S04K | | BES03KL BES M30MF-GSC15B-S04G-U | |
|-----------------------------------|---|---|---|--|
| | | BES0094 BES M30MF-USC15B-S04K | | |
| Ø 30 x 50 mm | Ø 30 x 50 mm | Ø 30 x 50 mm | Ø 30 x 51 mm | |
| M30x1.5 | M30x1.5 | M30x1.5 | M30x1.5 | |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting | |
| 15 mm | 15 mm | 15 mm | 15 mm | |
| polarized normally open (NO) | non-polarized normally open (NO) | non-polarized normally open (NO) | polarized normally open (NO) | |
| 400 Hz | 400 Hz | 400 Hz | 400 Hz | |
| Brass | Brass | Brass | Brass | |
| Nickel-free coated | Nickel-free coated | Nickel-free coated | coated, PTFE | |
| PA 12 | PA 12 | PA 12 | LCP PTFE | |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| 10...36 VDC | 10...36 VDC | 10...36 VDC | 10...36 VDC | |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C | |
| IP67 | IP67 | IP67 | IP67 | |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
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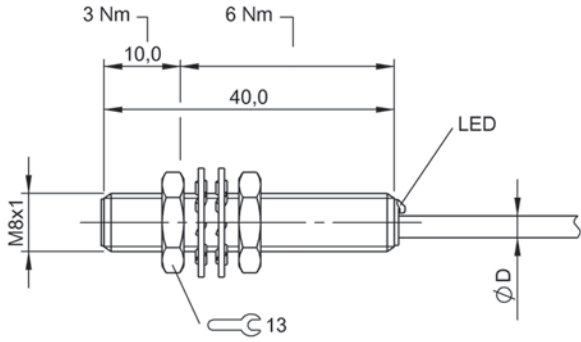
Safety

Industrial Networking

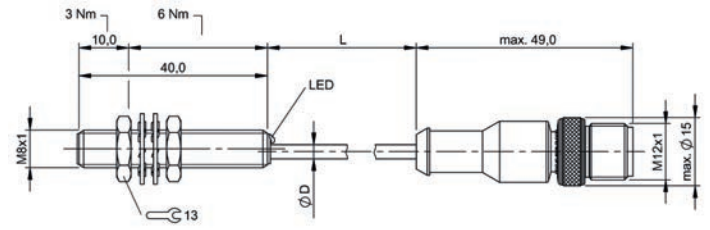
Power Supply

Connectivity

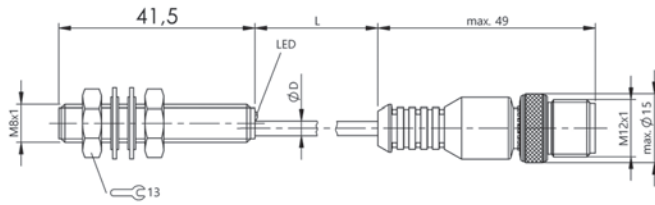
Accessories



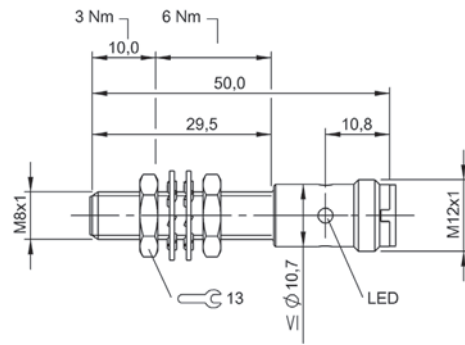
BES001L, BES001P, BES001T, BES001U, BES0021, BES001W, BES024T, BES03HH



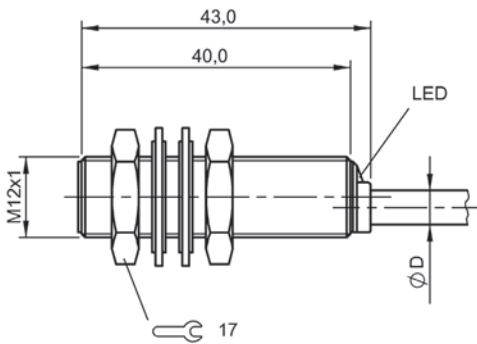
BES001Z



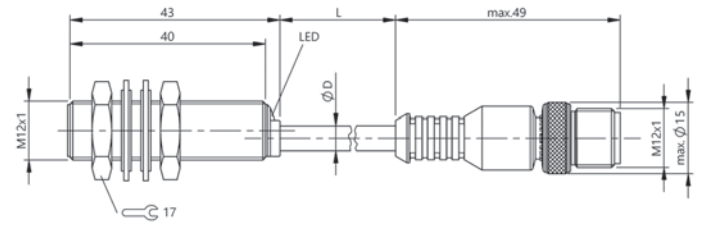
BES0324



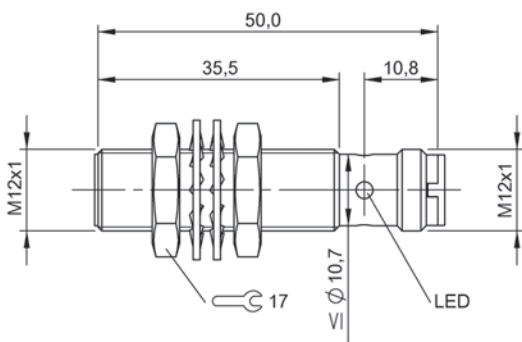
BES0022, BES001Y



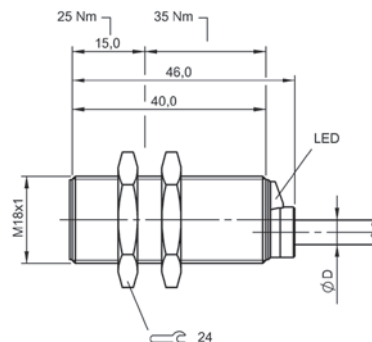
BES004P, BES004T, BES0046, BES0474, BES004U, BES004W, BES03HM



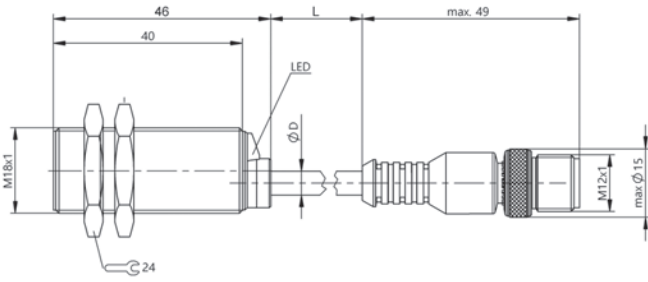
BES0042, BES0326, BES039W



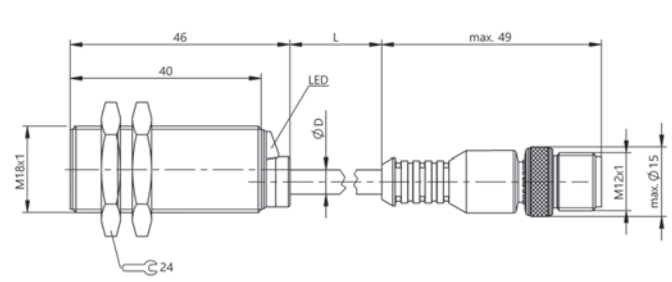
BES003Z, BES0041



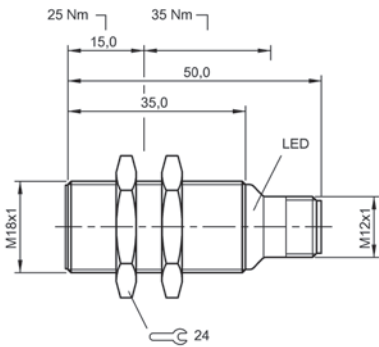
BES0073, BES0074, BES0071



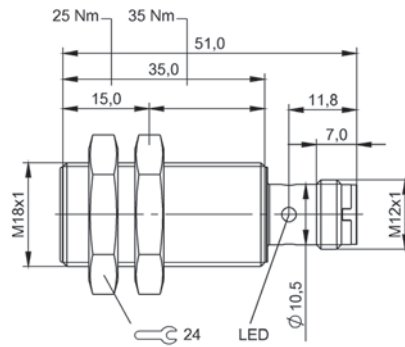
BES006C



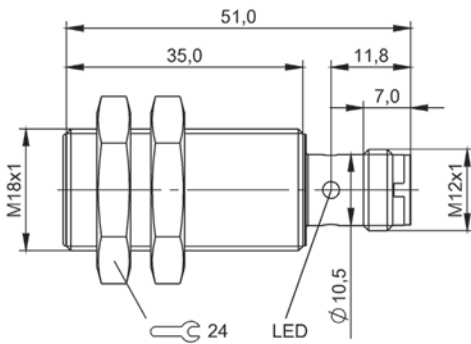
BES03FJ



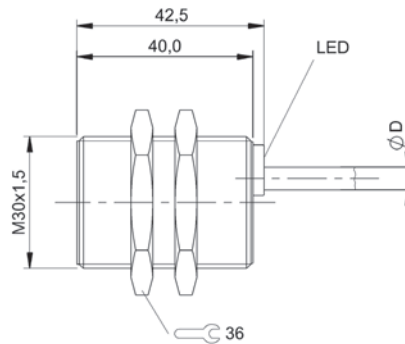
BES0069, BES006A



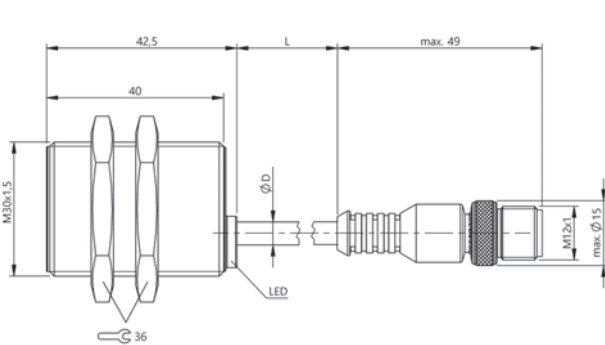
BES0328, BES02NR



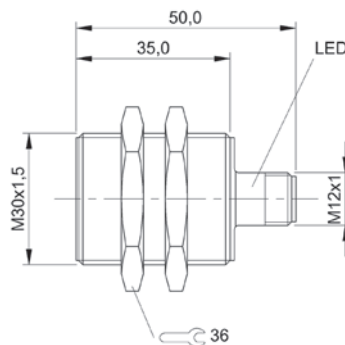
BES03FH



BES008R, BES0091, BES0092, BES008Z

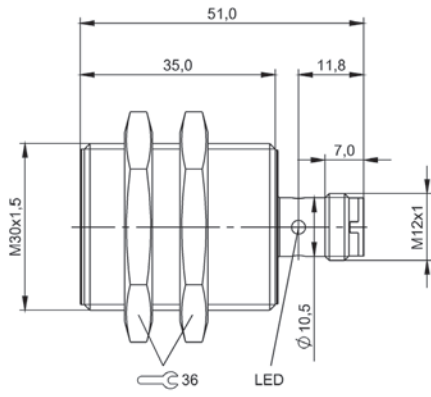


BES027K



BES008W, BES0094

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BES03KL



| | | | |
|--|--|--|--|
| PNP normally open | BHS006U BHS G409N-PSD10-EP02 | BHS007J BHS G409N-PSD10-EP00,3-GS49 | |
| NPN normally open | BHS006Y BHS G409N-NSD10-EP02 | | |
| Dimension | Ø 4.2 x 32 mm | Ø 4.2 x 32 mm | |
| Style | D4.2 | D4.2 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 1 mm | 1 mm | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | Ceramic | Ceramic | |
| Connection | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...80 °C | -25...80 °C | |
| Pressure rating max. | 500 bar | 500 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BHS006N BHS G403N-PSD10-S26 | BHS005H BHS G408N-PSC10-S49 | BES055Y BES M05EE1-PSC08B-EV00,9-116 | BES03H6 BES M05EG-PSC08B-BP02 |
|--|---------------------------------------|---------------------------------------|--|---|
| | Ø 4.2 x 40.5 mm | Ø 4.2 x 47 mm | Ø 5 x 42 mm | Ø 5 x 42 mm |
| | D4.2 | D4.2 | M5x0.5 | M5x0.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | — | — | — | — |
| | 1 mm | 1 mm | 0.8 mm | 0.8 mm |
| | 3000 Hz | 3000 Hz | 5000 Hz | 3000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | Ceramic | Ceramic | Ceramic | Ceramic |
| | Connector, M5x0.5 plug | Connector, M8x1 connector, 3-pin | Cable, 0.92 m, PVC | Cable, 2.00 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...80 °C | -25...80 °C | -25...70 °C | -25...70 °C |
| | 500 bar | 500 bar | 10 bar | 10 bar |
| | — | — | — | — |
| | IP68 | IP68 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | EAC, CE, cULus | CE, cULus, EAC |
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| | | | |
|--|--|---|--|
| PNP normally open | BES03JM BES M05EG-PSC08B-BP00,2-GS49 | BES03NZ BES M05ED-PSC08B-BP02-R50 | |
| PNP normally closed | | | |
| NPN normally open | BES0315 BES M05EG-NSC08B-BP00,2-GS49 | | |
| Dimension | Ø 5 x 42 mm | Ø 5 x 27 mm | |
| Style | M5x0.5 | M5x0.5 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 0.8 mm | 0.8 mm | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | Ceramic | Ceramic | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable, 2.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Pressure rating max. | 10 bar | 50 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | cULus, CE, EAC | |
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| | BES03L7 BES M05ED-PSD08B-BP02-R03 | BES03LC BES M05ED-PSD08B-BP00,3-GS49-R03 | BES034K BES 516-324-SA17-05 | BES03UY BES M08EE1-PSC20B-S49G-S |
|--|---|--|---------------------------------------|--|
| | | BES03LE BES M05ED-POD08B-BP00,3-GS49-R03 | | |
| | | | | BES03Z3 BES M08EE1-NSC20B-S49G-S |
| | Ø 5 x 27 mm | Ø 5 x 27 mm | Ø 8 x 45 mm | Ø 8 x 50 mm |
| | M5x0.5 | M5x0.5 | M8x1 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | — | — | — | — |
| | 0.8 mm | 0.8 mm | 1.2 mm | 2 mm |
| | 3000 Hz | 3000 Hz | 1500 Hz | 100 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | Ceramic | Ceramic | PA 12 | Stainless steel (1.4404) |
| | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Cable, 5.00 m, PVC | Connector, M8x1 connector, 3-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | 100 bar | 100 bar | 10 bar | 80 bar |
| | — | — | — | — |
| | IP67 | IP67 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, EAC | CE, cULus, EAC |
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| | | | |
|--|--|--|--|
| PNP normally open | | | |
| NPN normally open | BES02N3 BES M08EH1-NSC20B-S04G-S | BES02N4 BES M08EH1-NSC20B-S04G-S01 | |
| Dimension | Ø 8 x 65 mm | Ø 8 x 65 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 2 mm | 2 mm | |
| Switching frequency | 750 Hz | 750 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | coated, PTFE | |
| Material sensing surface | Stainless steel | Stainless steel | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Pressure rating max. | 80 bar | 80 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BHS0039 BES 516-300-S289-BO-D-PU-05 | BHS0058 BHS A407N-PSD15-BP02 | BHS0054 BHS A404N-PSC15-S49 | BHS0050 BHS A402N-PSC15-S49 |
|--|---|--|---------------------------------------|---------------------------------------|
| | Ø 8 x 34 mm | Ø 6.5 x 31.3 mm | Ø 6.5 x 45 mm | Ø 6.5 x 55 mm |
| | M8x1 | D6.5 | D6.5 | D6.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | — | — | — | — |
| | 1.5 mm | 1.5 mm | 1.5 mm | 1.5 mm |
| | 1000 Hz | 4000 Hz | 4000 Hz | 4000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | Ceramic | Ceramic | Ceramic | Ceramic |
| | Cable, 5.00 m, PUR | Cable, 2.00 m, PUR | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...80 °C | -25...80 °C | -25...80 °C |
| | 100 bar | 500 bar | 500 bar | 500 bar |
| | — | — | — | — |
| | IP67 | IP68 | IP68 | IP68 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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|--|---|---|--|
| PNP normally open | BHS003A BES 516-300-S291-S4-D | BES02NA BES M12EI-PSC40B-S04G-S | |
| NPN normally open | | | |
| Normally open | | | |
| Dimension | Ø 12 x 56 mm | Ø 12 x 65 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 1.5 mm | 4 mm | |
| Switching frequency | 2000 Hz | 500 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | EP | Stainless steel | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...80 °C | -25...70 °C | |
| Pressure rating max. | 50 bar | 60 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP68 | IP67 | |
| Approval/Conformity | CE, EAC | CE, cULus, EAC | |
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| | BES02NC BES M12EI-PSC40B-S04G-S01 | BES02WH BES M12EG1-PSC60Z-S04G-S11 | | |
|--|---|--|--|---|
| | | | | BHS0008 BES 516-200-S2/1.250"-S21 |
| | | | BHS0006 BES 516-200-S2/1.025"-S5 | |
| | Ø 12 x 65 mm | Ø 12 x 60 mm | 64.2 x 48 x 26.04 mm | 64.2 x 48 x 31.75 mm |
| | M12x1 | M12x1 | D12.7 | D12.7 |
| | for flush mounting | quasi-flush | for flush mounting | for flush mounting |
| | — | — | — | — |
| | 4 mm | 6 mm | 2 mm | 2 mm |
| | 500 Hz | 400 Hz | 50 Hz | 50 Hz |
| | Stainless steel | Stainless steel | Stainless steel (1.4104) Zinc, die-cast | Stainless steel Zinc, Die casting |
| | coated, PTFE | — | nickel plated | nickel plated |
| | Stainless steel | Stainless steel | Ceramic | Ceramic |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, 7/8"-16 UN plug | Connector, 1/2"-20 UNF2A-Male |
| | 10...30 VDC | 10...30 VDC | 20...250 VDC/20...250 VAC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | 60 bar | 80 bar | 207 bar | 207 bar |
| | — | — | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--|--|--|--|
| PNP normally open | BHS003M BES 516-300-S295/1.250"-S4 | | |
| Normally open | | BHS0009 BES 516-200-S2/1.250"-S5 | |
| Dimension | 51 x 48 x 31.75 mm | 64.2 x 48 x 31.75 mm | |
| Style | D12.7 | D12.7 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 2 mm | 2 mm | |
| Switching frequency | 10 Hz | 50 Hz | |
| Housing material | Stainless steel Zinc, Die casting | Stainless steel (1.4104) Zinc, die-cast | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | Ceramic | Ceramic | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, 7/8"-16 UN plug | |
| Operating voltage U _b | 10...30 VDC | 20...250 VDC/20...250 VAC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Pressure rating max. | 207 bar | 207 bar | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BHS0041 BES 516-300-S295/2.062"-S4 | | | |
|--------------------------------------|--|---|--|--|
| | | BHS000T BES 516-200-S2/2.062"-S21 | BHS000U BES 516-200-S2/2.062"-S5 | BHS0014 BES 516-200-S2/2.875"-S5 |
| 51 x 48 x 52.37 mm | | 64.2 x 48 x 52.37 mm | 64.2 x 48 x 52.37 mm | 64.2 x 48 x 73.03 mm |
| D12.7 | | D12.7 | D12.7 | D12.7 |
| for flush mounting | | for flush mounting | for flush mounting | for flush mounting |
| — | | — | — | — |
| 2 mm | | 2 mm | 2 mm | 2 mm |
| 10 Hz | | 50 Hz | 50 Hz | 50 Hz |
| Stainless steel Zinc, Die casting | | Stainless steel Zinc, Die casting | Stainless steel (1.4104) Zinc, die-cast | Stainless steel Zinc, Die casting |
| nickel plated | | nickel plated | nickel plated | nickel plated |
| Ceramic | | Ceramic | Ceramic | Ceramic |
| Connector, M12x1 connector, 4-pin | | Connector, 1/2"-20 UNF2A-Male | Connector, 7/8"-16 UN plug | Connector, 7/8"-16 UN plug |
| 10...30 VDC | | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC | 20...250 VDC/20...250 VAC |
| -25...70 °C | | -25...70 °C | -25...70 °C | -25...70 °C |
| 207 bar | | 207 bar | 207 bar | 207 bar |
| magnetic field immune (AC/DC) | | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| IP67 | | IP67 | IP67 | IP67 |
| CE, cULus, EAC | | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| | | | |
|--|--|---|--|
| PNP normally open | | BHS0030 BES 516-300-S260-S4-D | |
| Normally open | BHS0019 BES 516-200-S2/4.560*-S5 | | |
| Dimension | 64.2 x 48 x 115.82 mm | Ø 10 x 37 mm | |
| Style | D12.7 | D10.0 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 2 mm | 1.5 mm | |
| Switching frequency | 50 Hz | 2000 Hz | |
| Housing material | Stainless steel (1.4104) Zinc, die-cast | Stainless steel | |
| Surface protection | nickel plated | — | |
| Material sensing surface | Ceramic | EP | |
| Connection | Connector, 7/8"-16 UN plug | Connector, M12x1 connector, 4-pin | |
| Operating voltage U _b | 20...250 VDC/20...250 VAC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...80 °C | |
| Pressure rating max. | 207 bar | 350 bar | |
| Magnetic field immune | magnetic field immune (AC/DC) | — | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, EAC | |
| Productview | Page 180 | Page 181 | |



| | BHS0028 BES 516-300-S205-D-PU-03 | BHS0029 BES 516-300-S205-D-PU-05 | BES042M BES 516-300-S337-S4-D | BES042L BES 516-300-S338-S4-D |
|--|--|--|---|---|
| | Ø 12 x 37 mm | Ø 12 x 37 mm | Ø 12 x 56 mm | Ø 12 x 56 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | — | — | — | — |
| | 1.5 mm | 1.5 mm | 1.5 mm | 1.5 mm |
| | 2000 Hz | 2000 Hz | 1000 Hz | 1000 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | EP | EP | EP | EP |
| | Cable, 3.00 m, PUR | Cable, 5.00 m, PUR | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...80 °C | -25...80 °C | -25...80 °C | -25...80 °C |
| | 350 bar | 350 bar | 350 bar | 350 bar |
| | — | — | — | — |
| | IP68 | IP68 | IP68 | IP68 |
| | CE, EAC | CE, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| PNP normally open | BHS004N BES 516-300-S321-S4-D | BHS002H BES 516-300-S240-D-PU-03 | |
|--|---|--|--|
| Dimension | Ø 12 x 78 mm | Ø 12 x 47 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 1000 Hz | 2000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | EP | EP | |
| Connection | Connector, M12x1 connector, 4-pin | Cable, 3.00 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...80 °C | -25...80 °C | |
| Pressure rating max. | 350 bar | 500 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, EAC | CE, cULus, EAC | |
| Productview | Page 181 | Page 181 | |



| BHS002J BES 516-300-S240-D-PU-05 | BHS001F BES 516-300-S135-D-PU-05 | BHS0032 BES 516-300-S262-S4-D | BHS002Y BES 516-300-S249-S4-D |
|--|--|---|---|
| Ø 12 x 47 mm | Ø 12 x 61 mm | Ø 12 x 50 mm | Ø 12 x 56 mm |
| M12x1 | M12x1 | M12x1 | M12x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| — | — | — | 17.9 mm |
| 1.5 mm | 1.5 mm | 1.5 mm | 1.5 mm |
| 2000 Hz | 1000 Hz | 2000 Hz | 2000 Hz |
| Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| — | — | — | — |
| EP | EP | EP | EP |
| Cable, 5.00 m, PUR | Cable, 5.00 m, PUR | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...80 °C | -25...80 °C | -25...90 °C | -25...80 °C |
| 500 bar | 500 bar | 500 bar | 500 bar |
| — | — | — | — |
| IP68 | IP68 | IP68 | IP68 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| PNP normally open | BHS0033 BES 516-300-S265-S4-D | BHS005Y BHS B249V-PSD15-S04 | |
|--|---|---------------------------------------|--|
| Dimension | Ø 12 x 56 mm | Ø 12 x 56 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | 14.9 mm | 18 mm | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 2000 Hz | 400 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | EP | Ceramic | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...80 °C | -25...120 °C | |
| Pressure rating max. | 500 bar | 500 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| BHS0061 BHS B265V-PSD15-S04 | BHS0021 BES 516-300-S162-S4-D | BHS001L BES 516-300-S135-S4-D | BHS005R BHS B135V-PSD15-S04 |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Ø 12 x 56 mm | Ø 12 x 69 mm | Ø 12 x 78 mm | Ø 12 x 78 mm |
| M12x1 | M12x1 | M12x1 | M12x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 15 mm | — | — | — |
| 1.5 mm | 1.5 mm | 1.5 mm | 1.5 mm |
| 400 Hz | 2000 Hz | 1000 Hz | 400 Hz |
| Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| — | — | — | — |
| Ceramic | EP | EP | Ceramic |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...120 °C | -25...80 °C | -25...80 °C | -25...80 °C |
| 500 bar | 500 bar | 500 bar | 500 bar |
| — | — | — | — |
| IP68 | IP68 | IP68 | IP68 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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Sensors

RFID

Machine Vision and Optical Identification

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Industrial Networking

Power Supply

Connectivity

Accessories



| | | | |
|--|--|---|--|
| PNP normally open | | BHS0022 BES 516-300-S163-S4-D | |
| PNP normally open/normally closed | BHS0001 BES 516-100-S45-S4-D | | |
| Dimension | Ø 12 x 78 mm | Ø 12 x 93 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 1000 Hz | 1000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | EP | EP | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...80 °C | -25...80 °C | |
| Pressure rating max. | 500 bar | 500 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BHS004C BES 516-300-S300-S4-D | BHS005U BHS B135V-PSD25-S04-003 | BES02NK BES M18EI-PSC72B-S04G-S01 | BES02Y1 BES M18EF1-PSC20F-S04G-S |
|--|---|---|---|--|
| | Ø 12 x 93 mm | Ø 12 x 78 mm | Ø 18 x 65 mm | Ø 18 x 63.5 mm |
| | M12x1 | M12x1 | M18x1 | M18x1 |
| | for flush mounting | for flush mounting | for flush mounting | non-flush |
| | — | — | — | — |
| | 1.5 mm | 2.5 mm | 7.2 mm | 20 mm |
| | 1000 Hz | 400 Hz | 250 Hz | 200 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | coated, PTFE | — |
| | EP | Ceramic | Stainless steel | Stainless steel |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...80 °C | -25...90 °C | -25...70 °C | -25...70 °C |
| | 500 bar | 500 bar | 40 bar | 60 bar |
| | — | — | — | — |
| | IP68 | IP68 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
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| PNP normally open | BES02Y3 BES M18EG1-PSC10Z-S04G-S11 | BHS001N BES 516-300-S144-S4-D | |
|--|--|---|--|
| Dimension | Ø 18 x 63.5 mm | Ø 18 x 73 mm | |
| Style | M18x1 | M18x1 | |
| Installation | quasi-flush | for flush mounting | |
| Installation length from contact surface | — | — | |
| Range | 10 mm | 1.5 mm | |
| Switching frequency | 200 Hz | 1000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | Stainless steel | EP | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...80 °C | |
| Pressure rating max. | 60 bar | 350 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, EAC | |
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| | BHS004A BES 516-300-S299-S4-D | BHS0026 BES 516-300-S190-S4 | BHS0027 BES 516-300-S203 | BHS0036 BES 516-300-S271-S4 |
|--|---|---------------------------------------|------------------------------------|--|
| | Ø 18 x 55 mm | Ø 18 x 58 mm | Ø 18 x 61 mm | Ø 22 x 79 mm |
| | M18x1 | M18x1 | M18x1 | M22x1.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | — | — | — | — |
| | 1.5 mm | 3 mm | 3 mm | 3 mm |
| | 2000 Hz | 400 Hz | 1000 Hz | 500 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | EP | PEEK | PEEK | POM |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M18x1 connector, 4-pin | Connector, M12x1 connector, 4-pin, 0.50 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...80 °C | -25...80 °C | -25...80 °C | 0...85 °C |
| | 500 bar | 500 bar | 500 bar | 350 bar |
| | — | — | — | — |
| | IP68 | IP68 | IP68 | IP68 |
| | CE, EAC | CE, EAC | CE, EAC | CE, EAC |
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| | BES02YF BES M30EG1-PSC20Z-S04G-S11 | BES02YC BES M30EE1-PSC40F-S04G-S | |
|--|--|--|--|
| PNP normally open | | | |
| NAMUR | | | |
| Dimension | Ø 30 x 63.5 mm | Ø 30 x 63.5 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | non-flush | |
| Installation length from contact surface | — | — | |
| Range | 20 mm | 40 mm | |
| Switching frequency | 100 Hz | 100 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | 1.4305 stainless steel | 1.4305 stainless steel | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Pressure rating max. | 40 bar | 40 bar | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| | BHS007A BES 516-300-S332-S4-N | BHS006M BES 516-300-S331-S4-D | | |
|--|---|---|--|--|
| | Ø 16.66 x 50 mm | Ø 16.66 x 50 mm | | |
| | G3/8" | G3/8" | | |
| | for flush mounting | for flush mounting | | |
| | — | — | | |
| | 1.5 mm | 1.5 mm | | |
| | 1000 Hz | 2000 Hz | | |
| | Stainless steel (1.4404) | Stainless steel | | |
| | — | — | | |
| | POM | EP | | |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | | |
| | 7.7...9 VDC | 10...30 VDC | | |
| | -25...70 °C | -25...90 °C | | |
| | 500 bar | 500 bar | | |
| | — | — | | |
| | IP68 | IP68 | | |
| | CE, EAC | CE, cULus, EAC | | |
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Sensors

RFID

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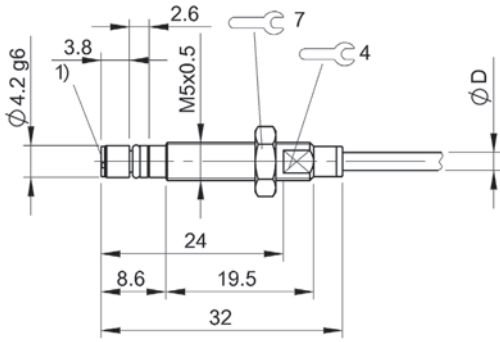
Safety

Industrial Networking

Power Supply

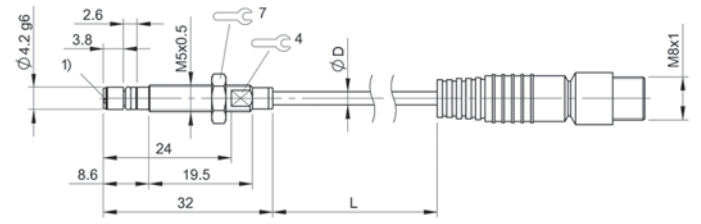
Connectivity

Accessories



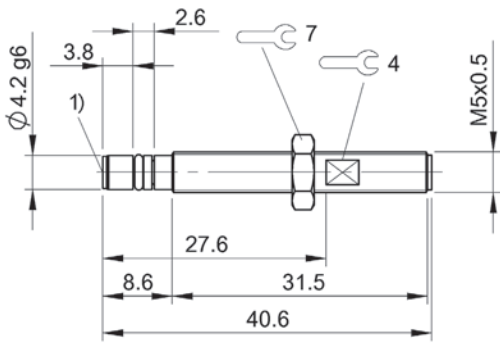
1) Sensing surface

BHS006Y, BHS006U



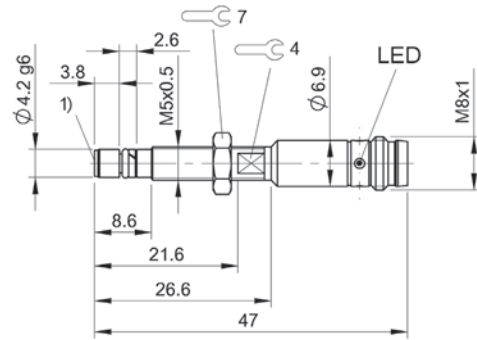
1) Sensing surface

BHS007J



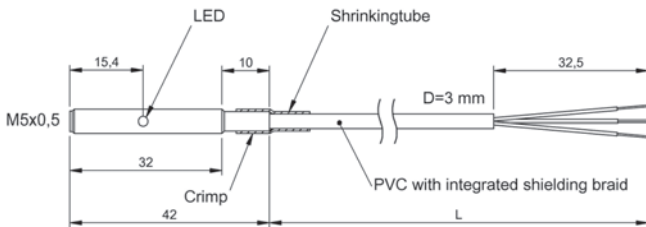
1) Sensing surface

BHS006N

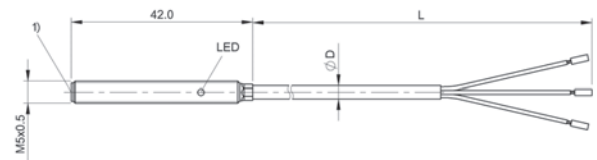


1) Sensing surface

BHS005H

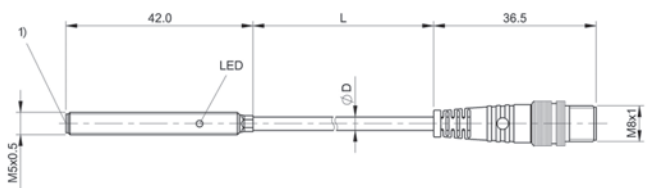


BES055Y



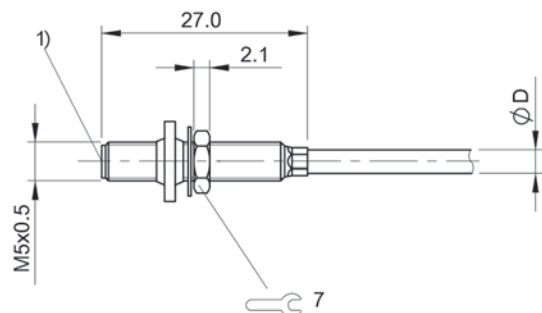
1) Sensing surface

BES03H6



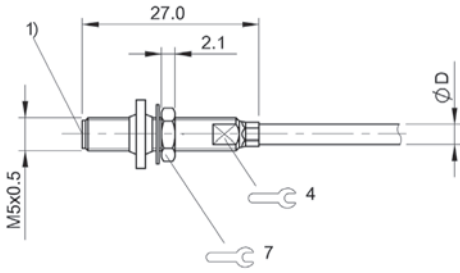
1) Sensing surface

BES0315, BES03JM



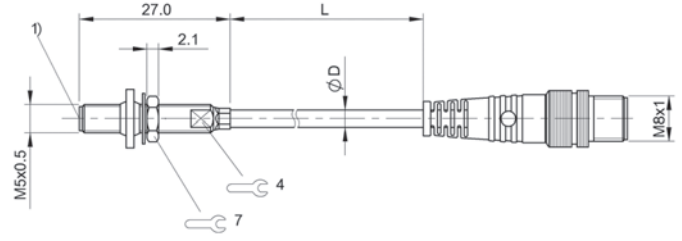
1) Sensing surface

BES03NZ



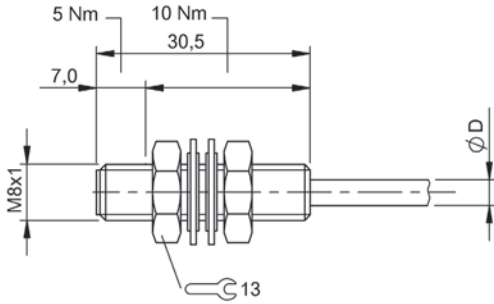
1) Sensing surface

BES03L7

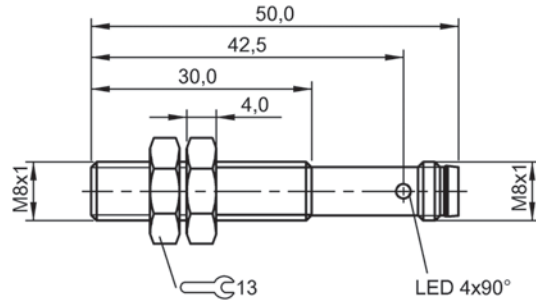


1) Sensing surface

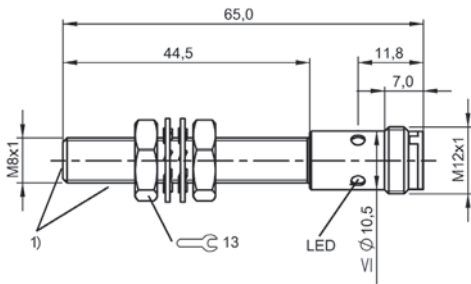
BES03LC, BES03LE



BES034K

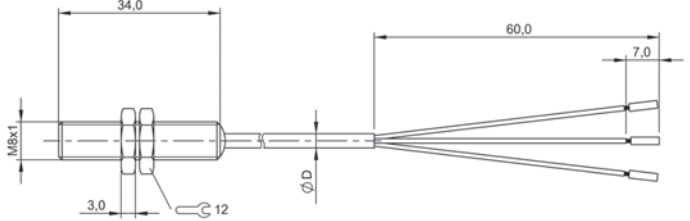


BES03Z3, BES03UY

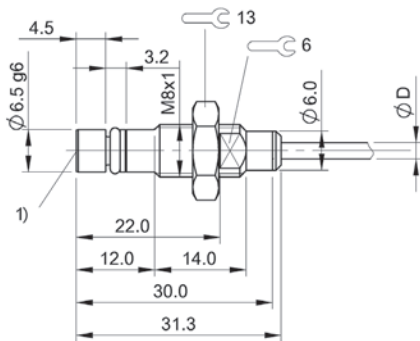


1) Pressure resistant area

BES02N3, BES02N4

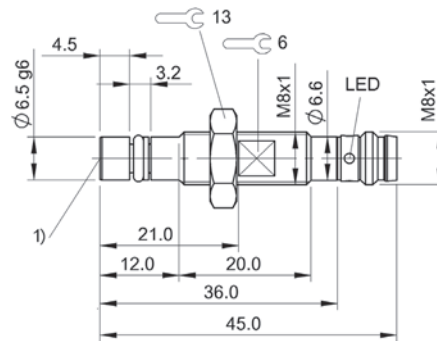


BHS0039



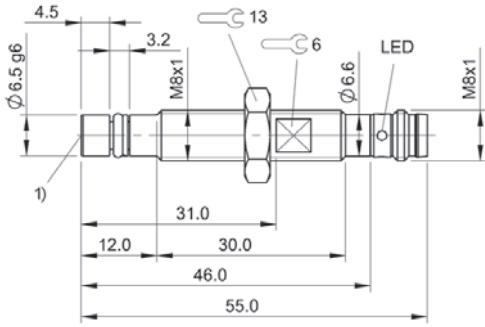
1) Sensing surface

BHS0058



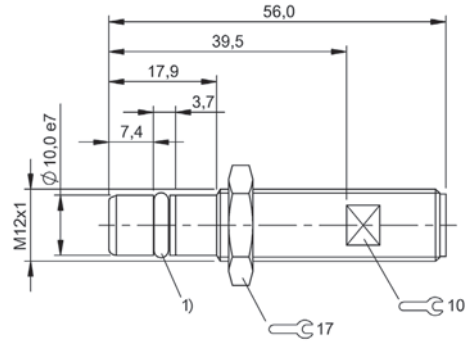
1) Sensing surface

BHS0054



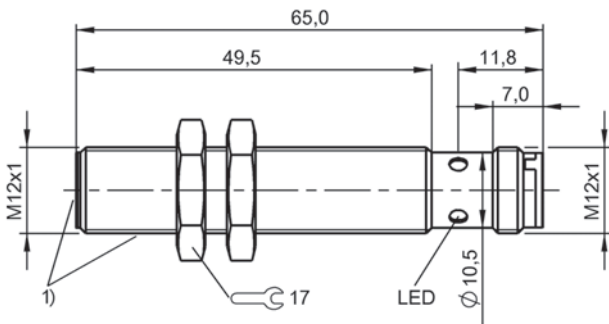
1) Sensing surface

BHS0050



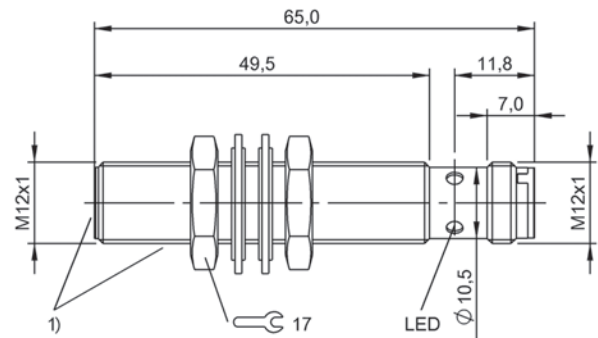
1) O-Ring with thrust ring

BHS003A, BES042M, BHS002Y



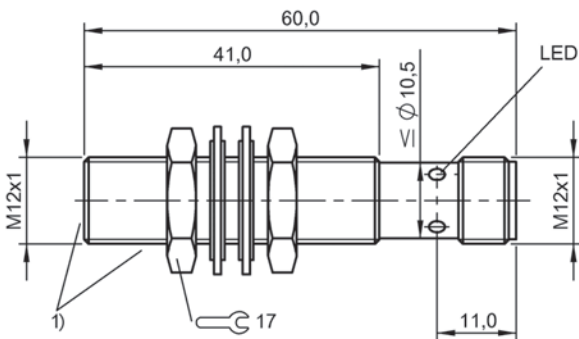
1) Pressure resistant area

BES02NA



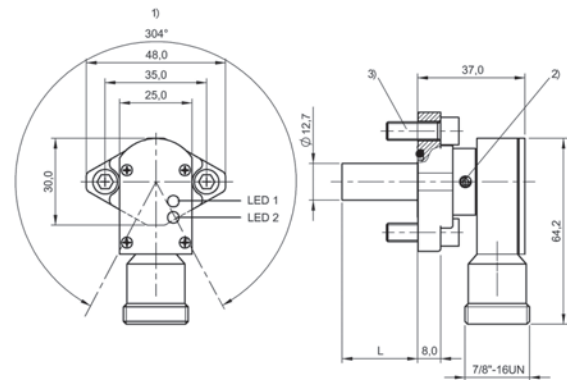
1) Pressure resistant area

BES02NC



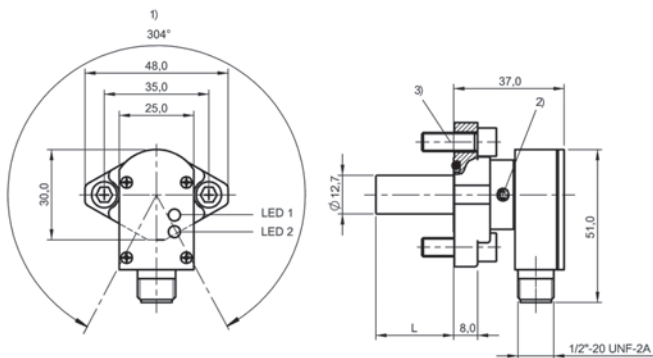
1) Pressure resistant area

BES02WH



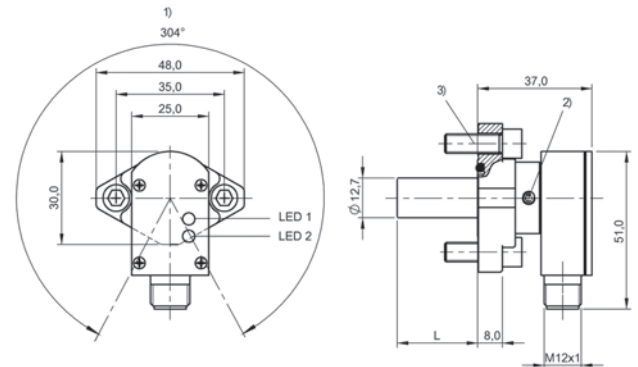
1) Housing rotatable 304°, 2) Tightening torque 1...1.5 Nm, 3) Tightening torque 16.5 Nm

BHS0006, BHS0009, BHS000U, BHS0014, BHS0019



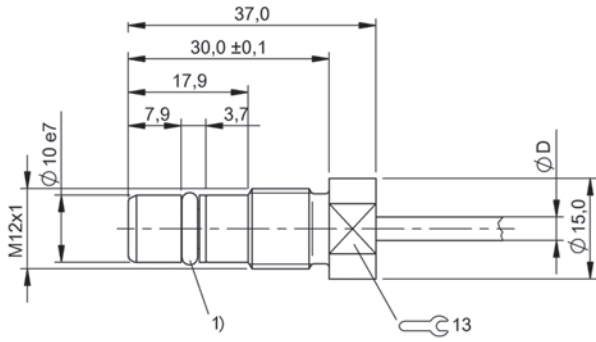
1) Housing rotatable 304°, 2) Tightening torque 1...1.5 Nm, 3) Tightening torque 16.5 Nm

BHS0008, BHS000T



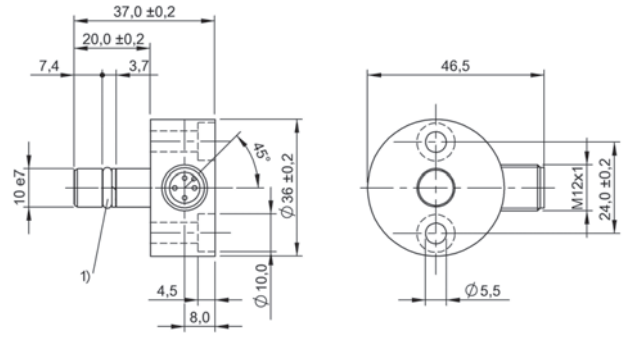
1) Housing rotatable 304°, 2) Tightening torque 1...1.5 Nm, 3) Tightening torque 16.5 Nm

BHS003M, BHS0041



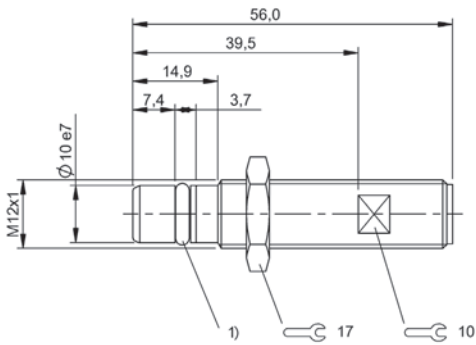
1) O-Ring with thrust ring

BHS0028, BHS0029



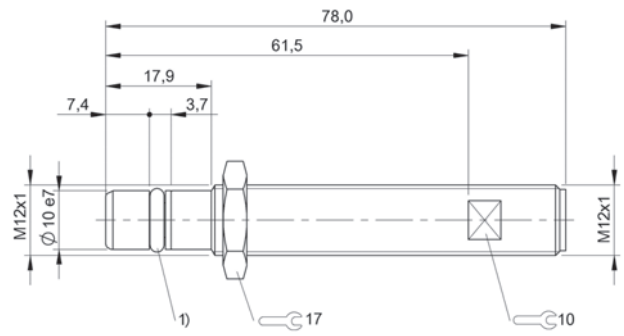
1) O-Ring with thrust ring

BHS0030



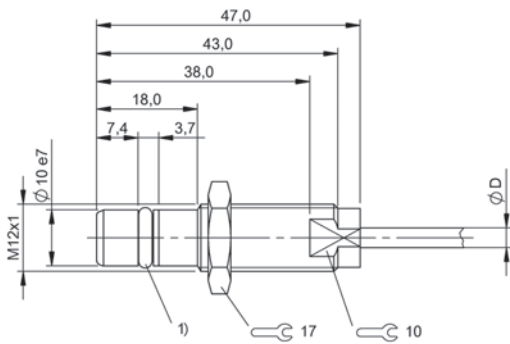
1) O-Ring with thrust ring

BES042L, BHS0033



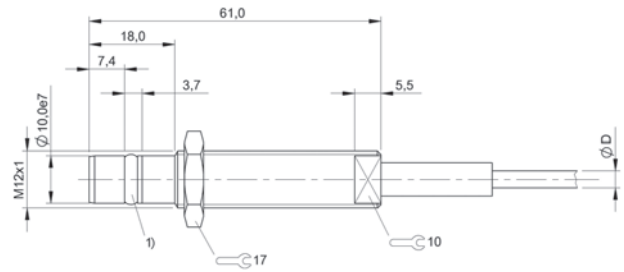
1) O-Ring with thrust ring

BHS004N, BHS001L, BHS0001



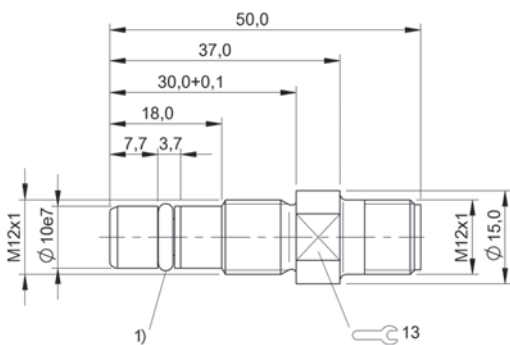
1) O-Ring with thrust ring

BHS002H, BHS002J



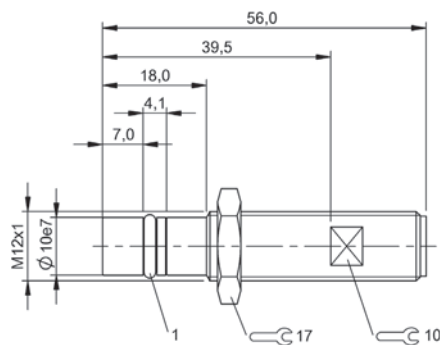
1) O-Ring with thrust ring

BHS001F



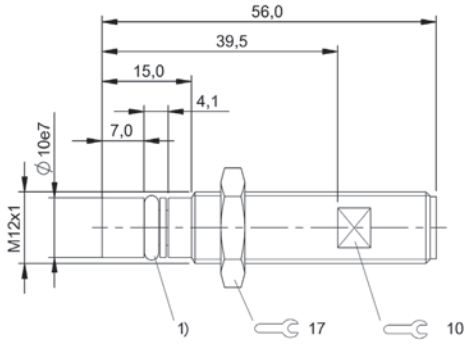
1) O-Ring with thrust ring

BHS0032



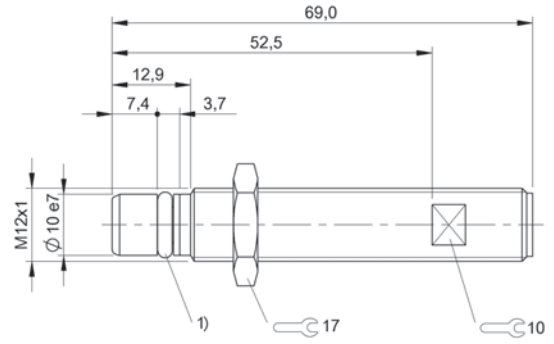
1) O-Ring with thrust ring

BHS005Y



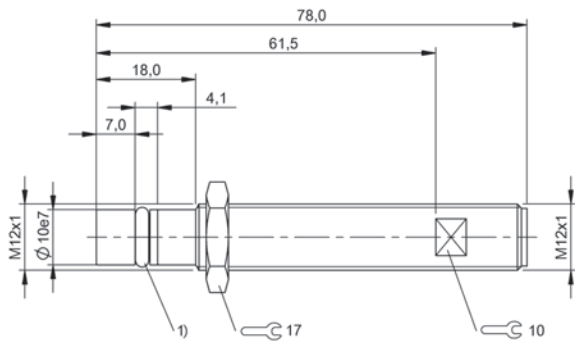
1) O-Ring with thrust ring

BHS0061



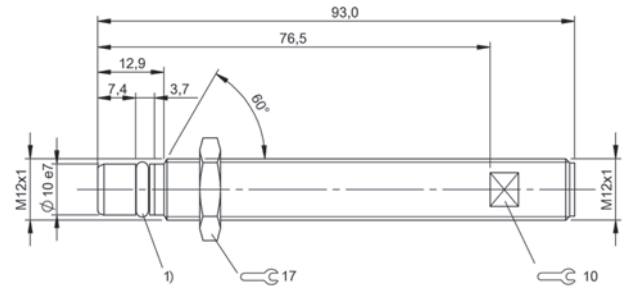
1) O-Ring with thrust ring

BHS0021



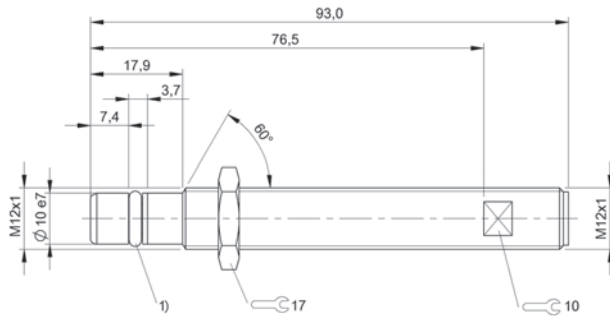
1) O-Ring with thrust ring

BHS005R, BHS005U



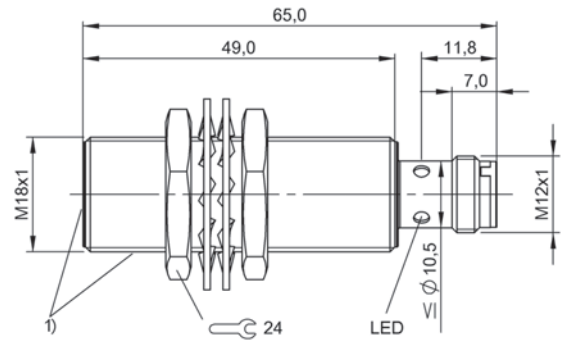
1) O-Ring with thrust ring

BHS0022



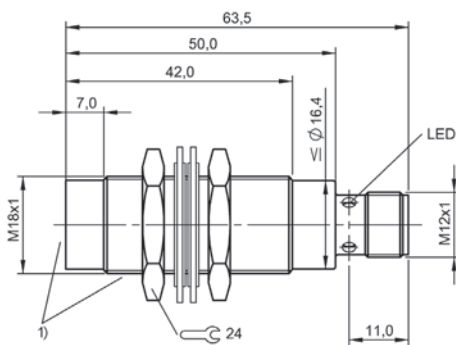
1) O-Ring with thrust ring

BHS004C



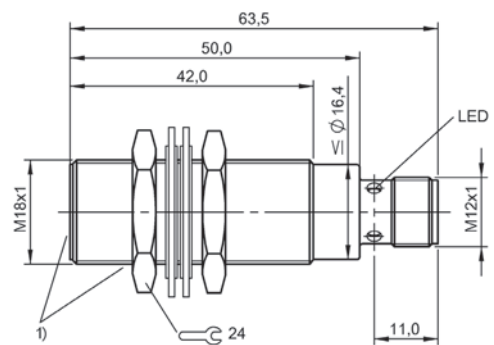
1) Pressure resistant area

BES02NK



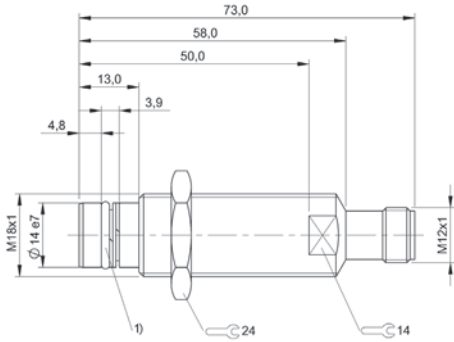
1) Pressure resistant area

BES02Y1



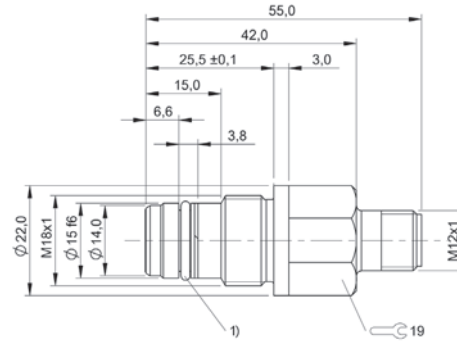
1) Pressure resistant area

BES02Y3



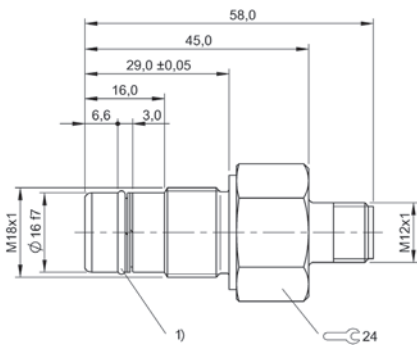
1) O-Ring with thrust ring

BHS001N



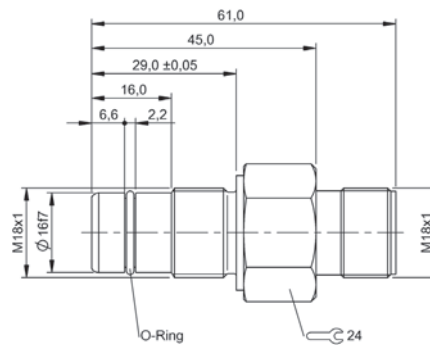
1) O-Ring with thrust ring

BHS004A



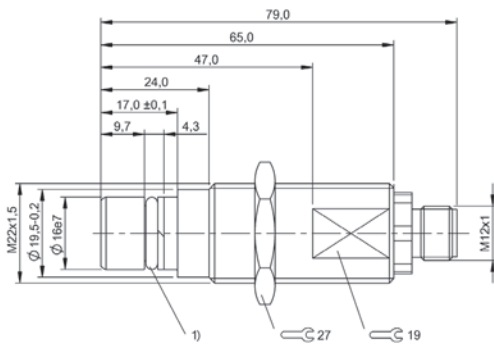
1) O-Ring with thrust ring

BHS0026



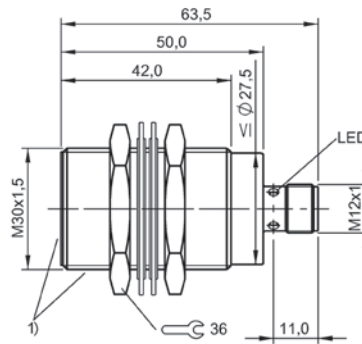
1) O-Ring with thrust ring

BHS0027



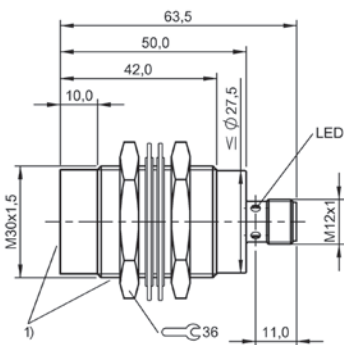
1) O-Ring with thrust ring

BHS0036



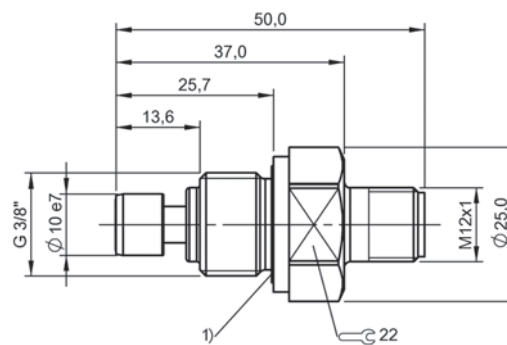
1) Pressure resistant area

BES02YF



1) Pressure resistant area

BES02YC



1) Sealing ring

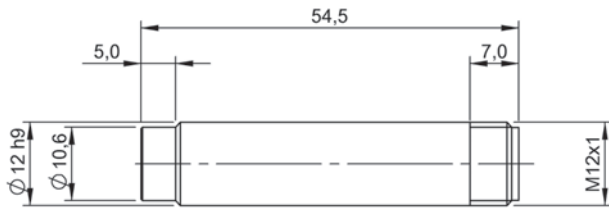
BHS007A, BHS006M



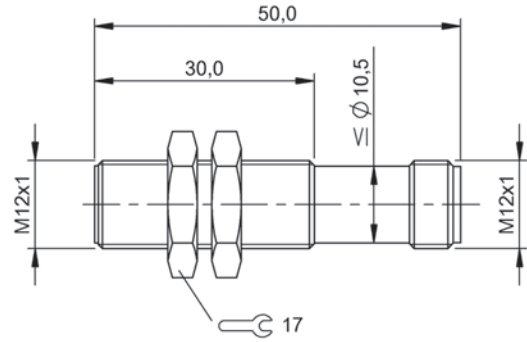
| PNP normally open | BES0431 BES G12EE1-PSY40F-S04G-L02 | BES0444 BES M12EE1-PSY20B-S04G-L01 | BES0433 BES M12EE-PSC40B-S04G-L01 | |
|----------------------------------|--|--|---|--|
| Dimension | Ø 12 x 54.5 mm | Ø 12 x 50 mm | Ø 12 x 45 mm | |
| Style | D12.0 | M12x1 | M12x1 | |
| Installation | non-flush | for flush mounting | for flush mounting | |
| Range | 4 mm | 2 mm | 4 mm | |
| Switching frequency | 400 Hz | 800 Hz | 2000 Hz | |
| Housing material | Stainless steel (1.4571) | Stainless steel (1.4571) | Stainless steel (1.4404) | |
| Material sensing surface | PEEK | PEEK | LCP | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -40...105 °C | -40...105 °C | -25...85 °C | |
| Protection degree | IP68 | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC, Ecolab, FDA compliant | CE, cULus, EAC, Ecolab, FDA compliant | CE, cULus, EAC, FDA compliant | |
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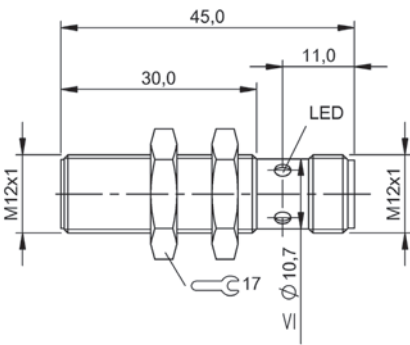
| BES0435 BES M12EI-PSC40B-S04G-L01 | BES0443 BES M12EE1-PSY40F-S04G-L01 | BES0441 BES M18EE1-PSY50B-S04G-L01 | BES0437 BES M18EI-PSC80B-S04G-L01 | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| Ø 12 x 65 mm | Ø 12 x 54.5 mm | Ø 18 x 45 mm | Ø 18 x 65 mm | |
| M12x1 | M12x1 | M18x1 | M18x1 | |
| for flush mounting | non-flush | for flush mounting | for flush mounting | |
| 4 mm | 4 mm | 5 mm | 8 mm | |
| 1000 Hz | 400 Hz | 500 Hz | 700 Hz | |
| Stainless steel (1.4404) | Stainless steel (1.4571) | Stainless steel (1.4571) | Stainless steel (1.4404) | |
| LCP | PEEK | PEEK | PEEK | |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| -25...85 °C | -40...105 °C | -40...105 °C | -40...85 °C | |
| IP68 | IP68 | IP68 | IP68 | |
| CE, cULus, EAC, Ecolab, FDA compliant | CE, cULus, EAC, Ecolab, FDA compliant | CE, cULus, EAC, Ecolab, FDA compliant | CE, cULus, EAC, Ecolab, FDA compliant | |
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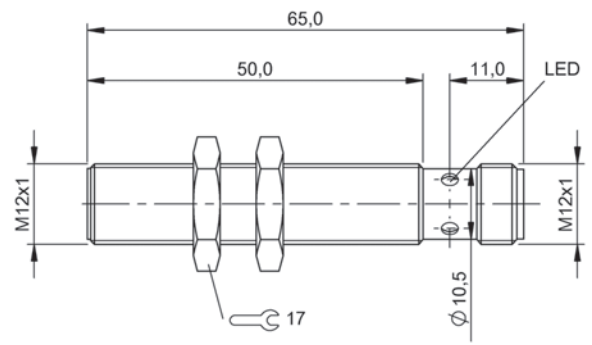
BES0431



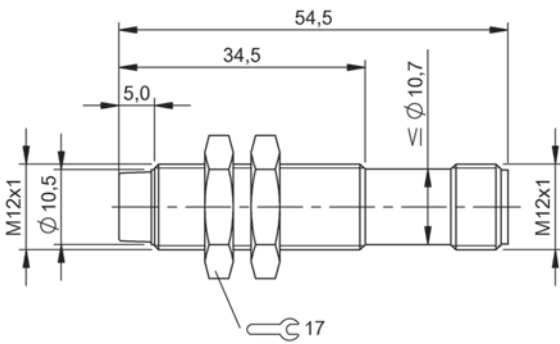
BES0444



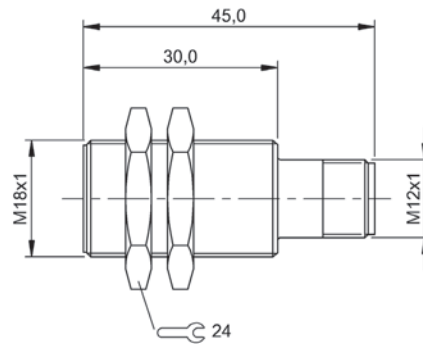
BES0433



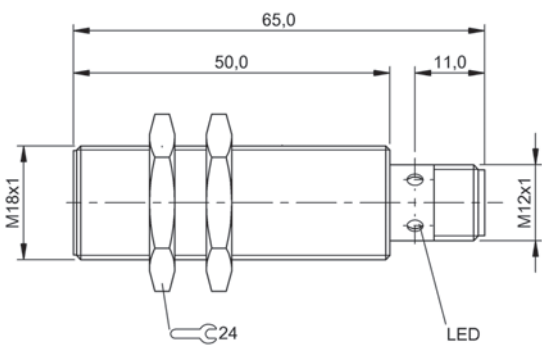
BES0435



BES0443



BES0441



BES0437



| PNP normally open | BES02YR BES M08EG-PSC15A-S49G-W | BES02YT BES M08EG1-PSC15A-S04G-W | |
|--------------------------|---|--|--|
| Dimension | Ø 8 x 49 mm | Ø 8 x 57 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 1.5 mm | |
| Switching frequency | 2000 Hz | 2000 Hz | |
| Housing material | Stainless steel (1.4301) | Stainless steel (1.4301) | |
| Surface protection | coated, PTFE | coated, PTFE | |
| Material sensing surface | PBT PTFE | PBT PTFE | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
| Additional features | Factor 1, Weld immune | Factor 1, Weld immune | |
| Productview | Page 198 | Page 198 | |



| BES03YP BES M08MG1-PSC20A-S04G-W | BES02JZ BES M12MF1-PSC30A-S04G-W | BES02K0 BES M12MF1-PSC30A-S04G-W01 | BES02K3 BES M12ML-PSC30A-S04G-W |
|-------------------------------------|-------------------------------------|---------------------------------------|------------------------------------|
| Ø 8 x 65 mm | Ø 12 x 50 mm | Ø 12 x 50 mm | Ø 12 x 65 mm |
| M8x1 | M12x1 | M12x1 | M12x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 2 mm | 3 mm | 3 mm | 3 mm |
| 1000 Hz | 2000 Hz | 2000 Hz | 2000 Hz |
| Brass | Brass | Brass | Brass |
| coated, PTFE | coated, PTFE | coated, PTFE | coated, PTFE |
| LCP | LCP PTFE | Ceramic | LCP PTFE |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC, WEEE |
| Factor 1, Weld immune | Factor 1, Weld immune | Weld immune, Factor 1 | Factor 1, Weld immune |
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| PNP normally open | BES02K4 BES M12ML-PSC30A-S04G-W01 | BES0452 BES M12MG-PSC40A-S04G-W12 | |
|--------------------------|---|---|--|
| Dimension | Ø 12 x 65 mm | Ø 12 x 56 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 3 mm | 4 mm | |
| Switching frequency | 2000 Hz | 2000 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | coated, PTFE | coated, PTFE | |
| Material sensing surface | ceramic coated | PPS, GF40 | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 3-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus | |
| Additional features | Factor 1, Weld immune | Factor 1, Weld immune | |
| Productview | Page 198 | Page 198 | |



| BES02K5 BES M12ML-PSC80E-S04G-W | BES05AJ BES M18ME-PSC80A-S04G-W08 | BES05AH BES M18MI-PSC80A-S04G-W07 | BES05AK BES M18MI-PSC80A-S04G-W08 |
|---|--|--|--|
| Ø 12 x 65 mm | Ø 18 x 46 mm | Ø 18 x 66 mm | Ø 18 x 66 mm |
| M12x1 | M18x1 | M18x1 | M18x1 |
| non-flush | for flush mounting | for flush mounting | for flush mounting |
| 8 mm | 8 mm | 8 mm | 8 mm |
| 2000 Hz | 2500 Hz | 2500 Hz | 2500 Hz |
| Brass | Brass | Brass | Brass |
| coated, PTFE | coated, PTFE | coated, PTFE | coated, PTFE |
| LCP PTFE | PBT | PBT, PTFE coated | PBT |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -40...85 °C | -40...85 °C | -40...85 °C |
| magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| IP67 | IP68 | IP68 | IP68 |
| CE, cULus, EAC, WEEE | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| Factor 1, Weld immune | Factor 1, Extended temperature range, Housing resistant to weld spatter, weld-immune (magnetic field 100kA/m) | Factor 1, Extended temperature range, Housing resistant to weld spatter, weld-immune (magnetic field 100kA/m) | Factor 1, Extended temperature range, Housing resistant to weld spatter, weld-immune (magnetic field 100kA/m) |
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| PNP normally open | BES05AL BES M18ME-PSC12E-S04G-W08 | BES05AM BES M18MI-PSC12E-S04G-W08 | |
|--------------------------|---|---|--|
| Dimension | Ø 18 x 56 mm | Ø 18 x 76 mm | |
| Style | M18x1 | M18x1 | |
| Installation | non-flush | non-flush | |
| Range | 12 mm | 12 mm | |
| Switching frequency | 2500 Hz | 2500 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | coated, PTFE | coated, PTFE | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -40...85 °C | -40...85 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | — | |
| Additional features | Factor 1, Extended temperature range, Housing resistant to weld spatter, weld-immune (magnetic field 100kA/m) | Factor 1, Extended temperature range, Housing resistant to weld spatter, weld-immune (magnetic field 100kA/m) | |
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| | BES02KM BES M30ML-PSC10A-S04G-W | BES02KN BES M30ML-PSC10A-S04G-W01 | BES0454 BES M30MI-PSC15A-S04G-W12 | BES04AH BES R01EC-PSC50A-BP00,3-GS04-W50 |
|--|---|---|---|--|
| | Ø 30 x 65 mm | Ø 30 x 65 mm | Ø 30 x 65 mm | 32 x 20 x 8 mm |
| | M30x1.5 | M30x1.5 | M30x1.5 | block style |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 10 mm | 10 mm | 15 mm | 5 mm |
| | 600 Hz | 600 Hz | 750 Hz | 20 Hz |
| | Brass | Brass | Brass | Stainless steel |
| | coated, PTFE | coated, PTFE | coated, PTFE | — |
| | LCP PTFE | ceramic coated | PPS | Stainless steel |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 3-pin | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Factor 1, Weld immune | Factor 1, Weld immune | Factor 1, Weld immune | Factor 1, Weld immune |
| | Page 199 | Page 199 | Page 199 | Page 199 |



| | BES04RE BES R01EC-PSC50A-BS00,3-GS04-W51 | BES049Y BES R01EC-PSC50A-BP00,3-GS04-W51 | |
|-----------------------------------|--|---|--|
| PNP normally open | | | |
| PNP normally open/normally closed | | | |
| Dimension | 32 x 20 x 8 mm | 32 x 20 x 8 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 5 mm | 5 mm | |
| Switching frequency | 20 Hz | 20 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | coated, PTFE | coated, PTFE | |
| Material sensing surface | Stainless steel, W51 ceramic coating | Stainless steel, W51 ceramic coating | |
| Connection | Cable with connector, M12x1 connector, 4-pin, 0.30 m, silicone | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Additional features | Factor 1, Housing resistant to weld spatter, Weld immune | Housing resistant to weld spatter, Weld immune, Factor 1 | |
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| BES021P BES Q40KFU-PSC15A-S04G | BES022K BES Q40KFU-PAC15A-S04G | BES021T BES Q40KFU-PSC15A-S04G-W01 | BES021U BES Q40KFU-PSC20A-S04G |
|-----------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|
| 40 x 40 x 62 mm | 40 x 40 x 62 mm | 40 x 40 x 62 mm | 40 x 40 x 62 mm |
| block style | block style | block style | block style |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 15 mm | 15 mm | 15 mm | 20 mm |
| 400 Hz | 400 Hz | 400 Hz | 400 Hz |
| PBT | PBT | PBT | PBT |
| — | — | partly coated | — |
| PBT | PBT | ceramic coated | PBT |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| Factor 1, Weld immune | Factor 1 | Factor 1, Weld immune | Factor 1 |
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| | | | |
|-----------------------------------|--|--|--|
| PNP normally open | | BES0222 BES Q40KFU-PSC35Z-S04G-011 | |
| PNP normally open/normally closed | BES0457 BES Q40KFU-PAC20A-S04G-W01 | | |
| Dimension | 40 x 40 x 62 mm | 40 x 40 x 62 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | Shielded on one side | |
| Range | 20 mm | 35 mm | |
| Switching frequency | 400 Hz | 250 Hz | |
| Housing material | PBT | PBT | |
| Surface protection | partly coated | — | |
| Material sensing surface | ceramic coated | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -10...60 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Additional features | Factor 1 | Factor 1 | |
| Productview | Page 200 | Page 200 | |



| | | | BES0223 BES Q40KFU-PSC40E-S04G | |
|--|--|--|--|--|
| | BES021H BES Q40KFU-PAC35E-S04G | BES021K BES Q40KFU-PAC35E-S04G-W01 | | BES021M BES Q40KFU-PAC40E-S04G |
| | 40 x 40 x 62 mm | 40 x 40 x 62 mm | 40 x 40 x 62 mm | 40 x 40 x 62 mm |
| | block style | block style | block style | block style |
| | non-flush | non-flush | non-flush | non-flush |
| | 35 mm | 35 mm | 40 mm | 40 mm |
| | 250 Hz | 250 Hz | 100 Hz | 100 Hz |
| | PBT | PBT | PBT | PBT |
| | — | partly coated | — | — |
| | PBT | ceramic coated | PBT | PBT |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -10...70 °C | -10...70 °C | -10...70 °C | -10...70 °C |
| | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Factor 1 | Factor 1, Weld immune | Factor 1 | Factor 1 |
| | Page 200 | Page 200 | Page 200 | Page 200 |

Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
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Systems

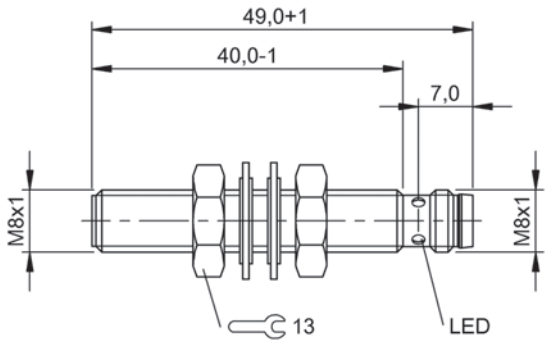
Safety

Industrial Networking

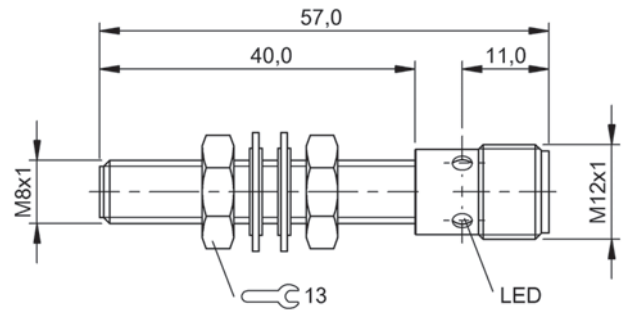
Power Supply

Connectivity

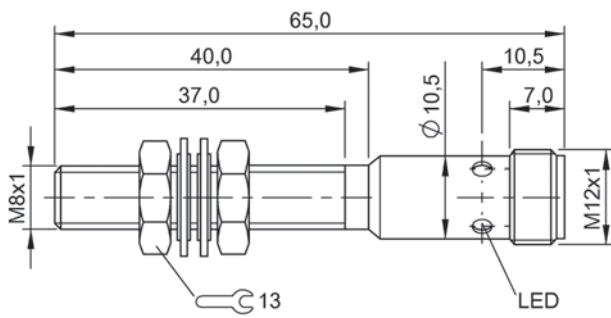
Accessories



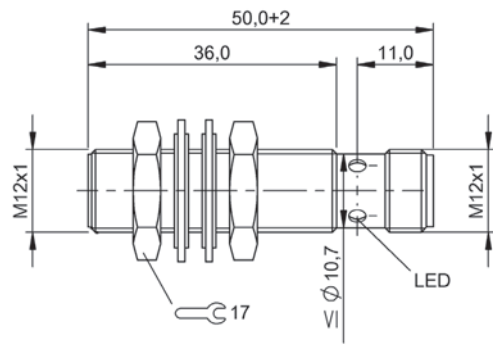
BES02YR



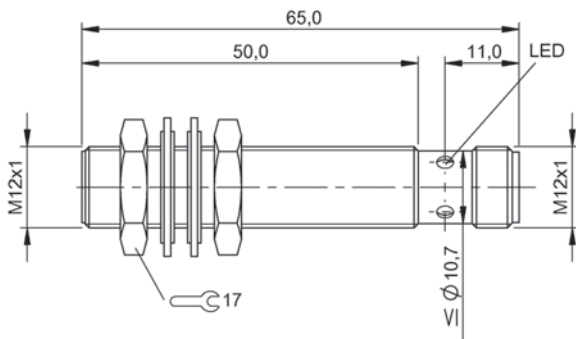
BES02YT



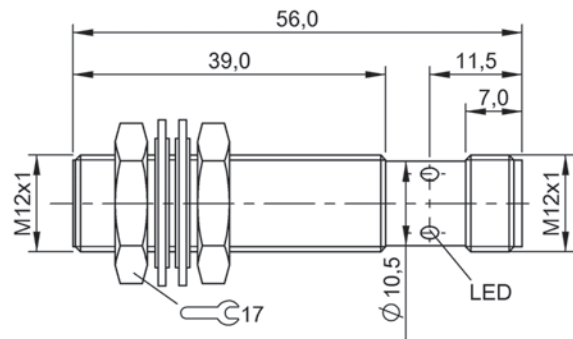
BES03YP



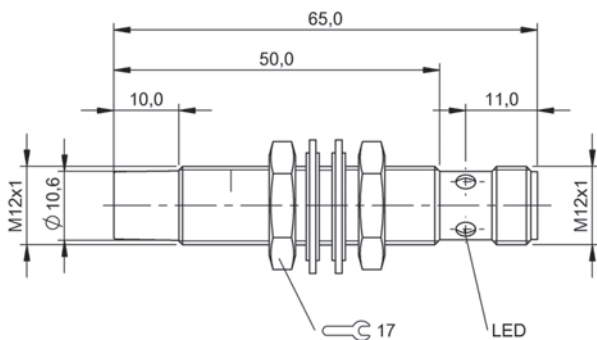
BES02JZ, BES02K0



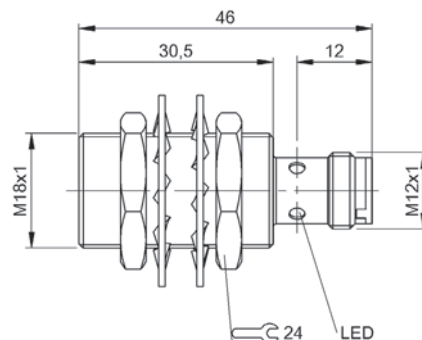
BES02K3, BES02K4



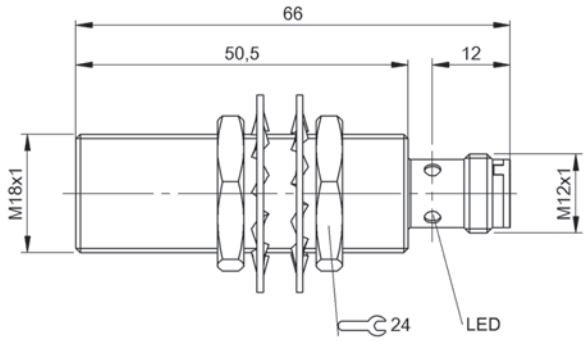
BES0452



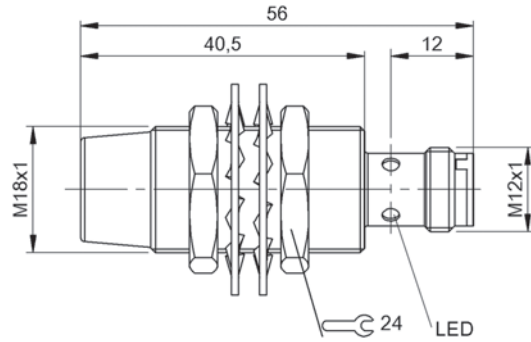
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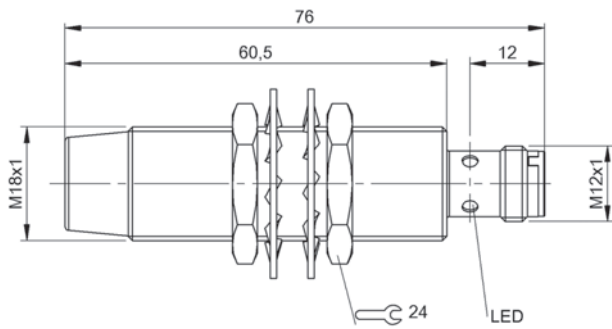
BES05AJ



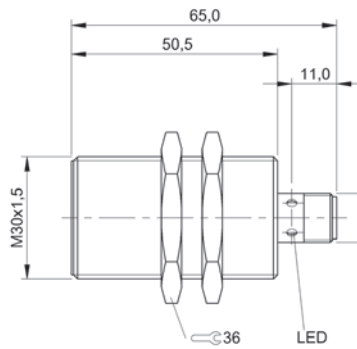
BES05AH, BES05AK



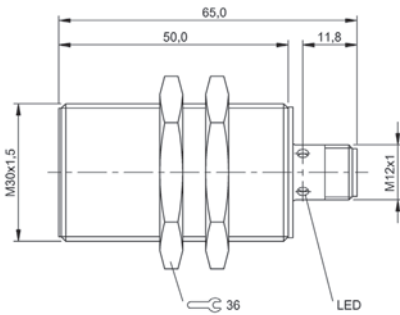
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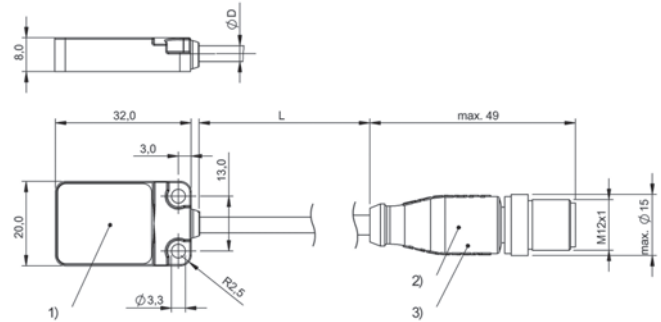
BES05AM



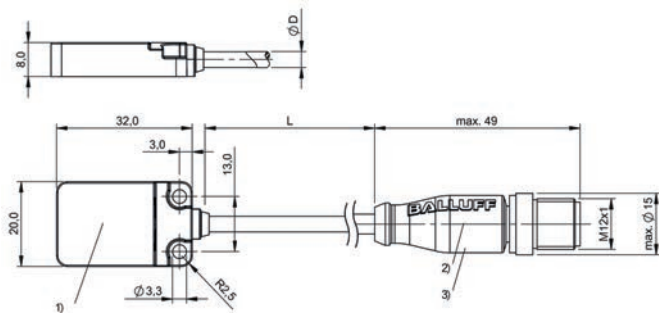
BES02KM, BES02KN



BES0454



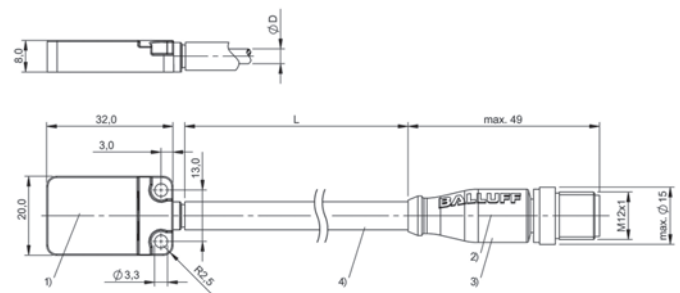
1) Sensing surface, 2) LED yellow, 3) LED green



1) Sensing surface, 2) LED green, 3) LED yellow

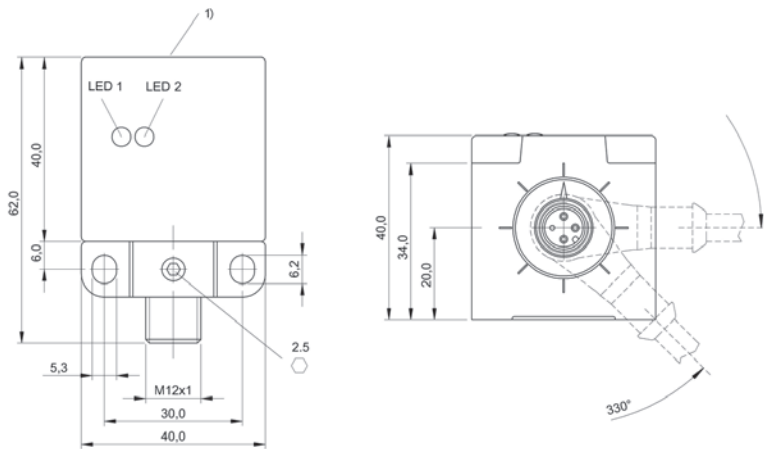
BES04RE

BES04AH



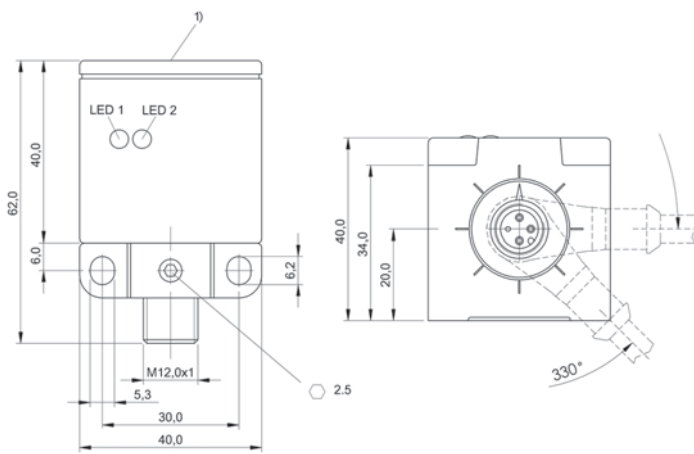
1) Sensing surface, 2) LED green, 3) LED yellow, 4) Silicon tube D=7mm

BES049Y



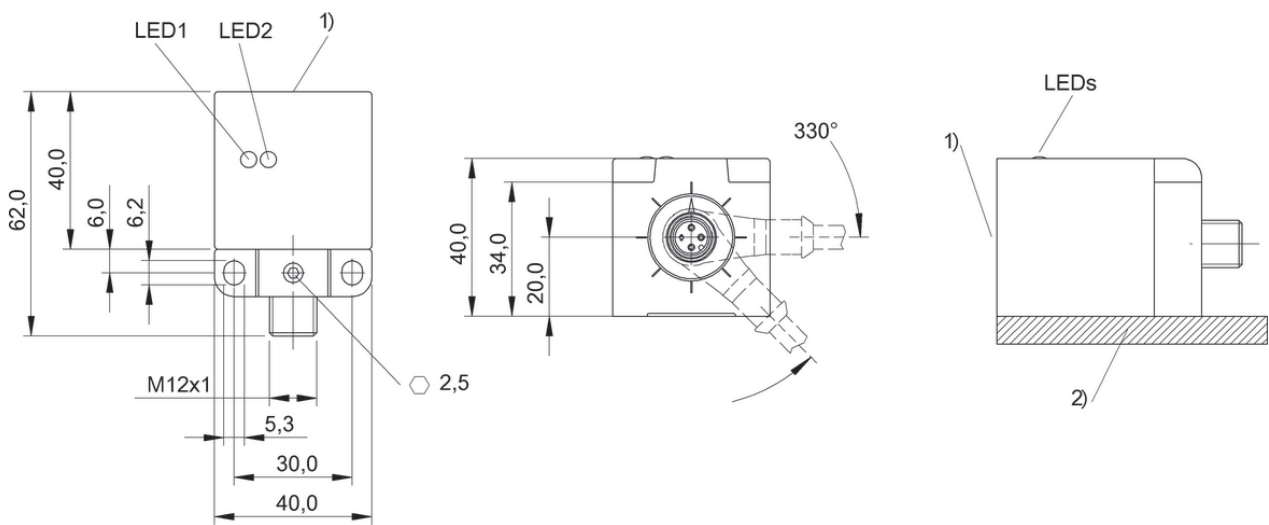
1) Sensing surface

BES021P, BES022K, BES021T, BES021H, BES021K, BES0223, BES021M



1) Sensing surface

BES021U, BES0457



1) Sensing surface, 2) Metal plate

BES0222



| PNP normally open | BES02YZ BES M08EG1-PSC15S-S04G-S | BES02N5 BES M08EH1-PSC20B-S04G-S | |
|--------------------------|--|--|--|
| Dimension | Ø 8 x 64.5 mm | Ø 8 x 65 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 2 mm | |
| Switching frequency | 20 Hz | 750 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | Stainless steel | Stainless steel | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Additional features | — | — | |
| Productview | Page 208 | Page 208 | |



| BES02N6 BES M08EH1-PSC20B-S04G-S01 | BES02Z3 BES M12EG1-PSC20S-S04G-S | BES02Z2 BES M12EG1-PSC20N-S04G-S | BES04Z5 BES M12EI-PSC40A-S04G-S |
|--|--|--|---|
| Ø 8 x 65 mm | Ø 12 x 65 mm | Ø 12 x 65 mm | Ø 12 x 65 mm |
| M8x1 | M12x1 | M12x1 | M12x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 2 mm | 2 mm | 2 mm | 4 mm |
| 750 Hz | 50 Hz | 50 Hz | 80 Hz |
| Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| coated, PTFE | — | — | — |
| Stainless steel, coated | Stainless steel | Stainless steel | Stainless steel |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| — | — | — | magnetic field immune (AC/DC) |
| IP67 | IP67 | IP67 | IP67 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| Housing resistant to weld spatter | — | — | Factor 1, Weld immune |
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| PNP normally open | BES0567 BES M12EI-PSC40A-S04G-S02 | BES0510 BES M12EI-PSC40S-S04G-S | |
|--------------------------|--|---|--|
| Dimension | Ø 12 x 65 mm | Ø 12 x 65 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 4 mm | 4 mm | |
| Switching frequency | 80 Hz | 70 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | weld spatter resistant, coated | — | |
| Material sensing surface | Stainless steel, coated | Stainless steel | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Additional features | Factor 1, Weld immune, Housing resistant to weld spatter | Damping: Steel | |
| Productview | Page 208 | Page 208 | |



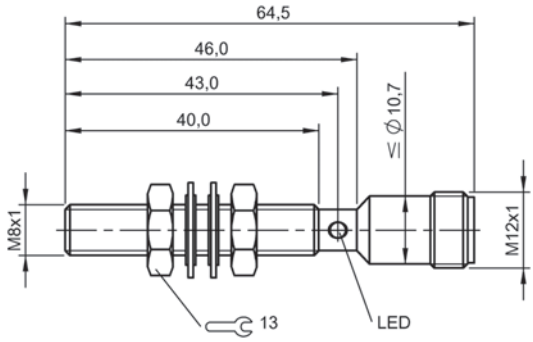
| BES0511 BES M12EI-PSC40N-S04G-S | BES0279 BES M18EG1-PSC50S-S04G-S | BES0278 BES M18EG1-PSC50N-S04G-S | BES05K7 BES M18EG1-PSC80A-S04G-S |
|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Ø 12 x 65 mm | Ø 18 x 66 mm | Ø 18 x 66 mm | Ø 18 x 56 mm |
| M12x1 | M18x1 | M18x1 | M18x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 4 mm | 5 mm | 5 mm | 8 mm |
| 70 Hz | 15 Hz | 15 Hz | 110 Hz |
| Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| — | — | — | — |
| Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 3-pin |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| magnetic field immune (AC/DC) | — | — | magnetic field immune (AC/DC) |
| IP67 | IP67 | IP67 | IP68 |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| Damping: Alloys | — | — | Factor 1 |
| Page 208 | Page 208 | Page 208 | Page 208 |



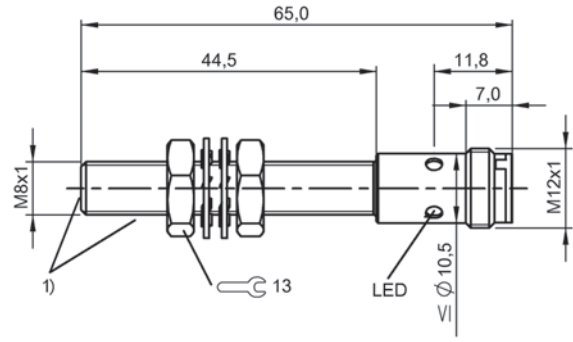
| | BES05NC BES M18EG1-PSC80A-S04G-S02 | BES05K8 BES M18EG1-PSC80S-S04G-S | |
|--------------------------|--|--|--|
| PNP normally open | | | |
| Dimension | Ø 18 x 56 mm | Ø 18 x 56 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 8 mm | 8 mm | |
| Switching frequency | 110 Hz | 110 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | weld spatter resistant, coated | — | |
| Material sensing surface | Stainless steel, coated | Stainless steel | |
| Connection | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Additional features | Factor 1 | Damping: Steel | |
| Productview | Page 208 | Page 208 | |



| BES05K9 BES M18EG1-PSC80N-S04G-S | BES02Z.J BES M30EG1-PSC80S-S04G-S | BES02Z.H BES M30EG1-PSC80N-S04G-S | |
|--|---|---|--|
| Ø 18 x 56 mm | Ø 30 x 66 mm | Ø 30 x 66 mm | |
| M18x1 | M30x1.5 | M30x1.5 | |
| for flush mounting | for flush mounting | for flush mounting | |
| 8 mm | 8 mm | 8 mm | |
| 110 Hz | 15 Hz | 15 Hz | |
| Stainless steel | Stainless steel | Stainless steel | |
| — | — | — | |
| Stainless steel | Stainless steel | Stainless steel | |
| Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| -25...70 °C | -25...70 °C | -25...70 °C | |
| magnetic field immune (AC/DC) | — | — | |
| IP68 | IP67 | IP67 | |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Damping: Alloys | — | — | |
| Page 208 | Page 208 | Page 208 | |

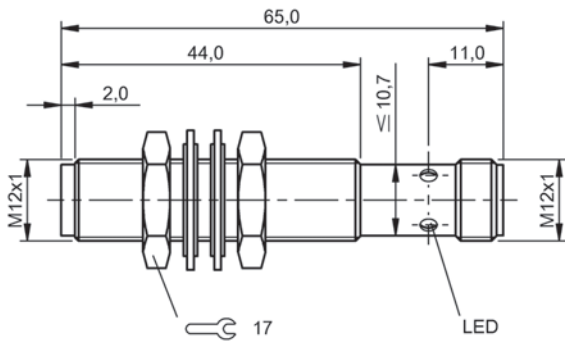


BES02YZ

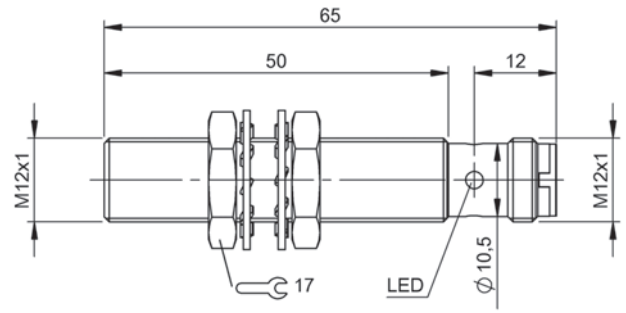


1) Pressure resistant area

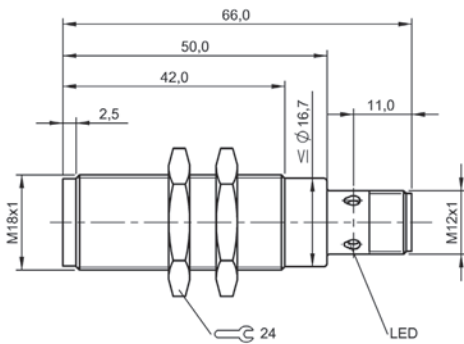
BES02N5, BES02N6



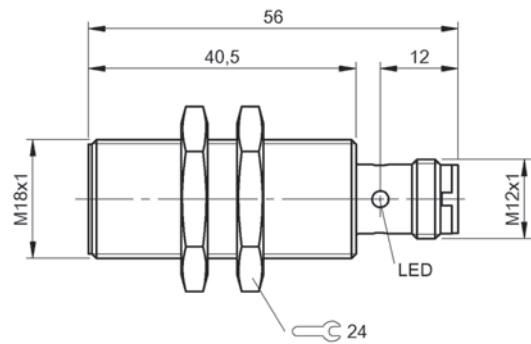
BES02Z3, BES02Z2



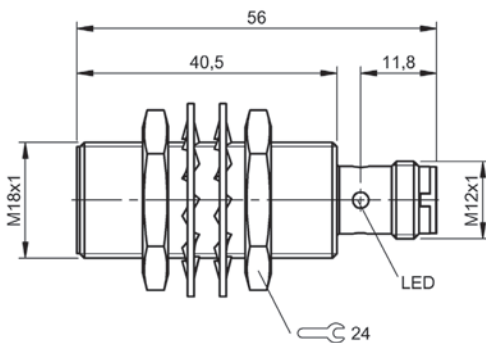
BES04Z5, BES0567, BES0510, BES0511



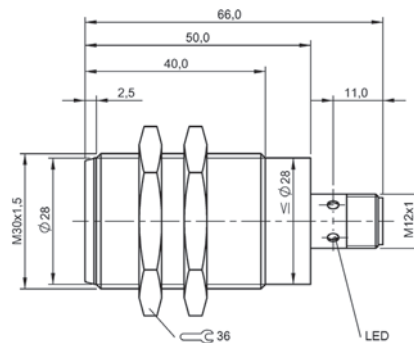
BES02Z9, BES02Z8



BES05K7, BES05K8, BES05K9



BES05NC



BES02ZJ, BES02ZH



| | | |
|--------------------------|-------------------------------------|--|
| PNP normally open | BES02J5 BES 516-325-S4-CW | |
| Dimension | Ø 12 x 61 mm | |
| Style | M12x1 | |
| Installation | for flush mounting | |
| Range | 2 mm | |
| Switching frequency | 1000 Hz | |
| Housing material | Stainless steel | |
| Surface protection | coated, PTFE | |
| Material sensing surface | PTFE | |
| Connection | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | |
| Ambient temperature | -25...70 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | |
| Approval/Conformity | cULus, CE, EAC | |
| Productview | Page 214 | |



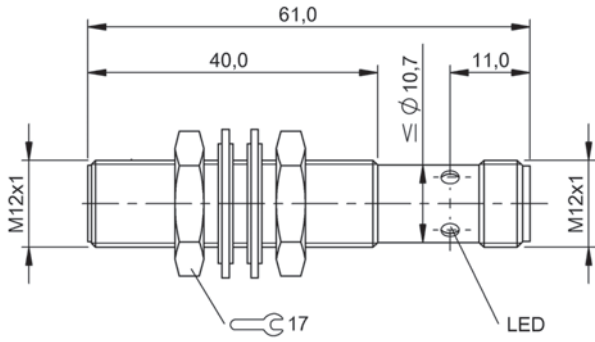
| | BES02JM BES 516-356-S4-CW | BES02J9 BES 516-326-S4-CW | BES02JH BES 516-327-S4-CW |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| | Ø 12 x 61 mm | Ø 18 x 65 mm | Ø 30 x 65 mm |
| | M12x1 | M18x1 | M30x1.5 |
| | non-flush | for flush mounting | for flush mounting |
| | 4 mm | 5 mm | 10 mm |
| | 1000 Hz | 500 Hz | 100 Hz |
| | Stainless steel | Brass | Brass |
| | coated, PTFE | coated, PTFE | coated, PTFE |
| | PTFE | PTFE | PTFE |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C |
| | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| | IP67 | IP67 | IP67 |
| | cULus, CE, EAC | cULus, CE, EAC | CE, cULus, EAC |
| | Page 214 | Page 214 | Page 214 |



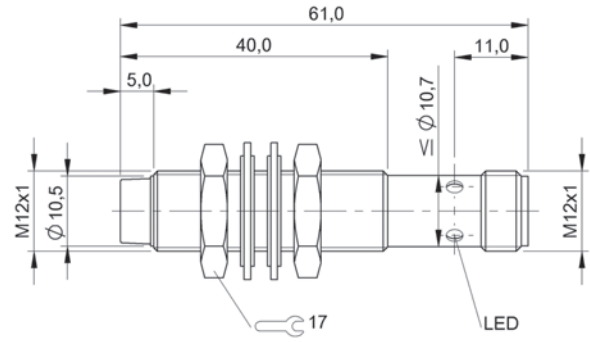
| | | |
|--------------------------|---|--|
| PNP normally open | BES0481 BES R01ZC-PSC50B-BZ03-V02 | |
| Dimension | 32 x 20 x 8 mm | |
| Style | block style | |
| Installation | for flush mounting | |
| Range | 5 mm | |
| Switching frequency | 100 Hz | |
| Housing material | Zinc, die-cast | |
| Surface protection | — | |
| Material sensing surface | PA 12 | |
| Connection | Cable, 3.00 m, TPU | |
| Operating voltage U_b | 10...30 VDC | |
| Ambient temperature | -25...70 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | |
| Approval/Conformity | CE, cULus, EAC | |
| Productview | Page 214 | |



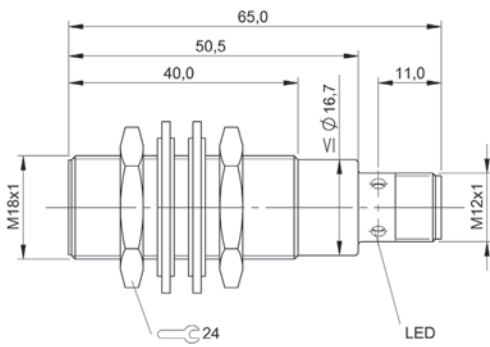
| | BES048J BES R01ZC-PSC50B-BZ00,2-GS04-V02 | BES0493 BES R01ZC-PSC50B-BZ00,2-GS49-V02 | BES048W BES R01ZC-PSC50B-BZ00,5-GS04-V02 |
|--|---|--|---|
| | 32 x 20 x 8 mm | 32 x 20 x 8 mm | 32 x 20 x 8 mm |
| | block style | block style | block style |
| | for flush mounting | for flush mounting | for flush mounting |
| | 5 mm | 5 mm | 5 mm |
| | 100 Hz | 100 Hz | 100 Hz |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| | — | — | — |
| | PA 12 | PA 12 | PA 12 |
| | Cable with connector, M12x1 connector, 4-pin, 0.20 m, TPU | Cable with connector, M8x1 connector, 3-pin, 0.20 m, TPU | Cable with connector, M12x1 connector, 4-pin, 0.50 m, TPU |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C |
| | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) |
| | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Page 214 | Page 214 | Page 214 |



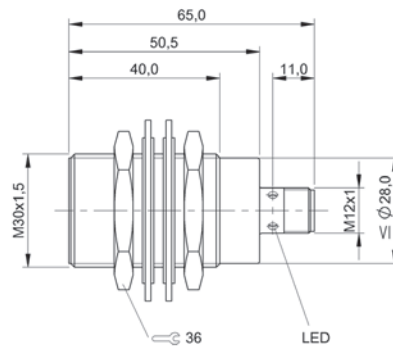
BES02J5



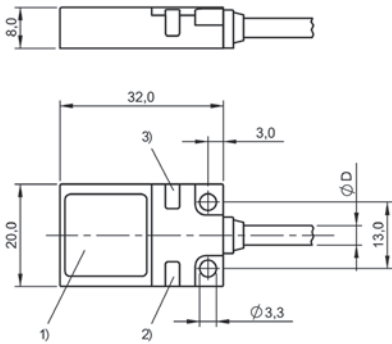
BES02JM



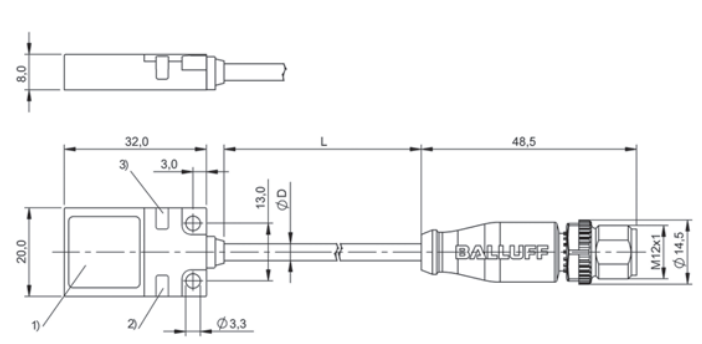
BES02J9



BES02JH



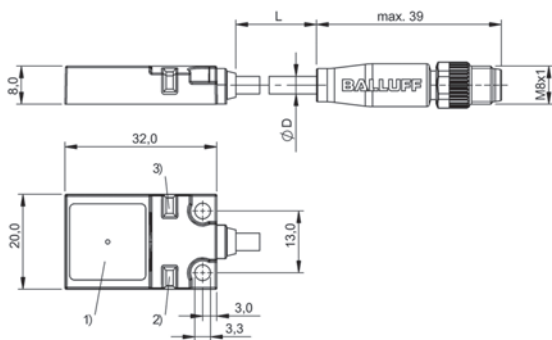
1) Sensing surface, 2) LED green, 3) LED yellow



1) Sensing surface, 2) LED green, 3) LED yellow

BES0481

BES048J, BES048W



1) Sensing surface, 2) LED green, 3) LED yellow

BES0493



| PNP normally open | BES02PU BES M08MH1-PSC20B-S04G-101 | BES02PW BES M08MH1-PSC30B-S04G-101 | |
|--------------------------|--|--|--|
| Dimension | Ø 8 x 65 mm | Ø 8 x 66 mm | |
| Style | M8x1 | M8x1 | |
| Installation | for flush mounting | quasi-flush | |
| Range | 2 mm | 3 mm | |
| Switching frequency | 700 Hz | 1000 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | Chrome-plated | |
| Material sensing surface | ceramic coated | ceramic coated | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 12...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, EAC | |
| Productview | Page 220 | Page 220 | |



| BES056A BES M12EI-PSC40B-S04G-S03 | BES02KC BES M18MI-PSC70B-S04G-W | BES056C BES M18EI-PSC72B-S04G-S03 | |
|--------------------------------------|--------------------------------------|--------------------------------------|--|
| Ø 12 x 65 mm | Ø 18 x 65 mm | Ø 18 x 65 mm | |
| M12x1 | M18x1 | M18x1 | |
| for flush mounting | for flush mounting | for flush mounting | |
| 4 mm | 7 mm | 7.2 mm | |
| 500 Hz | 50 Hz | 250 Hz | |
| Stainless steel | Brass | Stainless steel | |
| weld spatter resistant | coated, PTFE | weld spatter resistant | |
| Stainless steel | LCP PTFE | Stainless steel | |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| -25...70 °C | 5...60 °C | -25...70 °C | |
| — | magnetic field immune (AC/DC) | — | |
| IP67 | IP67 | IP67 | |
| CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
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| PNP normally open | BES048K BES R01ZC-PSC50B-BZ00,2-GS04-W05 | BES048N BES R01ZC-PSC50B-BZ00,2-GS04-W13 | |
|--------------------------|---|---|--|
| Dimension | 32 x 20 x 8 mm | 32 x 20 x 8 mm | |
| Style | block style | block style | |
| Installation | for flush mounting | for flush mounting | |
| Range | 5 mm | 5 mm | |
| Switching frequency | 100 Hz | 100 Hz | |
| Housing material | Zinc, die-cast | Zinc, die-cast | |
| Surface protection | partly coated | partly coated | |
| Material sensing surface | ceramic coated | ceramic coated | |
| Connection | Cable with connector, M12x1 connector, 4-pin, 0.20 m, TPU | Cable with connector, M12x1 connector, 4-pin, 0.20 m, TPU | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Magnetic field immune | magnetic field immune (AC/DC) | magnetic field immune (AC/DC) | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 220 | Page 220 | |



| | | | |
|---|--|--|--|
| BES048Y BES R01ZC-PSC70B-BZ00,2-GS04-108 | | | |
| 32 x 20 x 8 mm | | | |
| block style | | | |
| for flush mounting | | | |
| 7 mm | | | |
| 150 Hz | | | |
| Zinc, die-cast | | | |
| partly coated | | | |
| ceramic coated | | | |
| Cable with connector, M12x1 connector, 4-pin, 0.20 m, TPU | | | |
| 10...30 VDC | | | |
| -25...70 °C | | | |
| — | | | |
| IP67 | | | |
| CE, cULus, EAC | | | |
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Sensors

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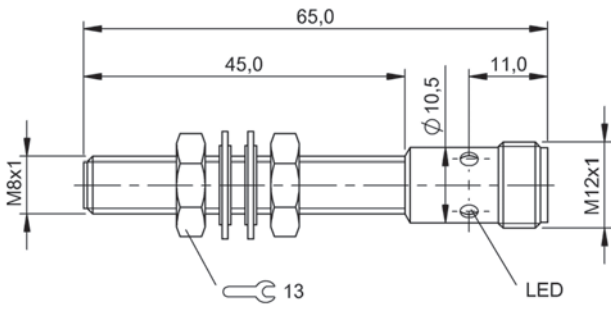
Safety

Industrial Networking

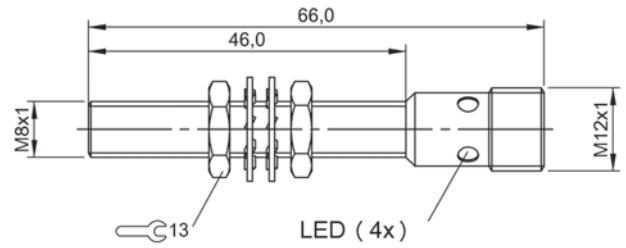
Power Supply

Connectivity

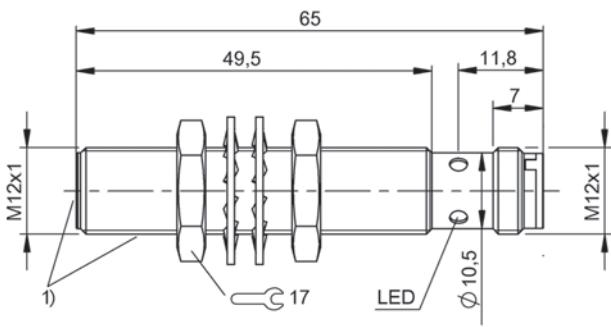
Accessories



BES02PU

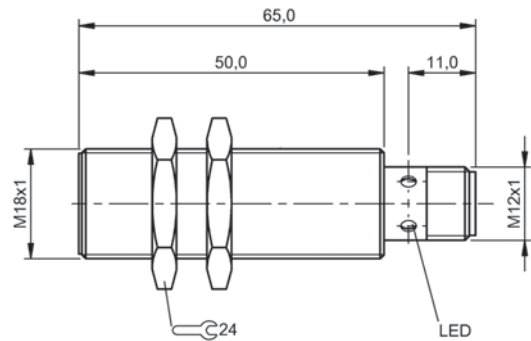


BES02PW

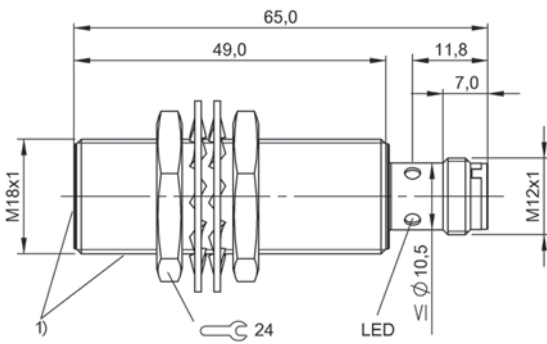


1) Pressure resistant area

BES056A

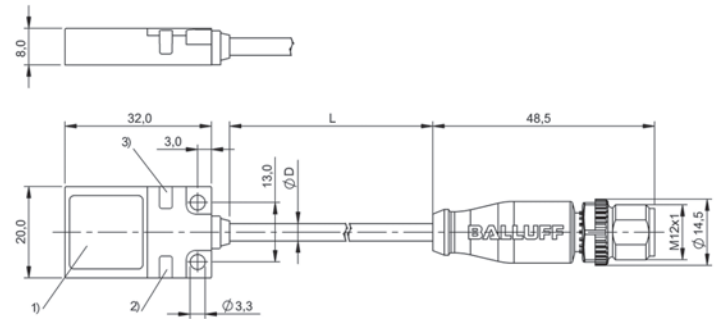


BES02KC



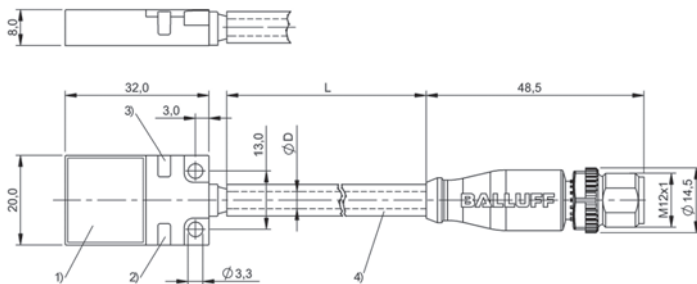
1) Pressure resistant area

BES056C



1) Sensing surface, 2) LED green, 3) LED yellow

BES048K, BES048Y



1) Sensing surface, 2) LED green, 3) LED yellow, 4) Silicon tube D=7mm

BES048N



| PNP normally open | BES02J2 BES M05ED-PSD05B-ES02-T01 | BES046C BES M05ED-PSD05B-ES05-T01 | |
|----------------------------------|---|---|--|
| Dimension | Ø 5 x 27 mm | Ø 5 x 27 mm | |
| Style | M5x0.5 | M5x0.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 0.5 mm | 0.5 mm | |
| Switching frequency | 1000 Hz | 1000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | POM | POM | |
| Connection | Cable, 2.00 m, silicone | Cable, 5.00 m, silicone | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...120 °C | -25...120 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
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| BES03P1 BES M05ED-PSD08B-ES02-T01 | BES04FL BES M05ED-PSD05B-ES05-GS04-T50 | BES05FN BES M08EM-PSD20B-ET05-T | BES04CK BES 515-325-SA74-D-TF-02 |
|--------------------------------------|---|------------------------------------|-------------------------------------|
| Ø 5 x 27 mm | Ø 5 x 27 mm | Ø 8 x 60 mm | Ø 12 x 62 mm |
| M5x0.5 | M5x0.5 | M8x1 | M12x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 0.8 mm | 0.5 mm | 2 mm | 2 mm |
| 900 Hz | 1000 Hz | 600 Hz | 200 Hz |
| Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| — | — | — | — |
| POM | POM | LCP | PEEK |
| Cable, 2.00 m, silicone | Cable with connector, 5.00 m, silicone | Cable, 5.0 m, PTFE | Cable, 2.00 m, PTFE |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| 0...120 °C | -25...120 °C | 0...140 °C | -25...160 °C |
| IP67 | IP67 | IP50 | IP68 |
| CE, cULus, EAC | CE, cULus, EAC | CE, EAC | CE, EAC |
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| PNP normally open | BES02HU BES 516-325-SA19-03 | BES02HW BES 516-325-SA19-05 | |
|-----------------------------------|---------------------------------------|---------------------------------------|--|
| PNP normally open/normally closed | | | |
| Dimension | Ø 12 x 75 mm | Ø 12 x 75 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 2 mm | |
| Switching frequency | 1000 Hz | 1000 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PEEK | PEEK | |
| Connection | Cable, 3.00 m, silicone | Cable, 5.00 m, silicone | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...120 °C | -25...120 °C | |
| Protection degree | IP68 | IP68 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
| Productview | Page 232 | Page 232 | |



| BES04CL BES 515-356-SA35-D-TF-02 | BES043T BES 515-326-SA49-D-TF-02 | BES04AT BES 515-326-SA49-D-TF-05 | BES02H5 BES 516-105-SA2-05 |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------|
| Ø 12 x 66 mm | Ø 18 x 95 mm | Ø 18 x 95 mm | Ø 18 x 95.5 mm |
| M12x1 | M18x1 | M18x1 | M18x1 |
| non-flush | for flush mounting | for flush mounting | for flush mounting |
| 4 mm | 5 mm | 5 mm | 5 mm |
| 200 Hz | 200 Hz | 200 Hz | 500 Hz |
| Stainless steel (1.4571) | Stainless steel | Stainless steel | Brass |
| — | — | — | nickel plated |
| PEEK | PEEK | PEEK | PBT |
| Cable, 2.00 m, PTFE | Cable, 2.00 m, PTFE | Cable, 5.00 m, PTFE | Cable, 5.00 m, silicone |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...160 °C | -25...160 °C | -25...160 °C | -25...120 °C |
| IP68 | IP68 | IP68 | IP67 |
| CE, EAC | CE, EAC | CE, EAC | CE, EAC |
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| | | | |
|-----------------------------------|--|-----------------------------------|--|
| PNP normally open | BES05N4 BES M18ED-PSC50B-GT05-T | | |
| PNP normally open/normally closed | | BES02H6 BES 516-105-SA5 | |
| Dimension | Ø 18 x 35 mm | Ø 18 x 83 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 5 mm | 5 mm | |
| Switching frequency | 9 Hz | 500 Hz | |
| Housing material | Stainless steel | Brass | |
| Surface protection | — | nickel plated | |
| Material sensing surface | LCP | PBT | |
| Connection | Connector, M12x1-Male, 4-pole, 5.0 m, PTFE | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | 0...230 °C | -25...120 °C | |
| Protection degree | IP50 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
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| BES04C7 BES 515-360-SA13-D-TF-05 | BES02H7 BES 516-114-SA1-05 | BES043W BES 515-327-SA22-D-TF-02 | BES04AU BES 515-327-SA22-D-TF-05 |
|-------------------------------------|-------------------------------|-------------------------------------|-------------------------------------|
| Ø 18 x 103 mm | Ø 30 x 91.5 mm | Ø 30 x 100 mm | Ø 30 x 100 mm |
| M18x1 | M30x1.5 | M30x1.5 | M30x1.5 |
| non-flush | for flush mounting | for flush mounting | for flush mounting |
| 8 mm | 10 mm | 10 mm | 10 mm |
| 200 Hz | 300 Hz | 200 Hz | 200 Hz |
| Stainless steel | Brass | Stainless steel | Stainless steel |
| — | nickel plated | — | — |
| PEEK | PBT | PEEK | PEEK |
| Cable, 5.00 m, PTFE | Cable, 5.00 m, silicone | Cable, 2.00 m, PTFE | Cable, 5.00 m, PTFE |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...160 °C | -25...120 °C | -25...160 °C | -25...160 °C |
| IP68 | IP67 | IP68 | IP68 |
| CE, EAC | CE, EAC | CE, EAC | CE, EAC |
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| | | | |
|-----------------------------------|---|--------------------------------------|--|
| PNP normally open | BES05N5 BES M30N1-PSC10B-GT05-T | | |
| PNP normally open/normally closed | | BES02HE BES 516-125-SA1-05 | |
| Dimension | Ø 30 x 74 mm | Ø 30 x 91 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | non-flush | |
| Range | 10 mm | 15 mm | |
| Switching frequency | 9 Hz | 100 Hz | |
| Housing material | Stainless steel | Brass | |
| Surface protection | — | nickel plated | |
| Material sensing surface | LCP | PA 12 | |
| Connection | Connector, M12x1, 4-pole, 5.0 m, PTFE | Cable, 5.00 m, silicone | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | 0...230 °C | -25...120 °C | |
| Protection degree | IP50 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
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| | BES043Y BES 515-362-SA4-D-TF-02 | BES04C8 BES 515-362-SA4-D-TF-05 | BES05N7 BES Q08EC-PSD20B-ES05 | BES05N8 BES Q12EC-PSD40B-ES05 |
|--|---|---|---|---|
| | Ø 30 x 110 mm | Ø 30 x 110 mm | 8 x 8 x 55 mm | 12 x 12 x 59 mm |
| | M30x1.5 | M30x1.5 | 8x8 | 12x12 |
| | non-flush | non-flush | for flush mounting | for flush mounting |
| | 15 mm | 15 mm | 2 mm | 4 mm |
| | 200 Hz | 200 Hz | 500 Hz | 500 Hz |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | — | — | — | — |
| | PEEK | PEEK | LCP | LCP |
| | Cable, 2.00 m, PTFE | Cable, 5.00 m, PTFE | Cable, 5.0 m, Silicone | Cable, 5.0 m, Silicone |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...160 °C | -25...160 °C | -25...140 °C | -25...130 °C |
| | IP68 | IP68 | IP65 | IP65 |
| | CE, EAC | CE, EAC | CE, EAC | CE, EAC |
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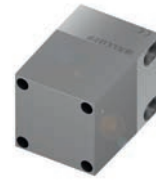
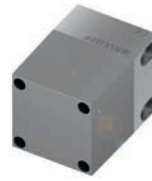
Safety

Industrial Networking

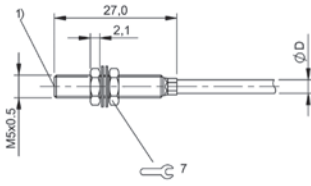
Power Supply

Connectivity

Accessories

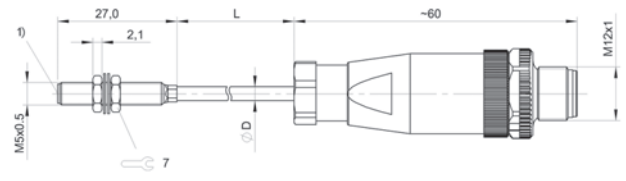


| | | | |
|--------------------------|---|---|--|
| PNP normally open | | BES05N9 BES Q40KG-PSD25F-S04G | |
| For switching amplifier | BES05N6 BES Q40KG-X20F-SZ03 | | |
| Dimension | 40 x 40 x 66.6 mm | 40 x 40 x 70.7 mm | |
| Style | 40x40 | 40x40 | |
| Installation | non-flush | non-flush | |
| Range | 20 mm | 25 mm | |
| Switching frequency | 100 Hz | 100 Hz | |
| Housing material | Stainless steel | Stainless steel (1.4305) LCP | |
| Surface protection | — | — | |
| Material sensing surface | LCP | LCP | |
| Connection | Connector, LEMO connector-Special connector, 2-pole | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...35 VDC | |
| Ambient temperature | 0...230 °C | 0...150 °C | |
| Protection degree | IP50 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
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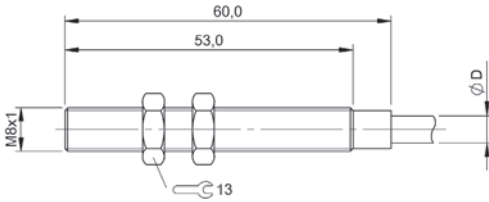
1) Sensing surface

BES02J2, BES046C, BES03P1

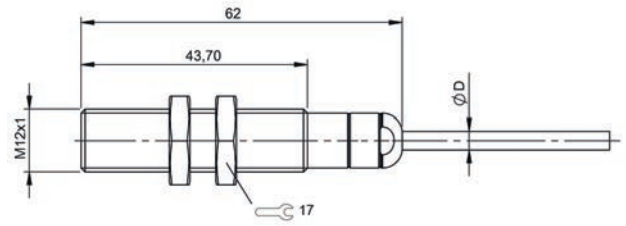


1) Sensing surface

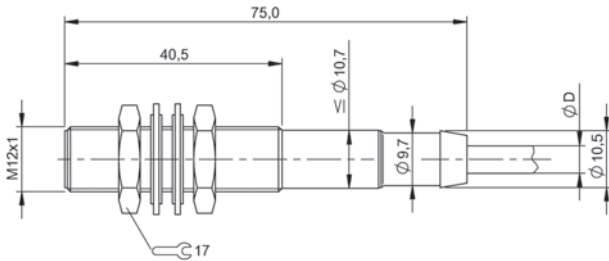
BES04FL



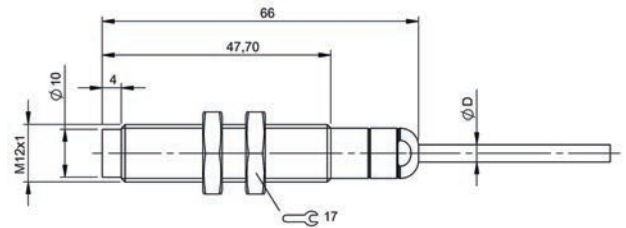
BES05FN



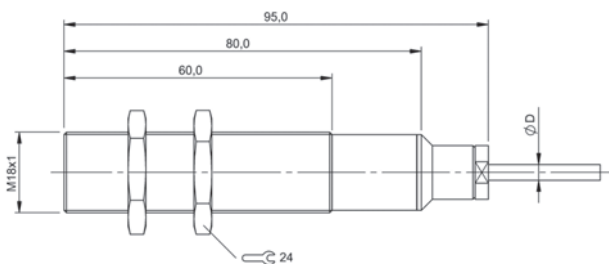
BES04CK



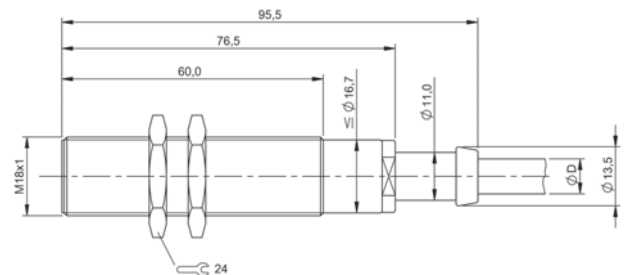
BES02HU, BES02HW



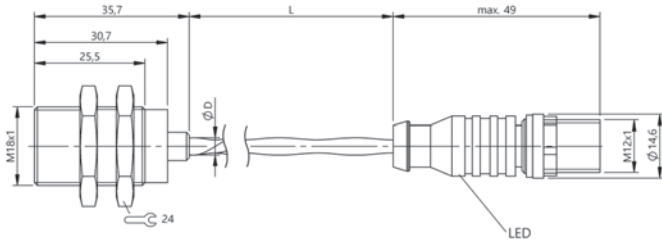
BES04CL



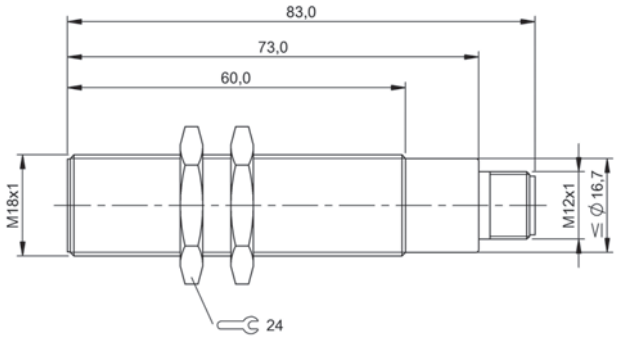
BES043T, BES04AT



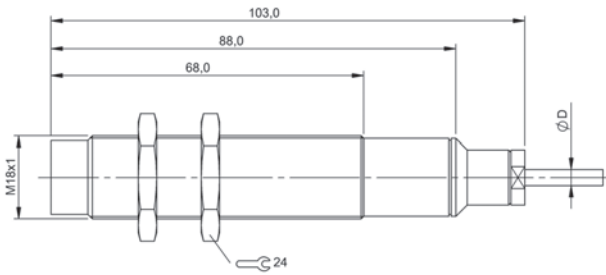
BES02H5



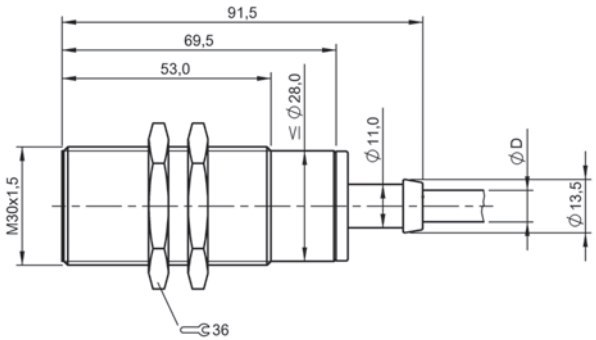
BES05N4



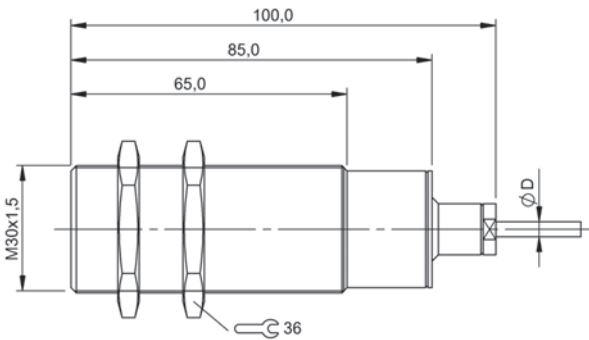
BES02H6



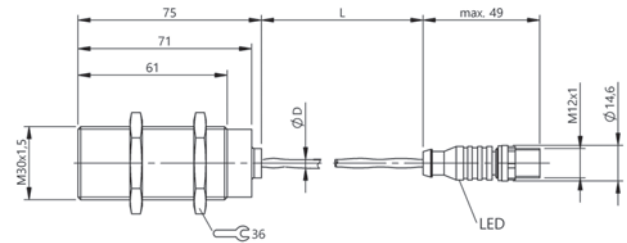
BES04C7



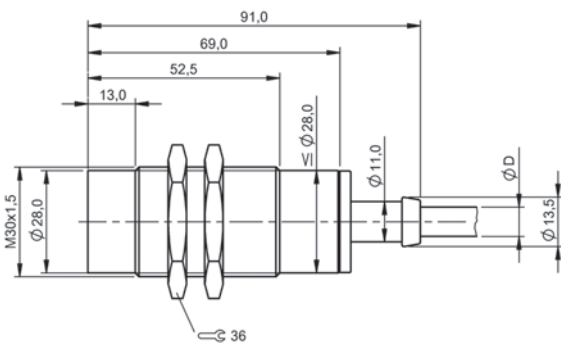
BES02H7



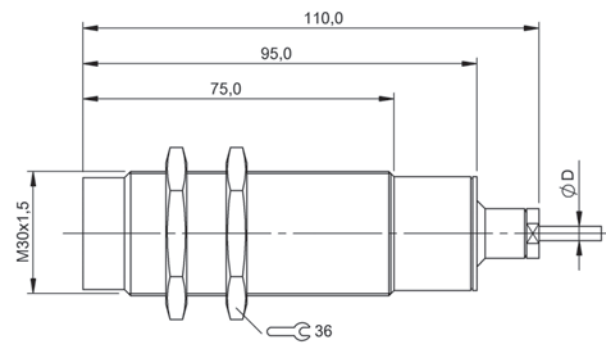
BES043W, BES04AU



BES05N5

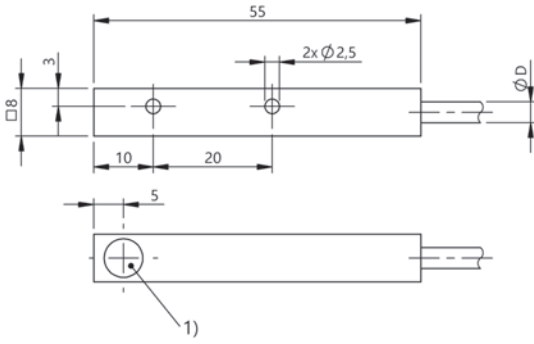


BES02HE



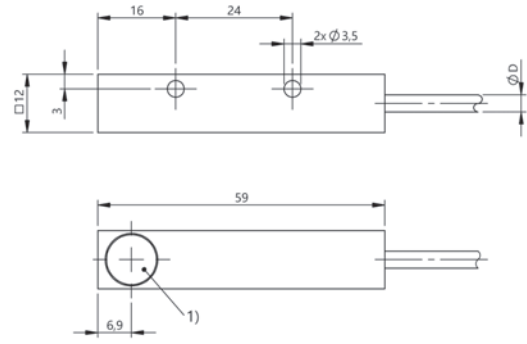
BES043Y, BES04C8

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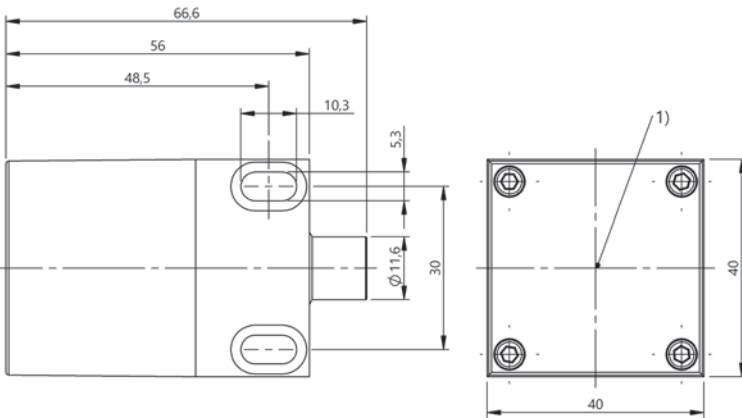
1) Sensing surface

BES05N7



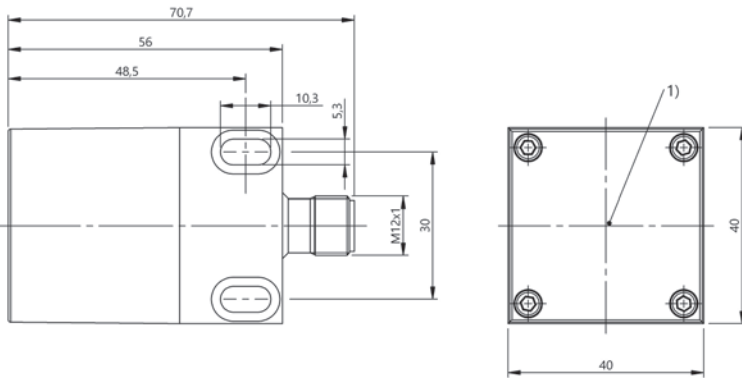
1) Sensing surface

BES05N8



1) Sensing surface

BES05N6



1) Sensing surface

BES05N9



| NAMUR | BES02ZR BES G06MD-GNX10B-EV02-EEX | BES02ZT BES M08MD-GNX10B-EV02-EEX | | |
|--------------------------|---|---|--|--|
| PNP normally open | | | BES05M3 BES M12EG2-PSC20B-BV02-EXF | |
| Dimension | Ø 6.5 x 30 mm | Ø 8 x 30 mm | Ø 12 x 59 mm | |
| Style | D6.5 | M8x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | for flush mounting | |
| Range | 1 mm | 1 mm | 2 mm | |
| Switching frequency | 2000 Hz | 2000 Hz | 180 Hz | |
| Housing material | Brass | Brass | Stainless steel | |
| Surface protection | Nickel-free coated | Nickel-free coated | — | |
| Material sensing surface | PBT | PBT | Stainless steel | |
| Connection | Cable, 2.00 m, PVC | Cable, 2.00 m, PVC | Cable, PUR | |
| Operating voltage U_b | 7.7...9 VDC | 7.7...9 VDC | 10...30 VDC | |
| Ambient temperature | -20...70 °C | -20...70 °C | -5...60 °C | |
| Pressure rating max. | — | — | — | |
| Ex category | ATEX: 2G (EPL Gb) ATEX: 1D (EPL Da) | ATEX: 2G (EPL Gb) ATEX: 1D (EPL Da) | ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | CE, EAC, ATEX, cCSAus, FM | CE, EAC, ATEX, cCSAus, FM | CE, EAC, IECEX, ATEX | |
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| | BES05NE BES M12MG2-GNX20B-BT02-EXA | BES05NM BES M12MG2-GNX20B-BT02-EXB | BHS004L BES 516-300-S318-S4-N | |
|--|--|--|---|---|
| | | | | BHS002W BES 516-300-S249-NEX-S4-D |
| BES05L6 BES M12MF2-PSC20B-BV02-EXE | | | | |
| Ø 12 x 59 mm | Ø 12 x 62 mm | Ø 12 x 62 mm | Ø 12 x 56 mm | Ø 12 x 56 mm |
| M12x1 | M12x1 | M12x1 | M12x1 | M12x1 |
| for flush mounting | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| 2 mm | 2 mm | 2 mm | 1.5 mm | 1.5 mm |
| 300 Hz | — | — | 1000 Hz | 2000 Hz |
| Stainless steel | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| — | — | — | — | — |
| LCP | PEEK | PTFE | POM | EP |
| Cable, PUR | Cable, FEP | Cable, FEP | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10...30 VDC | 7.7...9 VDC | 7.7...9 VDC | 7.7...9 VDC | 10...30 VDC |
| -20...60 °C | -20...60 °C, depending on Ex category | -20...60 °C, depending on Ex category | -25...70 °C | -25...80 °C |
| — | — | — | 500 bar | 500 bar |
| ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 2G (EPL Gb) | ATEX: 3G (EPL Gc) |
| IP67 | IP68 | IP68 | IP68 | IP68 |
| CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | CE, EAC, ATEX |
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| | | | | |
|--------------------------|---------------------------------------|---|---|--|
| NAMUR | BHS0034 BES 516-300-S266-S4 | BHS004K BES 516-300-S315-S4-N | | |
| PNP normally open | | | BHS005P BHS B135V-PSD15-NEX-S04 | |
| Dimension | Ø 12 x 56 mm | Ø 12 x 56 mm | Ø 12 x 78 mm | |
| Style | M12x1 | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | for flush mounting | |
| Range | 1.5 mm | 1.5 mm | 1.5 mm | |
| Switching frequency | 1000 Hz | 1000 Hz | 400 Hz | |
| Housing material | Stainless steel | Stainless steel | Stainless steel | |
| Surface protection | — | — | — | |
| Material sensing surface | POM | POM | Ceramic | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 7.7...9 VDC | 7.7...9 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | -25...100 °C | |
| Pressure rating max. | 500 bar | 500 bar | 500 bar | |
| Ex category | ATEX: 2G (EPL Gb) | ATEX: 2G (EPL Gb) | ATEX: 3G (EPL Gc) | |
| Protection degree | IP68 | IP68 | IP68 | |
| Approval/Conformity | CE, EAC | CE, EAC, IECEx, ATEX | CE, EAC, ATEX | |
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| BES05MW BES M12MG2-GNX20B-S04G-EXC | BES02ZU BES M12ME-GNX40B-S04G-EEX | BES05L7 BES M12MF2-PSC40F-BV02-EXE | BES05NF BES M12MG2-GNX40F-BT02-EXA | BES05NN BES M12MG2-GNX40F-BT02-EXB |
|--|---|--|--|--|
| Ø 12 x 65 mm | Ø 12 x 45 mm | Ø 12 x 61 mm | Ø 12 x 66 mm | Ø 12 x 66 mm |
| M12x1 | M12x1 | M12x1 | M12x1 | M12x1 |
| for flush mounting | for flush mounting | non-flush | non-flush | non-flush |
| 2 mm | 4 mm | 1.5 mm | 4 mm | 4 mm |
| — | 700 Hz | 300 Hz | — | — |
| Brass | Brass | Stainless steel | Stainless steel | Stainless steel |
| nickel plated | Nickel-free coated | — | — | — |
| PA | PBT | LCP POM | PEEK | PTFE |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Cable, PUR | Cable, FEP | Cable, FEP |
| 7.7...9 VDC | 7.7...9 VDC | 10...30 VDC | 7.7...9 VDC | 7.7...9 VDC |
| -20...60 °C, depending on Ex category | -20...70 °C | -20...60 °C | -20...60 °C, depending on Ex category | -20...60 °C, depending on Ex category |
| — | — | — | — | — |
| ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) |
| IP67 | IP67 | IP67 | IP68 | IP68 |
| CE, EAC, IECEx, ATEX | CE, EAC, cCSAus, FM | CE, EAC, IECEx, ATEX | CE, EAC, IECEx, ATEX | CE, EAC, IECEx, ATEX |
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| | | | | |
|--------------------------|--|--|--|--|
| NAMUR | BES05MY BES M12MG2-GNX40F-S04G-EXC | | | |
| PNP normally open | | BES05M4 BES M18EG2-PSC50B-BV02-EXF | BES05L2 BES M18MF2-PSC50B-BV02-EXD | |
| Dimension | Ø 12 x 70 mm | Ø 18 x 57 mm | Ø 18 x 60 mm | |
| Style | M12x1 | M18x1 | M18x1 | |
| Installation | non-flush | for flush mounting | for flush mounting | |
| Range | 4 mm | 5 mm | 5 mm | |
| Switching frequency | — | 180 Hz | 300 Hz | |
| Housing material | Brass | Stainless steel | Brass | |
| Surface protection | nickel plated | — | nickel plated | |
| Material sensing surface | PA | Stainless steel | PA | |
| Connection | Connector, M12x1 connector, 4-pin | Cable, PUR | Cable, PUR | |
| Operating voltage U_b | 7.7...9 VDC | 10...30 VDC | 18...27 VDC | |
| Ambient temperature | -20...60 °C, depending on Ex category | -10...60 °C | -20...60 °C | |
| Pressure rating max. | — | — | — | |
| Ex category | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | |
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| | BES05L8 BES M18MF2-PSC50B-BV02-EXE | BES05NH BES M18MH2-GNX50B-BT02-EXA | BES05NP BES M18MH2-GNX50B-BT02-EXB | BHS004H BES 516-300-S308-NEX-S4-D | BES05MZ BES M18MH2-GNX50B-S04G-EXC |
|--|--|--|--|---|--|
| | BES05L8 BES M18MF2-PSC50B-BV02-EXE | | | BHS004H BES 516-300-S308-NEX-S4-D | |
| | Ø 18 x 60 mm | Ø 18 x 67 mm | Ø 18 x 67 mm | Ø 18 x 55 mm | Ø 18 x 67 mm |
| | M18x1 | M18x1 | M18x1 | M18x1 | M18x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 5 mm | 5 mm | 5 mm | 1.5 mm | 5 mm |
| | 300 Hz | — | — | 2000 Hz | — |
| | Brass | Stainless steel | Stainless steel | Stainless steel | Brass |
| | nickel plated | — | — | — | nickel plated |
| | PA | PEEK | PTFE | EP | PA |
| | Cable, PUR | Cable, FEP | Cable, FEP | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | 10...30 VDC | 7.7...9 VDC | 7.7...9 VDC | 10...30 VDC | 7.7...9 VDC |
| | -20...60 °C | -20...60 °C, depending on Ex category | -20...60 °C, depending on Ex category | -25...80 °C | -20...60 °C, depending on Ex category |
| | — | — | — | 500 bar | — |
| | ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 3G (EPL Gc) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) |
| | IP67 | IP68 | IP68 | IP68 | IP67 |
| | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | CE, EAC, ATEX | CE, EAC, IECEX, ATEX |
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| | | | | |
|--------------------------|--|--|--|--|
| NAMUR | BES02ZW BES M18ME1-GNX80B-S04G-EEX | | | |
| PNP normally open | | BES05L3 BES M18MF2-PSC80F-BV02-EXD | BES05L9 BES M18MF2-PSC80F-BV02-EXE | |
| Dimension | Ø 18 x 46 mm | Ø 18 x 69 mm | Ø 18 x 69 mm | |
| Style | M18x1 | M18x1 | M18x1 | |
| Installation | for flush mounting | non-flush | non-flush | |
| Range | 8 mm | 5.5 mm | 5.5 mm | |
| Switching frequency | 400 Hz | 300 Hz | 300 Hz | |
| Housing material | Brass | Brass | Brass | |
| Surface protection | Nickel-free coated | nickel plated | nickel plated | |
| Material sensing surface | PBT | PA POM | PA POM | |
| Connection | Connector, M12x1 connector, 4-pin | Cable, PUR | Cable, PUR | |
| Operating voltage U_b | 7.7...9 VDC | 18...27 VDC | 10...30 VDC | |
| Ambient temperature | -20...70 °C | -20...60 °C | -20...60 °C | |
| Pressure rating max. | — | — | — | |
| Ex category | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | CE, EAC, cCSAus, FM | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | |
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| BES05NJ BES M18MH2-GNX80F-BT02-EXA | BES05NR BES M18MH2-GNX80F-BT02-EXB | BES05N0 BES M18MH2-GNX80F-S04G-EXC | | BES05M5 BES M30EG2-PSC10B-BV02-EXF | BES05L4 BES M30MF2-PSC10B-BV02-EXD |
|--|--|--|--|--|--|
| Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | | Ø 30 x 59 mm | Ø 30 x 62 mm |
| M18x1 | M18x1 | M18x1 | | M30x1.5 | M30x1.5 |
| non-flush | non-flush | non-flush | | for flush mounting | for flush mounting |
| 8 mm | 8 mm | 8 mm | | 10 mm | 10 mm |
| — | — | — | | 180 Hz | 300 Hz |
| Stainless steel | Stainless steel | Brass | | Stainless steel | Brass |
| — | — | nickel plated | | — | nickel plated |
| PEEK | PTFE | PA | | Stainless steel | PA |
| Cable, FEP | Cable, FEP | Connector, M12x1 connector, 4-pin | | Cable, PUR | Cable, PUR |
| 7.7...9 VDC | 7.7...9 VDC | 7.7...9 VDC | | 10...30 VDC | 18...27 VDC |
| -20...60 °C, depending on Ex category | -20...60 °C, depending on Ex category | -20...60 °C, depending on Ex category | | -20...60 °C | -20...60 °C |
| — | — | — | | — | — |
| ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | | ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) |
| IP68 | IP68 | IP67 | | IP67 | IP67 |
| CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX |
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| NAMUR | | BES05NK BES M30MH2-GNX10B-BT02-EXA | BES05NT BES M30MH2-GNX10B-BT02-EXB | |
|--------------------------|--|--|--|--|
| PNP normally open | BES05LA BES M30MF2-PSC10B-BV02-EXE | | | |
| Dimension | Ø 30 x 62 mm | Ø 30 x 68 mm | Ø 30 x 68 mm | |
| Style | M30x1.5 | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | for flush mounting | |
| Range | 10 mm | 10 mm | 10 mm | |
| Switching frequency | 300 Hz | — | — | |
| Housing material | Brass | Stainless steel | Stainless steel | |
| Surface protection | nickel plated | — | — | |
| Material sensing surface | PA | PEEK | PTFE | |
| Connection | Cable, PUR | Cable, FEP | Cable, FEP | |
| Operating voltage U_b | 10...30 VDC | 7.7...9 VDC | 7.7...9 VDC | |
| Ambient temperature | -20...60 °C | -20...60 °C, depending on Ex category | -20...60 °C, depending on Ex category | |
| Pressure rating max. | — | — | — | |
| Ex category | ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | |
| Protection degree | IP67 | IP68 | IP68 | |
| Approval/Conformity | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | |
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| BES05N1 BES M30MH2-GNX10B-S04G-EXC | BES02ZY BES M30ME1-GNX15B-S04G-EEX | | | | BES05NL BES M30MH2-GNX15F-BT02-EXA |
|--|--|--|--|--|--|
| | | BES05L5 BES M30MF2-PSC15F-BV02-EXD | BES05LC BES M30MF2-PSC15F-BV02-EXE | | |
| Ø 30 x 68 mm | Ø 30 x 50 mm | Ø 30 x 74 mm | Ø 30 x 74 mm | | Ø 30 x 77 mm |
| M30x1.5 | M30x1.5 | M30x1.5 | M30x1.5 | | M30x1.5 |
| for flush mounting | for flush mounting | non-flush | non-flush | | non-flush |
| 10 mm | 15 mm | 12 mm | 12 mm | | 15 mm |
| — | 100 Hz | 300 Hz | 300 Hz | | — |
| Brass | Brass | Brass | Brass | | Stainless steel |
| nickel plated | Nickel-free coated | nickel plated | nickel plated | | — |
| PA | PBT | PA POM | PA POM | | PEEK |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Cable, PUR | Cable, PUR | | Cable, FEP |
| 7.7...9 VDC | 7.7...9 VDC | 18...27 VDC | 10...30 VDC | | 7.7...9 VDC |
| -20...60 °C, depending on Ex category | -20...70 °C | -20...60 °C | -20...60 °C | | -20...60 °C, depending on Ex category |
| — | — | — | — | | — |
| ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 3G (EPL Gc) ATEX: 3D (EPL Dc) IECEX: EPL Gc IECEX: EPL Dc | | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) |
| IP67 | IP67 | IP67 | IP67 | | IP68 |
| CE, EAC, IECEX, ATEX | CE, EAC, cCSAus, FM | CE, EAC, IECEX, ATEX | CE, EAC, IECEX, ATEX | | CE, EAC, IECEX, ATEX |
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| NAMUR | BES05NU BES M30MH2-GNX15F-BT02-EXB | BES05N2 BES M30MH2-GNX15F-S04G-EXC | BES02ZZ BES Q40KFU-GNX20B-S92G-EEEX | |
|----------------------------------|--|--|---|--|
| Dimension | Ø 30 x 77 mm | Ø 30 x 77 mm | 40 x 40 x 66 mm | |
| Style | M30x1.5 | M30x1.5 | block style | |
| Installation | non-flush | non-flush | for flush mounting | |
| Range | 15 mm | 15 mm | 20 mm | |
| Switching frequency | — | — | 200 Hz | |
| Housing material | Stainless steel | Brass | PPE PPS | |
| Surface protection | — | nickel plated | — | |
| Material sensing surface | PTFE | PA | PPE | |
| Connection | Cable, FEP | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector | |
| Operating voltage U _b | 7.7...9 VDC | 7.7...9 VDC | 7.7...9 VDC | |
| Ambient temperature | -20...60 °C, depending on Ex category | -20...60 °C, depending on Ex category | -20...70 °C | |
| Pressure rating max. | — | — | — | |
| Ex category | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | ATEX: 2G (EPL Gb) ATEX: 1D (EPL Da) | |
| Protection degree | IP68 | IP67 | IP67 | |
| Approval/Conformity | CE, EAC, IECEx, ATEX | CE, EAC, IECEx, ATEX | CE, EAC, cCSAus, FM | |
| Productview | Page 252 | Page 252 | Page 252 | |



| | | | | |
|--|--|--|--|--|
| BES0300 BES Q40KFU-GNX35F-S92G-EEX | | | | |
| 40 x 40 x 66 mm | | | | |
| block style | | | | |
| non-flush | | | | |
| 35 mm | | | | |
| 100 Hz | | | | |
| PPE PPS | | | | |
| — | | | | |
| PPE | | | | |
| Connector, M12x1 connector | | | | |
| 7.7...9 VDC | | | | |
| -20...70 °C | | | | |
| — | | | | |
| ATEX: 2G (EPL Gb) ATEX: 1D (EPL Da) | | | | |
| IP67 | | | | |
| CE, EAC, cCSAus, FM | | | | |
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Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

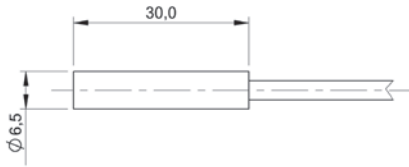
Safety

Industrial Networking

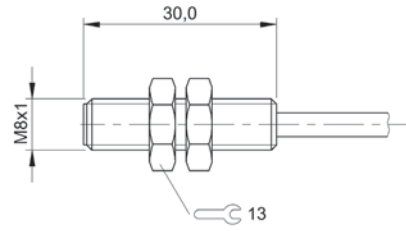
Power Supply

Connectivity

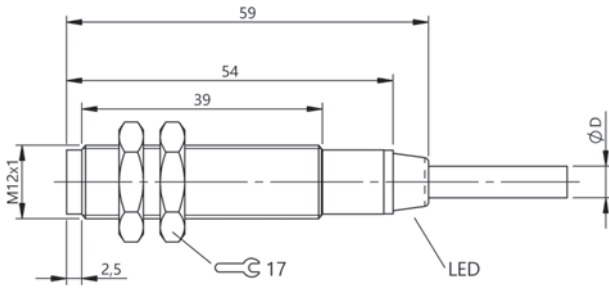
Accessories



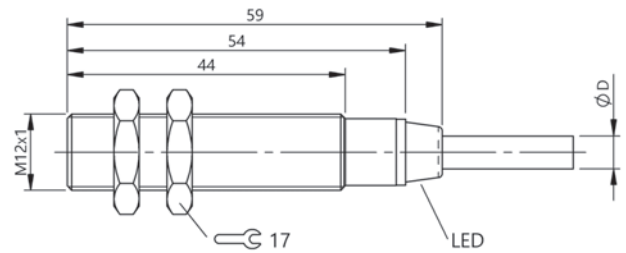
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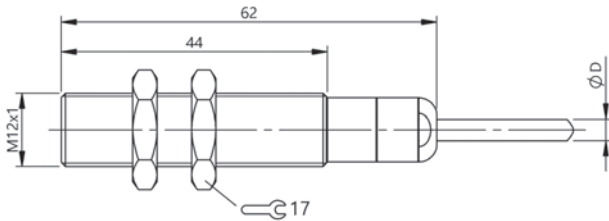
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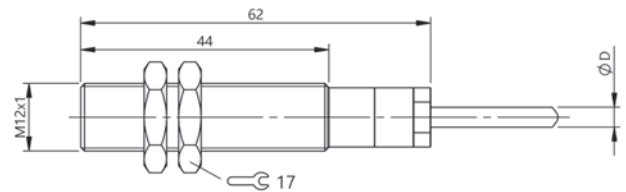
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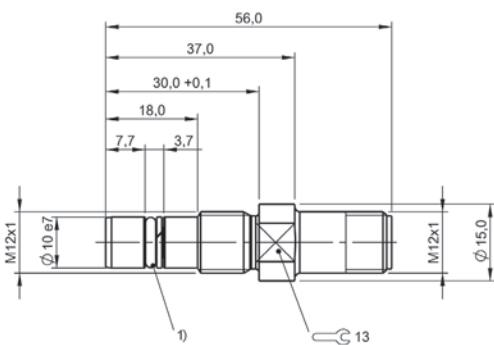
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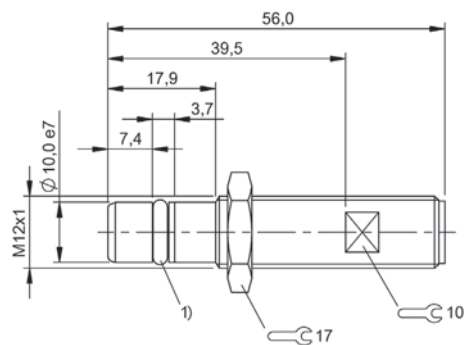
BES05NE



BES05NM



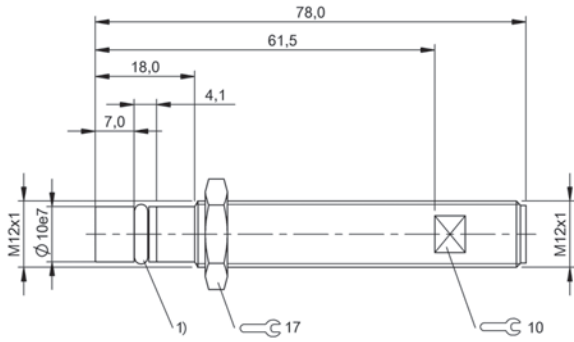
1) O-Ring with thrust ring



1) O-Ring with thrust ring

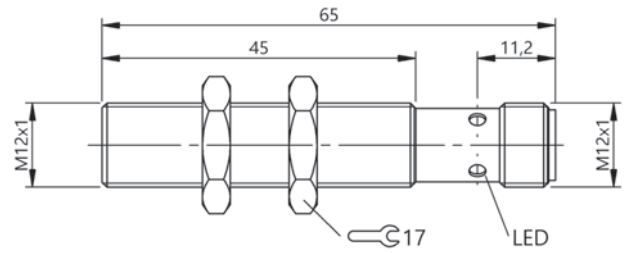
BHS004L

BHS002W, BHS0034, BHS004K

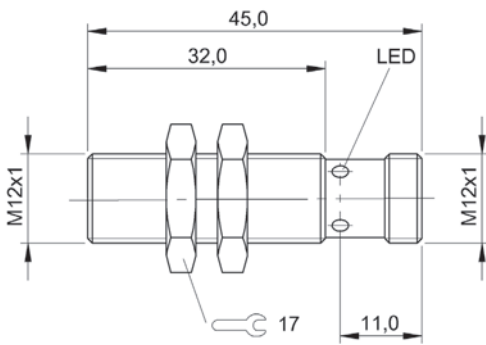


1) O-Ring with thrust ring

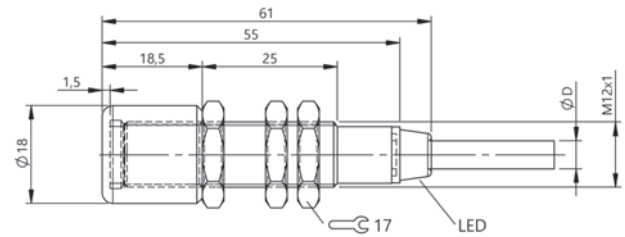
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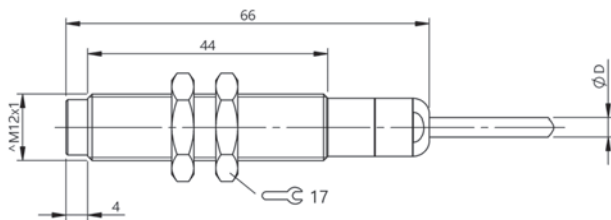
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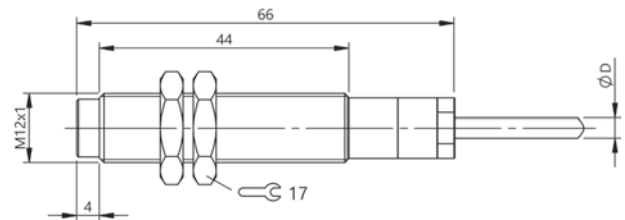
BES02ZU



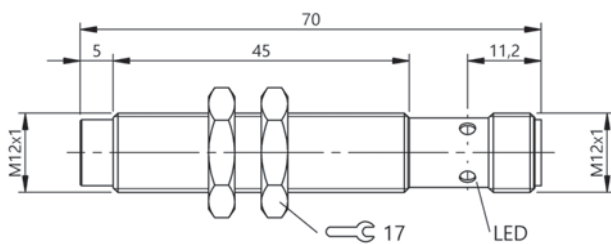
BES05L7



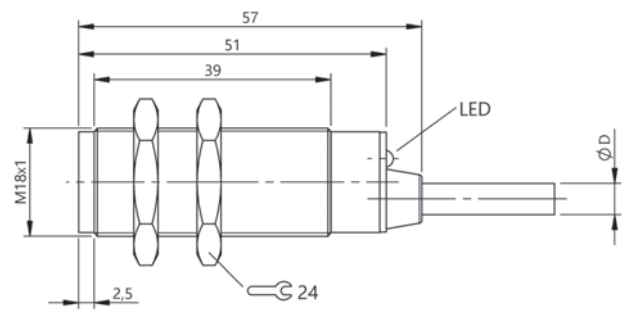
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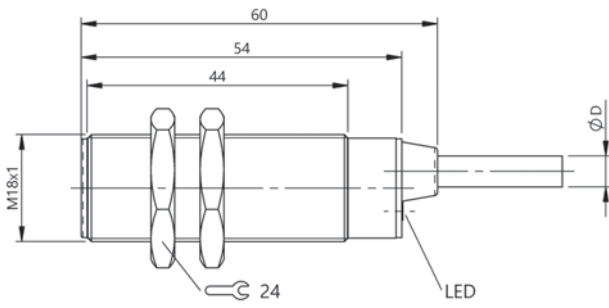
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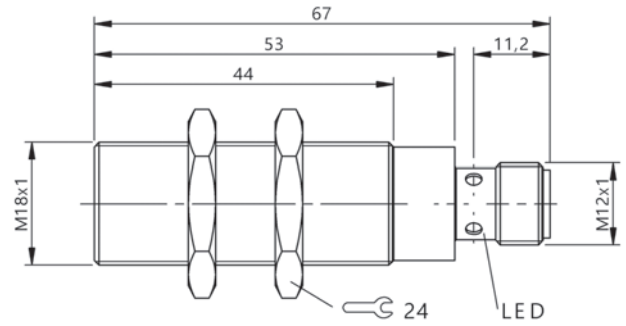
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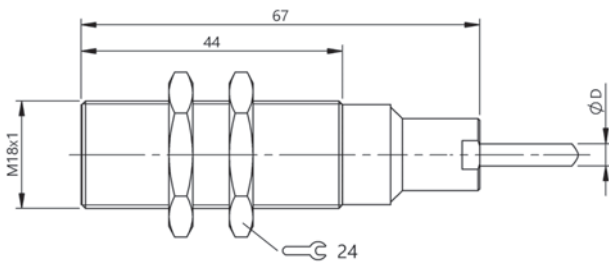
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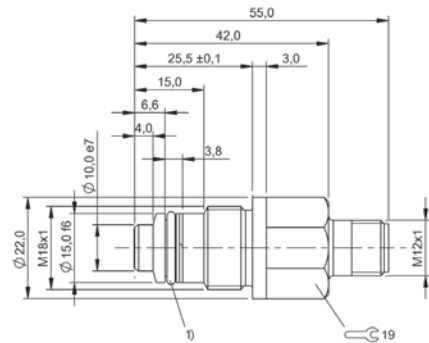
BES05L2, BES05L8



BES05NH, BES05MZ

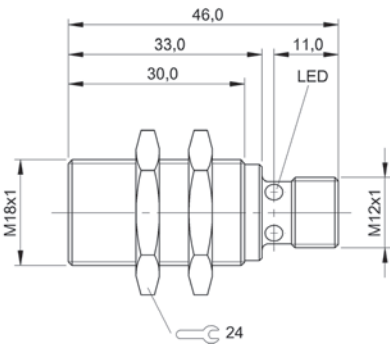


BES05NP

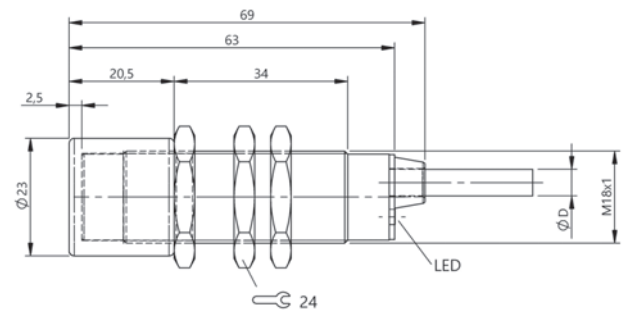


1) O-Ring with thrust ring

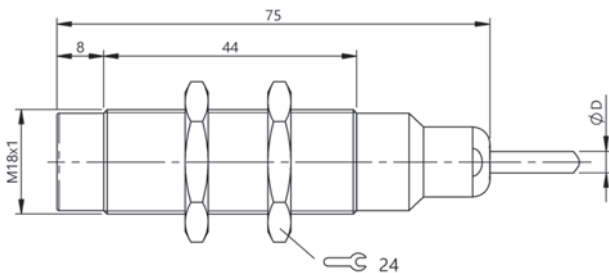
BHS004H



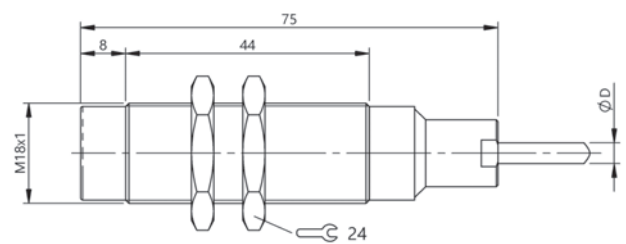
BES02ZW



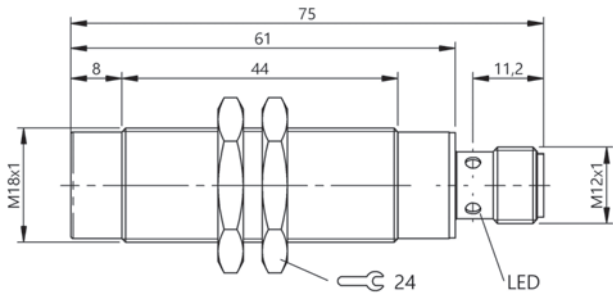
BES05L3, BES05L9



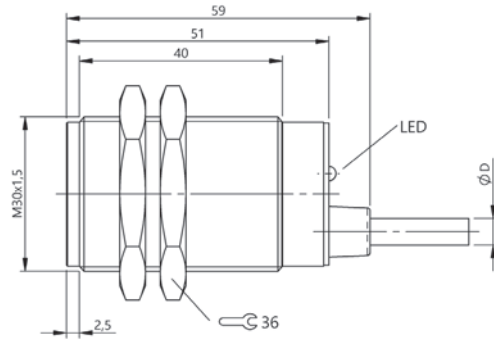
BES05NJ



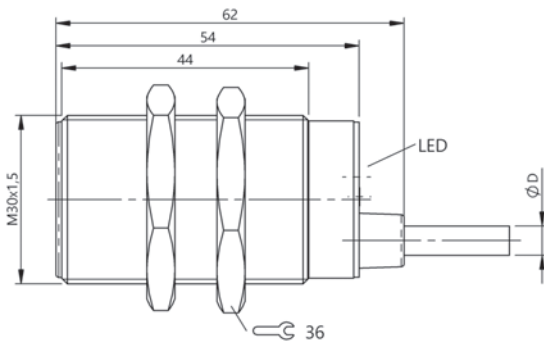
BES05NR



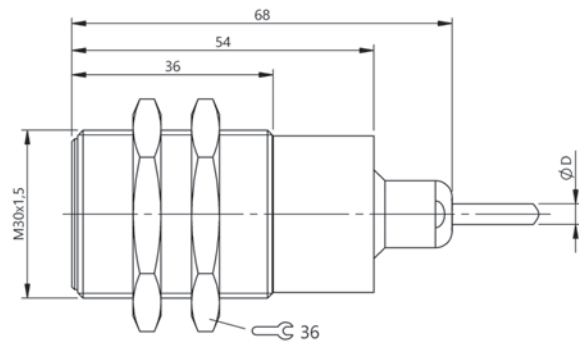
BES05N0



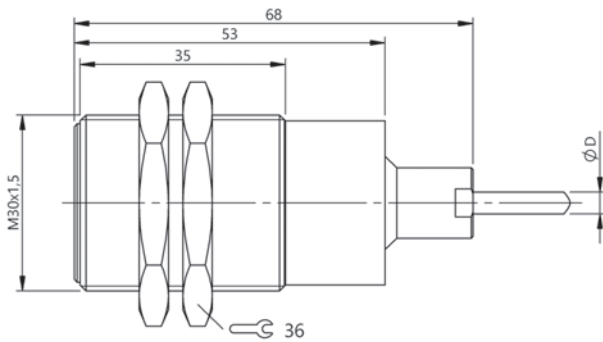
BES05M5



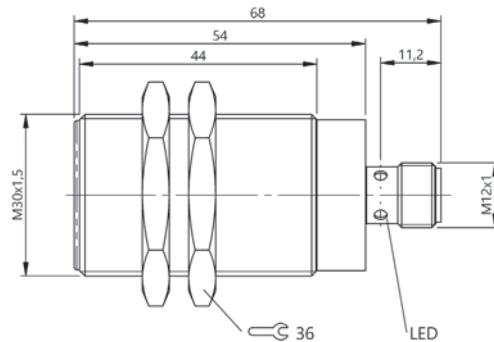
BES05L4, BES05LA



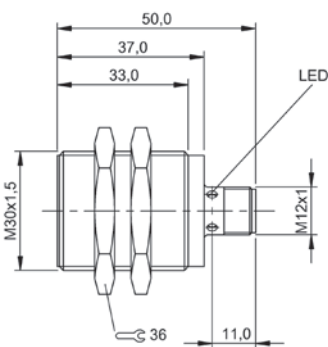
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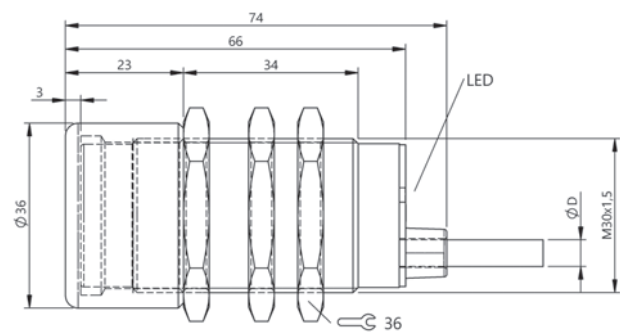
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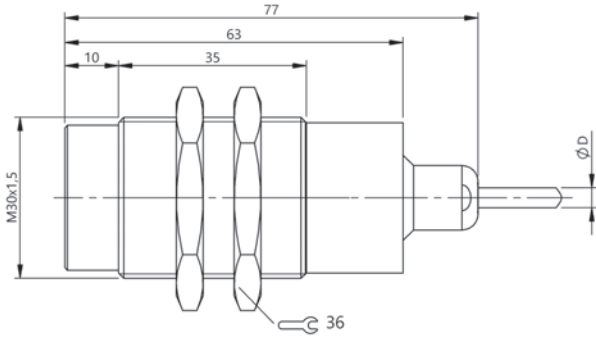
BES05N1



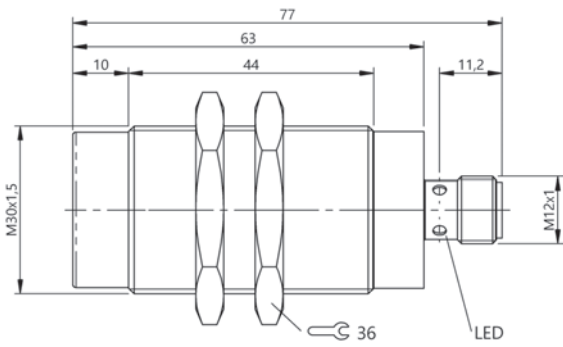
BES02ZY



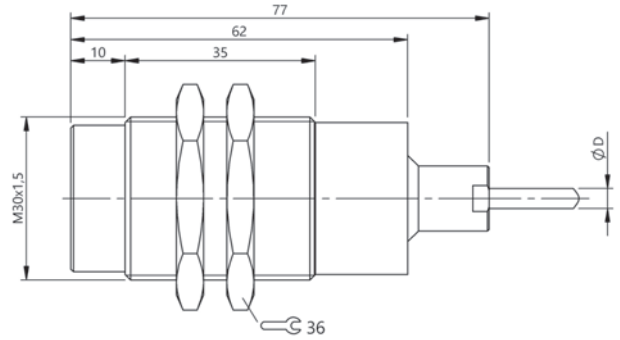
BES05L5, BES05LC



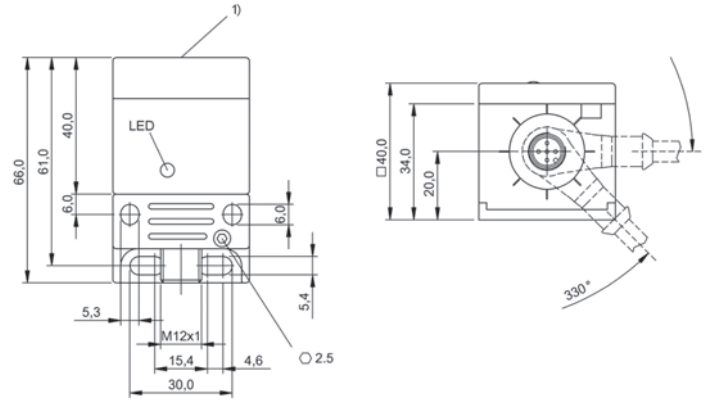
BES05NL



BES05N2



BES05NU



1) Sensing surface

BES02ZZ, BES0300



| | BES050N BES G04ED-GNX08B-EP02 | BES02L6 BES 516-3005-F0-N-03 | |
|--------------------------|---|--|--|
| Dimension | Ø 4 x 27 mm | Ø 5 x 24.5 mm | |
| Style | D4.0 | M5x0.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 0.8 mm | 0.8 mm | |
| Interface | NAMUR | NAMUR | |
| Switching frequency | 2500 Hz | 2000 Hz | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 2.00 m, PUR | Cable, 3.00 m, PVC | |
| Operating voltage U_b | 7.7...9 VDC | 7.7...9 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, EAC | |
| Productview | Page 258 | Page 258 | |



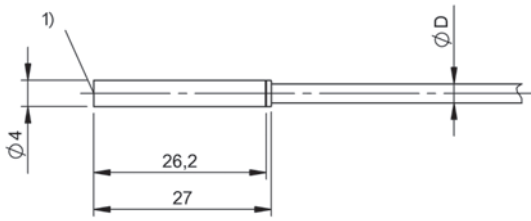
| | BES050P BES M05ED-GNX08B-EP02 | BES02LW BES 516-371-SA3-03 | BES02LY BES 516-371-SA3-05 | BES02LA BES 516-324-E0-N-03 |
|--|---|--------------------------------------|--------------------------------------|---------------------------------------|
| | Ø 5 x 27 mm | Ø 6.5 x 22.5 mm | Ø 6.5 x 22.5 mm | Ø 8 x 45.5 mm |
| | M5x0.5 | D6.5 | D6.5 | M8x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | 0.8 mm | 0.3 mm | 0.3 mm | 1.2 mm |
| | NAMUR | NAMUR | NAMUR | NAMUR |
| | 2500 Hz | 2000 Hz | 2000 Hz | 2000 Hz |
| | Stainless steel | Aluminum | Aluminum | Stainless steel |
| | — | — | — | — |
| | PBT | PA 12 | PA 12 | PBT |
| | Cable, 2.00 m, PUR | Cable, 3.00 m, PVC | Cable, 5.00 m, PVC | Cable, 3.00 m, PVC |
| | 7.7...9 VDC | 10.8...13.2 VDC | 10.8...13.2 VDC | 7.7...9 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C | -25...70 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, EAC | CE, EAC | CE, EAC |
| | Page 258 | Page 258 | Page 258 | Page 258 |



| | BES02LE BES 516-325-E3-N-PU-05 | BES02LL BES 516-327-E3-N-PU-05 | |
|--------------------------|--|--|--|
| Dimension | Ø 12 x 30 mm | Ø 30 x 30 mm | |
| Style | M12x1 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2 mm | 10 mm | |
| Interface | NAMUR | NAMUR | |
| Switching frequency | 1000 Hz | 300 Hz | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PA 12 | PA 12 | |
| Connection | Cable, 5.00 m, PUR | Cable, 5.00 m, PUR | |
| Operating voltage U_b | 7.7...9 VDC | 7.7...9 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
| Productview | Page 258 | Page 258 | |

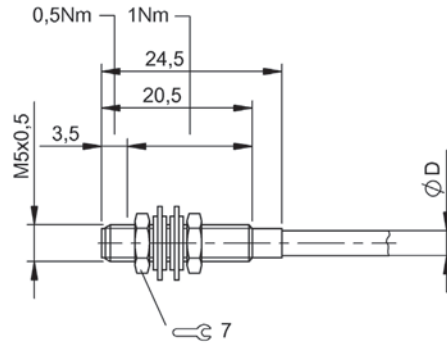


| | BES0566 BES Q05EC-GNX08B-EP02 | BES0568 BES Q08ZC-GNX15B-EP02 | BES03M5 BES R04KC-GNX15B-EP02 | |
|--|---|---|---|--|
| | 25 x 5 x 5 mm | 40 x 8 x 8 mm | 16 x 8 x 4 mm | |
| | block style | block style | block style | |
| | for flush mounting | for flush mounting | for flush mounting | |
| | 0.8 mm | 1.5 mm | 1.5 mm | |
| | NAMUR | NAMUR | NAMUR | |
| | 3000 Hz | 5000 Hz | 8000 Hz | |
| | Stainless steel | Zinc, die-cast | PA 6, GF30 | |
| | — | — | — | |
| | PBT | PBT | PA 6 | |
| | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | |
| | 7.7...9 VDC | 7.7...9 VDC | 7.7...9 VDC | |
| | — | -25...70 °C | -25...70 °C | |
| | IP67 | IP67 | IP67 | |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| | Page 258 | Page 259 | Page 259 | |

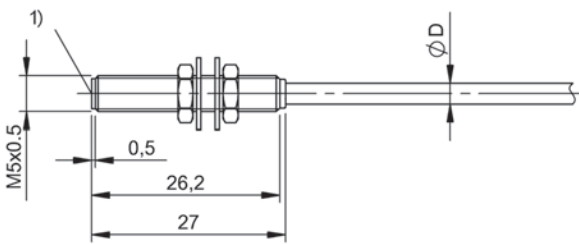


1) Sensing surface

BES050N

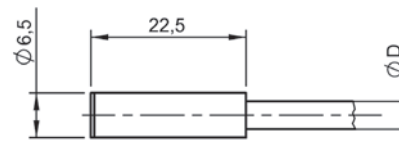


BES02L6

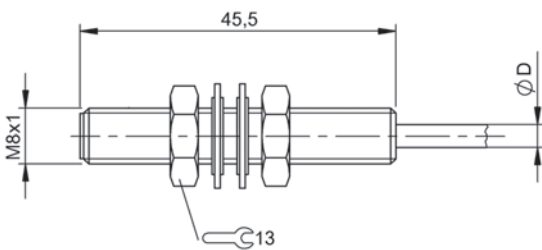


1) Sensing surface

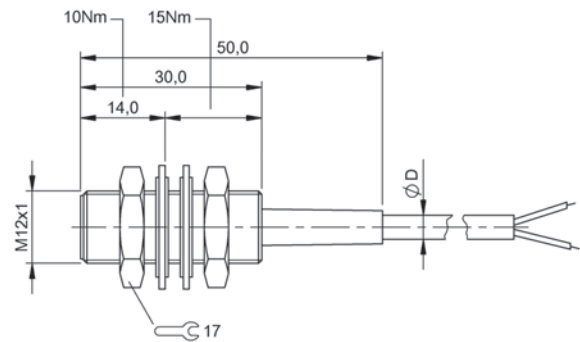
BES050P



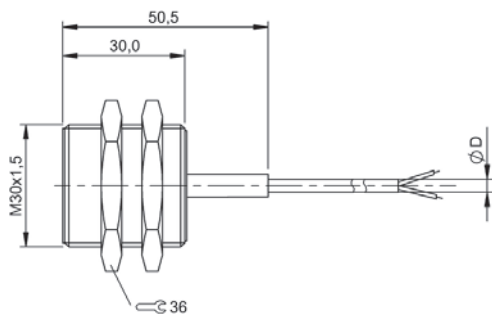
BES02LW, BES02LY



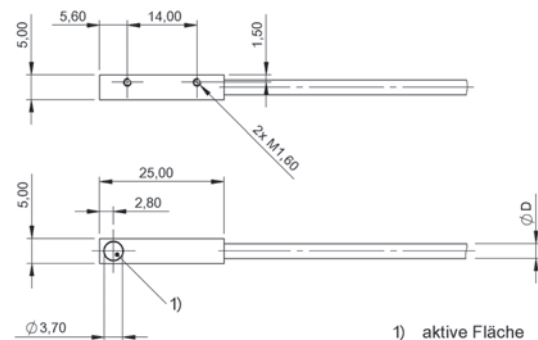
BES02LA



BES02LE

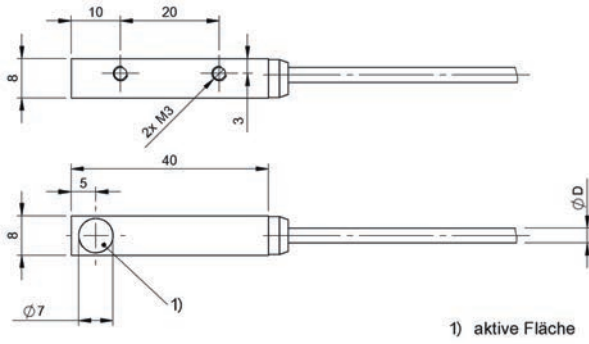


BES02LL



BES0566

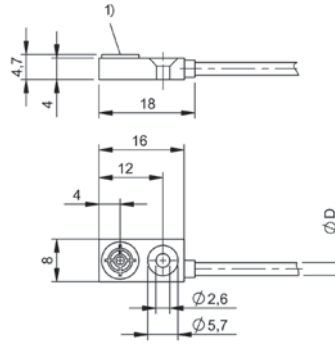
1) aktive Fläche



1) Sensing surface

BES0568

1) aktive Fläche



1) Sensing surface

BES03M5



| PNP normally open | BES03JA BES IKVS-010.23-G-S4 | BES03JC BES IKVS-015.23-G-S4 | |
|--------------------------|--|--|--|
| Dimension | 60 x 35 x 20 mm | 60 x 35 x 20 mm | |
| Style | block style | block style | |
| Pass-through | 10.1 mm | 15.1 mm | |
| Target size min. | Ball D = 2 mm | Ball D = 3 mm | |
| Range | — | — | |
| Switching frequency | 16 Hz | 16 Hz | |
| Housing material | Plastic | Plastic | |
| Material sensing surface | Plastic | Plastic | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Protection degree | IP65 | IP65 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
| Productview | Page 262 | Page 262 | |



| BES03JH BES IKVS-025.23-G-S4 | BES0429 BES Z06K-PSC16F-BP00,1-GS04 | BES0428 BES Z06K-PSC16F-S49G | |
|-----------------------------------|---|----------------------------------|--|
| 60 x 35 x 20 mm | 78.5 x 17 x 11.9 mm | 78.5 x 17 x 11.9 mm | |
| block style | block style | block style | |
| 25.1 mm | — | — | |
| Ball D = 4 mm | M3x5 screw | M3x5 screw | |
| — | 16 mm | 16 mm | |
| 16 Hz | 10 Hz | 10 Hz | |
| Plastic | PA 6.6 | PA 6.6 | |
| Plastic | — | — | |
| Connector, M12x1 connector, 4-pin | Cable with connector, M12x1 connector, 4-pin, 0.10 m, PUR | Connector, M8x1 connector, 3-pin | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| -25...70 °C | -25...70 °C | -25...70 °C | |
| IP65 | IP67 | IP67 | |
| CE, EAC | CE, EAC | CE, EAC | |
| Page 262 | Page 263 | Page 263 | |

Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

Systems

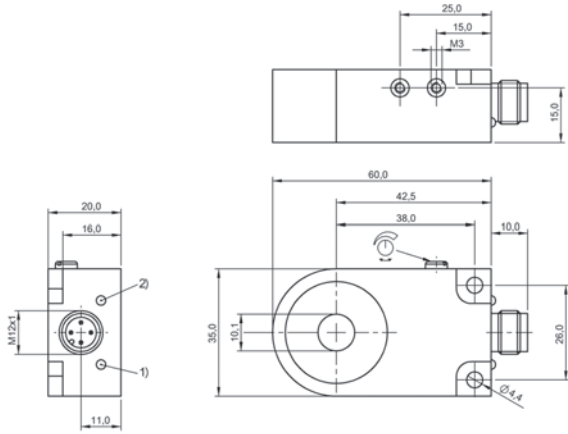
Safety

Industrial Networking

Power Supply

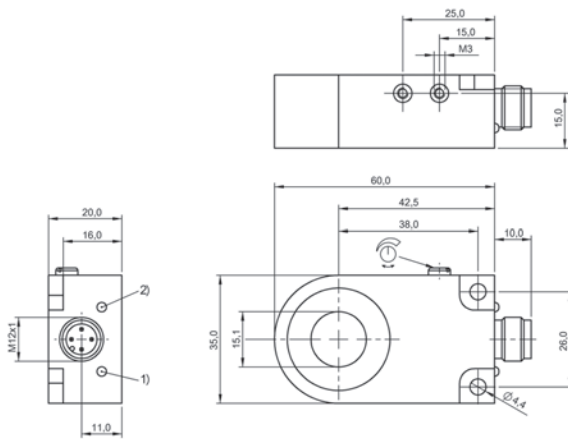
Connectivity

Accessories



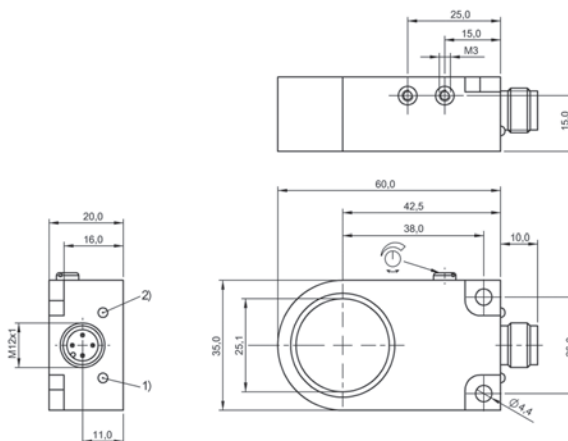
1) LED function indicator, 2) LED operating voltage

BES03JA



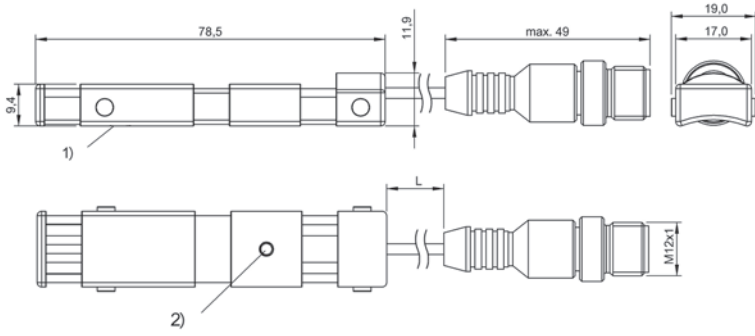
1) LED function indicator, 2) LED operating voltage

BES03JC



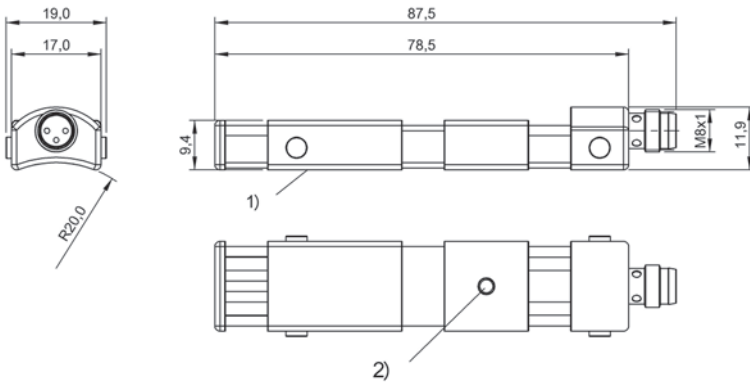
1) LED function indicator, 2) LED operating voltage

BES03JH



1) Sensing surface, 2) LED yellow

BES0429



BES0428



| | BAW000J BAW G06EE-UAF20B-EP03-K | BAW000L BAW G06EF-UAC20B-S49G | |
|--------------------------|---|---|--|
| Dimension | Ø 6.5 x 30.5 mm | Ø 6.5 x 45 mm | |
| Style | D6.5 | D6.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 0.5...2 mm | 0.5...2 mm | |
| Interface | — | — | |
| Analog output | Analog, voltage 0...10 V Analog, Temperature | Analog, voltage 0...10 V | |
| Output characteristic | falling on approach | falling on approach | |
| Limit frequency -3 dB | 1000 Hz | 1000 Hz | |
| Switching output | — | — | |
| Switching frequency | — | — | |
| Repeat accuracy per BWN | ±10 µm | ±40 µm | |
| Non-linearity max. | ±45 µm | ±45 µm | |
| Housing material | Stainless steel | Stainless steel | |
| Surface protection | — | — | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 3.00 m, PUR | Connector, M8x1 connector, 3-pin | |
| Operating voltage U_b | 21.6...26.4 VDC | 15...30 VDC | |
| Ambient temperature | 10...60 °C | 10...60 °C | |
| Pressure rating max. | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 274 | Page 274 | |



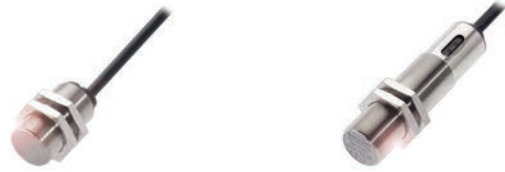
| | BAW000T BAW M08EI-UAD15B-BP03 | BAW000W BAW M08EI-UAD25F-BP03 | BAW0040 BAW Z08E0-UAD20B-S04G-H11 | BAW004K BAW M12ME-UAC35C-S04G |
|--|---|---|---|---|
| | Ø 8 x 51.5 mm | Ø 8 x 51.5 mm | Ø 12 x 78 mm | Ø 12 x 45 mm |
| | M8x1 | M8x1 | M12x1 | M12x1 |
| | for flush mounting | non-flush | for flush mounting | for flush mounting |
| | 0.5...1.5 mm | 0.5...2.5 mm | 0.5...2 mm | 0.2...3.5 mm |
| | — | — | — | — |
| | Analog, voltage 0...10 V | Analog, voltage 0...10 V | Analog, voltage 0...10 V | Analog, voltage 0...10 V |
| | falling on approach | falling on approach | falling on approach | falling on approach |
| | 1000 Hz | 1000 Hz | 1000 Hz | 1000 Hz |
| | — | — | — | — |
| | — | — | — | — |
| | ±8 µm | ±10 µm | ±8 µm | ±7 µm |
| | ±30 µm | ±60 µm | ±45 µm | ±35 µm |
| | Stainless steel | Stainless steel | Stainless steel | Brass |
| | — | — | — | Nickel-free coated |
| | PBT | PBT | Ceramic | PBT |
| | Cable, 3.00 m, PUR | Cable, 3.00 m, PUR | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 4-pin |
| | 15...30 VDC | 15...30 VDC | 15...30 VDC | 15...30 VDC |
| | -10...70 °C | -10...70 °C | -25...85 °C | -40...80 °C |
| | — | — | 500 bar | — |
| | IP67 | IP67 | IP68 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Page 274 | Page 274 | Page 274 | Page 274 |



| | BAW0054 BAW M12ME-IAC35C-S04G | BAW0055 BAW M12ME-ICC35C-S04G | |
|----------------------------------|---|---|--|
| Dimension | Ø 12 x 45 mm | Ø 12 x 45 mm | |
| Style | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 0.2...3.5 mm | 0.2...3.5 mm | |
| Interface | — | — | |
| Analog output | Analog, current 0...20 mA | Analog, current 4...20 mA | |
| Output characteristic | falling on approach | falling on approach | |
| Limit frequency -3 dB | 1000 Hz | 1000 Hz | |
| Switching output | — | — | |
| Switching frequency | — | — | |
| Repeat accuracy per BWN | ±7 µm | ±7 µm | |
| Non-linearity max. | ±35 µm | ±35 µm | |
| Housing material | Brass | Brass | |
| Surface protection | Nickel-free coated | Nickel-free coated | |
| Material sensing surface | PBT | PBT | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U _b | 16...30 VDC | 16...30 VDC | |
| Ambient temperature | -40...80 °C | -40...80 °C | |
| Pressure rating max. | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 274 | Page 274 | |



| | BAW004M BAW M12MI-BLC35C-S04G | BAW004H BAW M12ME-UAC70G-S04G | BAW0056 BAW M12MH-BLC70G-S04G | BAW0011 BAW M12ME-UAD50B-BP01 |
|--|---|---|---|---|
| | Ø 12 x 65 mm | Ø 12 x 50 mm | Ø 12 x 65 mm | Ø 12 x 30 mm |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | for flush mounting | non-flush | non-flush | quasi-flush |
| | 0.2...3.5 mm | 0.2...7 mm | 0.2...7 mm | 1...5 mm |
| | IO-Link 1.1 12 bit | — | IO-Link 1.1 12 bit | — |
| | — | Analog, voltage 0...10 V | — | Analog, voltage 0...10 V Analog, Temperature |
| | falling on approach | falling on approach | falling on approach | falling on approach |
| | 1000 Hz | 1000 Hz | 1000 Hz | 1000 Hz |
| | — | — | — | — |
| | — | — | — | — |
| | ±7 µm | ±7 µm | ±14 µm | ±10 µm |
| | ±35 µm | ±70 µm | ±70 µm | ±160 µm |
| | Brass | Brass | Brass | Brass |
| | Nickel-free coated | Nickel-free coated | Nickel-free coated | nickel plated |
| | PBT | LCP | LCP | PA 12 |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Cable, 1.00 m, PUR |
| | 18...30 VDC | 15...30 VDC | 18...30 VDC | 15...30 VDC |
| | -40...80 °C | -40...80 °C | -40...80 °C | 0...60 °C |
| | — | — | — | — |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Page 274 | Page 274 | Page 275 | Page 275 |



| | BAW001T BAW M18ME-ICC50B-BP03 | BAW002M BAW M18MI2-UAC50B-BP05-002 | |
|--------------------------|---|--|--|
| Dimension | Ø 18 x 36 mm | Ø 18 x 76.5 mm | |
| Style | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 1...5 mm | 1...5 mm | |
| Interface | — | — | |
| Analog output | Analog, current 4...20 mA | Analog, voltage 0...10 V | |
| Output characteristic | falling on approach | falling on approach | |
| Limit frequency -3 dB | 500 Hz | 500 Hz | |
| Switching output | — | 3x PNP Normally open (NO) Programmable | |
| Switching frequency | — | 1000 Hz | |
| Repeat accuracy per BWN | ±8 µm | ±8 µm | |
| Non-linearity max. | ±120 µm | ±120 µm | |
| Housing material | Brass | Brass | |
| Surface protection | nickel plated | nickel plated | |
| Material sensing surface | PBT | PBT | |
| Connection | Cable, 3.00 m, PUR | Cable, 5.00 m, PUR | |
| Operating voltage U_b | 15...30 VDC | 15...30 VDC | |
| Ambient temperature | -10...70 °C | -10...70 °C | |
| Pressure rating max. | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 275 | Page 275 | |



| | BAW0026 BAW M18ME-UAE50B-S04G-K | BAW002F BAW M18MI-BLC50B-S04G | BAW002H BAW M18MI-IAC50B-S04G | BAW0029 BAW M18MG-UAC16F-S04G-K |
|--|---|---|---|---|
| | Ø 18 x 44.5 mm | Ø 18 x 65 mm | Ø 18 x 65 mm | Ø 18 x 65 mm |
| | M18x1 | M18x1 | M18x1 | M18x1 |
| | for flush mounting | for flush mounting | for flush mounting | non-flush |
| | 1...5 mm | 1...5 mm | 1...5 mm | 4...16 mm |
| | — | IO-Link 1.1 10 bit | — | — |
| | Analog, voltage 0...10 V Analog, Temperature | — | Analog, current 0...20 mA | Analog, voltage 0...10 V Analog, Temperature |
| | falling on approach | falling on approach | falling on approach | falling on approach |
| | 500 Hz | 500 Hz | 500 Hz | 500 Hz |
| | — | — | — | — |
| | — | — | — | — |
| | ±8 µm | ±10 µm | ±8 µm | ±200 µm |
| | ±120 µm | ±120 µm | ±120 µm | ±360 µm |
| | Brass | Brass | Brass | Brass |
| | nickel plated | nickel plated | nickel plated | nickel plated |
| | PBT | PBT | PBT | PBT |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 4-pin |
| | 21.6...26.4 VDC | 18...30 VDC | 10...30 VDC | 15...30 VDC |
| | -10...70 °C | -10...70 °C | -10...70 °C | 10...60 °C |
| | — | — | — | — |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Page 275 | Page 275 | Page 275 | Page 275 |



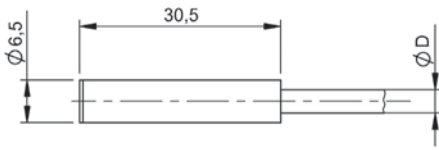
| | BAW005Y BAW M30EE-ICD10B-S04G-L01 | BAW002W BAW M30ME-UAC10B-S04G | |
|--------------------------|---|---|--|
| Dimension | Ø 30 x 44.5 mm | Ø 30 x 44.5 mm | |
| Style | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | |
| Range | 2...10 mm | 2...10 mm | |
| Interface | — | — | |
| Analog output | Analog, current 4...20 mA | Analog, voltage 0...10 V | |
| Output characteristic | falling on approach | falling on approach | |
| Limit frequency -3 dB | 500 Hz | 500 Hz | |
| Switching output | — | — | |
| Switching frequency | — | — | |
| Repeat accuracy per BWN | ±10 µm | ±10 µm | |
| Non-linearity max. | ±300 µm | ±240 µm | |
| Housing material | Stainless steel | Brass | |
| Surface protection | — | nickel plated | |
| Material sensing surface | PEEK | PBT | |
| Connection | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | |
| Operating voltage U_b | 15...30 VDC | 15...30 VDC | |
| Ambient temperature | -10...70 °C | -10...70 °C | |
| Pressure rating max. | — | — | |
| Protection degree | IP68 | IP67 | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | |
| Productview | Page 275 | Page 276 | |



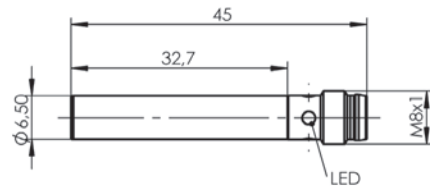
| | BAW002Y BAW M30ME-UAC15F-S04G | BAW005Z BAW R03KC-UAA40B-BP03-505 | BAW003E BAW Z01AC-UAD50B-DP03-K | BAW003W BAW Z05AC-BLD50B-BP00,75-GS04 |
|--|---|---|---|--|
| | Ø 30 x 57 mm | 10 x 6 x 30 mm | 38,5 x 14 x 17 mm | 30 x 38,5 x 16,5 mm |
| | M30x1,5 | block style | block style | block style |
| | non-flush | for flush mounting | non-flush | non-flush |
| | 3...15 mm | 1...4 mm | 1...5 mm | 1...5 mm |
| | — | — | — | IO-Link 1.1 10 bit |
| | Analog, voltage 0...10 V | Analog, voltage 0...10 V | Analog, voltage 0...10 V Analog, Temperature | — |
| | falling on approach | falling on approach | falling on approach | falling on approach |
| | 350 Hz | 1000 Hz | 1000 Hz | 200 Hz |
| | — | — | — | — |
| | — | — | — | — |
| | ±12 µm | ±35 µm | ±10 µm | ±12 µm |
| | ±360 µm | ±150 µm | ±120 µm | ±150 µm |
| | Brass | PA 6, GF30 | Aluminum | Aluminum |
| | nickel plated | — | Anodized | Anodized |
| | PBT | PA 6, GF30 | PA 12 | LCP |
| | Connector, M12x1 connector, 3-pin | Cable, 3.00 m, PUR | Cable, 3.00 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.75 m, PUR |
| | 15...30 VDC | 21.6...26.4 VDC | 15...30 VDC | 18...30 VDC |
| | -10...70 °C | 0...70 °C | -10...60 °C | -10...60 °C |
| | — | — | — | — |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Page 276 | Page 276 | Page 276 | Page 276 |



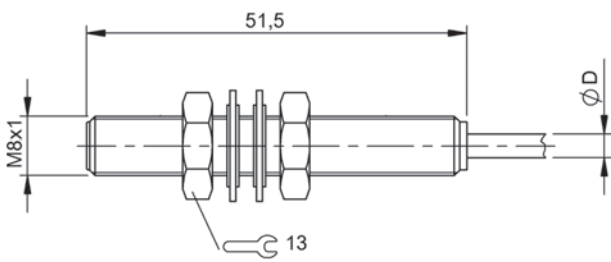
| | BAW0034 BAW R06AC-UAF20B-S49G | | |
|--------------------------|---|--|--|
| Dimension | 30 x 20 x 8 mm | | |
| Style | block style | | |
| Installation | for flush mounting | | |
| Range | 0.5...2 mm | | |
| Interface | — | | |
| Analog output | Analog, voltage 0...10 V | | |
| Output characteristic | falling on approach | | |
| Limit frequency -3 dB | 1000 Hz | | |
| Switching output | — | | |
| Switching frequency | — | | |
| Repeat accuracy per BWN | ±12 µm | | |
| Non-linearity max. | ±45 µm | | |
| Housing material | Aluminum | | |
| Surface protection | Anodized | | |
| Material sensing surface | PBT | | |
| Connection | Connector, M8x1 connector, 3-pin | | |
| Operating voltage U_b | 21.6...26.4 VDC | | |
| Ambient temperature | -10...70 °C | | |
| Pressure rating max. | — | | |
| Protection degree | IP67 | | |
| Approval/Conformity | CE, cULus, EAC | | |
| Productview | Page 276 | | |



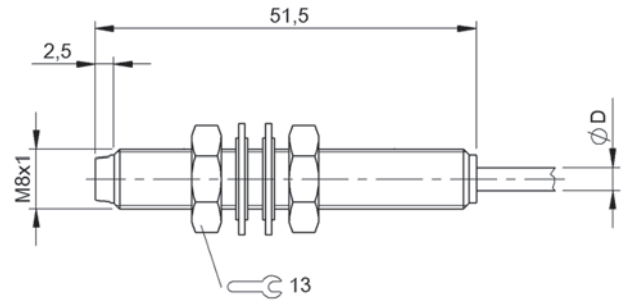
BAW000J



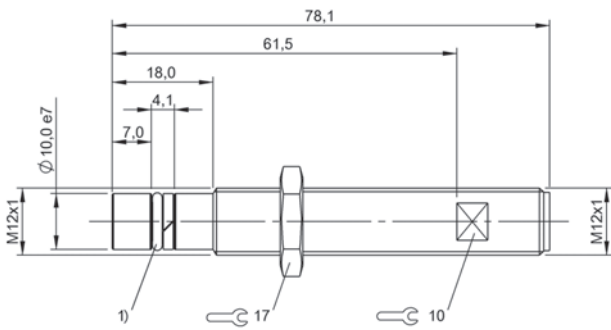
BAW000L



BAW000T

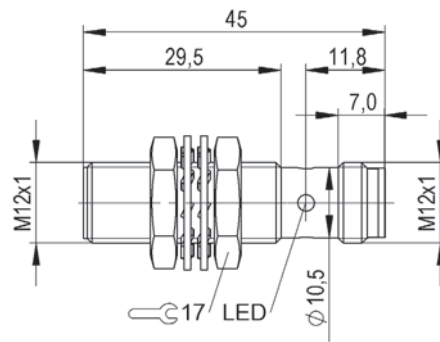


BAW000W

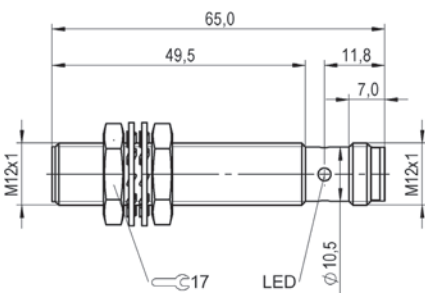


1) O-Ring with thrust ring

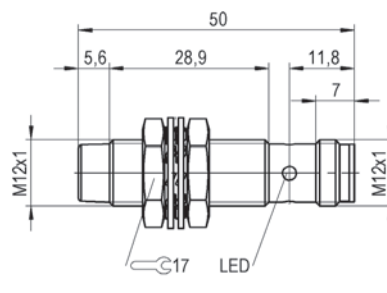
BAW0040



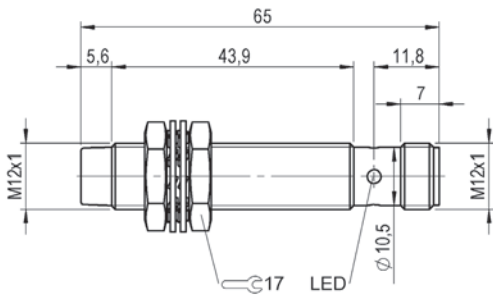
BAW004K, BAW0054, BAW0055



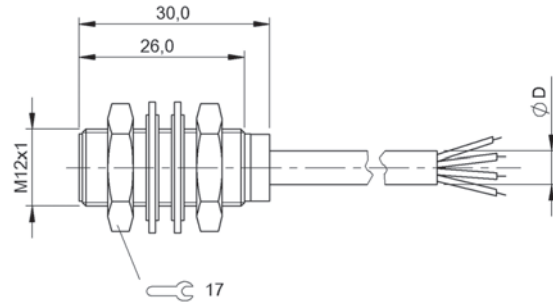
BAW004M



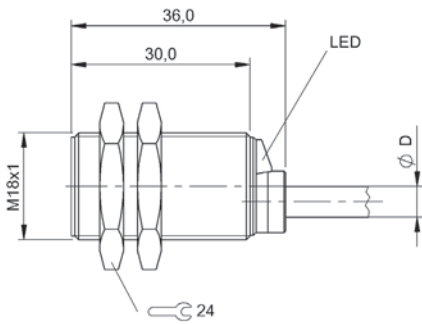
BAW004H



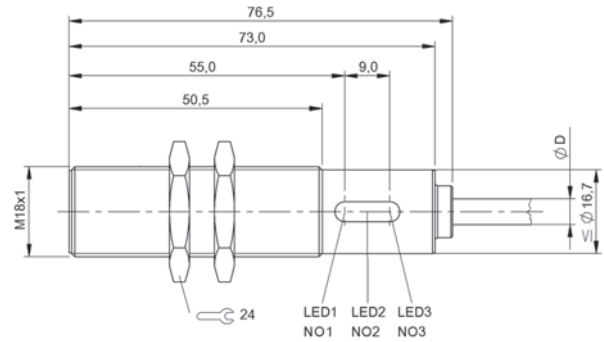
BAW0056



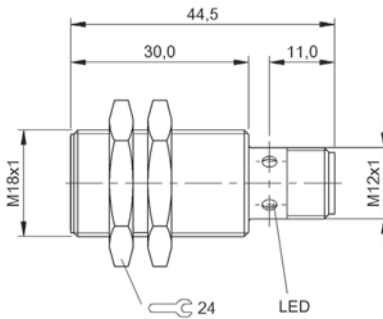
BAW0011



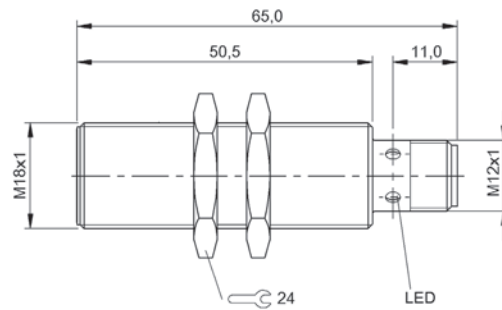
BAW001T



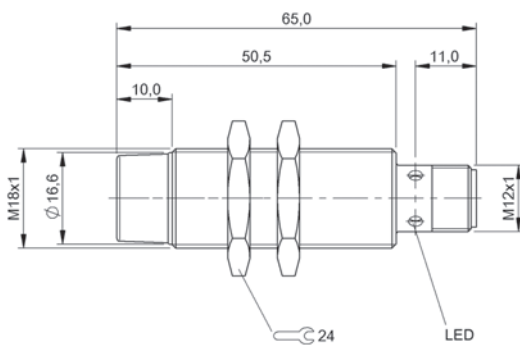
BAW002M



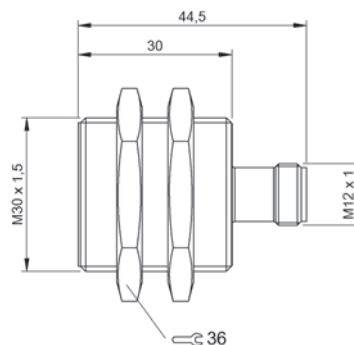
BAW0026



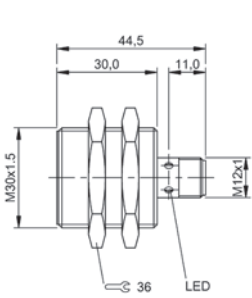
BAW002F, BAW002H



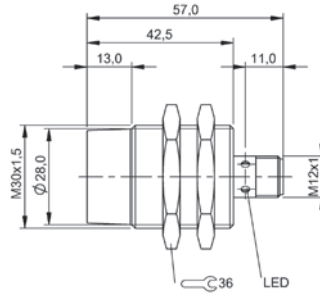
BAW0029



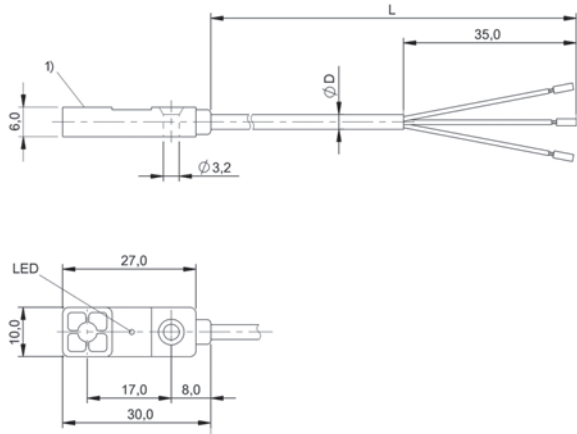
BAW005Y



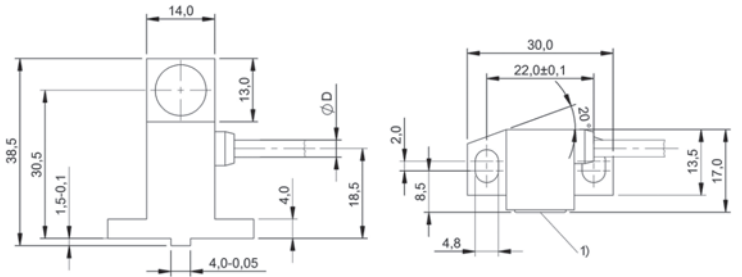
BAW002W



BAW002Y

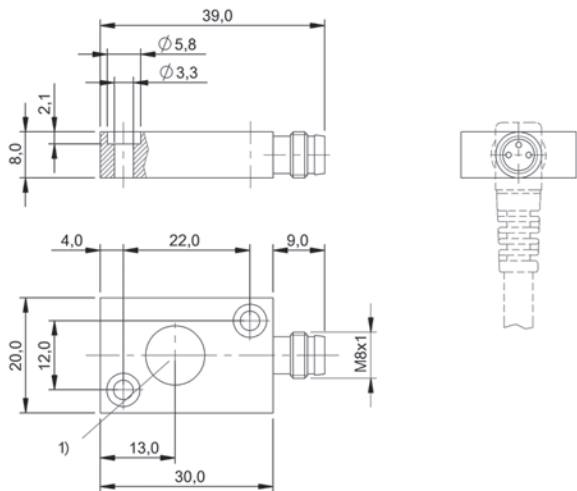


1) Sensing surface



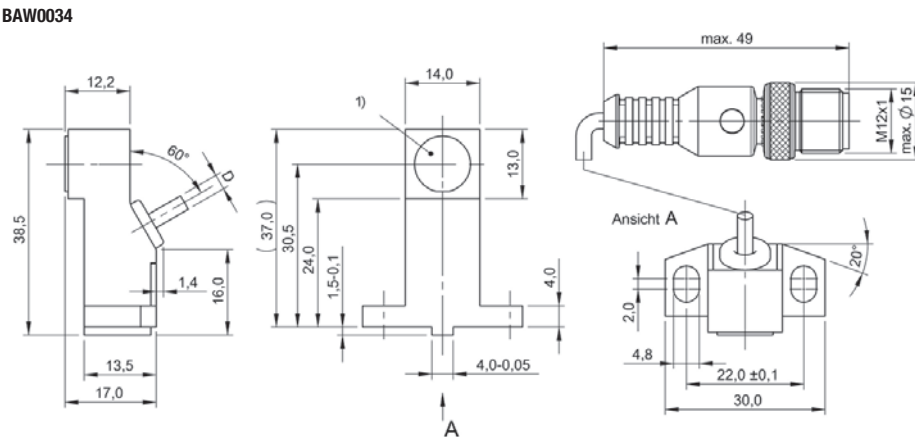
1) Sensing surface

BAW005Z



1) Sensing surface

BAW003E



1) Sensing surface

BAW003W



| | BIP0001 BIP AD0-B014-01-EP02 | BIP000T BIP AD2-T014-01-EB02-505 | BIP0008 BIP CD2-B014-01-EP02 | |
|-------------------------|--|--|--|--|
| Dimension | 35 x 35 x 31 mm | 35 x 35 x 31 mm | 35 x 35 x 31 mm | |
| Style | block style | block style | block style | |
| Connection | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | |
| Cable shield | no | yes | no | |
| Housing material | PA | PA | PA | |
| Measuring range | 0...14 mm | 0...14 mm | 0...14 mm | |
| Interface | — | — | — | |
| Analog output | Analog, voltage 0...10 V | Analog, voltage 0...10 V | Analog, current 4...20 mA | |
| Output characteristic | Adjustable | Adjustable | Adjustable | |
| Repeat accuracy per BWN | ±80 µm | ±80 µm | ±80 µm | |
| Non-linearity max. | ±250 µm | ±250 µm | ±250 µm | |
| Operating voltage U_b | 15...30 VDC | 15...30 VDC | 15...30 VDC | |
| Ambient temperature | -25...70 °C | -25...70 °C | -25...70 °C | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC | |
| Productview | Page 284 | Page 284 | Page 284 | |



| | BIP000F BIP LD2-T014-01-EP01-S4 | BIP001K BIP AD2-T017-04-BP02 | BIP001L BIP CD2-T017-04-BP02 | BIP001M BIP LD2-T017-04-BP00,5-S4 | BIP000L BIP AD2-T030-02-S4 |
|--|---|--|---|--|--------------------------------------|
| | 35 x 35 x 31 mm | 30 x 18 x 40.5 mm | 30 x 18 x 40.5 mm | 30 x 18 x 40.5 mm | 52 x 30 x 16 mm |
| | block style | block style | block style | block style | block style |
| | Cable with connector, M12x1-Male, 3-pole, 1.00 m, PUR | Cable, 2 m, PUR | Cable, 2 m, PUR | Cable with connector, M12x1 connector, 3-pin, 0.5 m, PUR | Connector, M12x1 connector, 3-pin |
| | no | yes | yes | yes | — |
| | PA | PA | PA | PA | PA |
| | 0...14 mm | 0...17 mm | 0...17 mm | 0...17 mm | 0...30 mm |
| | IO-Link 1.0 | — | — | IO-Link 1.1 | — |
| | — | Analog, voltage 0...10 V | Analog, current 4...20 mA | — | Analog, voltage 0...10 V |
| | — | Adjustable | Adjustable | — | Adjustable |
| | ±80 µm | ±50 µm | ±50 µm | ±40 µm | ±100 µm |
| | ±250 µm | ±250 µm | ±250 µm | ±250 µm | ±500 µm |
| | 18...30 VDC | 15...30 VDC | 15...30 VDC | 18...30 VDC | 15...30 VDC |
| | -25...70 °C | -25...70 °C | -25...70 °C, Temperature drift is between -10...70 °C | -25...70 °C | -25...85 °C |
| | IP67 | IP67 | IP67 | IP67 | IP67 |
| | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC |
| | Page 284 | Page 284 | Page 284 | Page 284 | Page 284 |



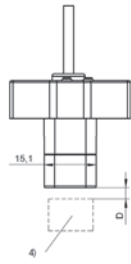
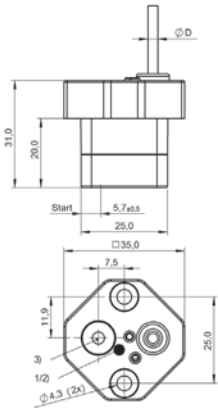
| | BIP0002 BIP AD2-B040-02-S4 | BIP0005 BIP CD2-B040-02-S4 | BIP0004 BIP LD2-T040-02-S4 | |
|-------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|
| Dimension | 70 x 30 x 16 mm | 70 x 30 x 16 mm | 70 x 30 x 16 mm | |
| Style | block style | block style | block style | |
| Connection | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | Connector, M12x1 connector, 3-pin | |
| Cable shield | — | — | — | |
| Housing material | PA | PA | PA | |
| Measuring range | 0...40 mm | 0...40 mm | 0...40 mm | |
| Interface | — | — | IO-Link 1.0 | |
| Analog output | Analog, voltage 0...10 V | Analog, current 4...20 mA | — | |
| Output characteristic | Adjustable | Adjustable | — | |
| Repeat accuracy per BWN | ±100 µm | ±100 µm | ±100 µm | |
| Non-linearity max. | ±500 µm | ±500 µm | ±500 µm | |
| Operating voltage U_b | 15...30 VDC | 15...30 VDC | 18...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -25...85 °C | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC | |
| Productview | Page 285 | Page 285 | Page 285 | |



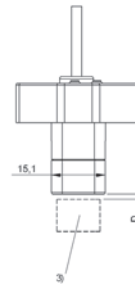
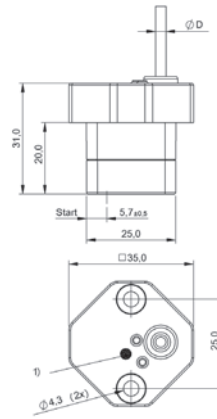
| | BIP000M BIP ED2-B048-03-S75 | BIP001J BIP LD2-T048-03-S75 | BIP000C BIP ED2-B070-03-S75 | BIP001H BIP LD2-T070-03-S75 | BIP000E BIP ED2-B103-03-S75 |
|--|---|---------------------------------------|---|---------------------------------------|---|
| | 64 x 21 x 22 mm | 64 x 21 x 22 mm | 92.5 x 21 x 22 mm | 92.5 x 21 x 22 mm | 121 x 21 x 22 mm |
| | block style | block style | block style | block style | block style |
| | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin |
| | — | — | — | — | — |
| | PBT | PBT | PBT | PBT | PBT |
| | 0...48 mm | 0...48 mm | 0...70 mm | 0...70 mm | 0...103 mm |
| | — | IO-Link 1.1 | — | IO-Link 1.1 | — |
| | Analog, voltage 0...10 V Analog, current 4...20 mA | — | Analog, voltage 0...10 V Analog, current 4...20 mA | — | Analog, voltage 0...10 V Analog, current 4...20 mA |
| | Adjustable | — | Adjustable | — | Adjustable |
| | ±80 µm | ±80 µm | ±80 µm | ±80 µm | ±80 µm |
| | ±400 µm | ±400 µm | ±300 µm | ±300 µm | ±300 µm |
| | 16...30 VDC | 18...30 VDC | 16...30 VDC | 18...30 VDC | 16...30 VDC |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C |
| | IP67 | IP67 | IP67 | IP67 | IP67 |
| | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC |
| | Page 285 | Page 285 | Page 285 | Page 286 | Page 286 |



| | BIP0014 BIP LD2-T103-03-S75 | BIP000R BIP ED2-B133-03-S75 | BIP001F BIP LD2-T133-03-S75 | |
|-------------------------|---------------------------------------|---|---------------------------------------|--|
| Dimension | 121 x 21 x 22 mm | 149.5 x 21 x 22 mm | 149.5 x 21 x 22 mm | |
| Style | block style | block style | block style | |
| Connection | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | |
| Cable shield | — | — | — | |
| Housing material | PBT | PBT | PBT | |
| Measuring range | 0...103 mm | 0...133 mm | 0...133 mm | |
| Interface | IO-Link 1.1 | — | IO-Link 1.1 | |
| Analog output | — | Analog, voltage 0...10 V Analog, current 4...20 mA | — | |
| Output characteristic | — | Adjustable | — | |
| Repeat accuracy per BWN | ±80 µm | ±80 µm | ±80 µm | |
| Non-linearity max. | ±300 µm | ±400 µm | ±400 µm | |
| Operating voltage U_b | 18...30 VDC | 16...30 VDC | 18...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -25...85 °C | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | CE, cURus, EAC | CE, cURus, EAC | CE, cURus, EAC | |
| Productview | Page 286 | Page 286 | Page 286 | |

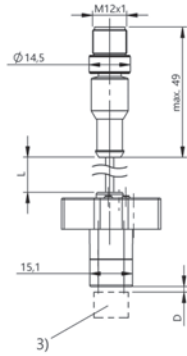
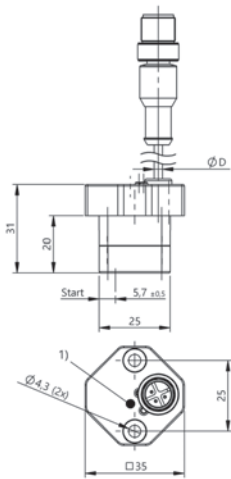


1) LED function indicator, 2) LED function indicator, 3) Teach-In button, 4) Encoder



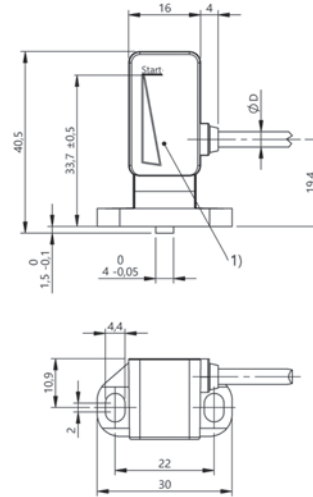
1) LED function indicator, 3) Encoder

BIP0001, BIP0008



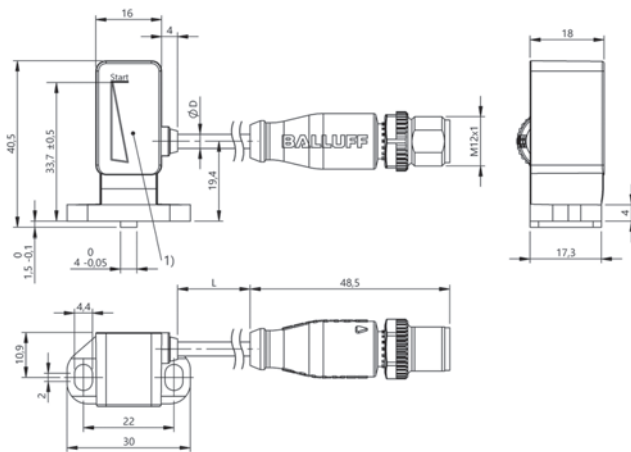
1) LED function indicator, 3) Encoder

BIP000T



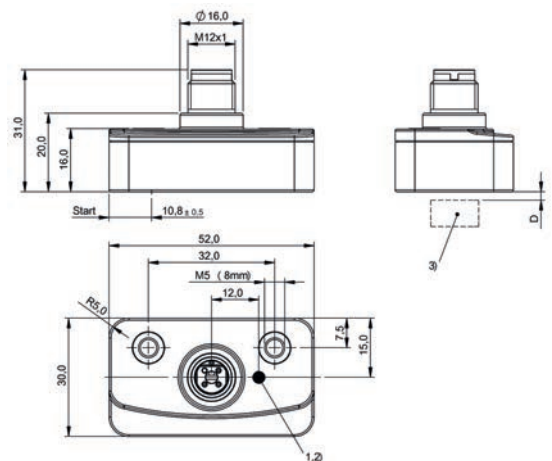
1) Sensing surface

BIP000F



1) Sensing surface

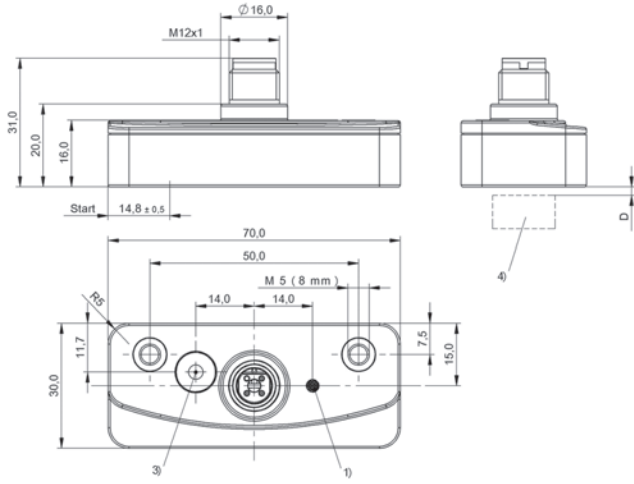
BIP001K, BIP001L



1) LED function indicator, 2) LED function indicator, 3) Encoder

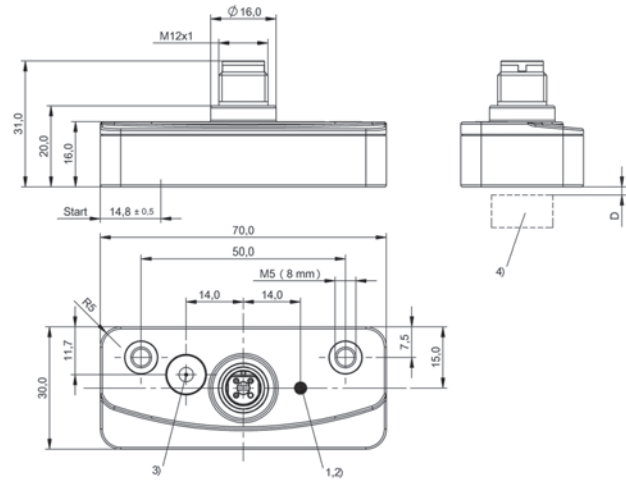
BIP001M

BIP000L



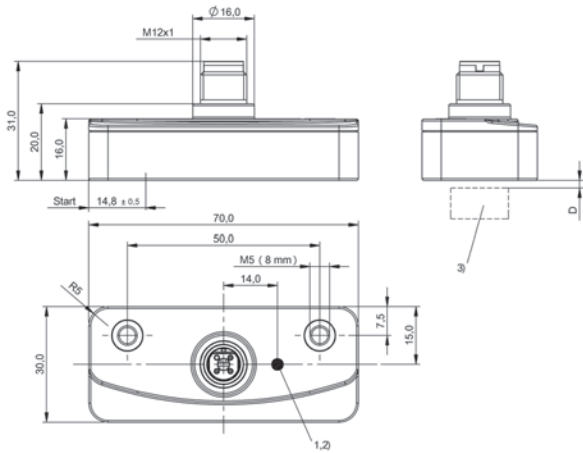
1) LED function indicator, 3) Teach-In button, 4) Encoder

BIP0002



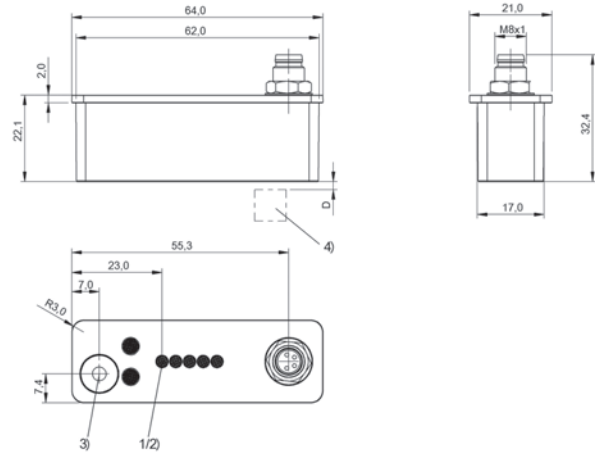
1) LED function indicator, 2) LED function indicator, 3) Teach-In button, 4) Encoder

BIP0005



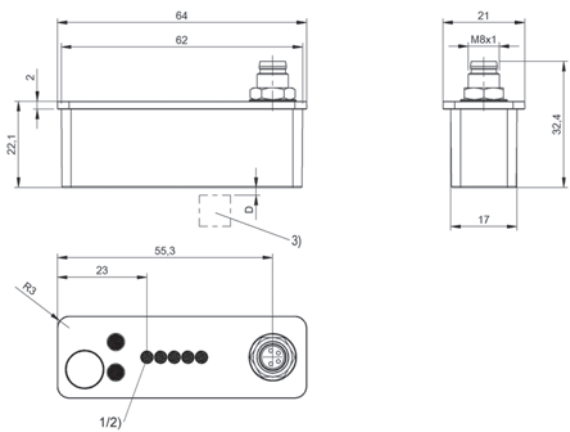
1) LED function indicator, 2) LED function indicator, 3) Encoder

BIP0004



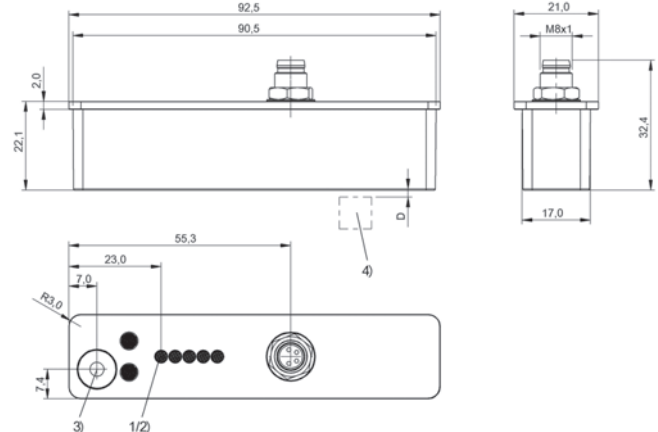
1) LED function indicator, 2) LED function indicator, 3) Teach-In button, 4) Encoder

BIP000M



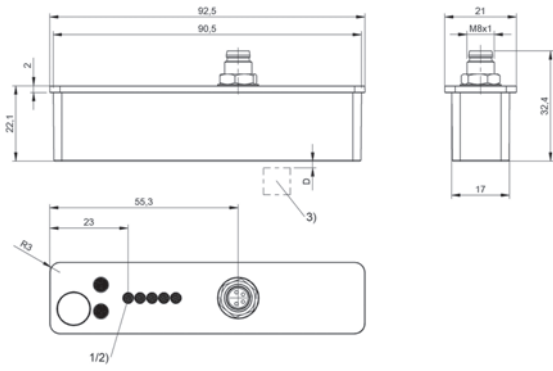
1) LED Power, 2) LED function indicator, 3) Encoder

BIP001J



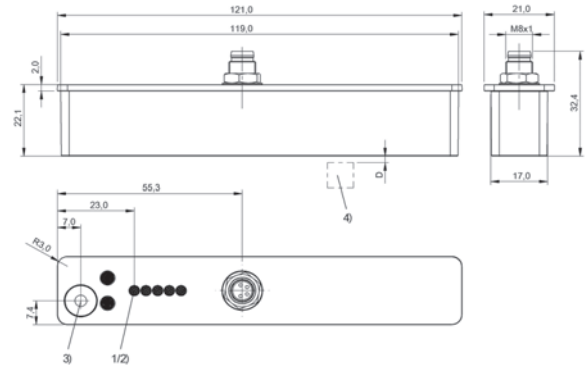
1) LED function indicator, 2) LED function indicator, 3) Teach-In button, 4) Encoder

BIP000C



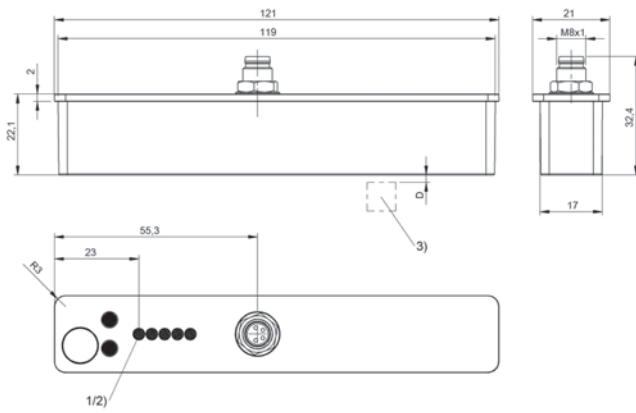
1) LED Power, 2) LED function indicator, 3) Encoder

BIP001H



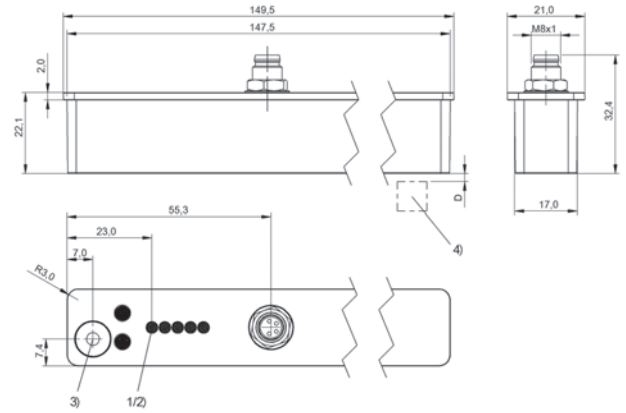
1) LED function indicator, 2) LED function indicator, 3) Teach-In button, 4) Encoder

BIP000E



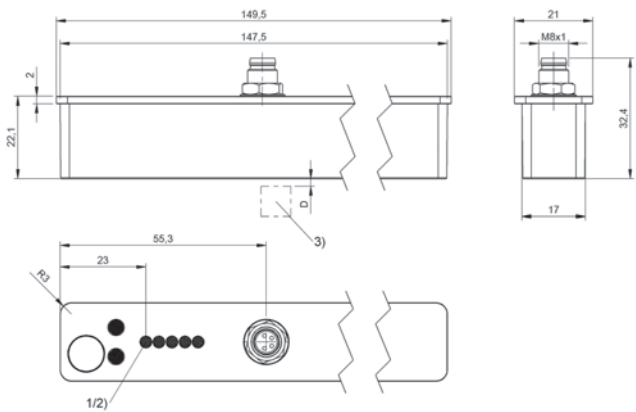
1) LED Power, 2) LED function indicator, 3) Encoder

BIP0014



1) LED function indicator, 2) LED function indicator, 3) Teach-In button, 4) Encoder

BIP000R



1) LED Power, 2) LED function indicator, 3) Encoder

BIP001F



Features

- High resolution and repeatability
- Insensitive to shock, vibration and noise fields
- Absolute analog output signal rising or falling
- Guided sensor element
- 32 kHz sampling rate
- Potential-free
- Non-contact operating principle

| | BIW1-A310 BIW1-A310-M____-P1-S115 |
|---------------------------------------|---|
| Analog output U_A / I_A | A (0...+10 V) |
| Repeat accuracy | 10 μ m |
| Sampling rate | typ. 32 kHz |
| Non-linearity max. | \leq 0.02% |
| Operating voltage | 18...30 V DC |
| Operating temperature | -20...+85 °C |
| Degree of protection as per IEC 60529 | IP 54 |
| Approval/Conformity | cULus, CE |
| Housing material | Anodized aluminum |
| Connection | M12 connector, 8-pin standard |

Calculation example:

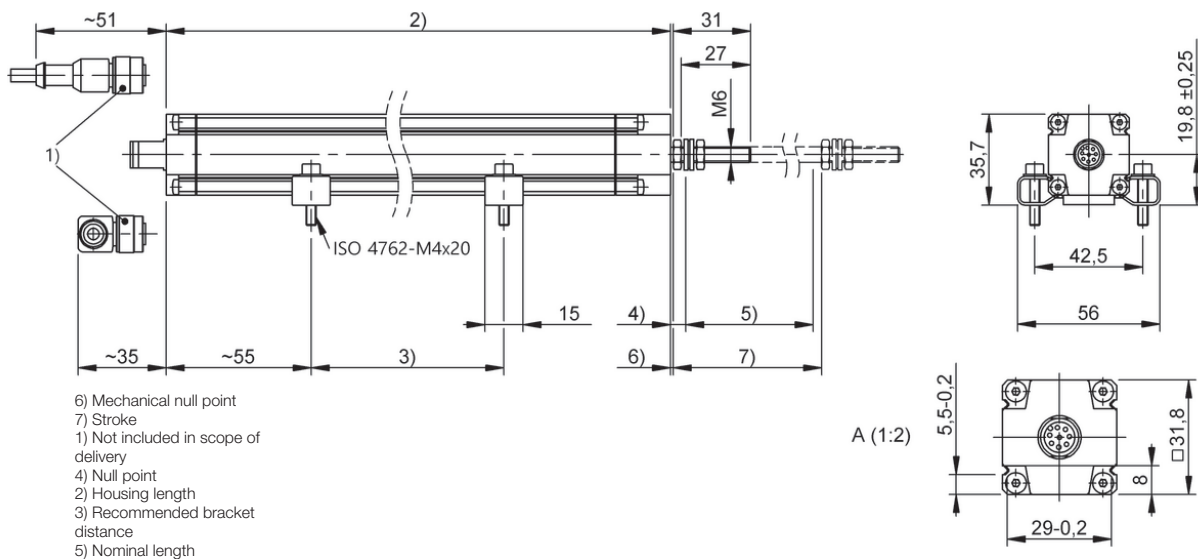
BIW1-...-M0100-P1-S115
 Nominal length 100
 A = 200
 B = 110
 C = 80

Ordering example:

BIW1 - 310 - M - P1 - S115

| | Output signal | Standard nominal length [mm] | | | |
|---|---------------|------------------------------|------|------|--------------|
| A | 0...+10 V | 0075 | 0100 | 0130 | 0150 |
| E | 4...20 mA | 0175 | 0225 | 0260 | 0300 |
| C | 0...20 mA | 0360 | 0375 | 0400 | 0450 |
| G | -10...+10 V | 0500 | 0600 | 0650 | 0750 0775 |

| BIW1-E310 BIW1-E310-M____-P1-S115 | BIW1-C310 BIW1-C310-M____-P1-S115 | BIW1-G310 BIW1-G310-M____-P1-S115 |
|--------------------------------------|--------------------------------------|--------------------------------------|
| E (4...20 mA) | C (0...20 mA) | G (-10...+10 V) |
| 10 µm | 10 µm | 10 µm |
| typ. 32 kHz | typ. 32 kHz | typ. 32 kHz |
| ≤ 0.02% | ≤ 0.02% | ≤ 0.02% |
| 18...30 V DC | 18...30 V DC | 18...30 V DC |
| -20...+85 °C | -20...+85 °C | -20...+85 °C |
| IP 54 | IP 54 | IP 54 |
| cULus, CE | cULus, CE | cULus, CE |
| Anodized aluminum | Anodized aluminum | Anodized aluminum |
| M12 connector, 8-pin standard | M12 connector, 8-pin standard | M12 connector, 8-pin standard |





Object and level detection with patented technology

CAPACITIVE SENSORS



Balluff's capacitive sensors detect fluids, granulates and powders in direct contact or through a non-metallic container wall. As stick-on sensors, they fit flexibly to the housing shape and are easily removable. Moisture, foam and deposits of any kind are compensated for, even through glass and plastic walls up to 10 mm thick. This makes them ideal as level detection sensors for conductive media while guaranteeing high application security.

Our capacitive sensors are available in various form factors, even especially small ones.

The most important benefits

- Contact-free and therefore wear-free
- Bounceless output signal
- Foam and residue compensation



| PNP normally open | BCS001L BCS G06T4E1-PSM15C-EP02 | BCS001R BCS G06T4D2-PSM15C-S49G | |
|----------------------------------|---|---|--|
| Dimension | Ø 6.5 x 42 mm | Ø 6.5 x 54 mm | |
| Series | G06 | G06 | |
| Thread (A) | — | — | |
| Installation | for flush mounting | for flush mounting | |
| Connection | Cable, 2.00 m, PUR | Connector, M8x1 connector, 3-pin | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 0.1...1.5 mm | 0.1...1.5 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Housing material | Stainless steel (1.4301) | Stainless steel (1.4301) | |
| Material sensing surface | PTFE | PTFE | |
| Ambient temperature | -10...70 °C | -10...70 °C | |
| Operating voltage U _b | 11...30 VDC | 11...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP65 | IP65 | |
| Productview | Page 304 | Page 304 | |



| | BCS0026 BCS M08T4E1-PSM15C-EP02 | BCS002A BCS M08T4E2-PSM15C-S49G | BCS002T BCS G10T4H-PSM40C-EP02 | BCS00PU BCS M12BB11-PSC40D-EP02 |
|--|---|---|--|---|
| | Ø 8 x 42 mm | Ø 8 x 54 mm | Ø 10 x 50 mm | Ø 12 x 61 mm |
| | M08 | M08 | G10 | M12 |
| | M8x1 | M8x1 | — | M12x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | Cable, 2.00 m, PUR | Connector, M8x1 connector, 3-pin | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR |
| | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| | — | — | — | — |
| | 0.1...1.5 mm | 0.1...1.5 mm | 1...4 mm | 1...4 mm |
| | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable |
| | Stainless steel (1.4301) | Stainless steel (1.4301) | Stainless steel (1.4301) | PBT |
| | PTFE | PTFE | PTFE | PBT |
| | -10...70 °C | -10...70 °C | -30...70 °C | -25...85 °C |
| | 11...30 VDC | 11...30 VDC | 12...35 VDC | 10...30 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | IP65 | IP65 | IP65 | IP67 |
| | Page 304 | Page 304 | Page 304 | Page 304 |



| PNP normally open | BCS00PJ BCS M12BBG2-PSC40D-S04K | BCS00AU BCS M12TTG1-PSM40C-ET02 | |
|----------------------------------|---|---|--|
| Dimension | Ø 12 x 75 mm | Ø 12 x 50 mm | |
| Series | M12 | M12 | |
| Thread (A) | M12x1 | M12x1 | |
| Installation | for flush mounting | for flush mounting | |
| Connection | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PUR | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 1...4 mm | 4 mm | |
| Sensitivity | Switching distance adjustable | — | |
| Housing material | PBT | PTFE | |
| Material sensing surface | PBT | PTFE | |
| Ambient temperature | -25...85 °C | -30...60 °C | |
| Operating voltage U _b | 10...30 VDC | 12...35 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP65 | |
| Productview | Page 304 | Page 304 | |



| | BCS00R4 BCS M12B4I1-PSC40D-EP02 | BCS00P0 BCS M12B4G2-PSC40D-S04K | BCS002Z BCS M12T4G1-PSM40C-EP02 | BCS0037 BCS M12T4D2-PSM40C-S04G |
|--|---|---|---|---|
| | Ø 12 x 61 mm | Ø 12 x 75 mm | Ø 12 x 50 mm | Ø 12 x 60 mm |
| | M12 | M12 | M12 | M12 |
| | M12x1 | M12x1 | M12x1 | M12x1 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin |
| | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| | — | — | — | — |
| | 1...4 mm | 1...4 mm | 1...4 mm | 1...4 mm |
| | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable |
| | Stainless steel (1.4305) | Stainless steel (1.4305) | Stainless steel (1.4301) | Stainless steel (1.4301) |
| | PBT | PBT | PTFE | PTFE |
| | -25...85 °C | -25...85 °C | -30...70 °C | -30...70 °C |
| | 10...30 VDC | 10...30 VDC | 12...35 VDC | 12...35 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | IP67 | IP67 | IP65 | IP65 |
| | Page 305 | Page 305 | Page 305 | Page 305 |



| | | | |
|--------------------------|---|---|--|
| PNP normally open | BCS00NZ BCS M18BBN1-PSC80D-EP02 | BCS00M8 BCS M18BBI3-PSC80D-S04K | |
| NPN normally open | BCS00M2 BCS M18BBN1-NSC80D-EP02 | | |
| Dimension | Ø 18 x 75 mm | Ø 18 x 88.5 mm | |
| Series | M18 | M18 | |
| Thread (A) | M18x1 | M18x1 | |
| Installation | for flush mounting | for flush mounting | |
| Connection | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 1...8 mm | 1...8 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Housing material | PBT | PBT | |
| Material sensing surface | PBT | PBT | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 305 | Page 305 | |



| | BCS00MF BCS M18B4I3-PSC80D-S04K | BCS003H BCS D22T403-PSM60C-EP02 | BCS00HK BCS D22T402-PSM60C-EP02 | BCS0033 BCS D22V4M1-PSC10C-EV02 |
|--|---|---|---|---|
| | Ø 18 x 88.5 mm | Ø 22 x 4 mm | Ø 22 x 16 mm | Ø 22 x 65 mm |
| | M18 | D22 | D22 | D22 |
| | M18x1 | — | — | — |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | Cable, 2.00 m, PVC |
| | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| | — | — | — | — |
| | 1...8 mm | 5.4...6.6 mm | 5.4...6.6 mm | 2...10 mm |
| | Switching distance adjustable | — | — | Switching distance adjustable |
| | Stainless steel (1.4305) | Stainless steel (1.4301) | Stainless steel (1.4301) | Stainless steel (1.4301) |
| | PBT | PTFE | PTFE | PVC |
| | -25...85 °C | -30...70 °C | -30...70 °C | -30...60 °C |
| | 10...30 VDC | 12...30 VDC | 12...30 VDC | 10...35 VDC |
| | CE, cULus | CE, cULus | CE | CE, cULus |
| | IP67 | IP64 | IP64 | IP67 |
| | Page 305 | Page 305 | Page 306 | Page 306 |



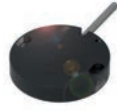
| | | | |
|--|---|---|--|
| PNP normally open | BCS003A BCS D30T401-PSC15C-EP02 | | |
| PNP normally open/normally closed programmable | | BCS004H BCS D30B4M3-PPC20C-EP02 | |
| NPN normally open | BCS003E BCS D30T401-NSC15C-EP02 | | |
| NPN normally closed | BCS003F BCS D30T401-NOC15C-EP02 | | |
| Dimension | Ø 30 x 4 mm | Ø 30 x 82 mm | |
| Series | D30 | D30 | |
| Thread (A) | — | — | |
| Installation | for flush mounting | for flush mounting | |
| Connection | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 2...15 mm | 2...20 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Housing material | Stainless steel (1.4301) | Stainless steel (1.4301) | |
| Material sensing surface | PTFE | PBT | |
| Ambient temperature | -30...70 °C | -30...70 °C | |
| Operating voltage U _b | 10...35 VDC | 10...35 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP66 | |
| Productview | Page 306 | Page 306 | |



| | | | | |
|--|---|---|---|---|
| | BCS00NM BCS M30BBI1-PSC15D-EP02 | BCS00NA BCS M30BBI2-PSC15D-S04K | | |
| | | | BCS004K BCS M30BBM3-PPC20C-EP02 | BCS004M BCS M30BBM2-PPM20C-S04G |
| | | | | |
| | | | | |
| | Ø 30 x 65.5 mm | Ø 30 x 79 mm | Ø 30 x 82 mm | Ø 30 x 87 mm |
| | M30 | M30 | M30 | M30 |
| | M30x1.5 | M30x1.5 | M30x1.5 | M30x1.5 |
| | for flush mounting | for flush mounting | for flush mounting | for flush mounting |
| | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin |
| | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| | — | — | — | — |
| | 2...15 mm | 2...15 mm | 1...20 mm | 1...20 mm |
| | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable |
| | PBT | PBT | PBT | PBT |
| | PBT | PBT | PBT | PBT |
| | -25...85 °C | -25...85 °C | -30...70 °C | -30...70 °C |
| | 10...30 VDC | 10...30 VDC | 10...35 VDC | 10...35 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | IP67 | IP67 | IP66 | IP66 |
| | Page 306 | Page 306 | Page 306 | Page 306 |



| | | | |
|--|---|---|--|
| PNP normally open | BCS00MR BCS M30B4I2-PSC15D-S04K | | |
| PNP normally open/normally closed programmable | | BCS004T BCS M30B4M2-PPM20C-S04G | |
| PNP/NPN normally open/normally closed programmable | | | |
| Dimension | Ø 30 x 79 mm | Ø 30 x 87 mm | |
| Series | M30 | M30 | |
| Thread (A) | M30x1.5 | M30x1.5 | |
| Installation | for flush mounting | for flush mounting | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 2...15 mm | 1...20 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Housing material | Stainless steel (1.4305) PBT | Stainless steel (1.4301) | |
| Material sensing surface | PBT | PBT | |
| Ambient temperature | -25...85 °C | -30...70 °C | |
| Operating voltage U_b | 10...30 VDC | 10...35 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP66 | |
| Productview | Page 307 | Page 307 | |



| | | | | |
|--|---|---|--|--|
| | BCS00UJ BCS G3400I2-PSC15D-S04K | | | |
| | | | | |
| | | BCS003K BCS D500002-YPC25C-EV02 | | |
| | Ø 34 x 77 mm | Ø 50 x 10 mm | | |
| | G34 | D50 | | |
| | — | — | | |
| | for flush mounting | for flush mounting | | |
| | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PVC | | |
| | 100 Hz | 50 Hz | | |
| | — | — | | |
| | 2...15 mm | 2...25 mm | | |
| | Switching distance adjustable | Switching distance adjustable | | |
| | POM | POM | | |
| | POM | POM | | |
| | -5...85 °C | — | | |
| | 10...30 VDC | 10...30 VDC | | |
| | CE, cULus | CE, cULus | | |
| | IP67 | IP67 | | |
| | Page 307 | Page 307 | | |

Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

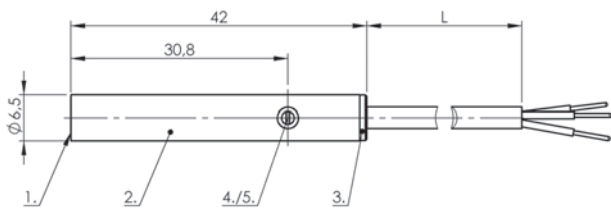
Accessories



| | | | |
|--|---|---|--|
| PNP normally open | BCS012N BCS R08RRE-PIM80C-EP00,3-GS04 | BCS012T BCS R08RRE-PSM80C-EP00,3-GS75 | |
| PNP normally closed | | BCS012U BCS R08RRE-POM80C-EP00,3-GS75 | |
| NPN normally open | | BCS012W BCS R08RRE-NSM80C-EP00,3-GS75 | |
| NPN normally closed | | BCS012Y BCS R08RRE-NOM80C-EP00,3-GS75 | |
| PNP/NPN normally open/normally closed programmable | | | |
| Dimension | 34 x 16 x 8 mm | 34 x 16 x 8 mm | |
| Series | R08 | R08 | |
| Thread (A) | — | — | |
| Installation | for flush mounting | for flush mounting | |
| Connection | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Cable with connector, 0.30 m, PUR | |
| Switching frequency | 50 Hz | 50 Hz | |
| Interface | IO-Link 1.1 | — | |
| Range | 1...8 mm | 1...8 mm | |
| Sensitivity | Switching distance adjustable | Switching distance teachable | |
| Housing material | PP | PP | |
| Material sensing surface | PP | PP | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Operating voltage U_b | 18...30 VDC | 12...30 VDC | |
| Approval/Conformity | UL Listed, CE, IO-Link | UL Listed, CE | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 307 | Page 307 | |

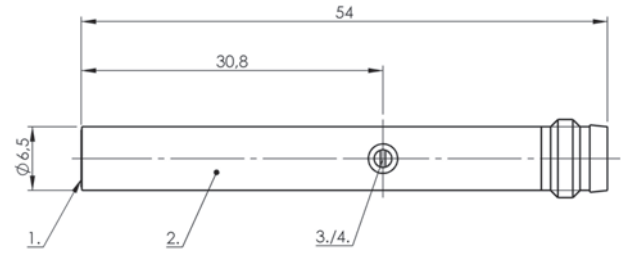


| | | | | |
|--|--|--|---|--|
| | BCS012A BCS R08RRE-PSM80C-EP02 | BCS00U6 BCS Q40BBAA-PSC20C-EP00,3-GS49 | | |
| | BCS012C BCS R08RRE-POM80C-EP02 | BCS00U5 BCS Q40BBAA-POC20C-EP00,3-GS49 | | |
| | BCS012E BCS R08RRE-NSM80C-EP02 | | | |
| | BCS012F BCS R08RRE-NOM80C-EP02 | | | |
| | | | BCS00TR BCS Q40BBAA-GPC20C-EP02 | |
| | 34 x 16 x 8 mm | 40 x 40 x 10 mm | 40 x 40 x 10 mm | |
| | R08 | Q40 | Q40 | |
| | — | — | — | |
| | for flush mounting | for flush mounting | for flush mounting | |
| | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Cable, 2.00 m, PUR | |
| | 50 Hz | 100 Hz | 100 Hz | |
| | — | — | — | |
| | 1...8 mm | 1...20 mm | 1...20 mm | |
| | Switching distance teachable | Switching distance adjustable | Switching distance adjustable | |
| | PP | PBT | PBT | |
| | PP | PBT | PBT | |
| | -25...70 °C | -5...85 °C | -5...85 °C | |
| | 12...30 VDC | 10...30 VDC | 10...30 VDC | |
| | CE, UL Listed | CE, cULus | CE, cULus | |
| | IP67 | IP67 | IP67 | |
| | Page 307 | Page 307 | Page 308 | |



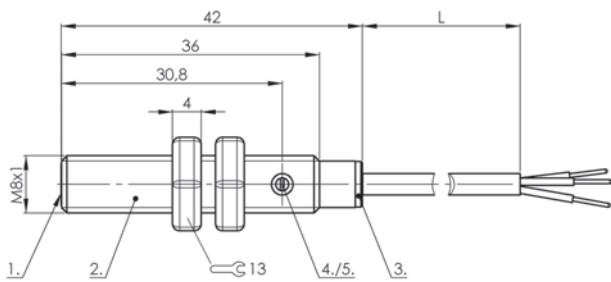
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS001L



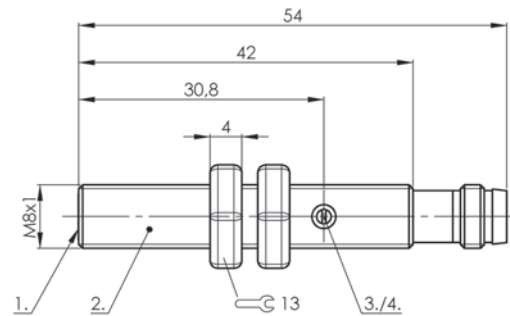
1) Sensing surface, 2) Housing, 3) Potentiometer, 4) LED function indicator

BCS001R



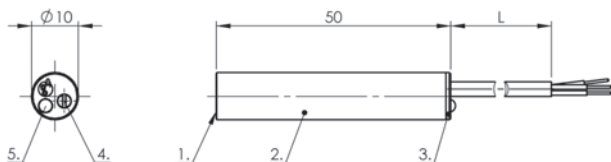
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS0026



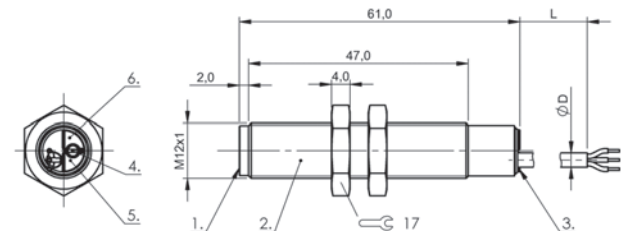
1) Sensing surface, 2) Housing, 3) Potentiometer, 4) LED function indicator

BCS002A



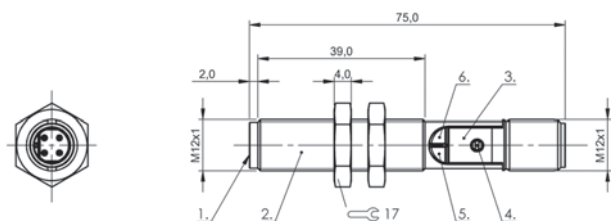
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS002T



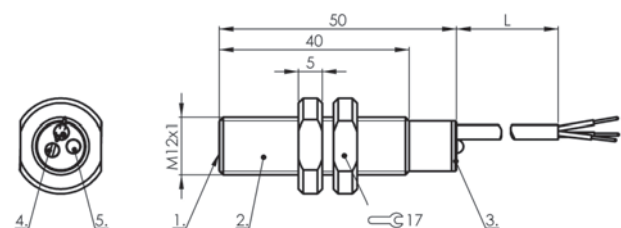
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00PU



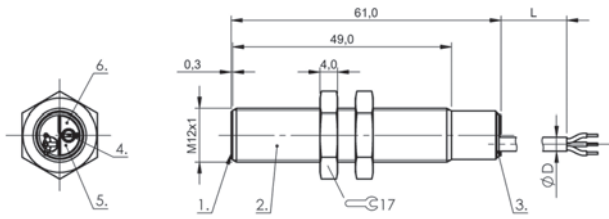
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00PJ



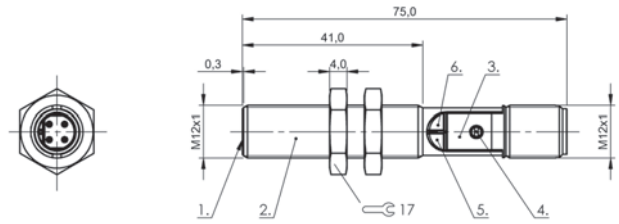
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS00AU



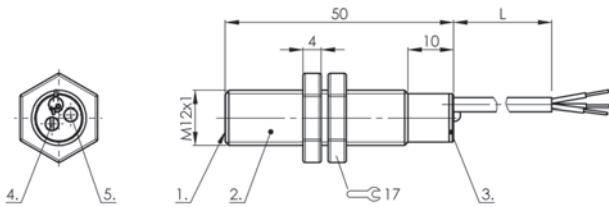
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00R4



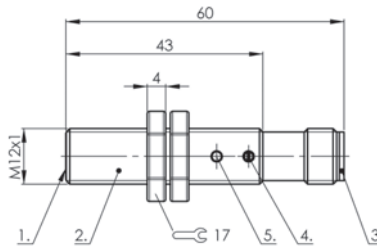
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00P0



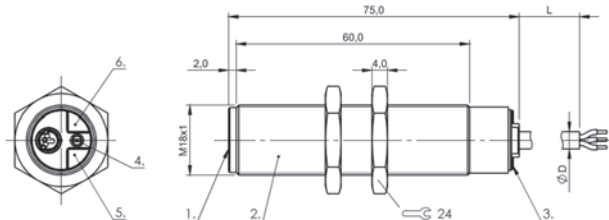
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS002Z



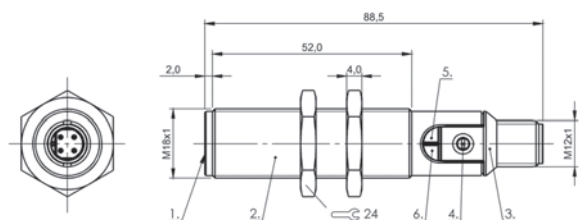
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS0037



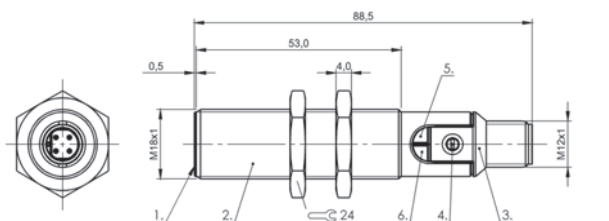
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00M2, BCS00NZ



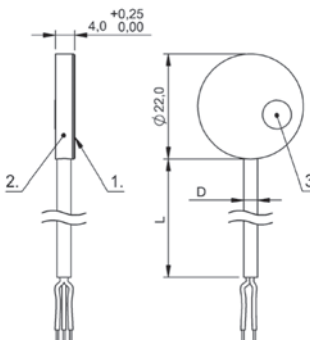
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00M8



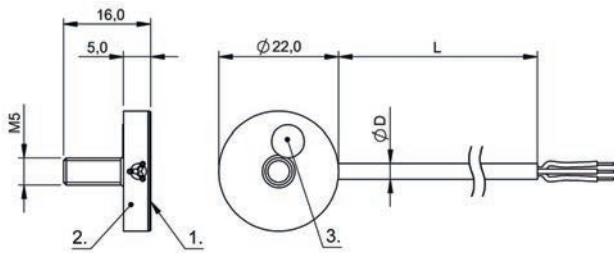
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00MF



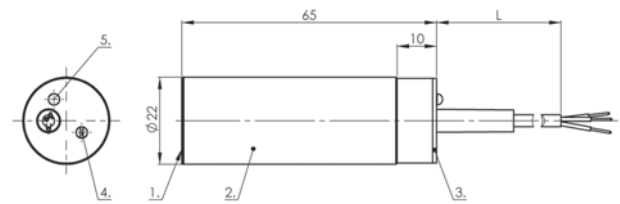
1) Sensing surface, 2) Housing, 3) Potentiometer sealed

BCS003H



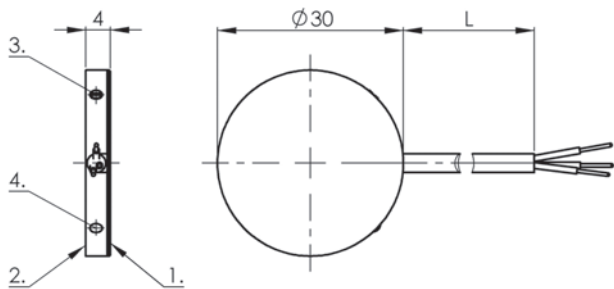
1) Sensing surface, 2) Housing, 3) Potentiometer sealed

BCS00HK



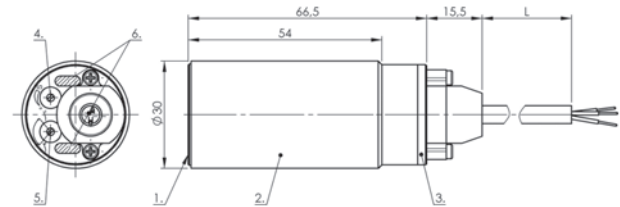
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS0033



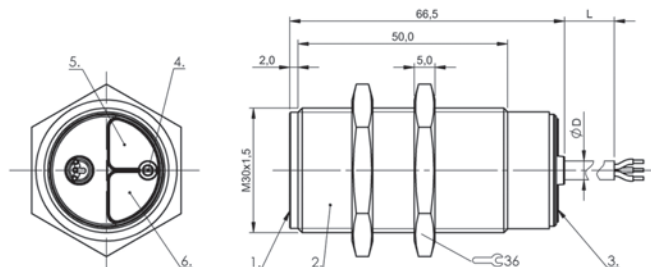
1) Sensing surface, 2) Housing, 3) Potentiometer, 4) LED function indicator

BCS003E, BCS003F, BCS003A



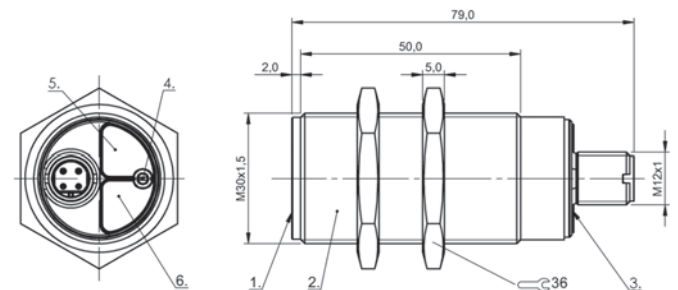
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) NO or NC selectable, 6) LED function indicator

BCS004H



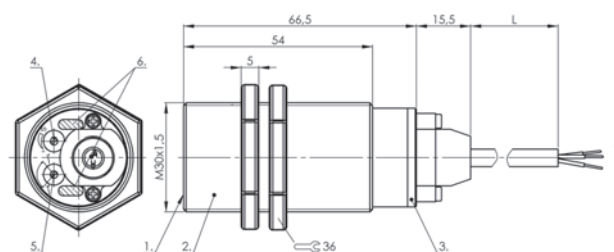
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00NM



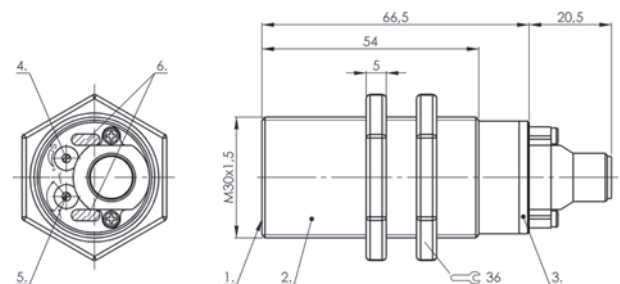
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00NA



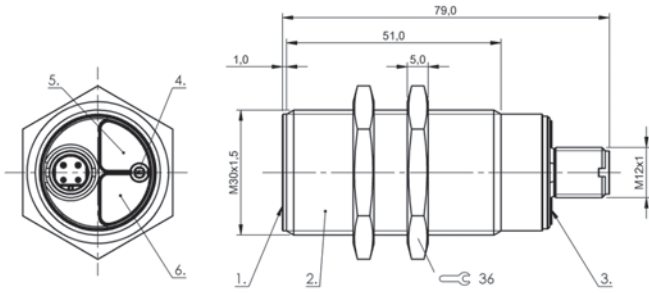
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) NO or NC selectable, 6) LED function indicator

BCS004K



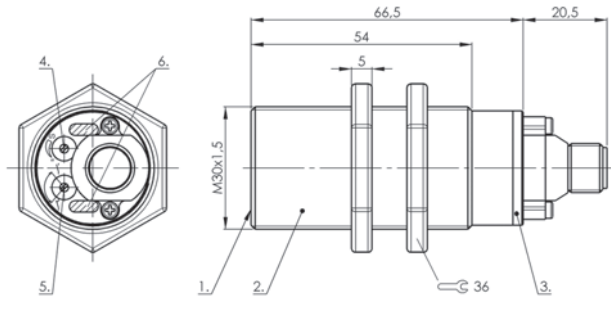
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) NO or NC selectable, 6) LED function indicator

BCS004M



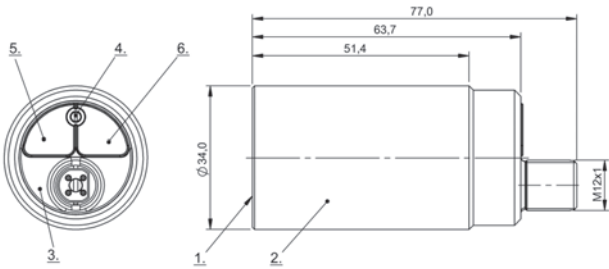
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00MR



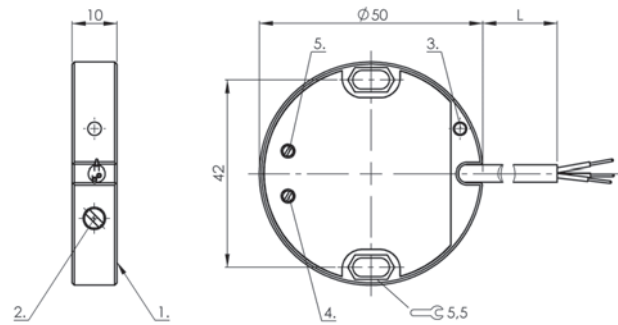
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) NO or NC selectable, 6) LED function indicator

BCS004T



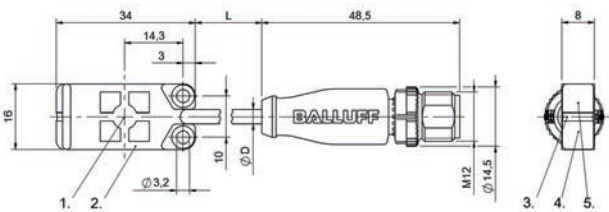
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00UJ



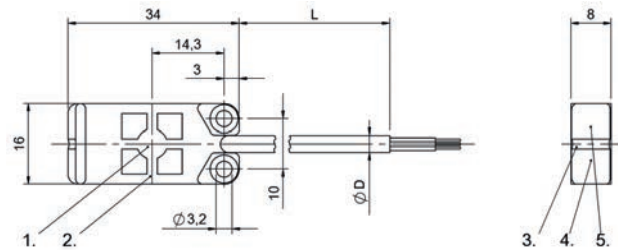
1) Sensing surface, 2) Potentiometer, 3) LED function indicator, 4) NO or NC selectable, 5) PNP or NPN selectable

BCS003K



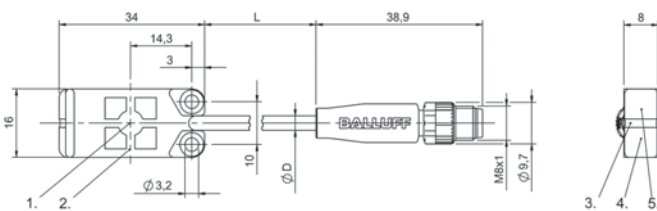
1) Sensing surface, 2) Housing, 3) Cover, 4) Power indicator green, 5) Function indicator yellow

BCS012N



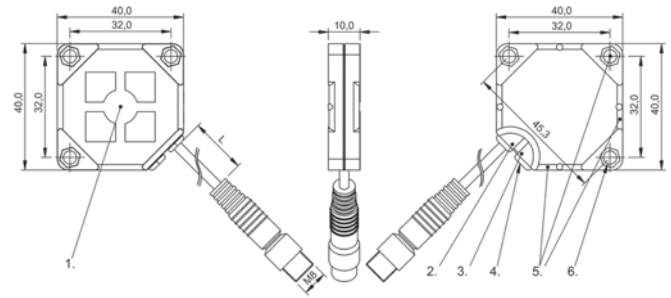
1) Sensing surface, 2) Housing, 3) Cover, 4) Power indicator green, 5) Function indicator yellow

BCS012E, BCS012F, BCS012A, BCS012C



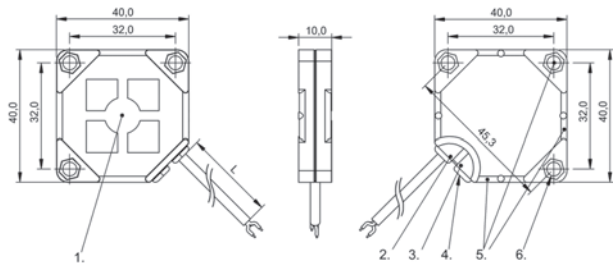
1) Sensing surface, 2) Housing, 3) Cover, 4) Power indicator green, 5) Function indicator yellow

BCS012W, BCS012Y, BCS012T, BCS012U



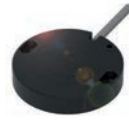
1) Sensing surface, 2) Power indicator green, 3) Function indicator yellow, 4) Potentiometer, 5) Fastening: Cable tie, 6) Fastening: screw 3xM3

BCS00U6, BCS00U5



1) Sensing surface, 2) Power indicator green, 3) Function indicator yellow, 4) Potentiometer, 5) Fastening: Cable tie, 6) Fastening: screw 3xM3

BCS00TR



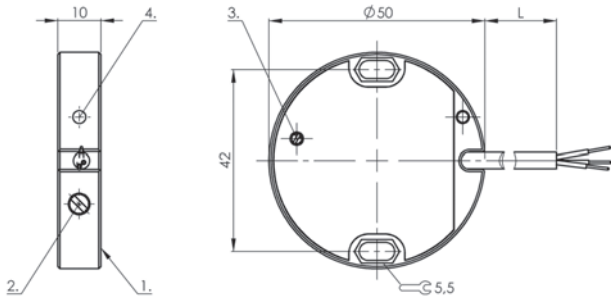
| | | | |
|--|---|---|--|
| PNP normally open | | BCS00UW BCS D50TT06-PSCFSC-ET02 | |
| PNP normally closed | | BCS00UY BCS D50TT06-POCFSC-ET02 | |
| PNP normally open/normally closed programmable | BCS0084 BCS D500004-PPCFAC-EV02 | | |
| NPN normally open | | | |
| NPN normally closed | | | |
| Dimension | Ø 50 x 10 mm | Ø 50 x 10 mm | |
| Series | D50 | D50 | |
| Installation | flush with container outer wall | flush with container outer wall | |
| Connection | Cable, 2.00 m, PVC | Cable, 2.00 m, PTFE | |
| Switching frequency | 2 Hz | 2 Hz | |
| Interface | — | — | |
| Sensitivity | media-dependent, adjustable | media-dependent, adjustable | |
| Function | Smart Level 15 | Smart Level 50 | |
| Additional features | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation | |
| Housing material | POM | PTFE | |
| Material sensing surface | POM | PTFE | |
| Ambient temperature | -10...60 °C | -10...60 °C | |
| Operating voltage U_b | 10...35 VDC | 10...35 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
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| | | | | |
|--|--|--|--|--|
| | BCS012P BCS R08RRE-PIMFHC-EP00,3-GS04 | BCS012Z BCS R08RRE-PSMFHC-EP00,3-GS75 | BCS012H BCS R08RRE-PSMFHC-EP02 | |
| | | BCS0130 BCS R08RRE-POMFHC-EP00,3-GS75 | BCS012J BCS R08RRE-POMFHC-EP02 | |
| | | BCS0131 BCS R08RRE-NSMFHC-EP00,3-GS75 | BCS012K BCS R08RRE-NSMFHC-EP02 | |
| | | BCS0132 BCS R08RRE-NOMFHC-EP00,3-GS75 | BCS012L BCS R08RRE-NOMFHC-EP02 | |
| | 34 x 16 x 8 mm | 34 x 16 x 8 mm | 34 x 16 x 8 mm | |
| | R08 | R08 | R08 | |
| | flush with container outer wall | flush with container outer wall | flush with container outer wall | |
| | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Cable with connector, M8x1 connector, 4-pin, 0.30 m, PUR | Cable, 4-pin, 2.00 m, PUR | |
| | 10 Hz | 10 Hz | 10 Hz | |
| | IO-Link 1.1 | — | — | |
| | teachable depending on media | teachable depending on media | teachable depending on media | |
| | Smart Level 50 | Smart Level 50 | Smart Level 50 | |
| | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation | |
| | PP | PP | PP | |
| | PP | PP | PP | |
| | -25...70 °C | -25...75 °C | -25...75 °C | |
| | 18...30 VDC | 12...30 VDC | 12...30 VDC | |
| | UL Listed, IO-Link, CE | UL Listed, CE | CE, UL Listed | |
| | IP67 | IP67 | IP67 | |
| | Page 314 | Page 314 | Page 314 | |

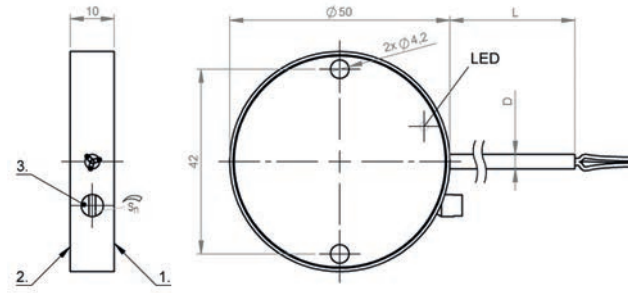


| | | | |
|--|--|--|--|
| PNP normally open | BCS0134 BCS Q40BBAA-PSCFHC-EP00,3-GS49 | | |
| PNP normally closed | BCS0135 BCS Q40BBAA-POCFHC-EP00,3-GS49 | | |
| PNP/NPN normally open/normally closed programmable | | BCS0133 BCS Q40BBAA-GPCFHC-EP02 | |
| Dimension | 40 x 40 x 10 mm | 40 x 40 x 10 mm | |
| Series | Q40 | Q40 | |
| Installation | flush with container outer wall | flush with container outer wall | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Cable, 2.00 m, PUR | |
| Switching frequency | 10 Hz | 10 Hz | |
| Interface | — | — | |
| Sensitivity | media-dependent, adjustable | media-dependent, adjustable | |
| Function | Smart Level 50 | Smart Level 50 | |
| Additional features | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation | |
| Housing material | PBT | PBT | |
| Material sensing surface | PBT | PBT | |
| Ambient temperature | -5...85 °C | -5...85 °C | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 314 | Page 314 | |



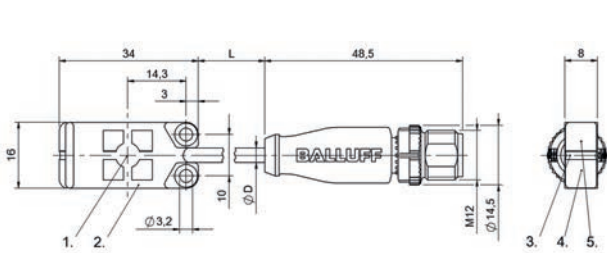
1) Sensing surface, 2) Potentiometer, 3) NO or NC selectable, 4) LED function indicator

BCS0084



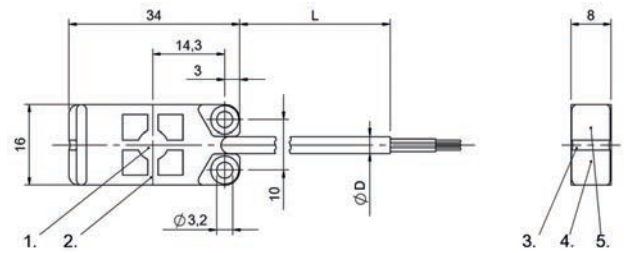
1) Sensing surface, 2) Housing, 3) Potentiometer, 4) LED function indicator

BCS00UW, BCS00UY



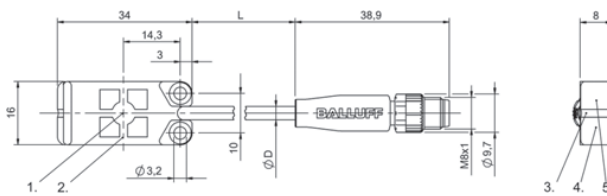
1) Sensing surface, 2) Housing, 3) Cover, 4) Power indicator green, 5) Function indicator yellow

BCS012P



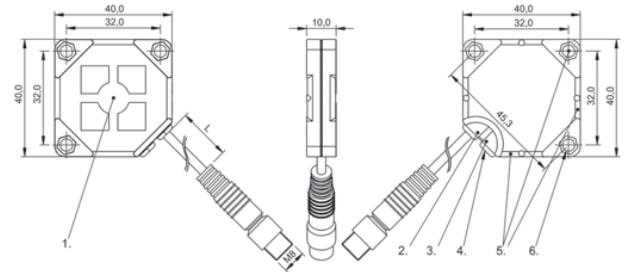
1) Sensing surface, 2) Housing, 3) Cover, 4) Power indicator green, 5) Function indicator yellow

BCS012K, BCS012L, BCS012H, BCS012J



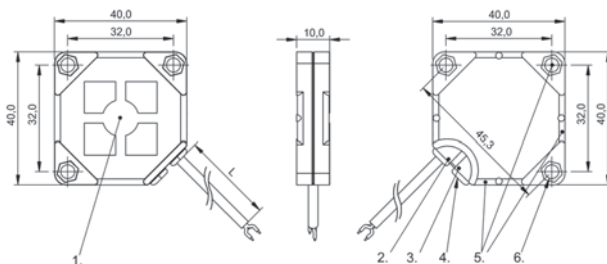
1) Sensing surface, 2) Housing, 3) Cover, 4) Power indicator green, 5) Function indicator yellow

BCS0131, BCS0132, BCS012Z, BCS0130



1) Sensing surface, 2) Power indicator green, 3) Function indicator yellow, 4) Potentiometer, 5) Fastening: Cable tie, 6) Fastening: screw 3xM3

BCS0134, BCS0135



1) Sensing surface, 2) Power indicator green, 3) Function indicator yellow, 4) Potentiometer, 5) Fastening: Cable tie, 6) Fastening: screw 3xM3

BCS0133



| | BCS001Y BCS G06T4E1-PSM30G-EP02 | BCS0022 BCS G06T4D2-PSM30G-S49G | |
|----------------------------------|---|---|--|
| PNP normally open | | | |
| PNP normally closed | | | |
| NPN normally closed | | | |
| Dimension | Ø 6.5 x 42 mm | Ø 6.5 x 54 mm | |
| Series | G06 | G06 | |
| Thread (A) | — | — | |
| Installation | non-flush | non-flush | |
| Connection | Cable, 2.00 m, PUR | Connector, M8x1 connector, 3-pin | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 0.1...3 mm | 0.1...3 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Function | — | — | |
| Additional features | — | — | |
| Housing material | Stainless steel (1.4301) | Stainless steel (1.4301) | |
| Material sensing surface | PTFE | PTFE | |
| Ambient temperature | -10...70 °C | -10...70 °C | |
| Operating voltage U _b | 11...30 VDC | 11...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP65 | IP65 | |
| Productview | Page 330 | Page 330 | |



| | | | |
|---|---|---|---|
| BCS002M BCS M08T4E2-PSM30G-S49G | BCS00R0 BCS M12BBG1-PSC80H-EP02 | BCS00PN BCS M12BBE2-PSC80H-S04K | BCS006Z BCS M12TTG1-PSM80G-ET02 |
| | BCS00R1 BCS M12BBG1-POC80H-EP02 | BCS00PP BCS M12BBE2-POC80H-S04K | BCS0070 BCS M12TTG1-POM80G-ET02 |
| | | | BCS0072 BCS M12TTG1-NOM80G-ET02 |
| Ø 8 x 54 mm | Ø 12 x 61 mm | Ø 12 x 75 mm | Ø 12 x 53 mm |
| M08 | M12 | M12 | M12 |
| M8x1 | M12x1 | M12x1 | M12x1 |
| non-flush | non-flush | non-flush | non-flush |
| Connector, M8x1 connector, 3-pin | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PTFE |
| 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| — | — | — | — |
| 0.1...3 mm | 1...8 mm | 1...8 mm | 1...8 mm |
| Switching distance adjustable | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable |
| — | — | — | — |
| — | — | — | — |
| Stainless steel (1.4301) | PBT | PBT | PTFE |
| PTFE | PBT | PBT | PTFE |
| -10...70 °C | -25...85 °C | -25...85 °C | -30...70 °C |
| 11...30 VDC | 10...30 VDC | 10...30 VDC | 12...35 VDC |
| CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| IP65 | IP67 | IP67 | IP65 |
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| | | | |
|----------------------------------|---|---|--|
| PNP normally open | BCS00PC BCS M12B4G1-PSC80H-EP02 | BCS00P4 BCS M12B4E2-PSC80H-S04K | |
| PNP normally closed | | | |
| Dimension | Ø 12 x 61 mm | Ø 12 x 75 mm | |
| Series | M12 | M12 | |
| Thread (A) | M12x1 | M12x1 | |
| Installation | non-flush | non-flush | |
| Connection | Cable, 2.00 m, PUR | Connector | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 1...8 mm | 1...8 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Function | — | — | |
| Additional features | — | — | |
| Housing material | Stainless steel (1.4305) | Stainless steel (1.4305) | |
| Material sensing surface | PBT | PBT | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
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| | BCS0062 BCS M12T4D2-PSM80G-S04G | BCS007N BCS M18VV11-PSCFAG-DV02 | BCS008T BCS M18VVN-PSCFAG-S49G | BCS008A BCS M18TT12-PSCFAG-AT02 |
|--|---|---|---|---|
| | | BCS007P BCS M18VV11-POCFAG-DV02 | | BCS008C BCS M18TT12-POCFAG-AT02 |
| | Ø 12 x 60 mm | Ø 18 x 70 mm | Ø 18 x 70 mm | Ø 18 x 73 mm |
| | M12 | M18 | M18 | M18 |
| | M12x1 | M18x1 | M18x1 | M18x1 |
| | non-flush | non-flush | non-flush | non-flush |
| | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PVC | Connector, M8x1 connector, 3-pin | Cable, 2.00 m, PTFE |
| | 100 Hz | 2 Hz | 2 Hz | 2 Hz |
| | — | — | — | — |
| | 1...8 mm | — | — | — |
| | Switching distance adjustable | media-dependent, adjustable | media-dependent, adjustable | media-dependent, adjustable |
| | — | Smart Level 15 | Smart Level 15 | Smart Level 15 |
| | — | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation |
| | Stainless steel (1.4301) | PVC | PVC | PTFE |
| | PTFE | PVC | PVC | PTFE |
| | -30...70 °C | -10...60 °C | -10...60 °C | -10...60 °C |
| | 12...35 VDC | 10...35 VDC | 10...35 VDC | 10...35 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | IP65 | IP66 | IP66 | IP66 |
| | Page 330 | Page 330 | Page 331 | Page 331 |



| | | | |
|--------------------------|---|---|--|
| PNP normally open | BCS00LL BCS M18BBH1-PSC15H-EP02 | BCS00LM BCS M18BBG2-PSC15H-S04K | |
| PNP normally closed | | BCS00LT BCS M18BBG2-POC15H-S04K | |
| NPN normally open | BCS00LZ BCS M18BBH1-NSC15H-EP02 | | |
| NPN normally closed | BCS00M0 BCS M18BBH1-NOC15H-EP02 | | |
| Dimension | Ø 18 x 75.5 mm | Ø 18 x 88.5 mm | |
| Series | M18 | M18 | |
| Thread (A) | M18x1 | M18x1 | |
| Installation | non-flush | non-flush | |
| Connection | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 2...15 mm | 2...15 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Function | — | — | |
| Additional features | — | — | |
| Housing material | PBT | PBT | |
| Material sensing surface | PBT | PBT | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 331 | Page 331 | |



| | | | | |
|--|---|---|---|---|
| | BCS0073 BCS M18TTI2-PSC15G-AT02 | BCS00ME BCS M18B4G2-PSC15H-S04K | BCS006A BCS M18T4G2-PSC15G-S04G | |
| | | BCS00ML BCS M18B4G2-POC15H-S04K | BCS006C BCS M18T4G2-POC15G-S04G | BCS005T BCS M18T4I1-POC15G-DV02 |
| | | | | |
| | BCS0076 BCS M18TTI2-NOC15G-AT02 | | | |
| | Ø 18 x 73 mm | Ø 18 x 88.5 mm | Ø 18 x 75 mm | Ø 18 x 65 mm |
| | M18 | M18 | M18 | M18 |
| | M18x1 | M18x1 | M18x1 | M18x1 |
| | non-flush | non-flush | non-flush | non-flush |
| | Cable, 2.00 m, PTFE | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PVC |
| | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| | — | — | — | — |
| | 2...15 mm | 2...15 mm | 2...15 mm | 2...15 mm |
| | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable |
| | — | — | — | — |
| | — | — | — | — |
| | PTFE | Stainless steel (1.4305) | Stainless steel (1.4301) | Stainless steel (1.4301) |
| | PTFE | PBT | PTFE | PTFE |
| | -30...70 °C | -25...85 °C | -30...70 °C | -30...70 °C |
| | 10...35 VDC | 10...30 VDC | 10...35 VDC | 10...35 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | IP67 | IP67 | IP67 | IP67 |
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| | | | |
|--|--|--|--|
| PNP normally open | | BCS0086 BCS M30TTH2-PSCFAG-AT02 | |
| PNP normally closed | | BCS0087 BCS M30TTH2-POCFAG-AT02 | |
| PNP normally open/normally closed programmable | BCS007Y BCS M30BBM2-PPCFAG-S04G | | |
| Dimension | Ø 30 x 87 mm | Ø 30 x 72 mm | |
| Series | M30 | M30 | |
| Thread (A) | M30x1.5 | M30x1.5 | |
| Installation | non-flush | non-flush | |
| Connection | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PTFE | |
| Switching frequency | 2 Hz | 2 Hz | |
| Interface | — | — | |
| Range | — | — | |
| Sensitivity | media-dependent, adjustable | media-dependent, adjustable | |
| Function | Smart Level 15 | Smart Level 15 | |
| Additional features | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation | |
| Housing material | PBT | PTFE | |
| Material sensing surface | PBT | PTFE | |
| Ambient temperature | -10...60 °C | -10...60 °C | |
| Operating voltage U _b | 10...35 VDC | 10...35 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 331 | Page 332 | |



| | BCS00NT BCS M30BBE1-PSC25H-EP02 | BCS00NH BCS M30BBE2-PSC25H-S04K | | BCS0077 BCS M30TTH2-PSC30G-AT02 |
|--|---|---|---|---|
| | | | | BCS0078 BCS M30TTH2-POC30G-AT02 |
| | | | BCS007F BCS M30BBM2-PPC30G-S04G | |
| | Ø 30 x 65.5 mm | Ø 30 x 78.5 mm | Ø 30 x 87 mm | Ø 30 x 72 mm |
| | M30 | M30 | M30 | M30 |
| | M30x1.5 | M30x1.5 | M30x1.5 | M30x1.5 |
| | non-flush | non-flush | non-flush | non-flush |
| | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PTFE |
| | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| | — | — | — | — |
| | 1...25 mm | 1...25 mm | 1...30 mm | 2...30 mm |
| | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable | Switching distance adjustable |
| | — | — | — | — |
| | — | — | — | — |
| | PBT | PBT | PBT | PTFE |
| | PBT | PBT | PBT | PTFE |
| | -25...85 °C | -25...85 °C | -30...70 °C | -30...70 °C |
| | 10...30 VDC | 10...30 VDC | 10...35 VDC | 10...35 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | IP67 | IP67 | IP66 | IP67 |
| | Page 332 | Page 332 | Page 332 | Page 332 |



| | | | |
|--|---|---|--|
| PNP normally open | BCS00N6 BCS M30B4E1-PSC25H-EP02 | BCS00MY BCS M30B4E2-PSC25H-S04K | |
| PNP normally open/normally closed programmable | | | |
| NPN normally closed | BCS00N9 BCS M30B4E1-NOC25H-EP02 | | |
| Dimension | Ø 30 x 65.5 mm | Ø 30 x 78.5 mm | |
| Series | M30 | M30 | |
| Thread (A) | M30x1.5 | M30x1.5 | |
| Installation | non-flush | non-flush | |
| Connection | Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 1...25 mm | 1...25 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Function | — | — | |
| Additional features | — | — | |
| Housing material | Stainless steel (1.4305) | Stainless steel (1.4305) | |
| Material sensing surface | PBT | PBT | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
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| | BCS007L BCS M30T4M2-PPC30G-S04G | BCS0105 BCS S44KK01-PSCFAG-EP00,3-GS49 | BCS010L BCS S44KK01-GPCFAG-EP02 | BCS00ZL BCS S44KK01-PSCFNG-EP00,3-GS49 |
|--|---|--|--|--|
| | Ø 30 x 86.5 mm | Ø 12 x 62.5 mm | Ø 12 x 62.5 mm | Ø 12 x 62.5 mm |
| | M30 | S44 | S44 | S44 |
| | M30x1.5 | M12x1 | M12x1 | M12x1 |
| | non-flush | non-flush | non-flush | non-flush |
| | Connector, M12x1 connector, 4-pin | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR |
| | 100 Hz | 5 Hz | 5 Hz | 10 Hz |
| | — | — | — | — |
| | 1...30 mm | — | — | — |
| | Switching distance adjustable | media-dependent, adjustable | media-dependent, adjustable | media-dependent, adjustable |
| | — | Smart Level 15 | Smart Level 15 | — |
| | — | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation | — |
| | Stainless steel (1.4301) | PEEK | PEEK | PEEK |
| | PTFE | PEEK | PEEK | PEEK |
| | -30...70 °C | -5...105 °C | -5...105 °C | -5...105 °C |
| | 10...35 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus | CE | CE | CE |
| | IP66 | IP67 | IP67 | IP67 |
| | Page 332 | Page 332 | Page 332 | Page 332 |



| | | | |
|---|---|--|--|
| PNP normally open | | BCS010F BCS S44KK03-PSCFAG-EP00,3-GS49 | |
| PNP normally closed | | | |
| PNP/NPN normally open/normally closed codierbar | BCS0102 BCS S44KK01-GPCFNG-EP02 | | |
| Dimension | Ø 12 x 62.5 mm | Ø 13.7 x 62.5 mm | |
| Series | S44 | S44 | |
| Thread (A) | M12x1 | NPT 1/4" | |
| Installation | non-flush | non-flush | |
| Connection | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | |
| Switching frequency | 10 Hz | 5 Hz | |
| Interface | — | — | |
| Range | — | — | |
| Sensitivity | media-dependent, adjustable | media-dependent, adjustable | |
| Function | — | Smart Level 15 | |
| Additional features | — | Electrically conductive media, Foam and residue compensation | |
| Housing material | PEEK | PEEK | |
| Material sensing surface | PEEK | PEEK | |
| Ambient temperature | -5...105 °C | -5...105 °C | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE | CE | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 332 | Page 333 | |



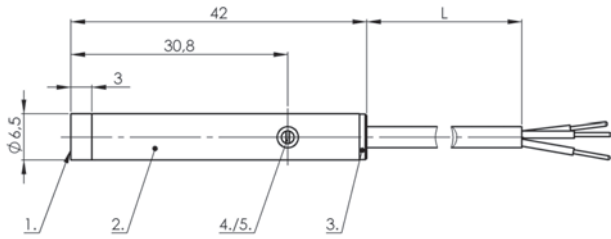
| | | | | |
|--|--|--|---|--|
| | | BCS00ZY BCS S44KK03-PSCFNG-EP00,3-GS49 | | BCS0109 BCS S44KK02-PSCFAG-EP00,3-GS49 |
| | | | | BCS010A BCS S44KK02-POCFAG-EP00,3-GS49 |
| BCS010N BCS S44KK03-GPCFAG-EP02 | | | BCS0104 BCS S44KK03-GPCFNG-EP02 | |
| Ø 13.7 x 62.5 mm | Ø 13.7 x 62.5 mm | Ø 13.7 x 62.5 mm | Ø 13.7 x 62.5 mm | Ø 11.9 x 62.5 mm |
| S44 | S44 | S44 | S44 | S44 |
| NPT 1/4" | NPT 1/4" | NPT 1/4" | NPT 1/4" | G 1/4" |
| non-flush | non-flush | non-flush | non-flush | non-flush |
| Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | Cable, 2.00 m, PUR | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR |
| 5 Hz | 10 Hz | 10 Hz | 10 Hz | 5 Hz |
| — | — | — | — | — |
| — | — | — | — | — |
| media-dependent, adjustable | media-dependent, adjustable | media-dependent, adjustable | media-dependent, adjustable | media-dependent, adjustable |
| Smart Level 15 | — | — | — | Smart Level 15 |
| Electrically conductive media, Foam and residue compensation | — | — | — | Electrically conductive media, Foam and residue compensation |
| PEEK | PEEK | PEEK | PEEK | PEEK |
| PEEK | PEEK | PEEK | PEEK | PEEK |
| -5...105 °C | -5...105 °C | -5...105 °C | -5...105 °C | -5...105 °C |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| CE | CE | CE | CE | CE |
| IP67 | IP67 | IP67 | IP67 | IP67 |
| Page 333 | Page 333 | Page 333 | Page 333 | Page 333 |



| | | | |
|---|--|--|--|
| PNP normally open | | BCS00ZR BCS S44KK02-PSCFNG-EP00,3-GS49 | |
| PNP normally closed | | | |
| NPN normally open | | | |
| NPN normally closed | | | |
| PNP/NPN normally open/normally closed codierbar | BCS010M BCS S44KK02-GPCFAG-EP02 | | |
| Dimension | Ø 11.9 x 62.5 mm | Ø 11.9 x 62.5 mm | |
| Series | S44 | S44 | |
| Thread (A) | G 1/4" | G 1/4" | |
| Installation | non-flush | non-flush | |
| Connection | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.30 m, PUR | |
| Switching frequency | 5 Hz | 10 Hz | |
| Interface | — | — | |
| Range | — | — | |
| Sensitivity | media-dependent, adjustable | media-dependent, adjustable | |
| Function | Smart Level 15 | — | |
| Additional features | Electrically conductive media, Foam and residue compensation | — | |
| Housing material | PEEK | PEEK | |
| Material sensing surface | PEEK | PEEK | |
| Ambient temperature | -5...105 °C | -5...105 °C | |
| Operating voltage Ub | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE | CE | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 333 | Page 333 | |

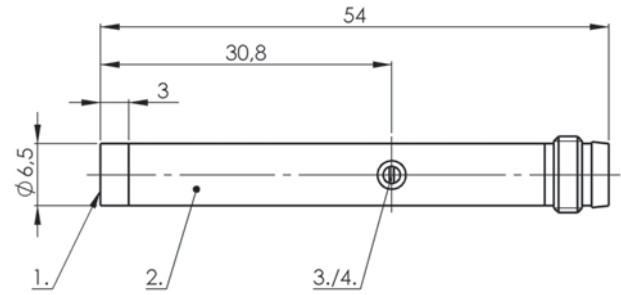


| | BCS011L BCS S04K501-PICFNG-S04G-T51 | BCS011E BCS S04K501-PICFNG-S04G-T50 | BCS011F BCS S04K501-PSCFNG-S04G-T50 |
|---|--|--|--|
| | | | BCS011H BCS S04K501-POCFNG-S04G-T50 |
| | | | BCS011J BCS S04K501-NSCFNG-S04G-T50 |
| | | | BCS011K BCS S04K501-NOCFNG-S04G-T50 |
| BCS0103 BCS S44KK02-GPCFNG-EP02 | | | |
| Ø 11.9 x 62.5 mm | Ø 30 x 96 mm | Ø 30 x 96 mm | Ø 30 x 96 mm |
| S44 | S04 | S04 | S04 |
| G 1/4" | G 1/2" | G 1/2" | G 1/2" |
| non-flush | non-flush | non-flush | non-flush |
| Cable, 2.00 m, PUR | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| 10 Hz | 5 Hz | 5 Hz | 5 Hz |
| — | IO-Link 1.1 | IO-Link 1.1 | — |
| — | — | — | — |
| media-dependent, adjustable | teachable depending on media | teachable depending on media | teachable depending on media |
| — | Smart Level 100 | Smart Level 100 | Smart Level 100 |
| — | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation | Electrically conductive media, Foam and residue compensation |
| PEEK | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4404) |
| PEEK | PEEK | PEEK | PEEK |
| -5...105 °C | -10...85 °C | -40...85 °C | -40...85 °C |
| 10...30 VDC | 18...30 VDC | 18...30 VDC | 12...30 VDC |
| CE | IO-Link, EHEDG conformal, FDA compliant, CE | CE, FDA compliant, EHEDG conformal, IO-Link | CE, FDA compliant, EHEDG conformal |
| IP67 | IP68 | IP68 | IP68 |
| Page 333 | Page 333 | Page 333 | Page 333 |



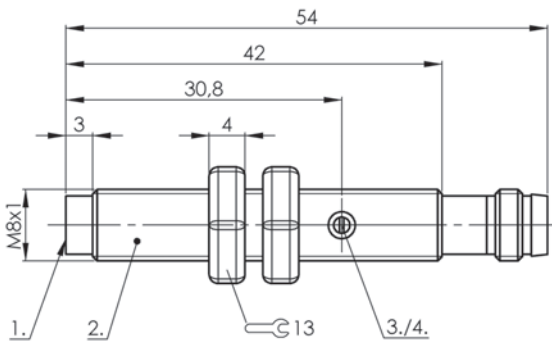
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS001Y



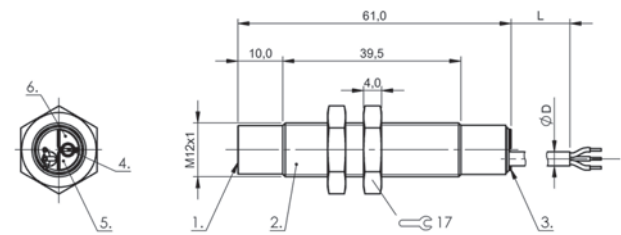
1) Sensing surface, 2) Housing, 3) Potentiometer, 4) LED function indicator

BCS0022



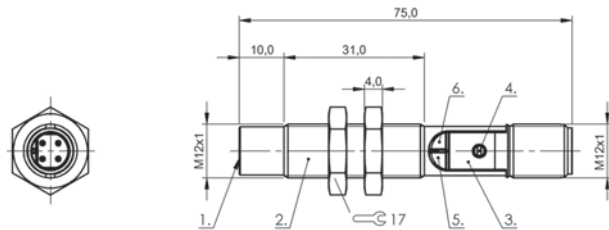
1) Sensing surface, 2) Housing, 3) Potentiometer, 4) LED function indicator

BCS002M



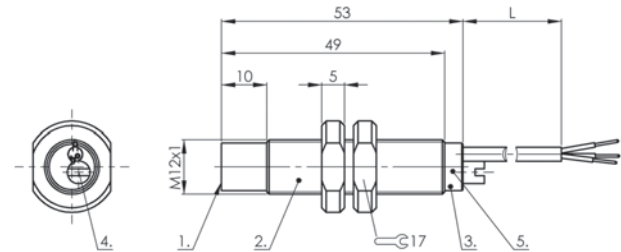
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00R0, BCS00R1, BCS00PC



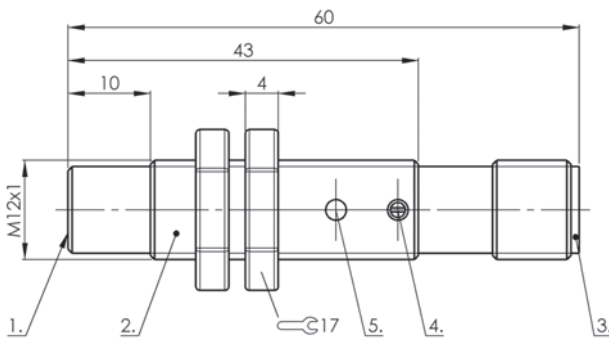
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00PN, BCS00PP, BCS00P4



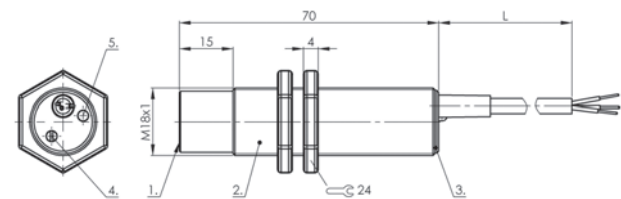
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS0072, BCS006Z, BCS0070



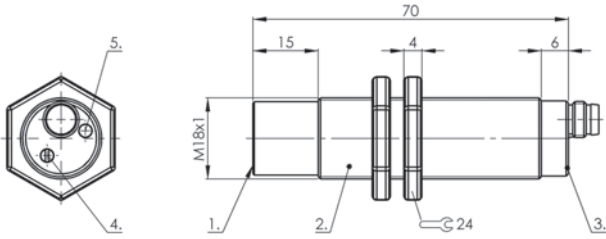
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS0062



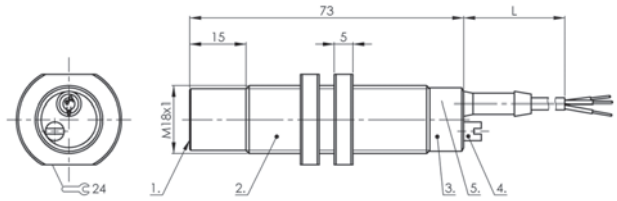
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS007N, BCS007P



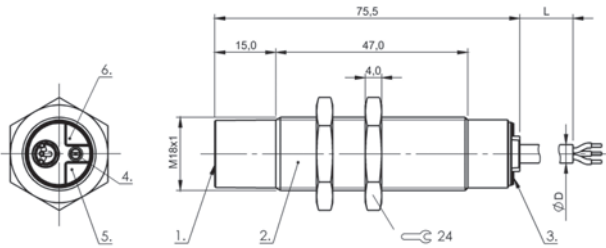
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS008T



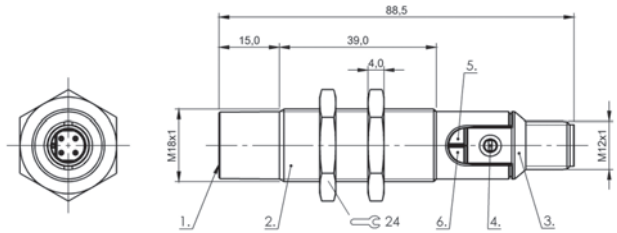
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS008A, BCS008C



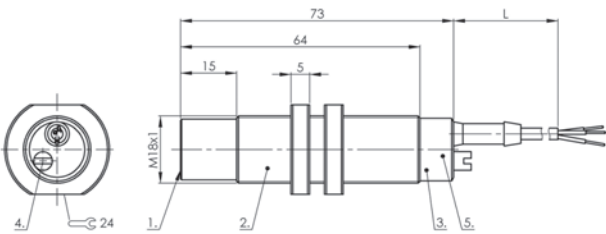
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00LZ, BCS00M0, BCS00LL



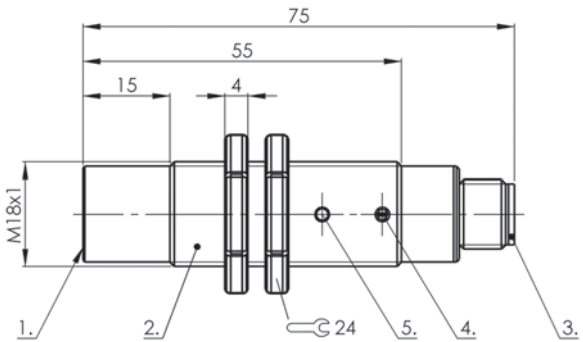
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00LM, BCS00LT, BCS00ME, BCS00ML



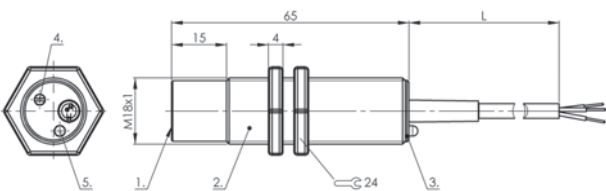
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS0076, BCS0073



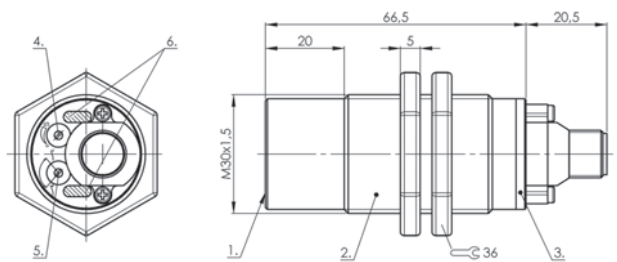
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS006A, BCS006C



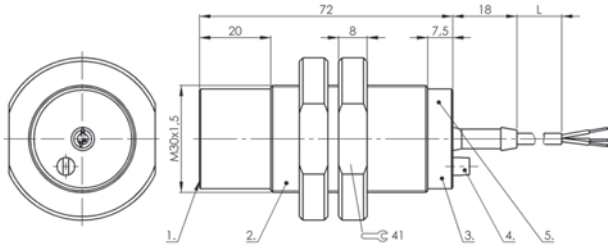
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS005T



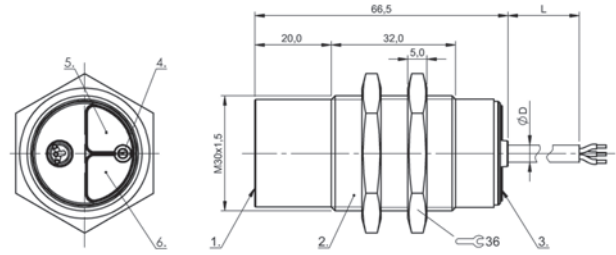
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) NO or NC selectable, 6) LED function indicator

BCS007Y



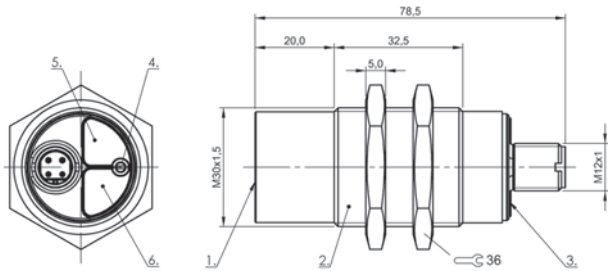
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS0086, BCS0087



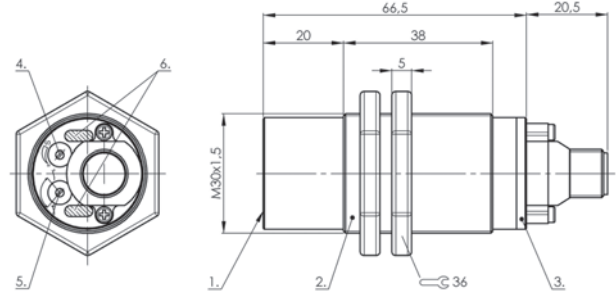
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00NT, BCS00N9, BCS00N6



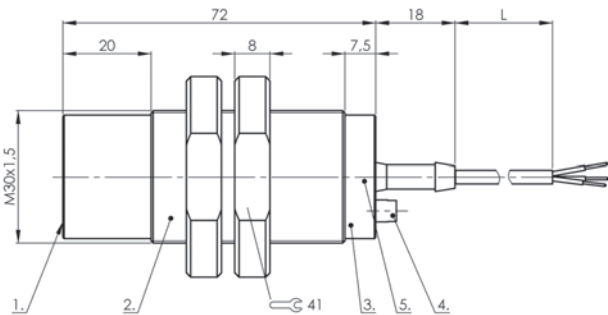
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED Power, 6) LED function indicator

BCS00NH, BCS00MY



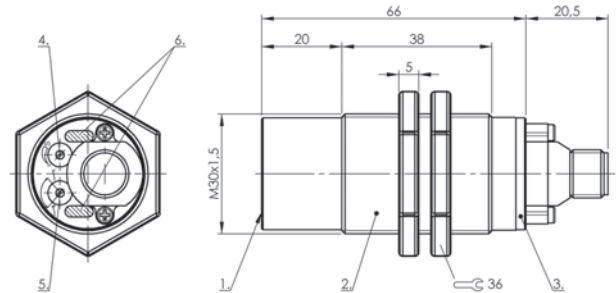
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) NO or NC selectable, 6) LED function indicator

BCS007F



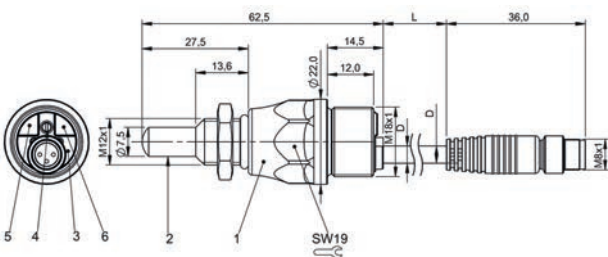
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCS0077, BCS0078



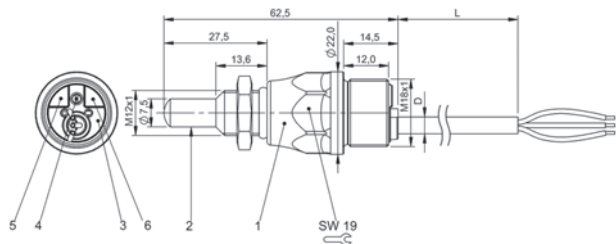
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) NO or NC selectable, 6) LED function indicator

BCS007L



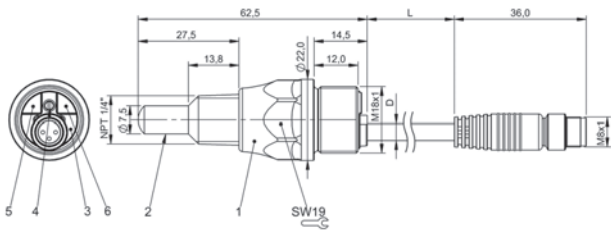
1) Housing, 2) Sensing surface, 3) Cover, 4) Potentiometer, 5) Function indicator yellow, 6) Power indicator green

BCS0105, BCS00ZL



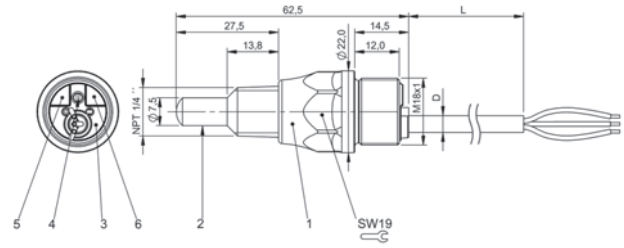
1) Housing, 2) Sensing surface, 3) Cover, 4) Potentiometer, 5) Function indicator yellow, 6) Power indicator green

BCS010L, BCS010Z



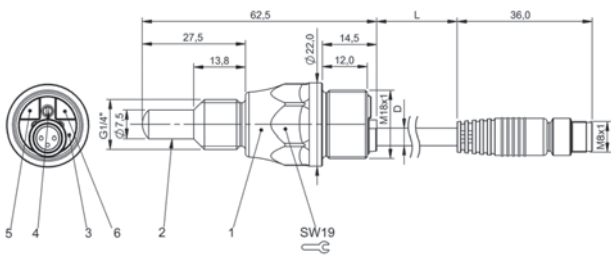
1) Housing, 2) Sensing surface, 3) Cover, 4) Potentiometer, 5) Function indicator yellow, 6) Power indicator green

BCS010F, BCS00ZY



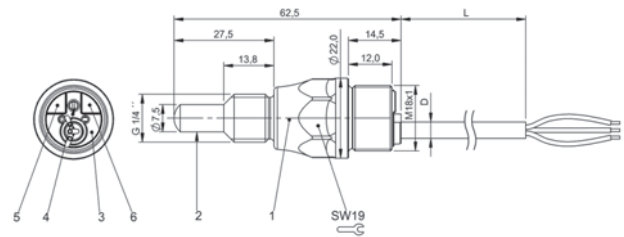
1) Housing, 2) Sensing surface, 3) Cover, 4) Potentiometer, 5) Function indicator yellow, 6) Power indicator green

BCS010N, BCS0104



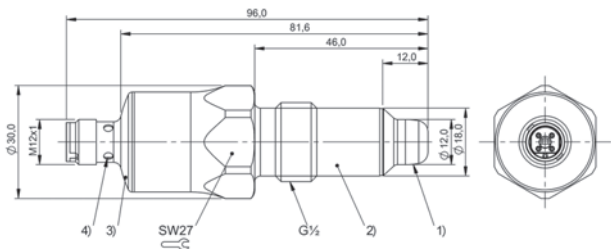
1) Housing, 2) Sensing surface, 3) Cover, 4) Potentiometer, 5) Function indicator yellow, 6) Power indicator green

BCS0109, BCS010A, BCS00ZR



1) Housing, 2) Sensing surface, 3) Cover, 4) Potentiometer, 5) Function indicator yellow, 6) Power indicator green

BCS010M, BCS0103



1) Sensing surface, 2) Housing, 3) Cover, 4) LED function indicator

BCS011E, BCS011L, BCS011J, BCS011K, BCS011F, BCS011H



| | BCS0010 BCS G04T4D-XXS10C-EP02-GZ01-002 | BCS0012 BCS G06T4B-XXS15C-EP02-GZ01-002 | |
|--------------------------|--|--|--|
| Dimension | Ø 4 x 29 mm | Ø 6.5 x 18 mm | |
| Series | G04 | G06 | |
| Thread (A) | — | — | |
| Installation | for flush mounting | for flush mounting | |
| Connection | Cable with connector, Special connector-Special connector, 2.00 m, PUR | Cable with connector, Special connector-Special connector, 2.00 m, PUR | |
| Interface | Special interface | Special interface | |
| Range | 0.1...1 mm | 0.1...1.5 mm | |
| Sensitivity | adjustable on base unit | adjustable on base unit | |
| Housing material | Stainless steel (1.4301) | Stainless steel (1.4301) | |
| Material sensing surface | PTFE | PTFE | |
| Ambient temperature | -30...80 °C | -30...80 °C | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 340 | Page 340 | |



| | BCS0013 BCS G06T4B-XXS30G-EP02-GZ01-002 | BCS0016 BCS G10T4B-XXS40C-EP02-GZ01-002 | BCS0017 BCS G10T4C-XXS80G-EP02-GZ01-002 | BCS0011 BCS M05T4C-XXS10C-EP02-GZ01-002 |
|--|--|--|--|--|
| | Ø 6.5 x 19 mm | Ø 10 x 20 mm | Ø 10 x 24 mm | Ø 5 x 29 mm |
| | G06 | G10 | G10 | M05 |
| | — | — | — | M5x0.5 |
| | non-flush | for flush mounting | non-flush | for flush mounting |
| | Cable with connector, Special connector-Special connector, 2.00 m, PUR | Cable with connector, Special connector-Special connector, 2.00 m, PUR | Cable with connector, Special connector-Special connector, 2.00 m, PUR | Cable with connector, Special connector-Special connector, 2.00 m, PUR |
| | Special interface | Special interface | Special interface | Special interface |
| | 0.1...3 mm | 0.1...4 mm | 1...8 mm | 0.1...1 mm |
| | adjustable on base unit | adjustable on base unit | adjustable on base unit | adjustable on base unit |
| | Stainless steel (1.4301) | Stainless steel (1.4301) | Stainless steel (1.4301) | Stainless steel (1.4301) |
| | PTFE | PTFE | PTFE | PTFE |
| | -30...80 °C | -30...80 °C | -30...80 °C | -30...80 °C |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | IP67 | IP67 | IP67 | IP67 |
| | Page 340 | Page 340 | Page 340 | Page 340 |



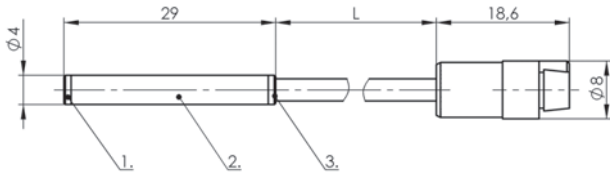
| | BCS0014 BCS M08T4C-XXS15C-EP02-GZ01-002 | BCS0015 BCS M08T4C1-XXS30G-EP02-GZ01-002 | |
|--------------------------|--|--|--|
| Dimension | Ø 8 x 25 mm | Ø 8 x 28 mm | |
| Series | M08 | M08 | |
| Thread (A) | M8x1 | M8x1 | |
| Installation | for flush mounting | non-flush | |
| Connection | Cable with connector, Special connector-Special connector, 2.00 m, PUR | Cable with connector, Special connector-Special connector, 2.00 m, PUR | |
| Interface | Special interface | Special interface | |
| Range | 0.1...1.5 mm | 0.1...3 mm | |
| Sensitivity | adjustable on base unit | adjustable on base unit | |
| Housing material | Stainless steel (1.4301) | Stainless steel (1.4301) | |
| Material sensing surface | PTFE | PTFE | |
| Ambient temperature | -30...80 °C | -30...80 °C | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 340 | Page 340 | |



| | BCS0019 BCS M12T4D1-XXS80G-EP02-GZ01-002 | BCS001A BCS D18T403-XXS30C-EP02-GZ01-002 | BCS001C BCS D18T404-XXS50C-EP02-GZ01-002 | BCS001F BCS D22T405-XXS10C-EP02-GZ01-002 |
|--|--|--|--|--|
| | Ø 12 x 34 mm | Ø 18 x 2.5 mm | Ø 18 x 4 mm | Ø 22 x 4 mm |
| | M12 | D18 | D18 | D22 |
| | M12x1 | — | — | — |
| | non-flush | for flush mounting | for flush mounting | for flush mounting |
| | Cable with connector, Special connector-Special connector, 2.00 m, PUR | Cable with connector, Special connector-Special connector, 2.00 m, PVC | Cable with connector, Special connector-Special connector, 2.00 m, PUR | Cable with connector, Special connector-Special connector, 2.00 m, PUR |
| | Special interface | Special interface | Special interface | Special interface |
| | 1...8 mm | 0.1...3 mm | 1...5 mm | 1...10 mm |
| | adjustable on base unit | adjustable on base unit | adjustable on base unit | adjustable on base unit |
| | Stainless steel (1.4301) | Stainless steel (1.4301) | Stainless steel (1.4301) | Stainless steel (1.4301) |
| | PTFE | PTFE | PTFE | PTFE |
| | -30...80 °C | -30...70 °C | -30...80 °C | -30...80 °C |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | IP67 | IP66 | IP66 | IP66 |
| | Page 341 | Page 341 | Page 341 | Page 341 |

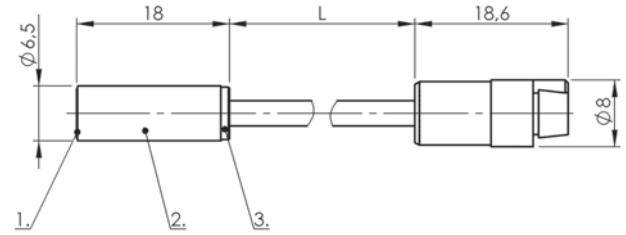


| | BCS001H BCS D22T408-XXS10C-EP02-GZ01-002 | | |
|--------------------------|--|--|--|
| Dimension | Ø 22 x 10 mm | | |
| Series | D22 | | |
| Thread (A) | — | | |
| Installation | for flush mounting | | |
| Connection | Cable with connector, Special connector-Special connector, 2.00 m, PUR | | |
| Interface | Special interface | | |
| Range | 1...10 mm | | |
| Sensitivity | adjustable on base unit | | |
| Housing material | Stainless steel (1.4301) | | |
| Material sensing surface | PTFE | | |
| Ambient temperature | -30...80 °C | | |
| Approval/Conformity | CE, cULus | | |
| Protection degree | IP66 | | |
| Productview | Page 341 | | |



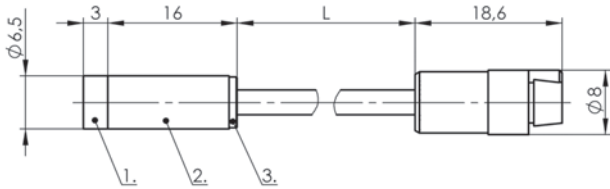
1) Sensing surface, 2) Housing, 3) Cover

BCS0010



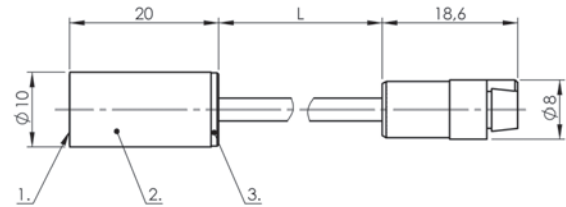
1) Sensing surface, 2) Housing, 3) Cover

BCS0012



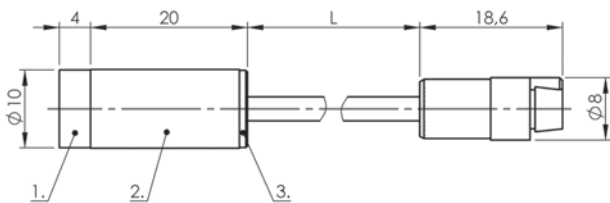
1) Sensing surface, 2) Housing, 3) Cover

BCS0013



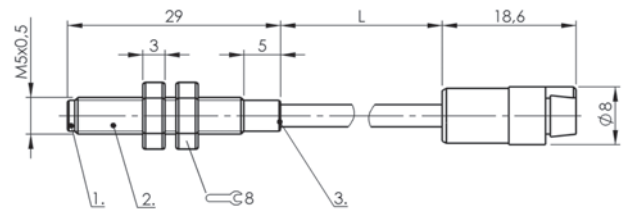
1) Sensing surface, 2) Housing, 3) Cover

BCS0016



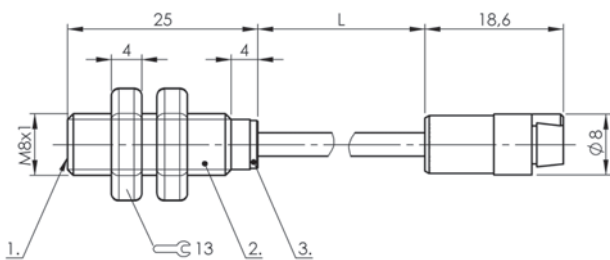
1) Sensing surface, 2) Housing, 3) Cover

BCS0017



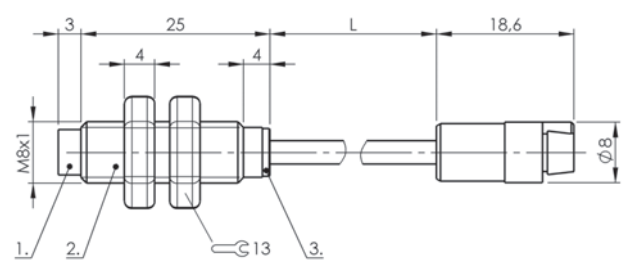
1) Sensing surface, 2) Housing, 3) Cover

BCS0011



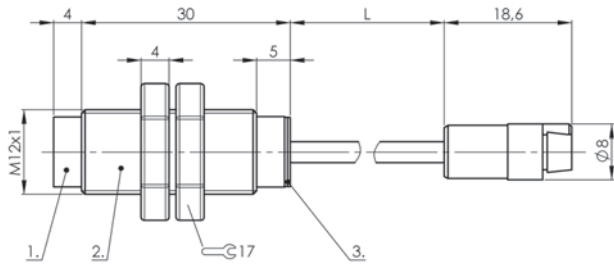
1) Sensing surface, 2) Housing, 3) Cover

BCS0014



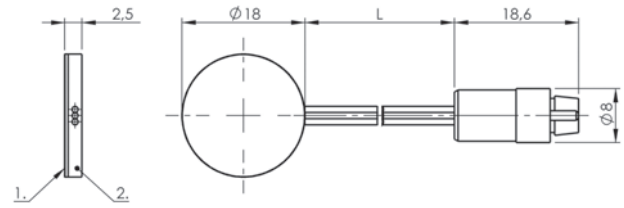
1) Sensing surface, 2) Housing, 3) Cover

BCS0015



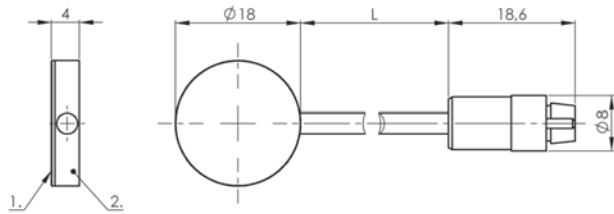
1) Sensing surface, 2) Housing, 3) Cover

BCS0019



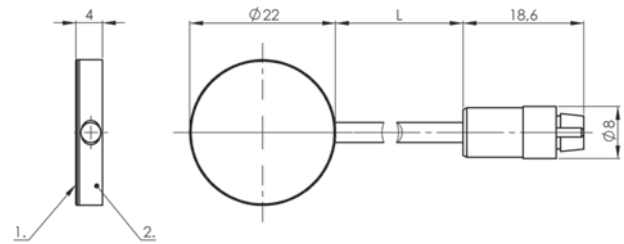
1) Sensing surface, 2) Housing

BCS001A



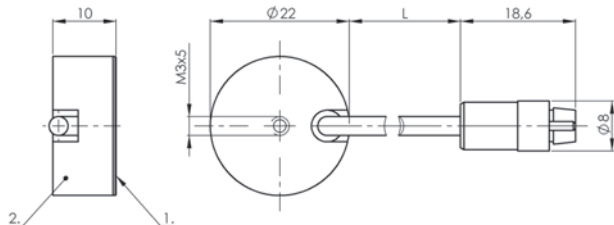
1) Sensing surface, 2) Housing

BCS001C



1) Sensing surface, 2) Housing

BCS001F



1) Sensing surface, 2) Housing

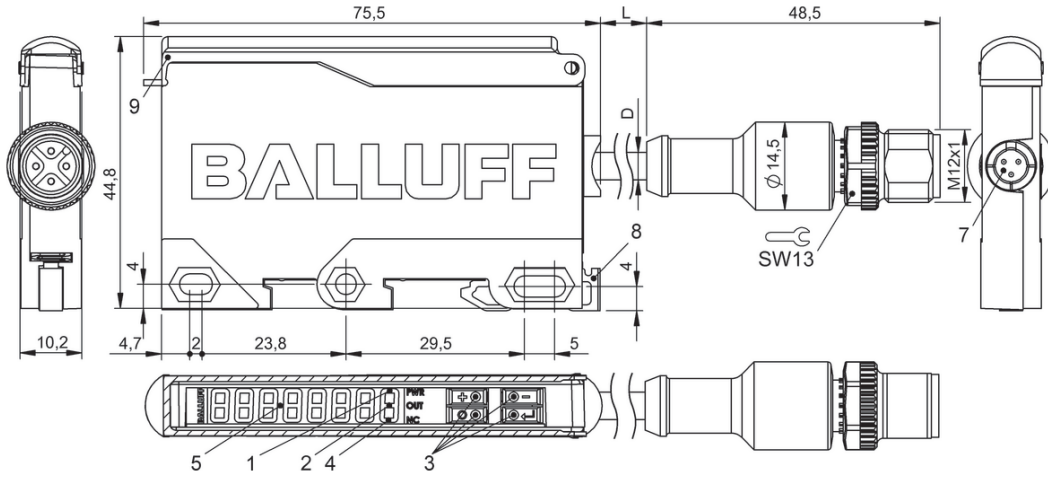
BCS001H



| | | | |
|--|---|---|--|
| PNP/NPN normally open/normally closed programmable | BAE00LC BAE SA-CS-027-YI-BP00,3-GS04 | | |
| Analog, voltage 0...10 V/current 4...20 mA | | BAE00KJ BAE SA-CS-026-YP-BP02 | |
| Dimension | 10.5 x 45 x 75.5 mm | 10.5 x 45 x 75.5 mm | |
| Connection | Cable with connector, M12x1 connector, 4-pin, 0.30 m, PUR | Cable, 2.00 m, PUR | |
| Switching frequency | 50 Hz | 100 Hz | |
| Interface | IO-Link 1.1 | — | |
| Housing material | PBT | PBT | |
| Ambient temperature | -10...70 °C | -10...70 °C | |
| Operating voltage U _b | 18...30 VDC | 15...30 VDC | |
| Approval/Conformity | CE, IO-Link, cULus | CE, cULus | |
| Protection degree | IP40 | IP40 | |
| Time function | On/off delay time programmable | On/off delay time programmable | |
| Productview | Page 344 | Page 344 | |

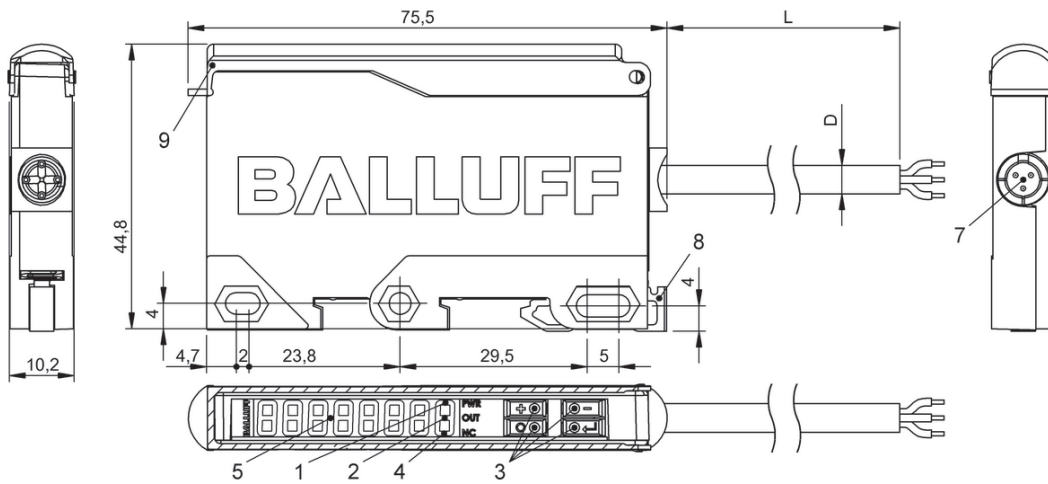


| | BAE00KH BAE SA-CS-025-YP-BP02 | BAE00L9 BAE SA-CS-025-YP-BP00,3-GS04 | |
|--|---|--|--|
| BAE00LA BAE SA-CS-026-YP-BP00,3-GS04 | | | |
| 10.5 x 45 x 75.5 mm | 10.5 x 45 x 75.5 mm | 10.5 x 45 x 75.5 mm | |
| Cable with connector, M12x1, 0.30 m, PUR | Cable, 2.00 m, PUR | Cable with connector, M12x1, 0.30 m, PUR | |
| 100 Hz | 100 Hz | 100 Hz | |
| — | — | — | |
| PBT | PBT | PBT | |
| -10...70 °C | -10...70 °C | -10...70 °C | |
| 15...30 VDC | 12...30 VDC | 12...30 VDC | |
| CE, cULus | CE, cULus | CE, cULus | |
| IP40 | IP40 | IP40 | |
| On/off delay time programmable | — | — | |
| Page 344 | Page 345 | Page 345 | |



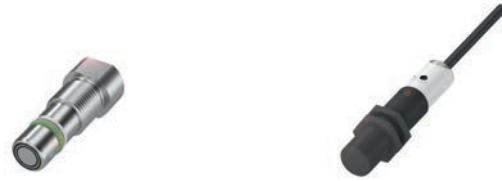
1) LED Power, 2) LED function indicator, 3) 4x operating keys, 4) LED N.C. function active, 5) 7x seven-segment display, 7) Plug connection sensor, 8) DIN rail mount 35mm, 9) Flap

BAE00LC, BAE00LA



1) LED Power, 2) LED function indicator, 3) 4x operating keys, 4) LED N.C. function active, 5) 7x seven-segment display, 7) Plug connection sensor, 8) DIN rail mount 35mm, 9) Flap

BAE00KJ



| | | | |
|-------------------------------------|---|--|--|
| Normally open | | BCS000K BCS M18KM3-U0T80G-BV02 | |
| Normally closed | | BCS000J BCS M18KM3-U0T80G-BV02 | |
| Analog, current falling on approach | | | |
| With sensor amplifier | BCS013E BCS Z094401-XXS20B-SZ02-T07 | | |
| Dimension | Ø 18 x 38.5 mm | Ø 18 x 84 mm | |
| Series | Z09 | M18 | |
| Thread (A) | M12x1 | M18x1 | |
| Installation | for flush mounting | non-flush | |
| Connection | Connector-triaxial plug | Cable, 2.00 m, PVC | |
| Switching frequency | 5 Hz | 40 Hz | |
| Interface | Special interface | — | |
| Range | 0.1...2 mm | 0...6.5 mm | |
| Sensitivity | adjustable on base unit | Switching distance adjustable | |
| Housing material | Stainless steel (1.4104) | PBT | |
| Material sensing surface | Stainless steel (1.4301) epoxy | PBT | |
| Ambient temperature | 0...180 °C | -25...80 °C | |
| Pressure rating max. | 150 bar | — | |
| Operating voltage U _b | — | 20...250 VDC/20...250 VAC | |
| Approval/Conformity | CE | CE | |
| Protection degree | IP68 | IP67 | |
| Productview | Page 352 | Page 352 | |



| | | | | |
|--|---|--|--|--|
| | | | | |
| | | | | |
| | BCW0001 BCW M18B4M1-ICM80C-DV02 | | | |
| | | BCS00A3 BCS S10T401-XXSFNC-SZ02-T07 | BCS00A5 BCS S10T403-XXSFNC-SZ02-T07 | BCS00A1 BCS M18T4H1-XXS10H-SZ02-T08 |
| | Ø 18 x 70 mm | Ø 18 x 61 mm | Ø 18 x 61 mm | Ø 18 x 65 mm |
| | M18 | S10 | S10 | M18 |
| | M18x1 | M18x1 | J 3/8" NPTF | M18x1 |
| | for flush mounting | non-flush | non-flush | non-flush |
| | Cable, 2.00 m, PVC | Connector, Special connector-Special connector | Connector, Special connector-Special connector | Connector, Special connector-Special connector |
| | 100 Hz | 5 Hz | 100 Hz | 50 Hz |
| | — | Special interface | Special interface | Special interface |
| | 0...8 mm | — | — | 1...10 mm |
| | — | adjustable on base unit | adjustable on base unit | adjustable on base unit |
| | Stainless steel | Stainless steel (1.4301) | Stainless steel (1.4301) | Stainless steel (1.4301) |
| | PBT | PTFE | PTFE | PTFE |
| | 10...55 °C | -10...180 °C | -10...180 °C | -180...250 °C |
| | — | 6 bar | 6 bar | — |
| | 12...35 VDC | — | — | — |
| | CE, cULus | CE | CE | CE |
| | IP67 | IP68 | IP68 | IP66 |
| | Page 352 | Page 352 | Page 353 | Page 352 |

Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

Accessories



| | | | |
|-----------------------------------|--|--|--|
| PNP normally open/normally closed | BCS00W7 BCS G20L4Q-PAC10C-EV03-D03 | | |
| Normally open | | BCS000W BCS M30KN2-UST15G-AV02 | |
| Normally closed | | BCS000U BCS M30KN2-UOT15G-AV02 | |
| With sensor amplifier | | | |
| Dimension | Ø 20 x 81 mm | Ø 30 x 99 mm | |
| Series | G20 | M30 | |
| Thread (A) | — | M30x1.5 | |
| Installation | for flush mounting | non-flush | |
| Connection | Cable, 3.00 m, PVC | Cable, 2.00 m, PVC | |
| Switching frequency | 100 Hz | 100 Hz | |
| Interface | — | — | |
| Range | 1.5...10 mm | 0...12.1 mm | |
| Sensitivity | Switching distance adjustable | Switching distance adjustable | |
| Housing material | Stainless steel (1.4301) | PBT | |
| Material sensing surface | LCP | PBT | |
| Ambient temperature | -25...70 °C | -25...70 °C | |
| Pressure rating max. | — | — | |
| Operating voltage Ub | 10...30 VDC | 20...250 VDC/20...250 VAC | |
| Approval/Conformity | CE | CE | |
| Protection degree | IP65 | IP65 | |
| Productview | Page 352 | Page 352 | |



| | | | |
|----------------------------------|---|---|--|
| PNP normally open | BCS006H BCS S01T401-PSCFNG-KM16-T02 | BCS00A6 BCS S03T401-PSCFNH-KM16-T02 | |
| PNP normally closed | BCS006J BCS S01T401-POCFNG-KM16-T02 | | |
| NPN normally closed | | BCS00A9 BCS S03T401-NOCFNH-KM16-T02 | |
| Dimension | 54.8 x 48.5 x 106 mm | 54.8 x 48.5 x 106 mm | |
| Series | S01 | S03 | |
| Thread (A) | M18x1 | J 3/8" NPTF | |
| Installation | non-flush | non-flush | |
| Connection | Clamping terminal | Clamping terminal | |
| Switching frequency | 5 Hz | 100 Hz | |
| Interface | — | — | |
| Range | — | — | |
| Sensitivity | media-dependent, adjustable | media-dependent, adjustable | |
| Housing material | Stainless steel (1.4305) | Stainless steel (1.4305) | |
| Material sensing surface | PTFE | PTFE | |
| Ambient temperature | -30...125 °C | -30...125 °C | |
| Pressure rating max. | 10 bar | 10 bar | |
| Operating voltage U _b | 10...35 VDC | 10...35 VDC | |
| Approval/Conformity | CE | CE | |
| Protection degree | IP67 | IP67 | |
| Productview | Page 353 | Page 353 | |



| | | | |
|---|--|--|--|
| BCS006M BCS S02T401-PSCFNG-KM16-T02 | | | |
| 54.8 x 48.5 x 106 mm | | | |
| S02 | | | |
| R 3/8" | | | |
| non-flush | | | |
| Clamping terminal | | | |
| 5 Hz | | | |
| — | | | |
| — | | | |
| media-dependent, adjustable | | | |
| Stainless steel (1.4305) | | | |
| PTFE | | | |
| -30...125 °C | | | |
| 10 bar | | | |
| 10...35 VDC | | | |
| CE | | | |
| IP67 | | | |
| Page 353 | | | |

Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

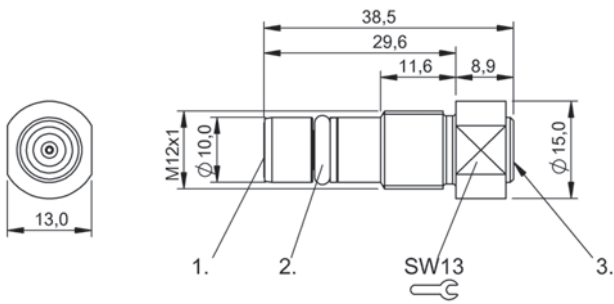
Safety

Industrial Networking

Power Supply

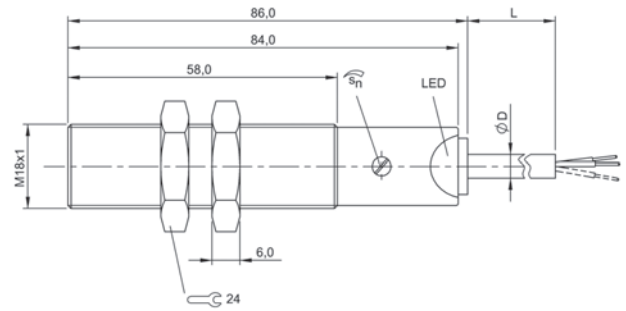
Connectivity

Accessories

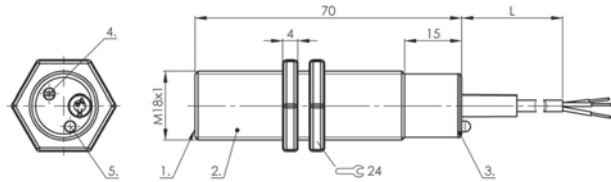


1) Sensing surface, 2) O-Ring with thrust ring, 3) Triaxial connector

BCS013E

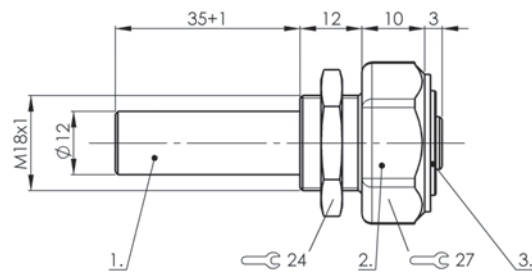


BCS000K, BCS000J



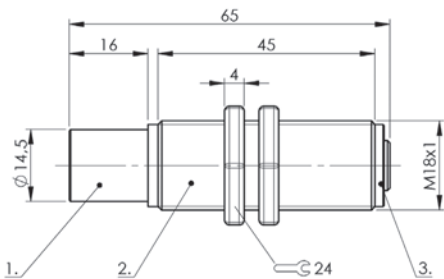
1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) LED function indicator

BCW0001



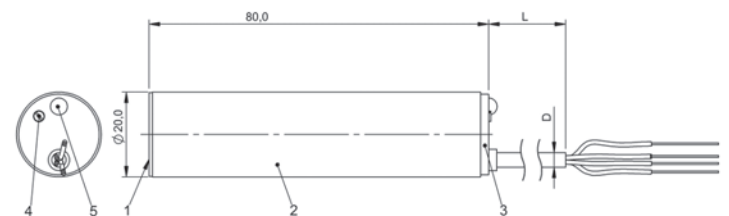
1) Sensing surface, 2) Housing, 3) Cover

BCS00A3



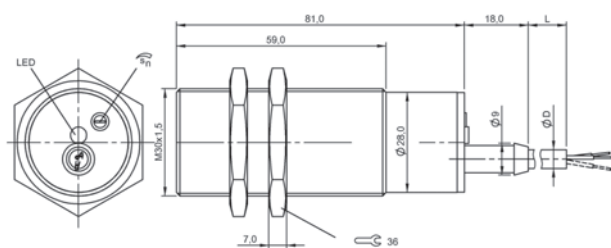
1) Sensing surface, 2) Housing, 3) Cover

BCS00A1

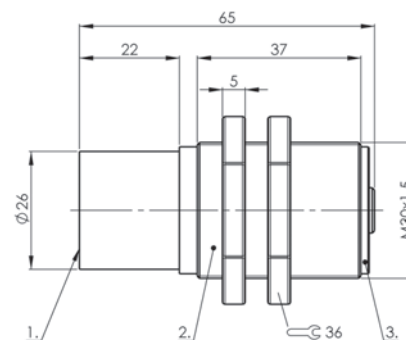


1) Sensing surface, 2) Housing, 3) Cover, 4) Potentiometer, 5) Function indicator yellow

BCS00W7

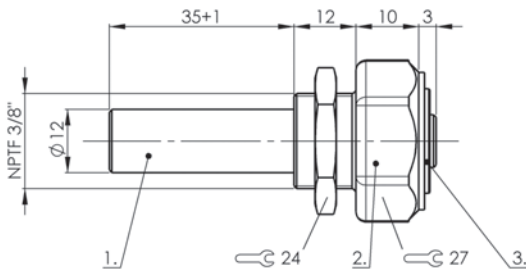


BCS000W, BCS000U



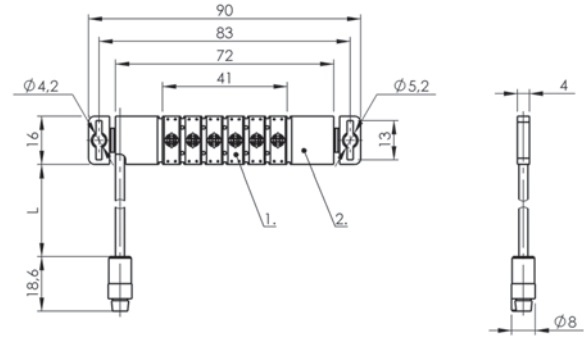
1) Sensing surface, 2) Housing, 3) Cover

BCS00A2



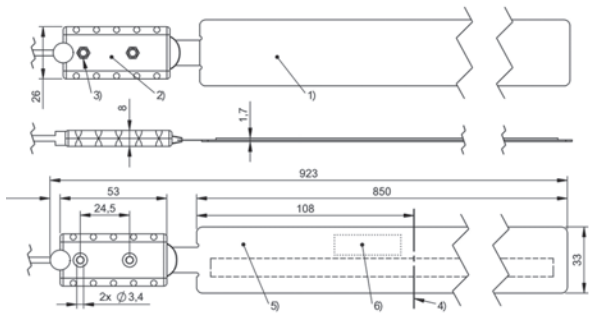
1) Sensing surface, 2) Housing, 3) Cover

BCS00A5



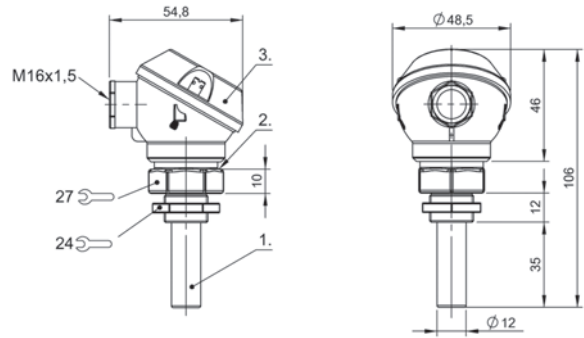
1) Sensing surface, 2) Housing

BCS000Y



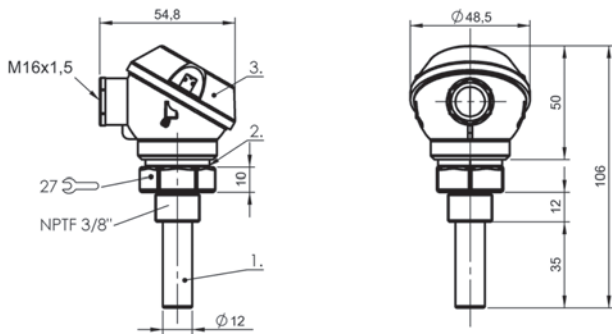
1) Length of stick-on electronics, 2) Measuring length min., 3) Length of electronics box, 4) Hole spacing, 5) Cable length, 6) Width of stick-on electrode

BCW0004



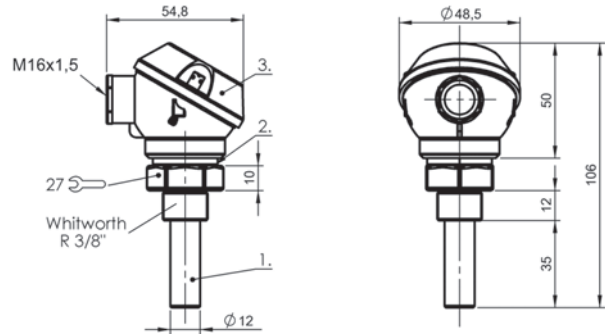
1) Sensing surface, 2) Housing, 3) Cover

BCS006H, BCS006J



1) Sensing surface, 2) Housing, 3) Cover

BCS00A9, BCS00A6



1) Sensing surface, 2) Housing, 3) Cover

BCS006M

Generous detection range for high reliability

PHOTOELECTRIC SENSORS

Photoelectric sensors from Balluff reliably recognize the presence of objects. They check shape, color, distance or thickness equally reliably. This is because they have a significantly greater detection range compared to inductive or capacitive technology.

In the area of photoelectric sensors we offer a huge product variety. Sensors using all light types from red light to infrared to laser technology.

Sensors with the most different ranges, with and without background suppression, as well as many different form factors. For specialty applications, mini-sensors, color sensors, light band and contrast sensors round out our portfolio. With Balluff you achieve not only the highest reliability, but also the greatest flexibility.

The most important benefits

- All light types, all principles
- Different ranges from near to far
- Tailored to the requirements of automation, mounting and handling
- Robust and reliable even under adverse environmental conditions
- Flexibility for planning and installation through well-conceived technical data





Sensors

RFID

Machine Vision and
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Human Machine
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Safety

Industrial Networking

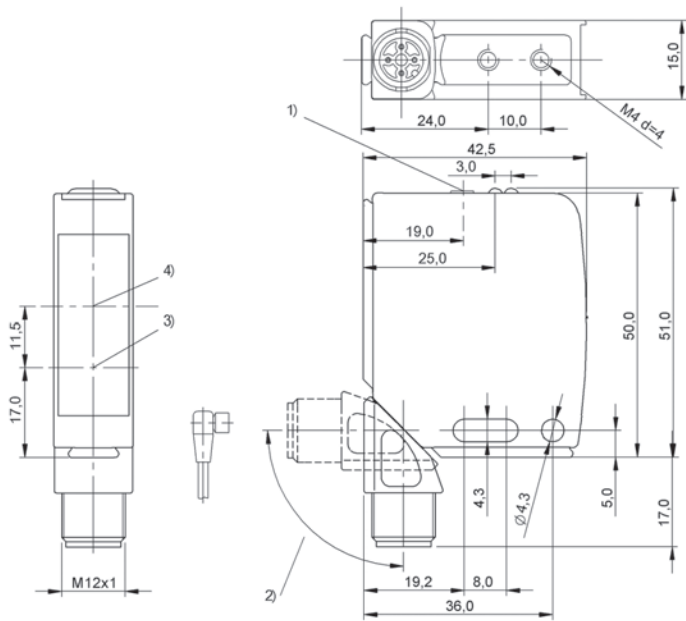
Power Supplies

Connectivity

Accessories



| | |
|--------------------------------|--|
| | BOS026R BOS 21M-UUI-RP30-S4 |
| Series | 21M |
| Dimension | 15 x 51 x 42.5 mm |
| Interface | IO-Link 1.1 2x PNP/NPN/push-pull NO/NC |
| Input function | Reset counter |
| Principle of operation | Photoelectric sensor |
| Principle of optical operation | Diffuse energetic, diffuse with background suppression, retroreflective, through-beam (emitter), through-beam (receiver), depends on setting |
| Special optical feature | Multifunction |
| Beam characteristic | Divergent |
| Light type | LED, red light |
| Light spot size | Ø 50 mm at 1 m |
| Range | adjustable |
| Connection | Connector, M12x1 connector, 4-pin |
| Housing material | Zinc, die-cast Aluminum, glass, PC |
| Material sensing surface | Glass, anti-glare |
| Operating voltage U_b | 10...30 VDC |
| Approval/Conformity | CE, EAC, cULus |
| Productview | Page 357 |



1) Display and control panel, 2) rotatable 270°, 3) Optical axis emitter, 4) Optical axis receiver

BOS026R



| | BOS01R8 BOS 08E-PS-KD20-00,2-S49 | BOS01NN BOS 08E-PS-KD20-S49 | BOS01Y2 BOS 12M-PS-ID10-S4 | |
|--|--|---------------------------------------|--------------------------------------|--|
| PNP normally open | | | | |
| PNP normally open, PNP normally closed | | | | |
| Series | 08E | 08E | 12M | |
| Dimension | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 12 x 60 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED infrared | |
| Light spot size | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | 45 x 45 mm at 400 mm | |
| Range | 1...60 mm | 1...60 mm | 1...400 mm | |
| Connection | Cable with connector, 0.20 m, PUR | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Stainless steel | Stainless steel | Brass | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | cULus, CE | cULus, CE | CE, cULus, EAC | |
| Trademark | — | — | — | |
| Productview | Page 370 | Page 370 | Page 370 | |



| | BOS01TP BOS 12M-PS-RD10-S4 | BOS01TN BOS 12M-PS-RD11-S4 | BOS01TU BOS 12M-PS-RD12-S4 | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | | BOS01EY BOS 18M-PA-ID20-S4 | BOS01NF BOS 18M-PA-LD20-S4 |
| | 12M | 12M | 12M | 18M | 18M |
| | Ø 12 x 60 mm | Ø 12 x 60 mm | Ø 12 x 60 mm | Ø 18 x 75 mm | Ø 18 x 75 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | Divergent | Focus, typical at 400 mm |
| | LED, red light | LED, red light | LED, red light | LED infrared | Laser red light |
| | 28 x 28 mm at 250 mm | Ø 8 mm at 100 mm | 22 x 22 mm at 200 mm | Ø 50 mm at 600 mm | Ø 2 mm at 250 mm |
| | 0...250 mm | 1...100 mm | 1...200 mm | 1...800 mm | 1...250 mm |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Brass | Brass | Brass | Brass | Brass |
| | PMMA | PMMA | PMMA | Glass, anti-glare | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | cULus, CE, EAC | cULus, CE, EAC |
| | Global | Global | Global | — | — |
| | Page 370 | Page 370 | Page 370 | Page 370 | Page 370 |



| | | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--|
| PNP normally open | BOS01C1 BOS 18M-PS-RD20-S4 | BOS01E7 BOS 18M-PS-RD21-S4 | | |
| PNP normally open, PNP normally closed | BOS01CF BOS 18M-PA-RD20-S4 | BOS01CA BOS 18M-PA-RD21-S4 | | |
| PNP normally open/normally closed, IO-Link 1.1 | | | BOS01UA BOS 18M-PI-RD30-S4 | |
| PNP normally open/normally closed | | | | |
| Series | 18M | 18M | 18M | |
| Dimension | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 50 mm at 600 mm | Ø 25 mm at 300 mm | Ø 50 mm at 600 mm | |
| Range | 0...600 mm | 0...300 mm | 1...500 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | Glass, anti-glare | Glass, anti-glare | Glass | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 18...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | cULus, CE, EAC | |
| Trademark | — | — | — | |
| Productview | Page 370 | Page 370 | Page 370 | |



| | | | | | |
|--|--------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|
| | BOS01FA BOS 18M-PS-RD23-S4 | | | | |
| | | | BOS01KE BOS 18E-PA-RD20-S4 | BOS023R BOS 18E-PA-RD30-S4 | |
| | | | | | BOS023E BOS 18E-PI-RD30-S4 |
| | | BOS01J8 BOS 18M-PUV-RD30-S4 | | | |
| | 18M | 18M | 18E | 18E | 18E |
| | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | LED, red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | Ø 25 mm at 300 mm | Ø 50 mm at 600 mm | Ø 50 mm at 600 mm | Ø 50 mm at 600 mm | Ø 50 mm at 600 mm |
| | 0...400 mm | 0...500 mm | 500 mm | 500 mm | 1...500 mm |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Brass | Brass | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4571) |
| | Glass, anti-glare | Glass | Glass | PMMA | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 18...30 VDC |
| | cULus, CE, EAC | CE, cULus, EAC | CE, cULus, Ecolab, FDA compliant, EAC | cULus, Ecolab | cULus, CE, EAC |
| | — | — | — | — | — |
| | Page 370 | Page 370 | Page 371 | Page 371 | Page 370 |



| | | | | |
|--|--|---------------------------------------|--|--|
| PNP normally open | | | | |
| PNP normally open, PNP normally closed | BOS01KH BOS G18E-PA-RD20-S4 | BOS0240 BOS G18E-PA-RD30-S4 | BOS00LT BOS 18KW-PA-1PD-S4-C | |
| Series | G18E | G18E | 18KW | |
| Dimension | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 14 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | Infrared | |
| Light spot size | Ø 50 mm at 600 mm | — | Ø 100 mm at 300 mm | |
| Range | 500 mm | 500 mm | 0...400 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Stainless steel (1.4404) | Stainless steel (1.4404) | PBT | |
| Material sensing surface | Glass | PMMA | PMMA | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, Ecolab, FDA compliant, EAC | Ecolab, cULus, CE, EAC | CE, cULus, EAC | |
| Trademark | — | — | Global | |
| Productview | Page 371 | Page 371 | Page 371 | |



| | | | | | |
|--|--|--|--|--|--|
| BOS01NA BOS 18KF-PA-1XA-SA1-C-00,2 | | | | | |
| | BOS00K9 BOS 18KF-PA-1XA-S4-C | BOS00K0 BOS 18KF-PA-1PE-C-02 | BOS00JZ BOS 18KF-PA-1PD-S4-C | BOS00K1 BOS 18KF-PA-1PE-S4-C | |
| 18KF | 18KF | 18KF | 18KF | 18KF | |
| Ø 18 x 67 mm | Ø 18 x 71.5 mm | Ø 18 x 77 mm | Ø 18 x 81.5 mm | Ø 18 x 81.5 mm | |
| — | — | — | — | — | |
| Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| — | — | — | — | — | |
| Divergent | Divergent | Divergent | Divergent | Divergent | |
| Infrared | Infrared | Infrared | Infrared | Infrared | |
| Ø 80 mm at 100 mm | Ø 80 mm at 100 mm | Ø 200 mm at 600 mm | Ø 100 mm at 300 mm | Ø 200 mm at 600 mm | |
| 0...100 mm | 0...100 mm | 0...700 mm | 0...400 mm | 0...700 mm | |
| Cable with connector, Molex Mini-Fit 4.2, 4-pin, 0.19 m, PVC | Connector, M12x1 connector, 4-pin | Cable, 2.00 m, PVC | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| PBT | PBT | PBT | PBT | PBT | |
| PMMA | PMMA | PMMA | PMMA | PMMA | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| CE, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| — | Global | Global | Global | Global | |
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| | | | | |
|--|---|--|--|--|
| PNP normally open | | BOS01WH BOS Q08M-PS-LD20-0,02-S49 | BOS01WC BOS Q08M-PS-LD20-S49 | |
| PNP normally open, PNP normally closed | BOS00JP BOS 18KF-PA-1LOC-S4-C | | | |
| Series | 18KF | Q08M | Q08M | |
| Dimension | Ø 18 x 81.5 mm | 8 x 44 x 8 mm | 8 x 59 x 8 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Collimated | Collimated | |
| Light type | Laser red light | Laser red light | Laser red light | |
| Light spot size | Ø 1 mm at 150 mm | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | |
| Range | 0...350 mm | 60 mm | 60 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Connector, M8x1 connector, 3-pin | |
| Housing material | PBT | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | cULus, CE, EAC | cULus, CE, EAC | |
| Trademark | Global | — | — | |
| Productview | Page 371 | Page 372 | Page 372 | |



| | BOS01RZ BOS Q08M-PS-KD20-00,2-S49 | BOS01RJ BOS Q08M-PS-KD20-S49 | BOS021J BOS R01E-PS-KD20-00,2-S49 | BOS021K BOS R01E-PS-KD20-02 | BOS0123 BOS 5K-PS-ID10-02 |
|--|---|--|--|---------------------------------------|-------------------------------------|
| | Q08M | Q08M | R01E | R01E | 5K |
| | 8 x 44 x 8 mm | 8 x 59 x 8 mm | 20 x 32 x 9 mm | 20 x 32 x 9 mm | 10.8 x 32.7 x 19.5 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | LED, red light | LED, red light | LED, red light | LED, red light | Infrared |
| | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | Ø 50 mm at 500 mm |
| | 1...60 mm | 1...60 mm | 1...100 mm | 1...100 mm | 0...900 mm |
| | Cable with connector, 0.20 m, PUR | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable, 2.00 m, PUR | Cable, 2.00 m, PVC |
| | Zinc, die-cast | Zinc, die-cast | Stainless steel (1.4404) | Stainless steel (1.4404) | PC PBT |
| | PMMA | PMMA | PA | PA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, Ecolab, EAC | cULus, CE, Ecolab, EAC | cULus, CE, EAC |
| | — | — | — | — | Global |
| | Page 372 | Page 372 | Page 372 | Page 372 | Page 372 |



| | BOS015J BOS 5K-PS-ID10-S49 | BOS0124 BOS 5K-PS-ID10-S75 | BOS0127 BOS 5K-PS-RD11-02 | |
|--|--------------------------------------|--------------------------------------|-------------------------------------|--|
| PNP normally open | | | | |
| PNP normally open, PNP normally closed | | | | |
| Series | 5K | 5K | 5K | |
| Dimension | 10.8 x 43.5 x 19.5 mm | 10.8 x 43.5 x 19.5 mm | 10.8 x 32.7 x 19.5 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Infrared | Infrared | LED, red light | |
| Light spot size | Ø 50 mm at 500 mm | Ø 50 mm at 500 mm | Ø 8 mm at 180 mm | |
| Range | 0...900 mm | 0...900 mm | 50...200 mm | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 4-pin | Cable, 2.00 m, PVC | |
| Housing material | PC PBT | PC PBT | PC PBT | |
| Material sensing surface | PMMA | PMMA | PC | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | cULus, CE, EAC | cULus, CE, EAC | cULus, CE | |
| Trademark | Global | Global | Global | |
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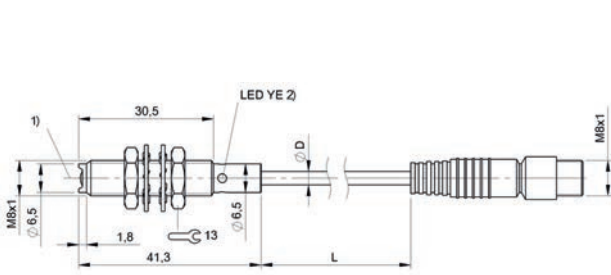
| | BOS015N BOS 5K-PS-RD11-S49 | BOS0128 BOS 5K-PS-RD11-S75 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | BOS0031 BOS 21M-PA-ID10-S4 | BOS0032 BOS 21M-PA-LD10-S4 | BOS0033 BOS 21M-PA-RD10-S4 |
| | 5K | 5K | 21M | 21M | 21M |
| | 10.8 x 43.5 x 19.5 mm | 10.8 x 43.5 x 19.5 mm | 15 x 50 x 42.5 mm | 15 x 50 x 42.5 mm | 15 x 50 x 42.5 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | Collimated | Divergent |
| | LED, red light | LED, red light | LED infrared | Laser red light | LED, red light |
| | Ø 8 mm at 180 mm | Ø 8 mm at 180 mm | — | — | — |
| | 50...200 mm | 50...200 mm | 50...2000 mm | 0...600 mm | 10...1000 mm |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | PC PBT | PC PBT | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum |
| | PC | PC | PMMA | PMMA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE | cULus, CE | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Global | Global | — | — | — |
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| | | | | |
|--|---|---|--------------------------------------|--|
| PNP normally open, PNP normally closed | | | BOS01FM BOS 23K-PA-RD10-S4 | |
| PNP normally open/normally closed, IO-Link 1.1 | | | | |
| PNP normally open/normally closed | BOS0175 BOS 23K-PU-LD20-S4 | BOS016Z BOS 23K-PU-RD10-S4 | | |
| Relay normally open/normally closed | | | | |
| Series | 23K | 23K | 23K | |
| Dimension | 23 x 51 x 52.4 mm | 23 x 51 x 52.4 mm | 23 x 51 x 52.4 mm | |
| Input function | Key disable on/off, Same function as button | Key disable on/off, Same function as button | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | — | — | — | |
| Beam characteristic | Collimated | Focus, typical at 500 mm | Focus, typical at 500 mm | |
| Light type | Laser red light | LED, red light | LED, red light | |
| Light spot size | 2.2 x 2.2 mm at 800 mm | 15 x 15 mm at focal point | 15 x 15 mm at focal point | |
| Range | 5...1200 mm | 0...2000 mm | 0...2000 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | PC ABS | PC ABS | PC ABS | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, Ecolab, cULus | Ecolab, CE, cULus, EAC | Ecolab, CE, cULus, EAC | |
| Trademark | — | — | — | |
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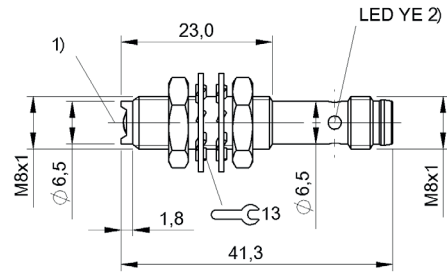


| | | | | | |
|--|---|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | BOS01CJ BOS 50K-PA-RD10-S4 | | | |
| | | | BOS01JJ BOS 50K-PI-RD11-S4 | | |
| | BOS016Z BOS 23K-PU-RD10-S4 | | | BOS01JA BOS 50K-PU-RD11-S4 | |
| | | | | | BOS01K2 BOS 64K-AA-ID10-TG |
| | 23K | 50K | 50K | 50K | 64K |
| | 23 x 51 x 52.4 mm | 28.5 x 80.5 x 62 mm | 28.5 x 80.5 x 62 mm | 28.5 x 80.5 x 62 mm | 25 x 69.7 x 100.4 mm |
| | Key disable on/off, Same function as button | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic |
| | — | — | — | — | — |
| | Focus, typical at 500 mm | Divergent | Divergent | Divergent | Divergent |
| | LED, red light | LED, red light | LED, red light | LED, red light | Infrared |
| | 15 x 15 mm at focal point | 50 x 50 mm at 2 m | 80 x 80 mm at Sr | 80 x 80 mm at Sr | — |
| | 0...2000 mm | 1...2000 mm | 1...3500 mm | 1...3500 mm | 50...2000 mm |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Screw terminals |
| | PC ABS | PC ABS | PC ABS | PC ABS | PBT, GF30 |
| | PMMA | Glass | Glass | Glass | PC |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 24...60 VDC/24...240 VAC |
| | Ecolab, CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | cULus, CE, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
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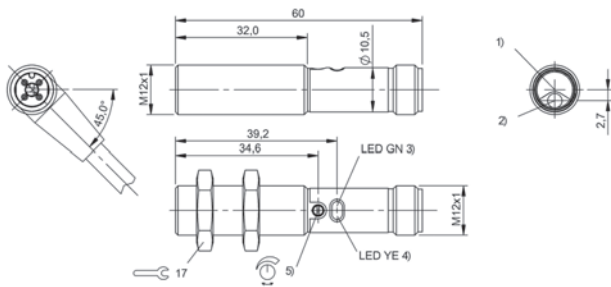
1) Optical axis, 2) Output function

BOS01R8



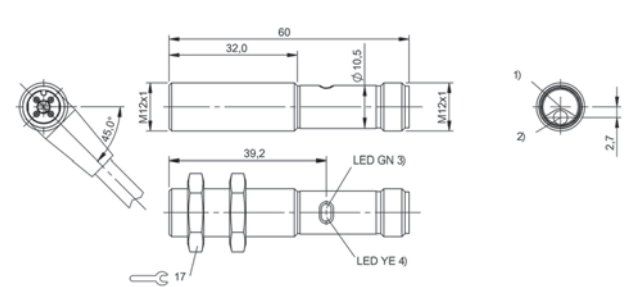
1) Optical axis, 2) Output function

BOS01NN



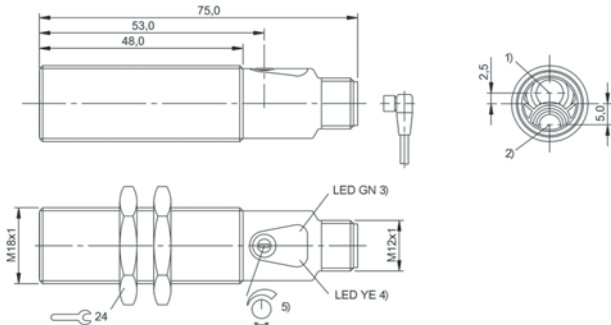
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area, 5) Sn

BOS01Y2, BOS01TP



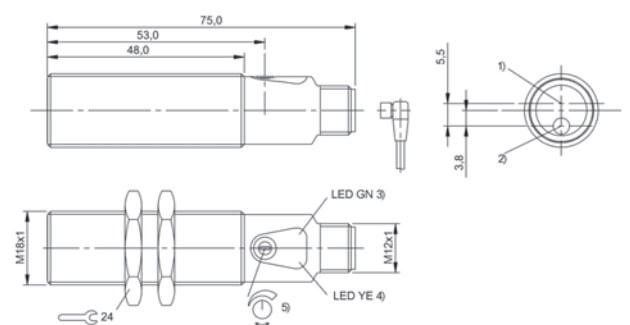
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area

BOS01TN, BOS01TU



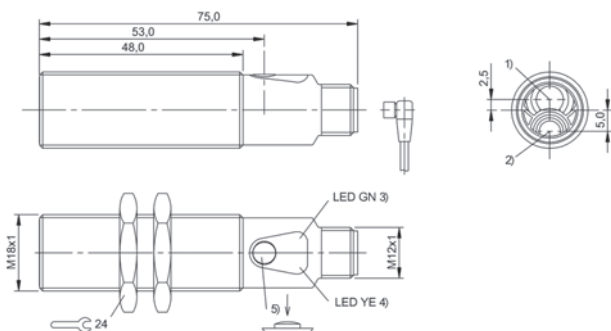
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area, 5) Sn

BOS01EY, BOS01CF, BOS01CA, BOS01C1, BOS01E7



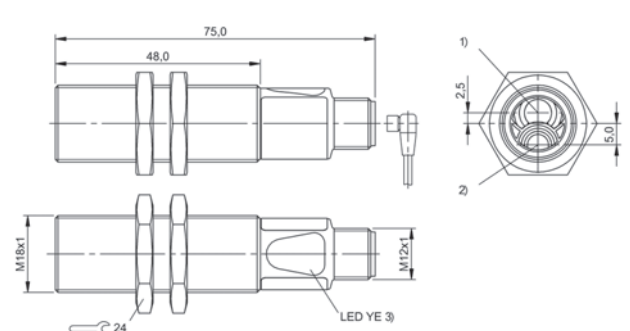
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage/Error, 4) Light reception/limit area, 5) Sn

BOS01NF



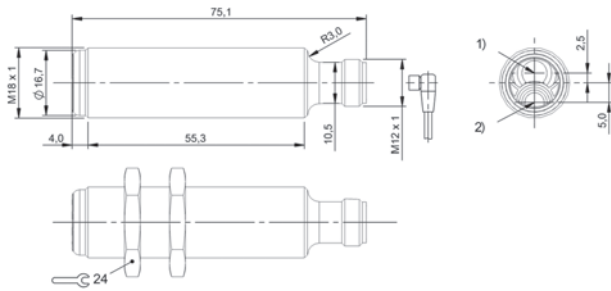
1) Optical axis receiver, 2) Optical axis emitter, 3) Power/short-circuit, 4) Light reception/limit area, 5) Sn

BOS01UA, BOS01J8, BOS023E



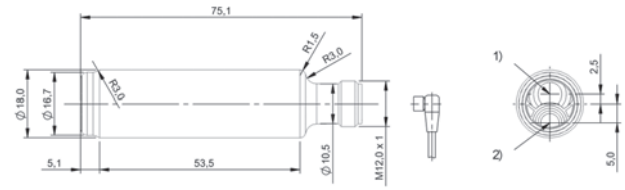
1) Optical axis receiver, 2) Optical axis emitter, 3) Light reception/limit area

BOS01FA



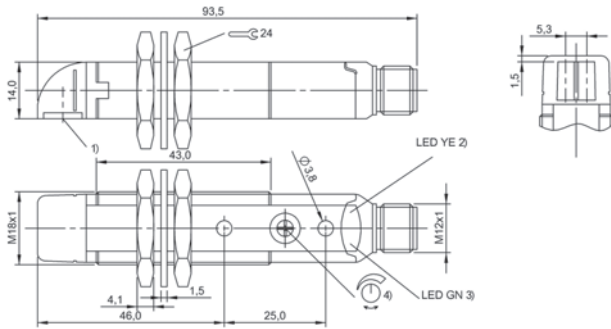
1) Optical axis receiver, 2) Optical axis emitter

BOS01KE, BOS023R



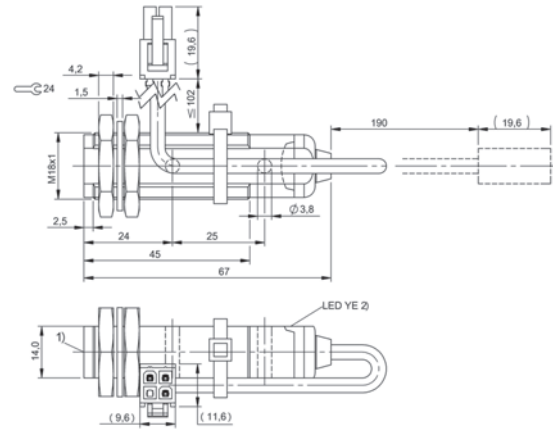
1) Optical axis receiver, 2) Optical axis emitter

BOS01KH, BOS0240



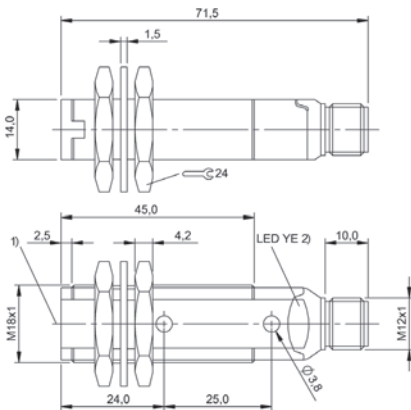
1) Optical axis, 2) Output function, 3) Stability, 4) Sn

BOS001T



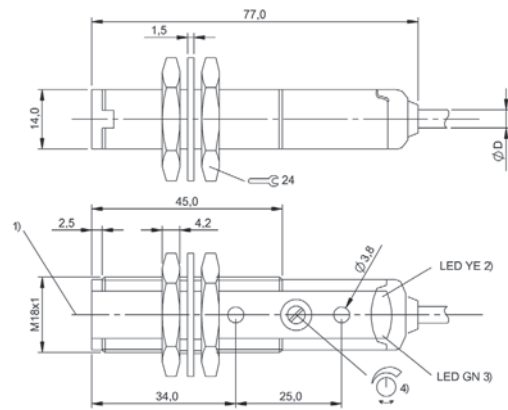
1) Optical axis, 2) Output function

BOS01NA



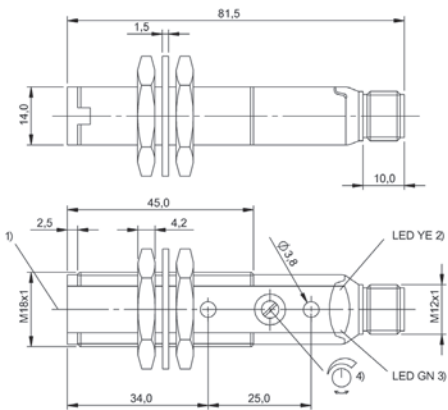
1) Optical axis, 2) Output function

BOS00K9



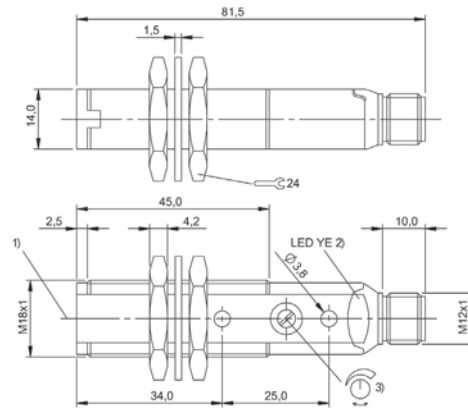
1) Optical axis, 2) Output function, 3) Stability, 4) Sn

BOS00K0



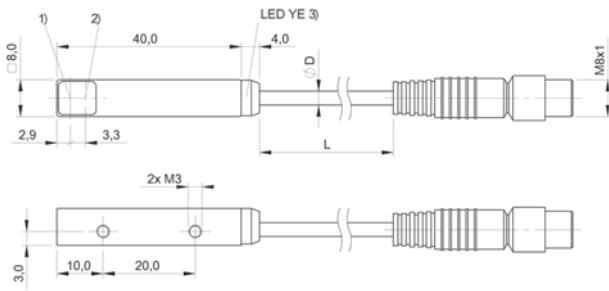
1) Optical axis, 2) Output function, 3) Stability, 4) Sn

BOS00JZ, BOS00K1



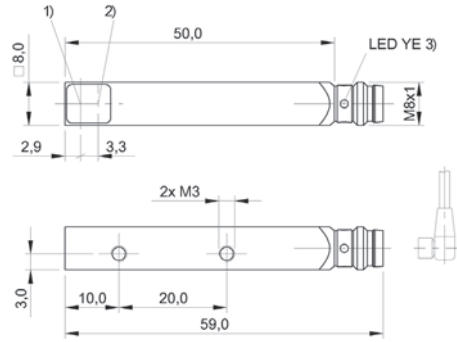
1) Optical axis, 2) Output function, 3) Sn

BOS00JP



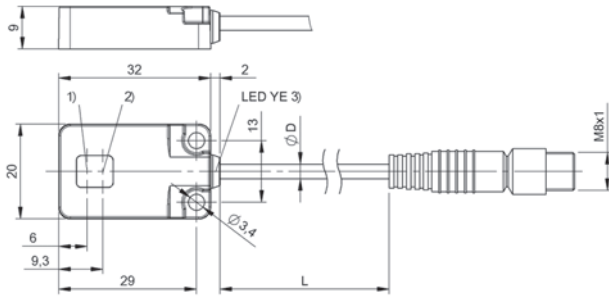
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS01WH, BOS01RZ



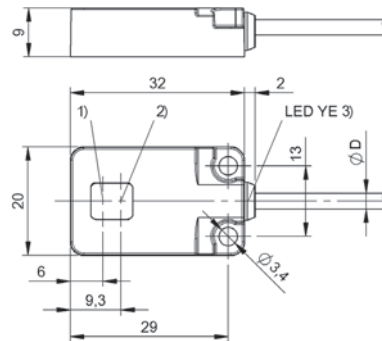
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS01WC, BOS01RJ



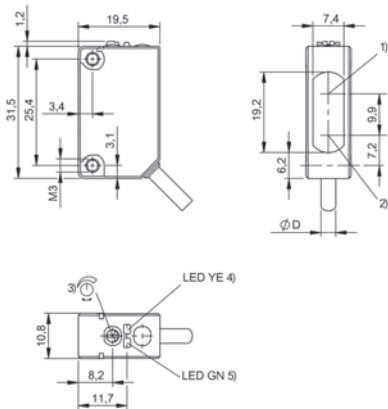
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS021J



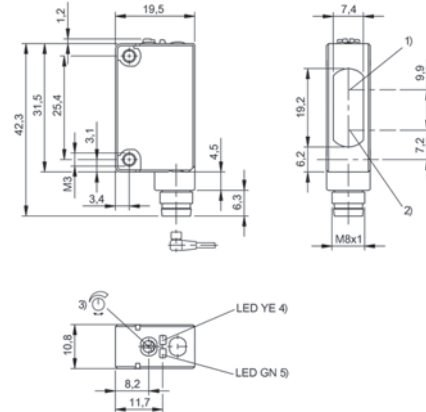
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS021K



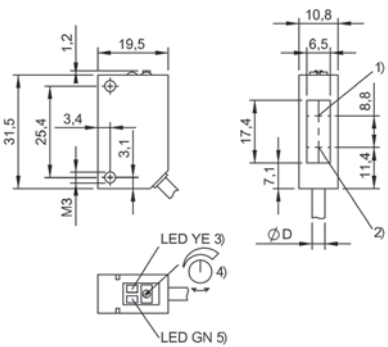
1) Optical axis receiver, 2) Optical axis emitter, 3) Sn, 4) Output function, 5) stability

BOS0123



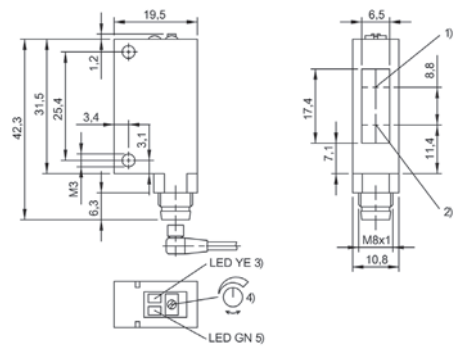
1) Optical axis receiver, 2) Optical axis emitter, 3) Sn, 4) Output function, 5) stability

BOS015J, BOS0124



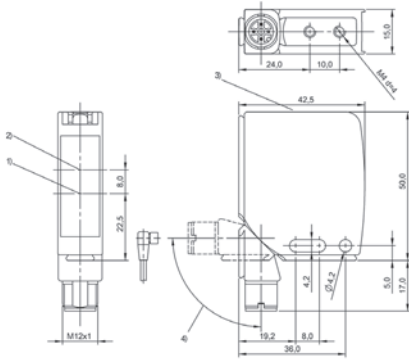
1) Optical axis receiver, 2) Optical axis emitter, 3) Output function, 4) Sn, 5) stability

BOS0127

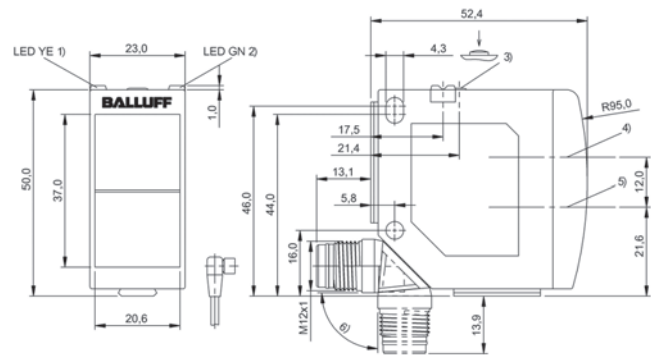


1) Optical axis receiver, 2) Optical axis emitter, 3) Output function, 4) Sn, 5) stability

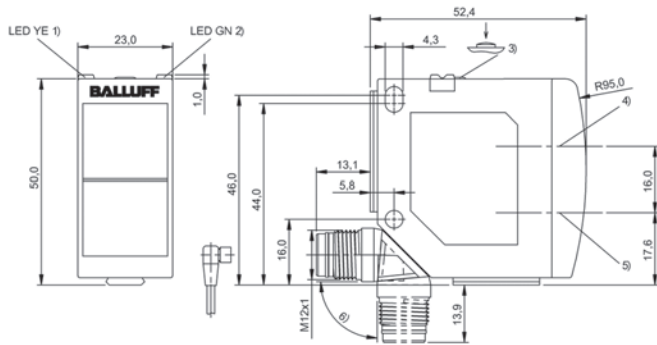
BOS015N, BOS0128



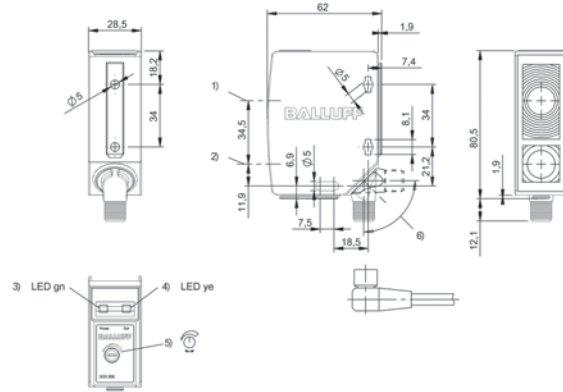
1) Optical axis emitter, 2) Optical axis receiver, 3) Display and control panel, 4) rotatable 270°
BOS0031, BOS0032, BOS0033



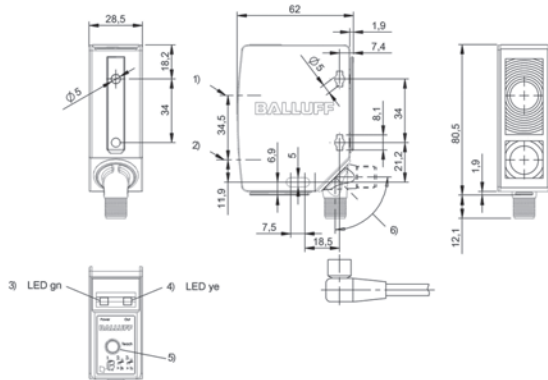
1) Output function/Error, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter, 6) rotatable 270°
BOS0175



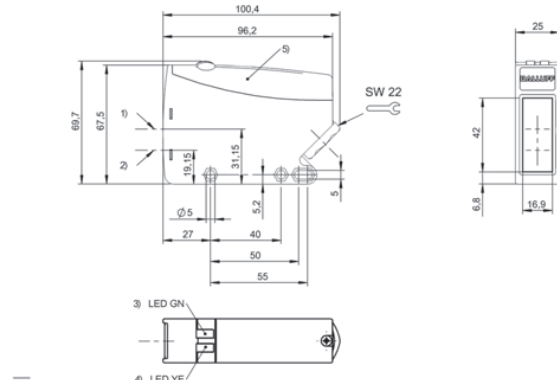
1) Output function/Error, 2) Power/setting mode, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter, 6) rotatable 270°
BOS01FM, BOS016Z



1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area, 5) Sn, 6) rotatable 270°
BOS01CJ



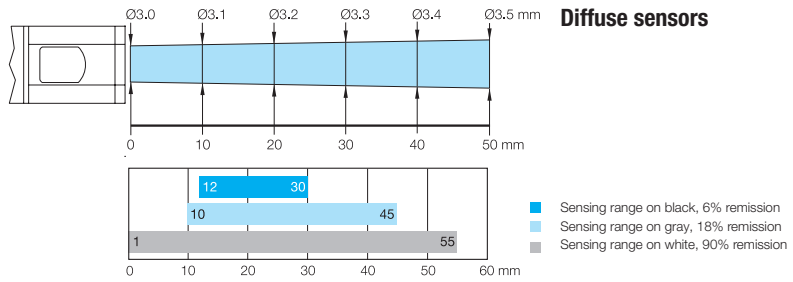
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception, 5) Teach-In button, 6) rotatable 270°
BOS01JJ, BOS01JA



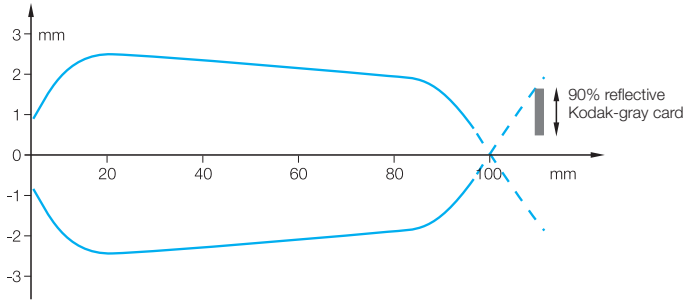
1) Optical axis receiver, 2) Optical axis emitter, 3) Stability, 4) Output function, 5) Removable cover
BOS01K2

BOS 2K

**Light spot diameter
Diffuse, 50 mm**

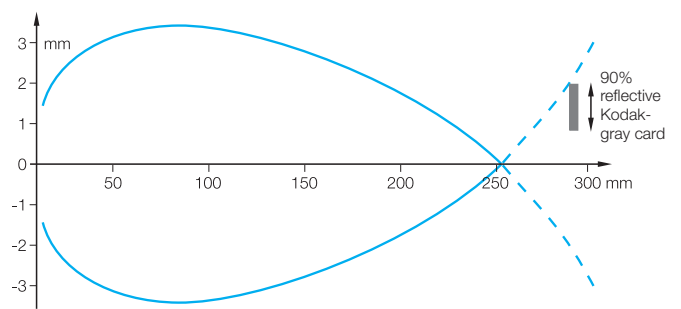


Diffuse sensor BOS 6K-...-1HA-...



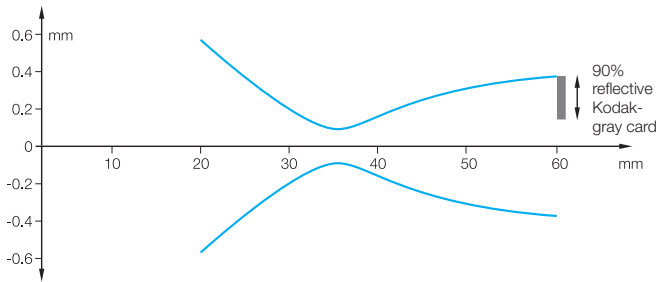
Sensing distance with side approach of Kodak-gray card.

Diffuse sensor BOS 6K-...-10C-...



Sensing distance with side approach of Kodak-gray card.

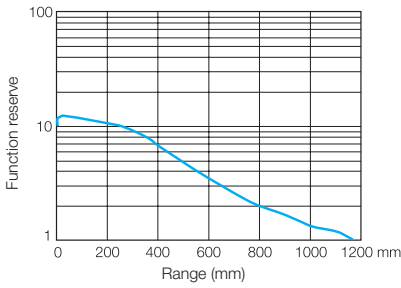
Diffuse sensor BOS 6K-...-1LHA-...



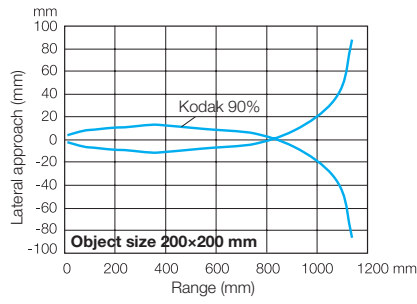
Sensing distance with side approach of Kodak-gray card.

Diffuse sensor BOS 5K-...-ID10-...

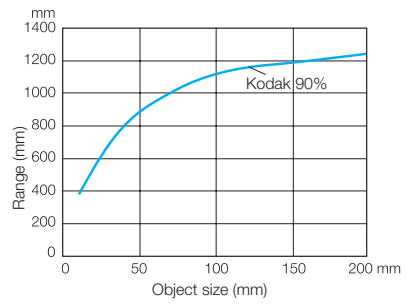
Receiving characteristics



Characteristic response curve

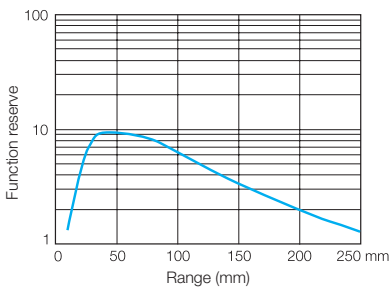


Object size vs. hysteresis

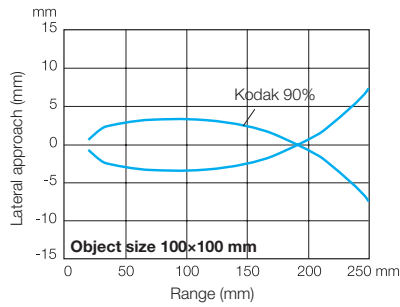


Diffuse sensor, small beam BOS 5K-...-RD11-...

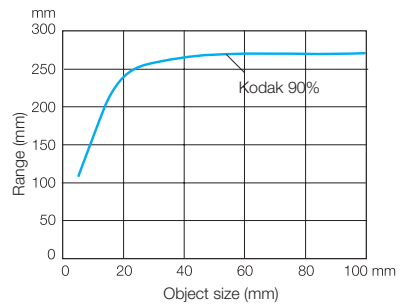
Receiving characteristics



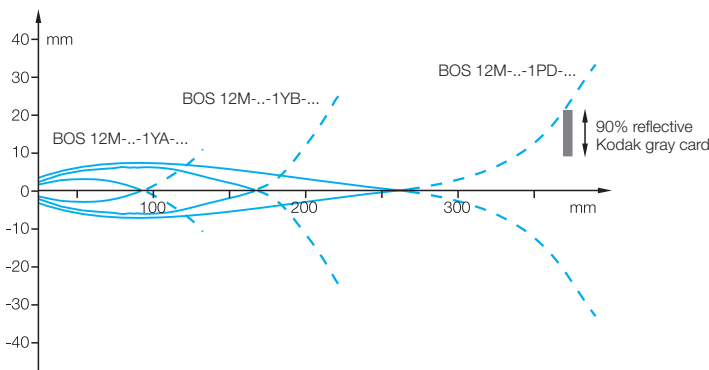
Characteristic response curve



Object size vs. hysteresis

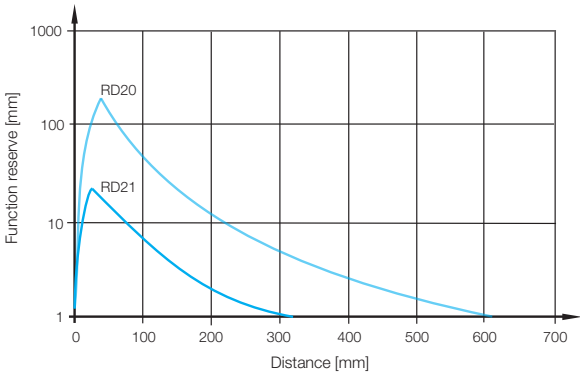


Diffuse sensor BOS 12M-...-1YA/1YB/1PD-...

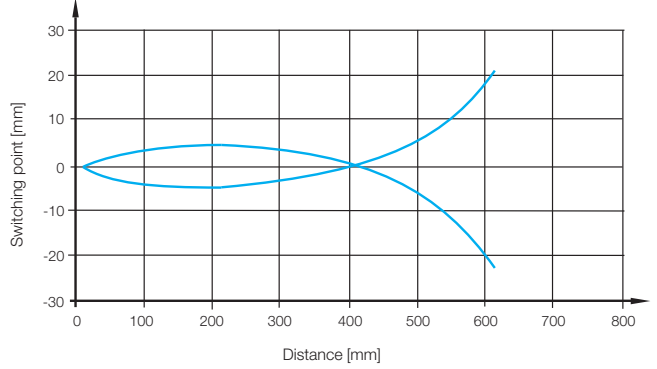


Sensing distance measured with side approach of Kodak gray card.

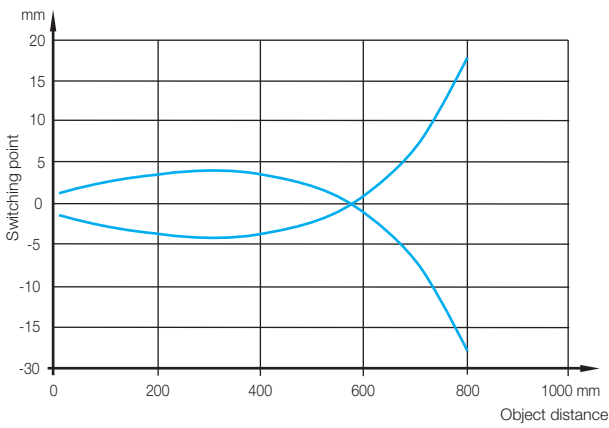
**Diffuse sensor BOS 18M...RD
function reserve**



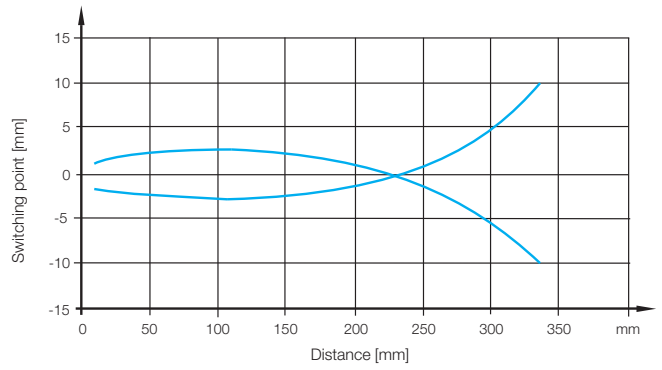
**Diffuse sensor BOS 18M...RD20
Response curve**



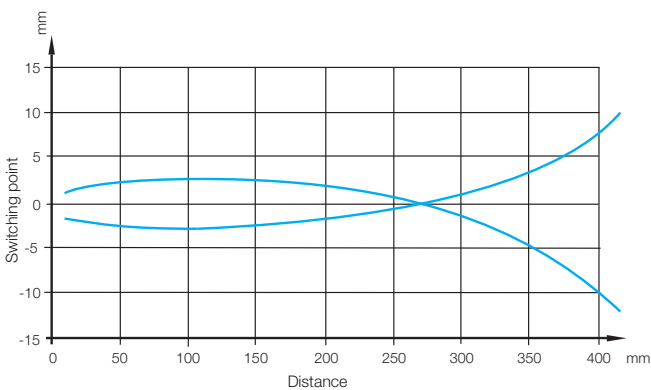
Diffuse sensor BOS 18M...ID20-S4 response curve



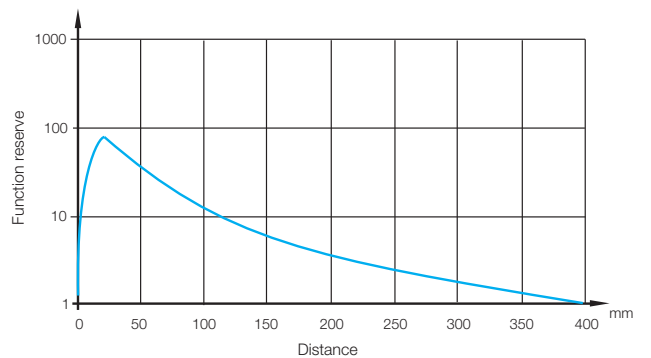
**Diffuse sensor BOS 18M...RD21..
Response curve**



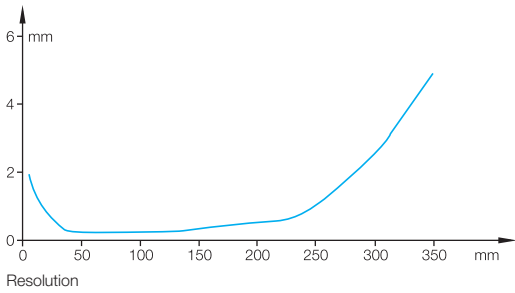
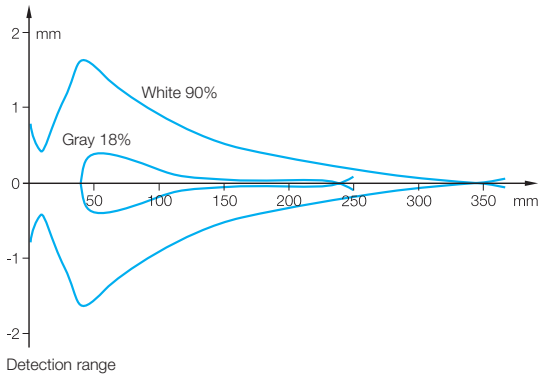
**Diffuse sensor BOS 18M...RD23
response curve**



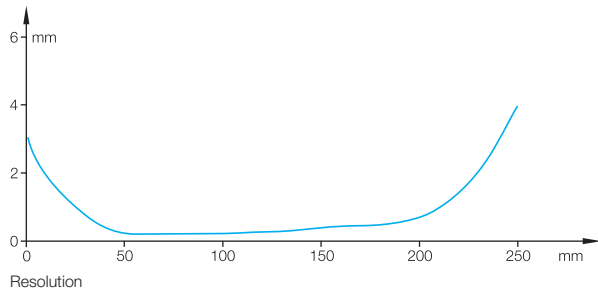
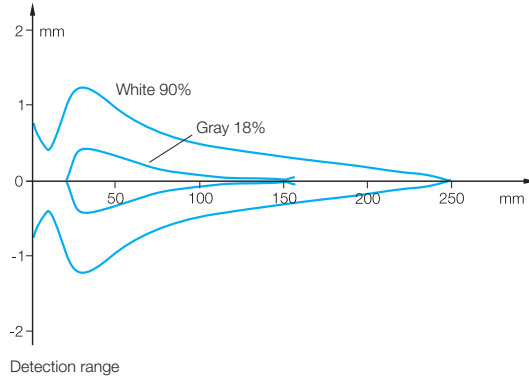
**Diffuse sensor BOS 18M...RD23
function reserve**



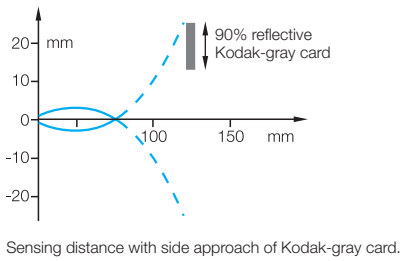
Diffuse sensor BOS 18M-...-LD10-...



Diffuse sensor BOS 18MR-...-LD10-...

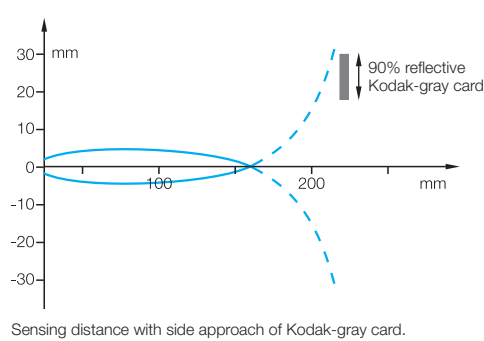


Diffuse sensor BOS 18E-...-1YA-...



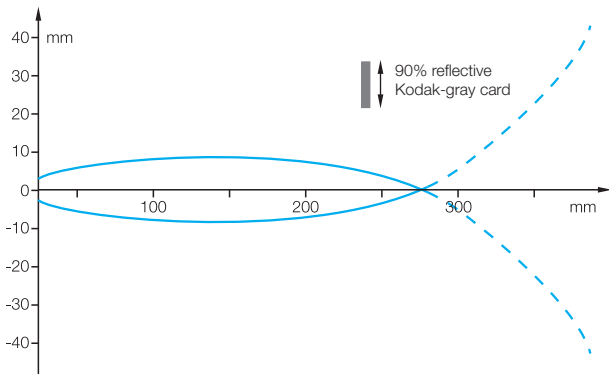
Sensing distance with side approach of Kodak-gray card.

Diffuse sensor BOS 18E-...-1YB-...



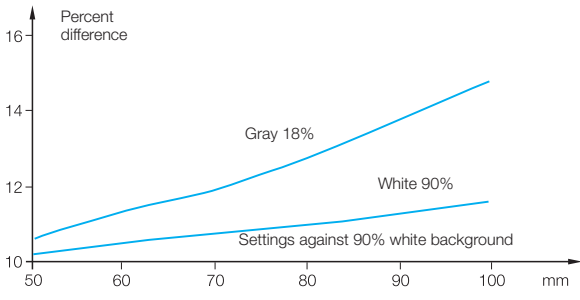
Sensing distance with side approach of Kodak-gray card.

Diffuse sensor BOS 18E-...-1YD-...

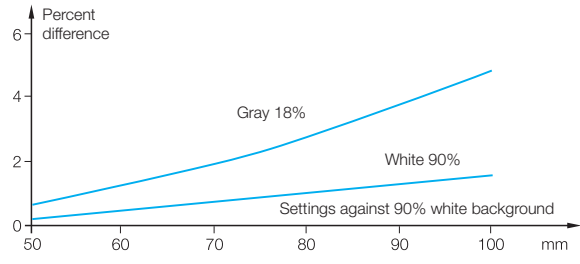


Sensing distance with side approach of Kodak-gray card.

Diffuse sensor BOS 18KF-..-1HA-...

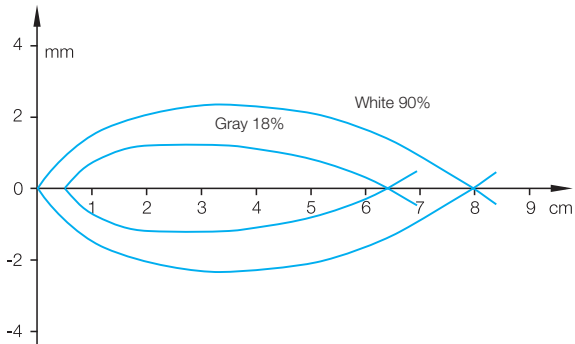


Tolerance with standard setting

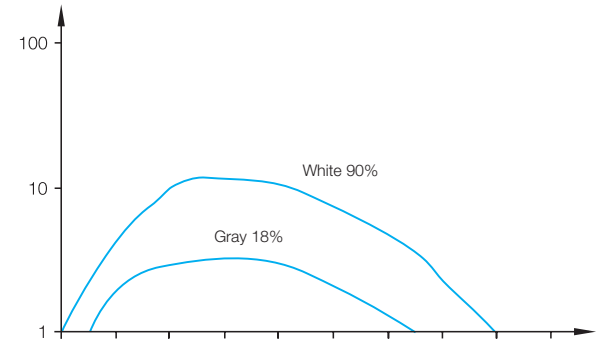


Tolerance with fine setting

Diffuse sensor BOS 18KF-..-1N1R-...

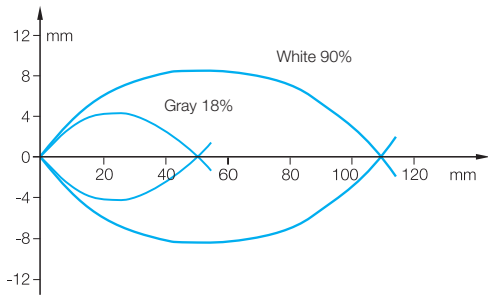


Detection range

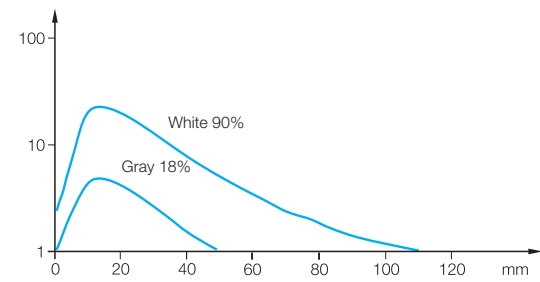


Function reserve

Diffuse sensor BOS 18KF-..-1XA-...

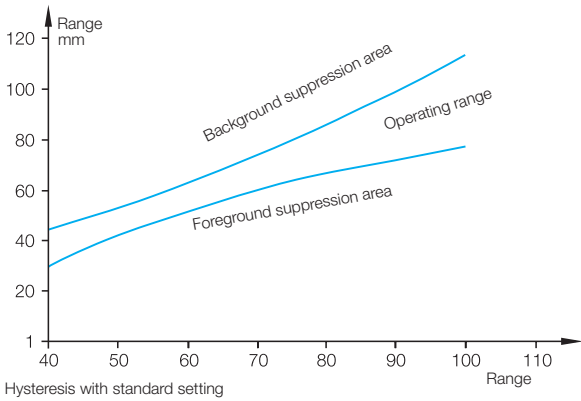


Detection range

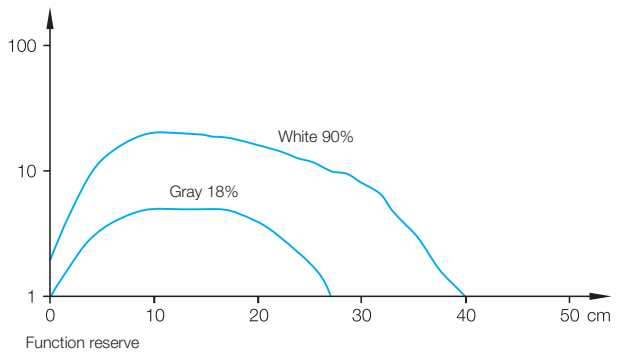
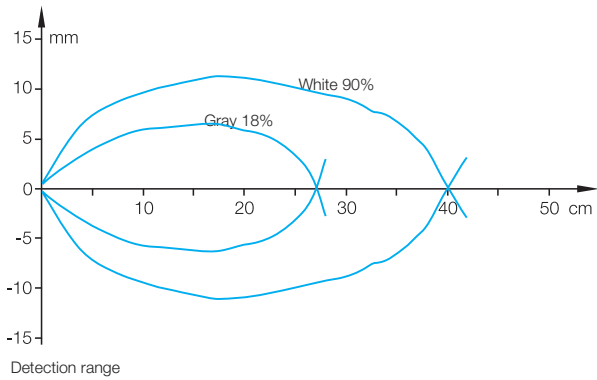


Function reserve

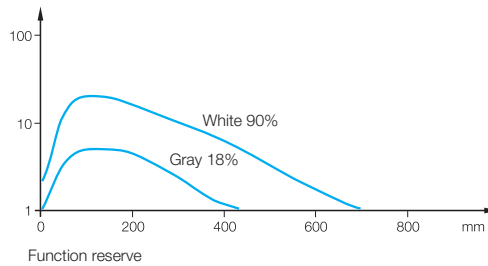
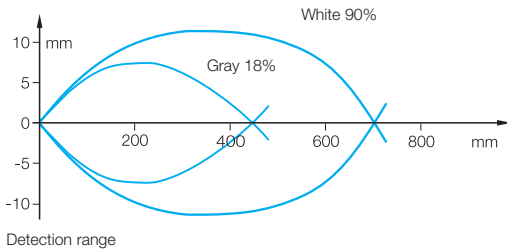
Diffuse sensor BOS 18KF-..-1GA-...



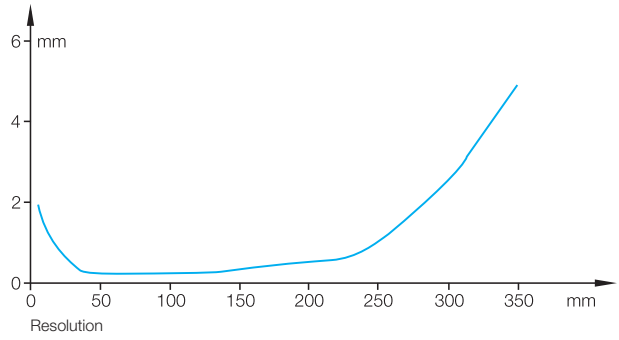
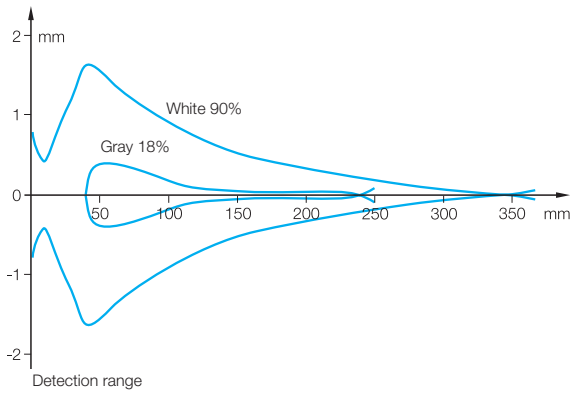
Diffuse sensor BOS 18KF-..-1PD-...



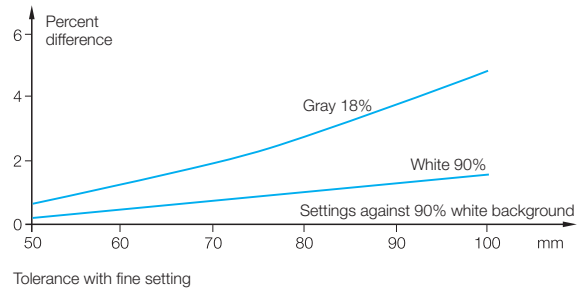
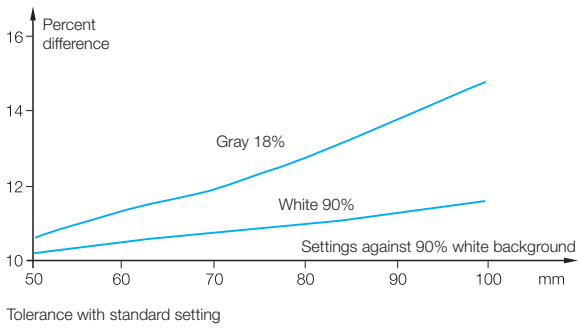
Diffuse sensor BOS 18KF-..-1PE-...



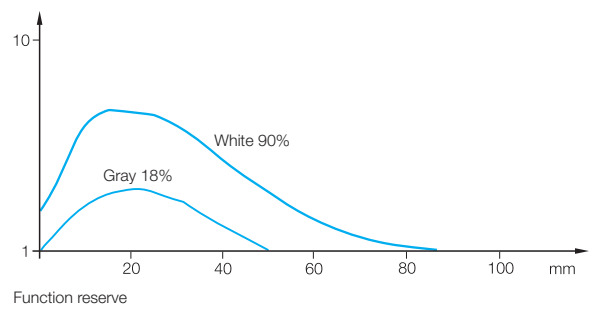
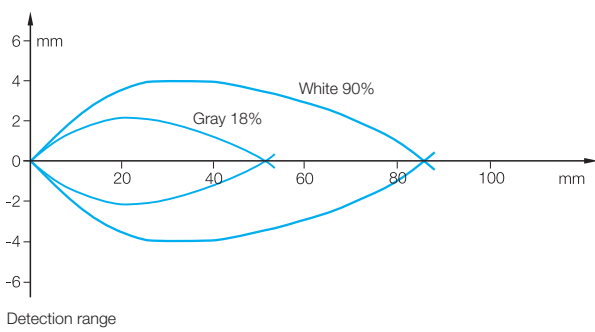
Diffuse sensor BOS 18KF--1LOC--...



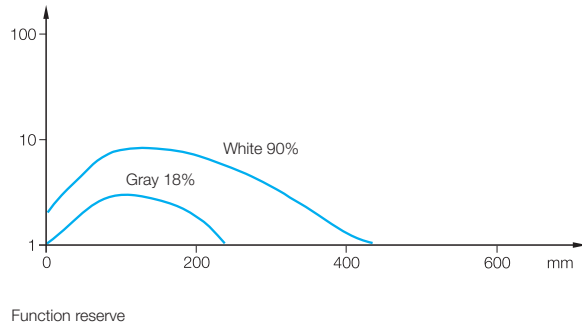
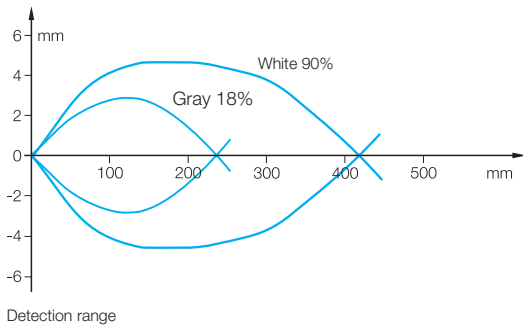
Diffuse sensor BOS 18KW--1HA--...



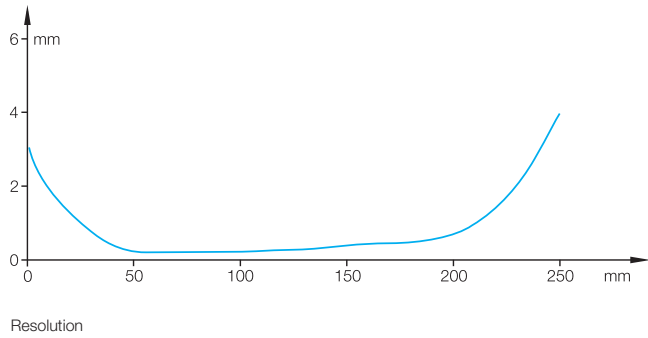
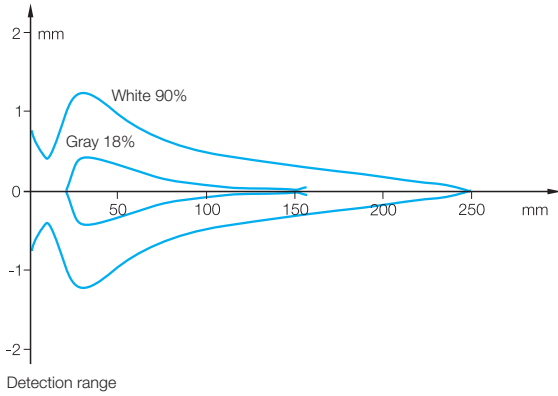
Diffuse sensor BOS 18KW--1XA--...



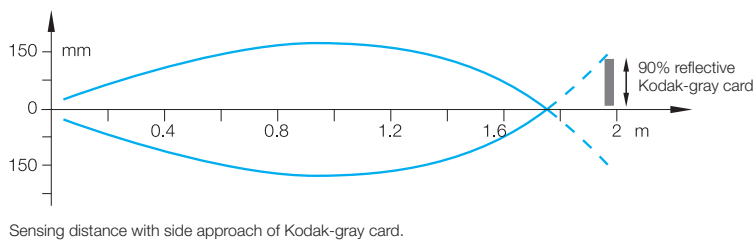
Diffuse sensor BOS 18KW-..-1PD-...



Diffuse sensor BOS 18KW-..-1LOB-...



Diffuse sensor BOS 30M-..-1PH-...





| | | | | |
|--|--|---------------------------------------|--|--|
| PNP normally open | | | BOS01H2 BOS 08E-PS-KF20-00,2-S49 | |
| PNP normally open, IO-Link 1.1 | BOS0246 BOS 08E-PI-KH22-00,2-S49 | BOS0247 BOS 08E-PI-KH22-S49 | | |
| PNP normally open, PNP normally closed | | | | |
| Series | 08E | 08E | 08E | |
| Dimension | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 40 mm | |
| Supplementary output | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | |
| Special optical feature | Background suppression | Background suppression | Background suppression | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | |
| Range | 30 mm Adjustable | 30 mm Adjustable | 20 mm | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | |
| Housing material | Stainless steel | Stainless steel | Stainless steel | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | cULus, CE, IO-Link, EAC | CE, cULus, IO-Link, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
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| | BOS01H6 BOS 08E-PS-KF20-S49 | BOS01H0 BOS 08E-PS-KH22-00,2-S49 | BOS01H4 BOS 08E-PS-KH22-S49 | | |
|--|---------------------------------------|--|---------------------------------------|---|--------------------------------------|
| | | | | | |
| | | | | BOS01UM BOS 12M-PA-RF10-S4 | BOS01ZT BOS 12M-PA-RF11-S4 |
| | 08E | 08E | 08E | 12M | 12M |
| | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 12 x 60 mm | Ø 12 x 60 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation |
| | Background suppression | Background suppression | Background suppression | Fixed focus, Fixed background suppression | Fixed background suppression |
| | Divergent | Divergent | Divergent | Focus, typical at 25 mm | Divergent |
| | LED, red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 1.5 mm at 25 mm | Ø 4 mm at 50 mm |
| | 20 mm | 7...30 mm | 7...30 mm | 1...25 mm | 0...50 mm |
| | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Connector, M8x1 connector, 3-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Stainless steel | Stainless steel | Stainless steel | Brass | Brass |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
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| | | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--|
| PNP normally open | | | BOS002H BOS 18M-PS-LH22-S4 | |
| PNP normally open, PNP normally closed | BOS017U BOS 12M-PA-RH12-S4 | BOS01C5 BOS 18M-PA-LH23-S4 | | |
| Series | 12M | 18M | 18M | |
| Dimension | Ø 12 x 60 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | |
| Supplementary output | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | |
| Special optical feature | Background suppression | Background suppression | Background suppression | |
| Beam characteristic | Divergent | Focus, typical at 100 mm | Focus, typical at 100 mm | |
| Light type | LED, red light | Laser red light | Laser red light | |
| Light spot size | Ø 6 mm at 100 mm | 0.05 x 0.1 mm at focal point | 0.05 x 0.1 mm at focal point | |
| Range | 25...100 mm | 30...150 mm | 30...150 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
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| | | | | | |
|--|---------------------------------------|---|--|--------------------------------------|--------------------------------------|
| | BOS002K BOS 18M-PSV-LH22-S4 | BOS010J BOS 18MR-PS-1HA-E5-C-S4 | | | |
| | | | BOS0081 BOS 18MR-PA-1HA-S4-C | BOS014W BOS 18M-PA-RH22-S4 | BOS01J4 BOS 18M-PA-RH23-S4 |
| | 18M | 18MR | 18MR | 18M | 18M |
| | Ø 18 x 75 mm | Ø 18 x 18 mm | 20 x 82 x 28 mm | Ø 18 x 75 mm | Ø 18 x 75 mm |
| | Error output PNP | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation |
| | Background suppression | Background suppression | Background suppression | Background suppression | Background suppression |
| | Focus, typical at 100 mm | Divergent | Divergent | Divergent | Divergent |
| | Laser red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | 0.05 x 0.1 mm at focal point | — | 8 x 10 mm at 100 mm | 27 x 27 mm at 300 mm | 10 x 10 mm at 150 mm |
| | 30...150 mm | 10...120 mm | 40...120 mm | 30...300 mm | 30...150 mm |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Brass | Brass | Brass | Brass | Brass |
| | PMMA | Glass | Glass | Glass | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus, EAC | CE, EAC | CE, cULus, EAC | cULus, CE, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
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Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

Accessories



| | | | | |
|---------------------------------------|--|--|--|--|
| 2 × PNP normally open/normally closed | | BOS00LH BOS 18KW-PA-1HA-S4-C | BOS00JK BOS 18KF-PA-1GA-S4-C | |
| PNP normally open | BOS0016 BOS 18E-PS-1N2M-S4-D | | | |
| Series | 18E | 18KW | 18KF | |
| Dimension | Ø 18 x 72 mm | Ø 18 x 14 mm | Ø 18 x 96 mm | |
| Supplementary output | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | |
| Special optical feature | Fixed background suppression | Background suppression | Background suppression, Foreground suppression | |
| Beam characteristic | Focus, typical at 16 mm | — | — | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 5 mm at 20 mm | Ø 10 mm at 100 mm | Ø 8 mm at 100 mm | |
| Range | 0...40 mm | 50...100 mm | 40...110 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Stainless steel (1.4571) | PBT | PBT | |
| Material sensing surface | Glass | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE | CE, cULus | CE, cULus | |
| Trademark | — | Global | Global | |
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| | BOS00JW BOS 18KF-PA-1N1R-S4-C | BOS00JM BOS 18KF-PA-1HA-S4-C | | | |
|--|---|--|--|--|--|
| | | | BOS0163 BOS Q08M-PS-KF20-00,2-S49 | BOS0160 BOS Q08M-PS-KF20-S49 | BOS021C BOS R020K-PS-RF10-00,2-S49 |
| | 18KF | 18KF | Q08M | Q08M | R020K |
| | Ø 18 x 71.5 mm | Ø 18 x 96 mm | 8 x 44 x 8 mm | 8 x 59 x 8 mm | 7.7 x 26.8 x 13.5 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, HGA fixed |
| | Fixed background suppression | Background suppression | Fixed background suppression | Fixed background suppression | Background suppression |
| | Focused | — | Divergent | Divergent | Focus, typical at 7.5 mm |
| | LED, red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | Ø 20 mm at 100 mm | Ø 8 mm at 100 mm | Ø 3 mm at 50 mm | Ø 3 mm at 50 mm | Ø 2 mm at 8 mm |
| | 5...100 mm | 50...100 mm | 5...50 mm | 5...50 mm | 1...15 mm |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PVC |
| | PBT | PBT | Zinc, die-cast | Zinc, die-cast | ABS |
| | PMMA | PMMA | PMMA PC | PMMA PC | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus | CE, cULus | CE, cULus, EAC | cULus, CE, EAC | CE, cULus |
| | Global | Global | — | — | — |
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| PNP normally open | BOS020M BOS R020K-PS-RF11-00,2-S49 | BOS020N BOS R020K-PS-RF11-00,2-S75 | BOS020K BOS R020K-PS-RF11-02 | |
|--------------------------------|--|--|--|--|
| Series | R020K | R020K | R020K | |
| Dimension | 7.7 x 26.8 x 13.5 mm | 7.7 x 26.8 x 13.5 mm | 7.7 x 26.8 x 13.5 mm | |
| Supplementary output | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, HGA fixed | Diffuse sensor, HGA fixed | Diffuse sensor, HGA fixed | |
| Special optical feature | Background suppression | Background suppression | Background suppression | |
| Beam characteristic | Focus, typical at 15 mm | Focus, typical at 15 mm | Focus, typical at 15 mm | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 3 mm at 15 mm | Ø 3 mm at 15 mm | Ø 3 mm at 15 mm | |
| Range | 1...30 mm | 1...30 mm | 1...30 mm | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PVC | Cable with connector, M8x1 connector, 4-pin, 0.20 m, PVC | Cable, 2.00 m, PVC | |
| Housing material | ABS | ABS | ABS | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | CE, cULus | |
| Trademark | — | — | — | |
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| BOS0217 BOS R020K-PS-RF12-00,2-S49 | BOS0234 BOS R020K-PS-RH12-00,2-S75 | BOS022C BOS R020K-PS-RH12-02 | BOS021U BOS R01E-PS-KF20-00,2-S49 | BOS021W BOS R01E-PS-KF20-02 |
|--|--|--|--|---------------------------------------|
| R020K | R020K | R020K | R01E | R01E |
| 7.7 x 26.8 x 13.5 mm | 7.7 x 32.5 x 13.5 mm | 7.7 x 32.5 x 13.5 mm | 20 x 32 x 9 mm | 20 x 32 x 9 mm |
| — | — | — | — | — |
| Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| Diffuse sensor, HGA fixed | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation |
| Background suppression | Background suppression | Background suppression | Fixed background suppression | Fixed background suppression |
| Focus, typical at 15 mm | Focus, typical at 15 mm | Focus, typical at 15 mm | Divergent | Divergent |
| LED, red light | LED, red light | LED, red light | LED, red light | LED, red light |
| Ø 4.5 mm at 40 mm | Ø 4.4 mm at 80 mm | Ø 4.4 mm at 80 mm | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit |
| 1...60 mm | 1...150 mm | 1...150 mm | 100 mm | 100 mm |
| Cable with connector, M8x1 connector, 3-pin, 0.20 m, PVC | Cable with connector, M8x1 connector, 4-pin, 0.20 m, PVC | Cable, 2.00 m, PVC | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable, 2.00 m, PUR |
| ABS | ABS | ABS | Stainless steel (1.4404) | Stainless steel (1.4404) |
| PMMA | PMMA | PMMA | PA | PA |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| CE, cULus | CE, cULus | CE, cULus | cULus, CE, Ecolab, EAC | cULus, CE, Ecolab, EAC |
| — | — | — | — | — |
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| | | | | |
|-----------------------------------|--|---------------------------------------|--|--|
| PNP normally open | BOS022M BOS R01E-PS-KF21-00,2-S49 | BOS022N BOS R01E-PS-KF21-02 | | |
| PNP normally open, IO-Link 1.1 | | | BOS0265 BOS R01E-UI-KH22-00,2-S49 | |
| PNP normally open/normally closed | | | | |
| NPN normally open | | | | |
| Series | R01E | R01E | R01E | |
| Dimension | 20 x 32 x 9 mm | 20 x 32 x 9 mm | 20 x 32 x 9 mm | |
| Supplementary output | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | |
| Special optical feature | Fixed background suppression | Fixed background suppression | Background suppression | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | |
| Range | 50 mm | 50 mm | 1...100 mm | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | |
| Housing material | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4404) | |
| Material sensing surface | PA | PA | PA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | cULus, CE, Ecolab, EAC | cULus, CE, Ecolab, EAC | cULus, CE, Ecolab, EAC, IO-Link | |
| Trademark | — | — | — | |
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| | | | | | |
|--|--------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | BOS015U BOS 5K-PS-RH12-S49 | BOS012A BOS 5K-PS-RH12-S75 | |
| | | | | | |
| | BOS01JK BOS 5K-PU-LH12-S75 | | | | BOS01LE BOS 6K-PU-LH10-S75 |
| | | BOS011E BOS 5K-NS-RH12-02 | | | |
| | 5K | 5K | 5K | 5K | 6K |
| | 10.8 x 43.5 x 19.5 mm | 10.8 x 32.7 x 19.5 mm | 10.8 x 43.2 x 19.5 mm | 10.8 x 43.2 x 19.5 mm | 12 x 41.5 x 21.6 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation |
| | Background suppression | Background suppression | Background suppression | Background suppression | Background suppression |
| | Focus, typical at 260 mm | Focus, typical at 60 mm | Focus, typical at 60 mm | Focus, typical at 60 mm | Focused |
| | Laser red light | LED, red light | LED, red light | LED, red light | Laser red light |
| | 0.2 x 0.3 mm at focal point | Ø 5 mm at 60 mm | Ø 5 mm at 60 mm | Ø 5 mm at 60 mm | Ø 1.2 mm at 120 mm |
| | 20...300 mm | 20...200 mm | 20...200 mm | 20...200 mm | 4...120 mm |
| | Connector, M8x1 connector, 4-pin | Cable, 2.00 m, PVC | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin |
| | PC PBT | PC PBT | PC PBT | PC PBT | ABS |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus, CDRH | cULus, CE | cULus, CE | cULus, CE | CE, cULus, EAC |
| | Global | Global | Global | Global | — |
| | Page 401 | Page 401 | Page 401 | Page 401 | Page 401 |



| | | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|--|
| 2 × PNP/NPN/push-pull, normally open/normally closed, IO-Link 1.1 | | | | |
| PNP normally open, PNP normally closed | | | | |
| PNP normally open/normally closed | BOS01KW BOS 6K-PU-RH10-S49 | BOS01KY BOS 6K-PU-RH10-S75 | BOS01L3 BOS 6K-PU-RH11-S75 | |
| Series | 6K | 6K | 6K | |
| Dimension | 12 x 41.5 x 21.6 mm | 12 x 41.5 x 21.6 mm | 12 x 41.5 x 21.6 mm | |
| Supplementary output | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | |
| Special optical feature | Background suppression | Background suppression | Background suppression | |
| Beam characteristic | Focus, typical at 50 mm | Focus, typical at 50 mm | Focus, typical at 60 mm | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | 5 x 5 mm at focal point | 5 x 5 mm at focal point | 8 x 8 mm at focal point | |
| Range | 1...200 mm | 1...200 mm | 3...400 mm | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | |
| Housing material | ABS | ABS | ABS | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, Ecolab, EAC | cULus, CE, EAC | cULus, CE, EAC | |
| Trademark | — | — | — | |
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|--|--------------------------------------|--|--------------------------------------|--|--------------------------------------|
| | | BOS026K BOS 21M-UUI-LH31-S4 | | | |
| | BOS0179 BOS 21M-PA-LH23-S4 | | BOS0178 BOS 21M-PA-RH22-S4 | | BOS01FR BOS 23K-PA-LH10-S4 |
| | | | | BOS0036 BOS 21M-PUS-RV13-S4 | BOS017C BOS 23K-PU-LH10-S4 |
| | 21M | 21M | 21M | 21M | 23K |
| | 15 x 51 x 42.5 mm | 15 x 51 x 42.5 mm | 15 x 51 x 42.5 mm | 15 x 50 x 42.5 mm | 23 x 51 x 52.4 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation |
| | Background suppression | Background suppression, CCD technology | Background suppression | Background suppression, Foreground suppression | Background suppression |
| | Focus, typical at 400 mm | Focus, typical at 400 mm | Focus, typical at 200 mm | — | Collimated |
| | Laser red light | Laser red light | LED, red light | LED, red light | Laser red light |
| | Ø 3 mm at 200 mm | 0.5 x 1.5 mm at 200 mm | 6 x 6 mm at 200 mm | — | 2.2 x 2.2 mm at 800 mm |
| | 1...250 mm | 30...200 mm | 1...400 mm | 70...200 mm | 5...800 mm |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum, glass, PC | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | PC ABS |
| | Glass | Glass, anti-glare | Glass | PMMA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 12...30 VDC |
| | CE, cULus, CDRH, EAC | CE, EAC, cULus | CE, cULus, EAC | CE, cULus, EAC | CE, Ecolab, cULus, EAC |
| | — | — | — | — | — |
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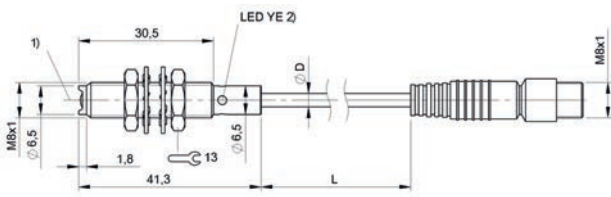
| | | | | |
|--|--------------------------------------|---------------------------------------|--------------------------------------|--|
| PNP normally open | | | | |
| PNP normally open, PNP normally closed | | | BOS01FL BOS 23K-PA-RH10-S4 | |
| PNP normally open/normally closed | BOS017H BOS 23K-PU-LH20-S4 | | BOS0178 BOS 23K-PU-RH10-S4 | |
| Normally open/normally closed | | BOS01UW BOS 23K-UU-LH11-S92 | | |
| Series | 23K | 23K | 23K | |
| Dimension | 23 x 51 x 52.4 mm | 23 x 51 x 52.4 mm | 23 x 51 x 52.4 mm | |
| Supplementary output | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, triangulation | Light time-of-flight | Diffuse sensor, triangulation | |
| Special optical feature | Background suppression | Background suppression | Background suppression | |
| Beam characteristic | Collimated | Divergent | Focus, typical at 500 mm | |
| Light type | Laser red light | Laser red light | LED, red light | |
| Light spot size | 2.5 x 3.5 mm at 800 mm | Ø 7 mm at 5 m | 15 x 15 mm at focal point | |
| Range | 5...800 mm | — | 3...800 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Connector | Connector, M12x1 connector, 4-pin | |
| Housing material | PC ABS | PC ABS | PC ABS | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 12...30 VDC | 18...30 VDC | 10...30 VDC | |
| Approval/Conformity | Ecolab, CE, cULus, EAC | CE, Ecolab, cULus, EAC | CE, Ecolab, cULus, EAC | |
| Trademark | — | — | — | |
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|---------------------------------------|--|--|---------------------------------------|--------------------------------------|--------------------------------------|
| | | | | | BOS018N BOS 50K-PS-RH12-S4 |
| BOS008A BOS 26K-PA-1IE-S4-C | BOS008E BOS 26K-PA-1LHB-S4-C | BOS008F BOS 26K-PA-1LHC-S4-C | BOS0089 BOS 26K-PA-1HC-S4-C | BOS018P BOS 50K-PA-RH12-S4 | |
| | | | | | |
| | | | | | |
| 26K | 26K | 26K | 26K | 26K | 50K |
| 17 x 50 x 50 mm | 17 x 50 x 50 mm | 17 x 50 x 50 mm | 17 x 50 x 50 mm | 17 x 50 x 50 mm | 28.5 x 80.5 x 62 mm |
| — | — | — | — | — | — |
| Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation | Diffuse sensor, triangulation |
| Background suppression | Background suppression | Background suppression | Background suppression | Background suppression | Background suppression |
| — | Focus, typical at 80 mm | Collimated | — | — | Divergent |
| Infrared | Laser red light | Laser red light | LED, red light | LED, red light | LED, red light |
| 20 x 20 mm at 400 mm | Ø 0.1 mm at focal point | 3 x 1 mm at 300 mm | Ø 8 mm at 200 mm | Ø 8 mm at 200 mm | 60 x 60 mm at Sr |
| 150...600 mm | 30...150 mm | 50...300 mm | 30...300 mm | 30...300 mm | 200...2000 mm |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| ABS | ABS | ABS | ABS | ABS | PC ABS |
| PMMA | PMMA | PMMA | PMMA | PMMA | Glass |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| cULus, CE | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC | CE, cULus, EAC |
| — | — | — | — | — | — |
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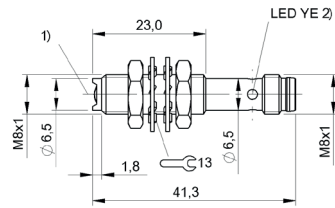


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|-------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|--|
| 2 × PNP normally open | | BOS019J BOS 63M-PS-LH13-S4 | | |
| PNP normally open | BOS0156 BOS 50K-PSV-RH12-S4 | | | |
| Relay normally open/normally closed | | | BOS01K1 BOS 64K-AA-IH12-TG | |
| Series | 50K | 63M | 64K | |
| Dimension | 28.5 x 80.5 x 62 mm | 35 x 70 x 90 mm | 25 x 69.7 x 100.4 mm | |
| Supplementary output | Error output PNP | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Diffuse sensor, triangulation | Light time-of-flight | Diffuse sensor, triangulation | |
| Special optical feature | Background suppression | Background suppression | Background suppression | |
| Beam characteristic | Divergent | Collimated | Divergent | |
| Light type | LED, red light | Laser red light | Infrared | |
| Light spot size | 60 x 60 mm at Sr | Ø 10 mm at 6 m | — | |
| Range | 200...2000 mm | 200...6000 mm | 200...2000 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Screw terminals | |
| Housing material | PC ABS | Aluminum, die-cast | PBT, GF30 | |
| Material sensing surface | Glass | Glass | PC | |
| Operating voltage U_b | 10...30 VDC | 15...30 VDC | 24...60 VDC/24...240 VAC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | cULus, CE | |
| Trademark | — | — | — | |
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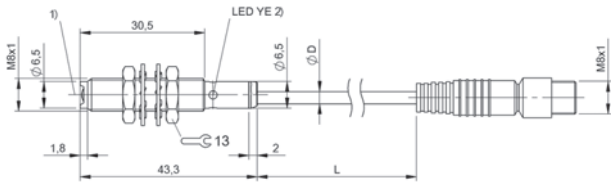
1) Optical axis, 2) Output function

BOS0246



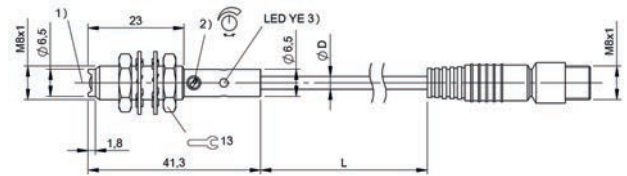
1) Optical axis, 2) Output function

BOS0247, BOS01H6



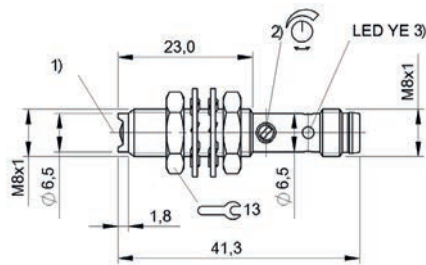
1) Optical axis, 2) Output function

BOS01H2



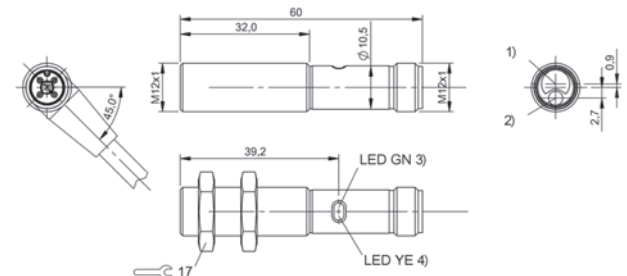
1) Optical axis, 2) Sn, 3) Output function

BOS01H0



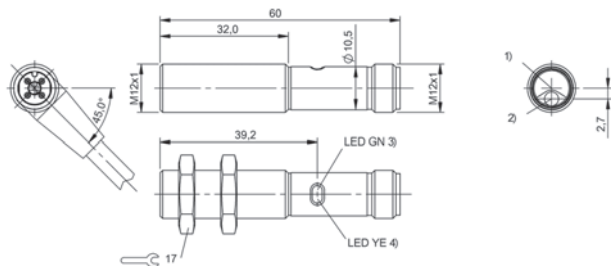
1) Optical axis, 2) Sn, 3) Output function

BOS01H4



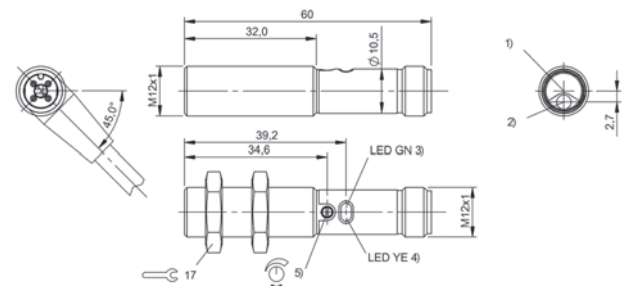
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage/Error, 4) Light reception/limit area

BOS01UM



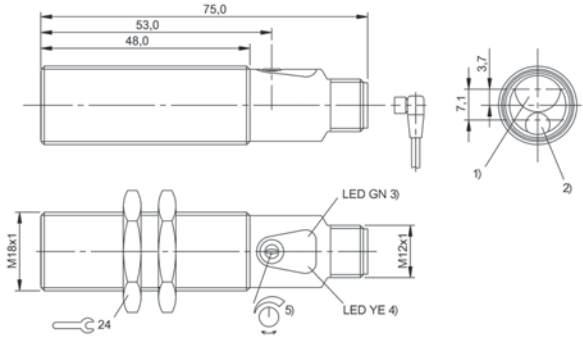
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area

BOS01ZT



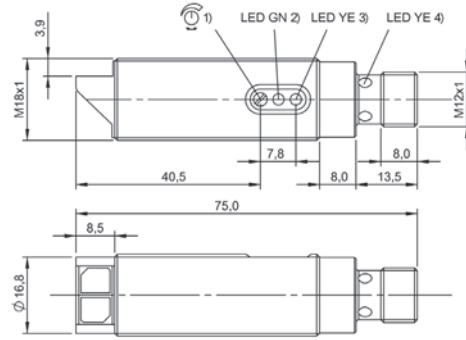
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area, 5) Sn

BOS01ZU



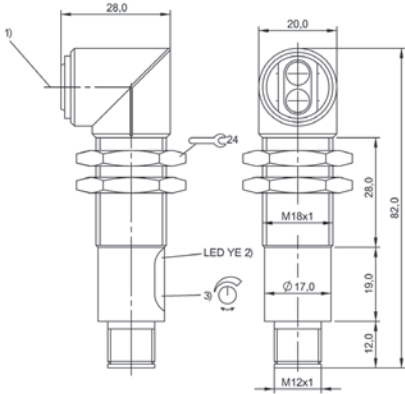
1) Optical axis receiver, 2) Optical axis emitter, 3) Power/short-circuit, 4) Output function/Error, 5) Sn

BOS01C5, BOS002H, BOS002K



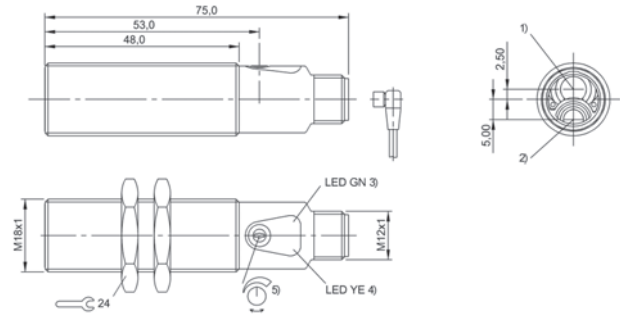
1) Sn, 2) Stability, 3) Output function

BOS010J



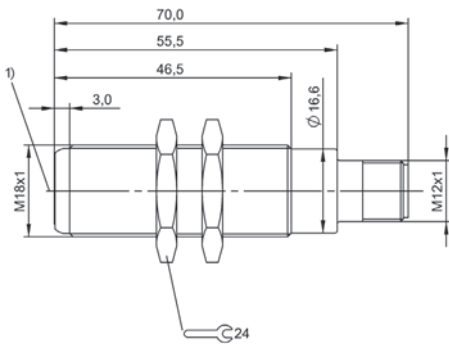
1) Optical axis, 2) Sn, 3) Output function

BOS0081



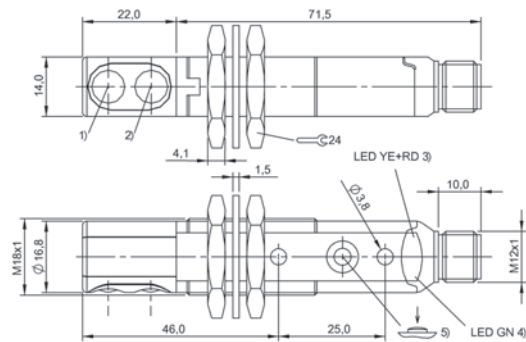
1) Optical axis receiver, 2) Optical axis emitter, 3) Power/short-circuit, 4) Output function/Error, 5) Sn

BOS014W, BOS01J4



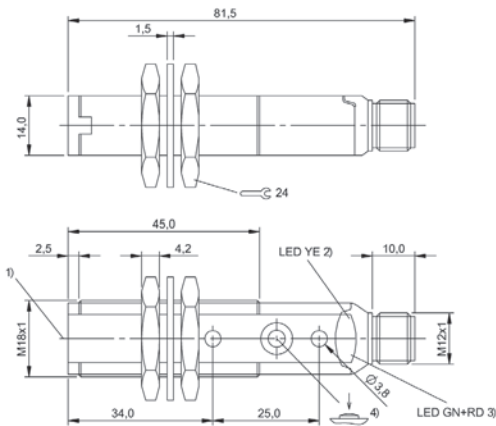
1) Optical axis

BOS0016



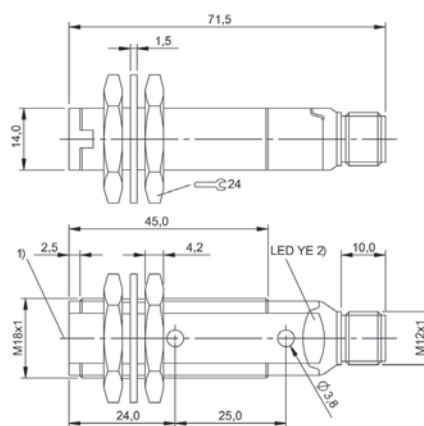
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function, 4) stability/error, 5) Sn

BOS00LH



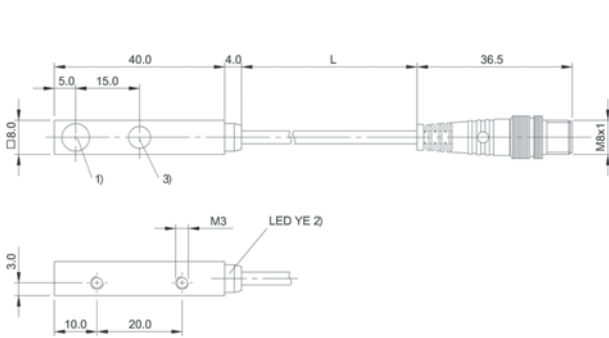
1) Optical axis, 2) Output function, 3) stability/error, 4) Sn

BOS00JK, BOS00JM



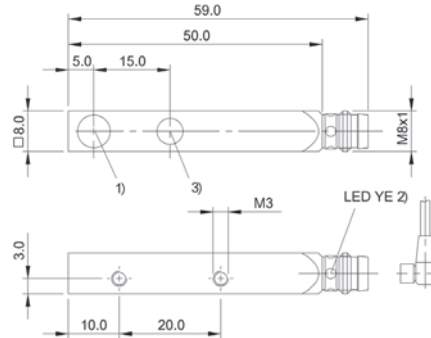
1) Optical axis, 2) Output function

BOS00JW



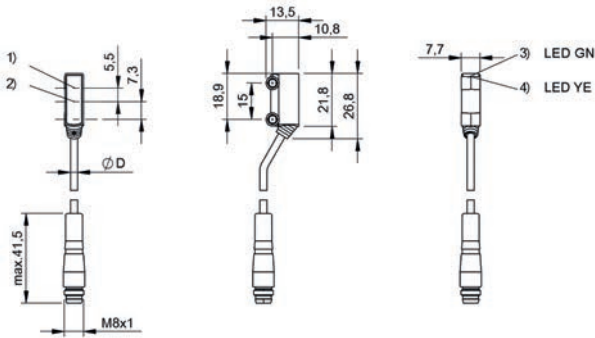
1) Emitter, 2) Light reception/limit area, 3) Receiver

BOS0163



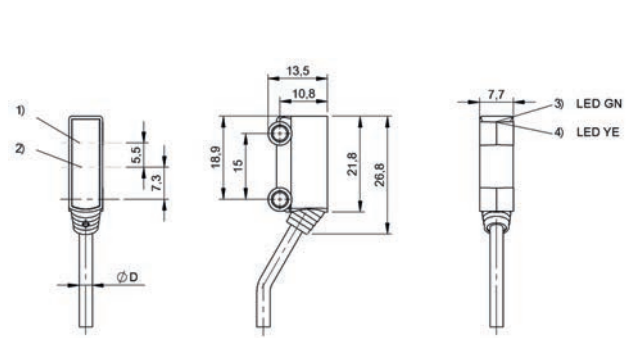
1) Emitter, 2) Light reception/limit area, 3) Receiver

BOS0160



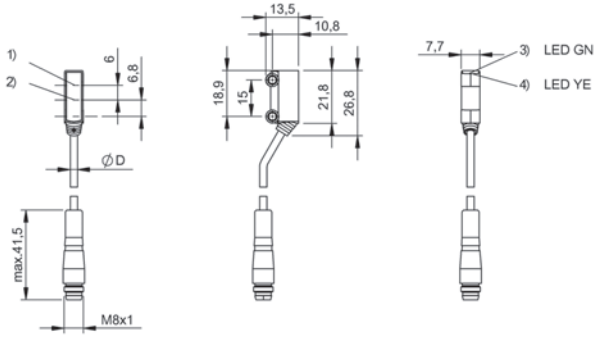
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception

BOS021C, BOS020M, BOS020N



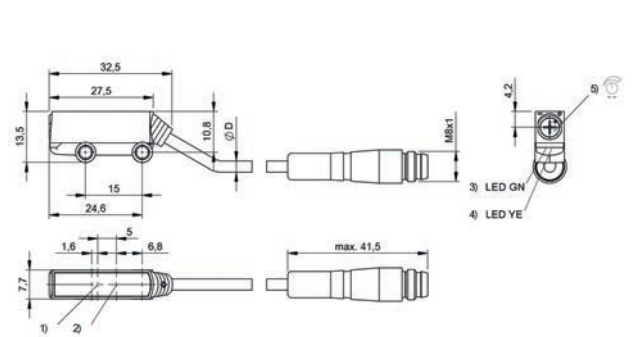
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception

BOS020K



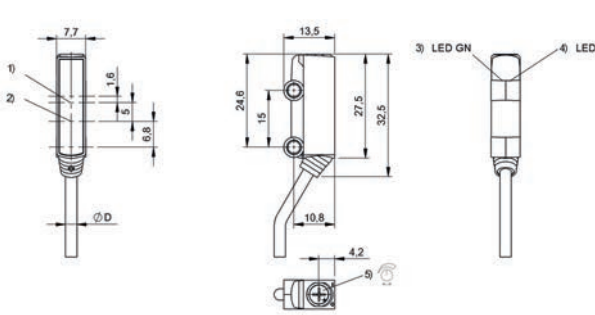
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception

BOS0217



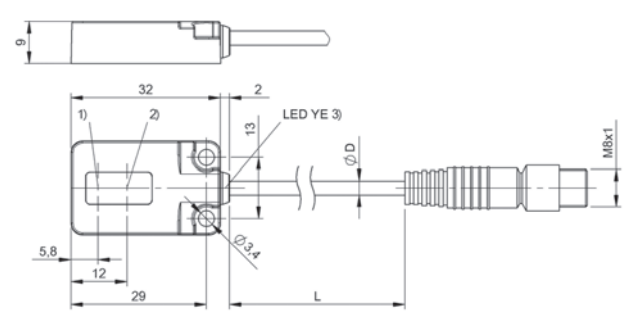
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception, 5) Sn

BOS0234



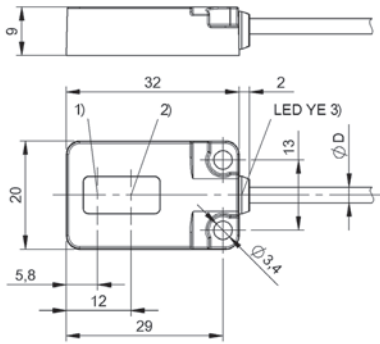
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception, 5) Sn

BOS022C



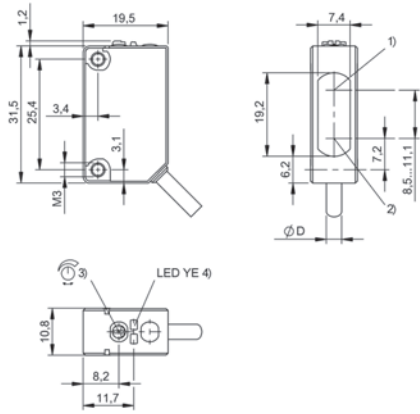
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS021U, BOS022M, BOS0265



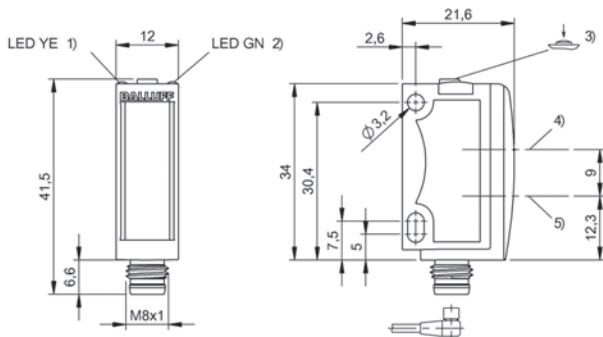
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS021W, BOS022N



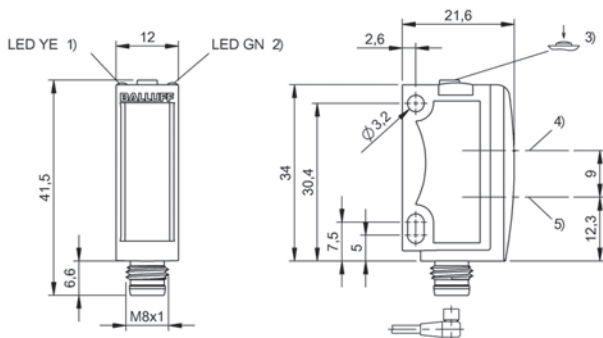
1) Optical axis receiver, 2) Optical axis emitter, 3) Sn, 4) Output function

BOS011E



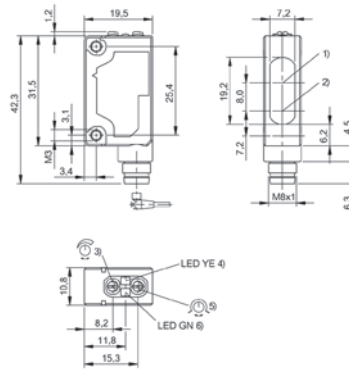
1) Output function, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter

BOS01LE



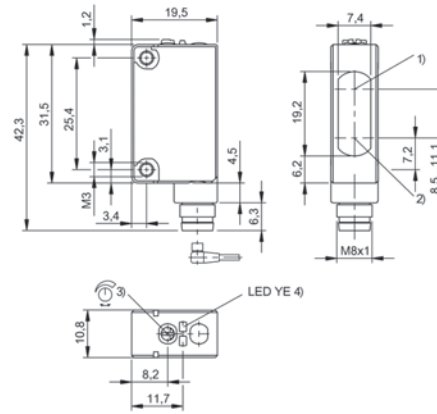
1) Output function, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter

BOS01L3



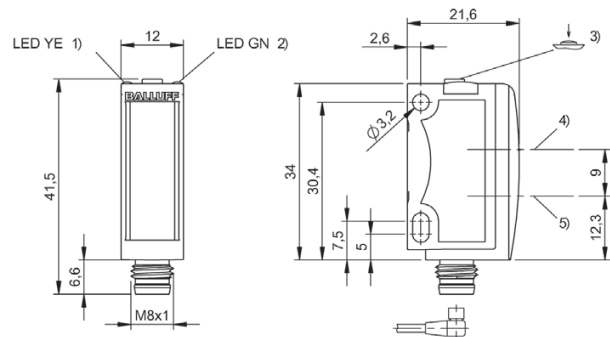
1) Optical axis receiver, 2) Optical axis emitter, 3) Sn, 4) Output function, 5) Light-on/dark-on, 6) stability

BOS01JK



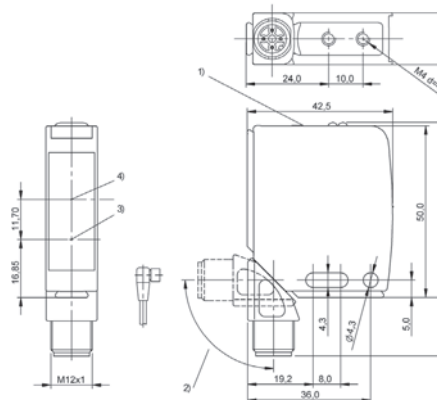
1) Optical axis receiver, 2) Optical axis emitter, 3) Sn, 4) Output function

BOS015U, BOS012A



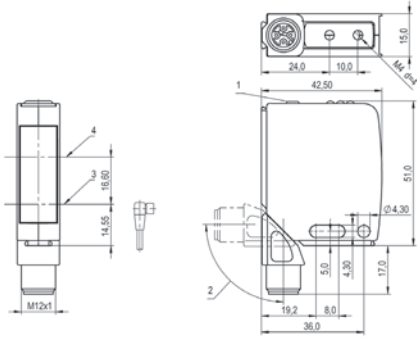
1) Output function, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter

BOS01KW, BOS01KY



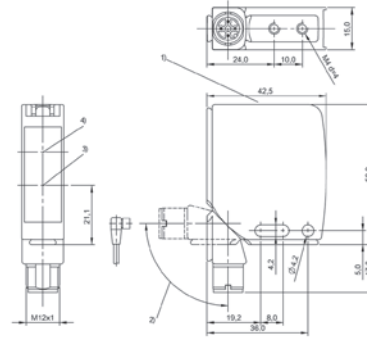
1) Display and control panel, 2) rotatable 270°, 3) Optical axis emitter, 4) Optical axis receiver

BOS01Z9, BOS01Z8



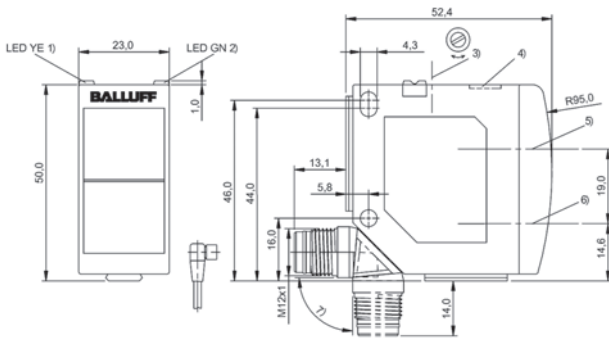
1) Display and control panel, 2) rotatable 270°, 3) Optical axis emitter, 4) Optical axis receiver

BOS026K



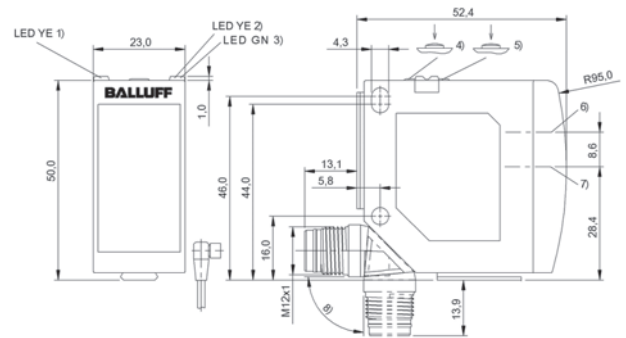
1) Display and control panel, 2) rotatable 270°, 3) Optical axis emitter, 4) Optical axis receiver

BOS0036



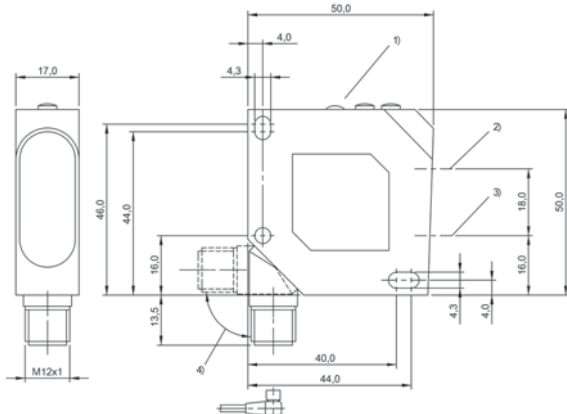
1) Output function/Error, 2) Operating voltage, 3) Sn, 4) Bar display for switching distance, 5) Optical axis receiver, 6) Optical axis emitter, 7) rotatable 270°

BOS01FR, BOS017C, BOS017H, BOS01FL, BOS0178



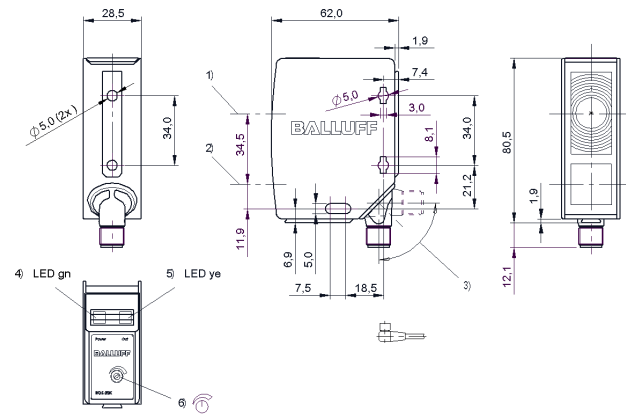
1) Output function Q1, 2) Output function Q2, 3) Operating voltage, 4) Setting Q1, 5) Setting Q2, 6) Optical axis emitter, 7) Optical axis receiver, 8) rotatable 270°

BOS01UW



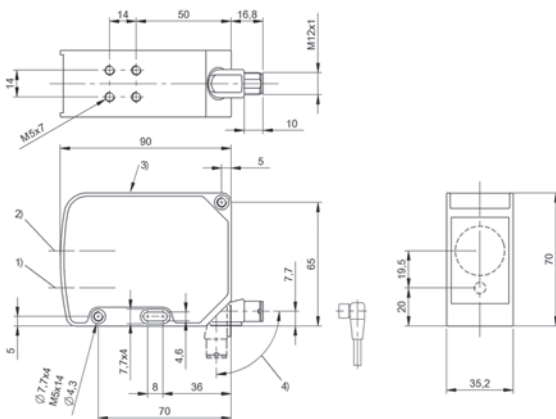
1) Display and control panel, 2) Optical axis receiver, 3) Optical axis emitter, 4) rotatable 270°

BOS008A, BOS008E, BOS008F, BOS0089



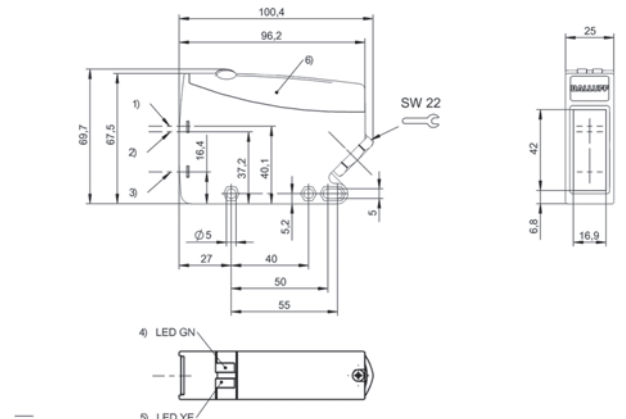
1) Optical axis receiver, 2) Optical axis emitter, 3) rotatable 270°, 4) Power/short-circuit, 5) Output function/Error, 6) Sn

BOS018P, BOS018N, BOS0156



1) Optical axis emitter, 2) Optical axis receiver, 3) Display and control panel, 4) rotatable 270°

BOS019J

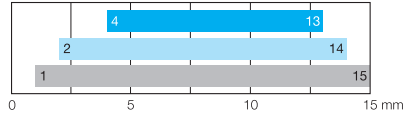
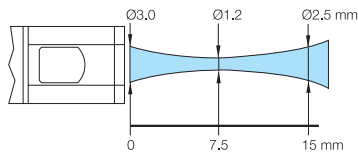


1) Opt. axis receiver max., 2) Opt. axis receiver min., 3) Optical axis emitter, 4) stability, 5) Output function, 6) Removable cover

BOS01K1

BOS 2K

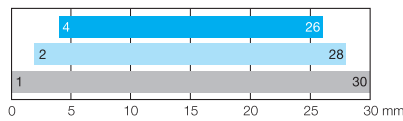
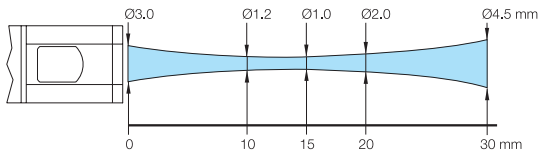
Light spot diameter
Diffuse sensor with background suppression, 15 mm



Diffuse sensors with background suppression 15 mm

- Sensing range on black, 6% remission
- Sensing range on gray, 18% remission
- Sensing range on white, 90% remission

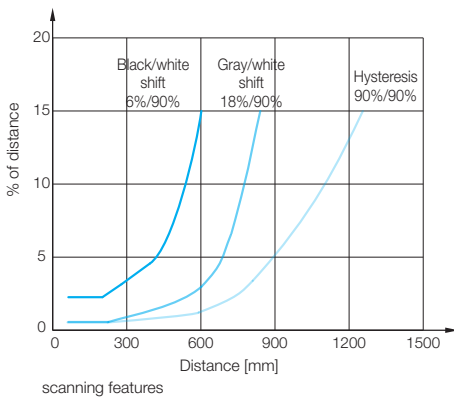
Light spot diameter
Diffuse sensor with background suppression, 30 mm



Diffuse sensors with background suppression 30 mm

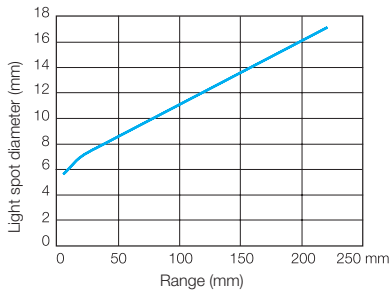
- Sensing range on black, 6% remission
- Sensing range on gray, 18% remission
- Sensing range on white, 90% remission

BOS01FL, BOS0178

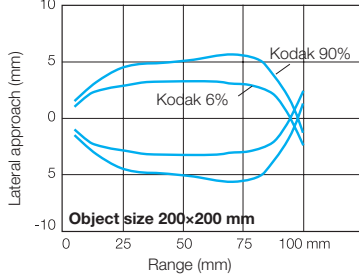


Diffuse sensor with background suppression BOS 5K-__-RH12-__

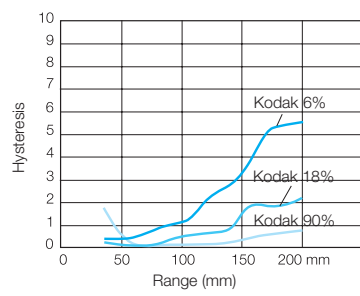
Light spot diameter



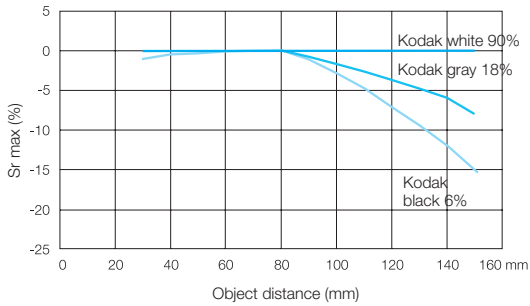
Characteristic response curve (background suppression 100 mm)



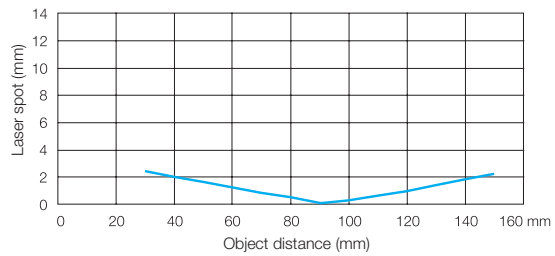
Range vs. hysteresis



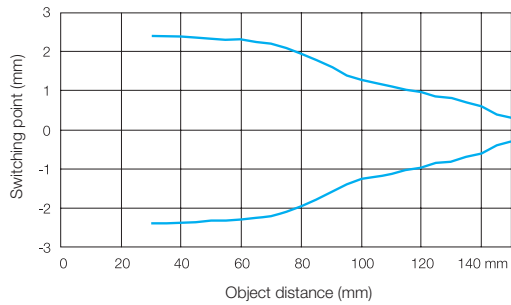
Diffuse sensor with background suppression BOS 18M-...LH
Gray value shift



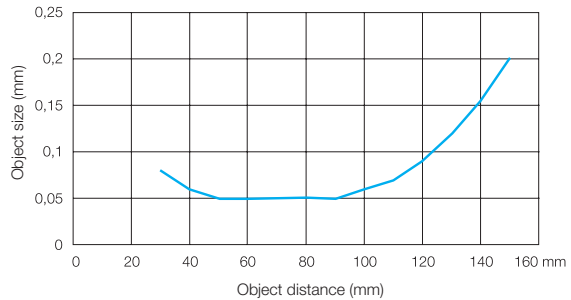
Diffuse sensor with background suppression BOS 18M-...LH
Light spot diameter at distance



Diffuse sensor with background suppression BOS 18M-...LH
Turn-on point for lateral approach



Diffuse sensor with background suppression BOS 18M-...LH
Smallest detectable part





| | | | | |
|--|---------------------------------------|--|--------------------------------------|--|
| PNP normally open | BOS01RK BOS 08E-PS-PR20-S49 | BOS01RL BOS 08E-PS-PR20-00,2-S49 | BOS01TT BOS 12M-PS-PR10-S4 | |
| PNP normally closed | BOS01RM BOS 08E-P0-PR20-S49 | | | |
| PNP normally open, PNP normally closed | | | | |
| Series | 08E | 08E | 12M | |
| Dimension | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 12 x 60 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | Ø 160 mm at 3 m | |
| Range | 0...1 m | 0...1 m | 0...3 m | |
| Connection | Connector, M8x1 connector, 3-pin | Cable with connector, 0.20 m, PUR | Connector, M12x1 connector, 4-pin | |
| Housing material | Stainless steel | Stainless steel | Brass | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | — | — | Global | |
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| | | | BOS01HK BOS 18M-PS-IR23-S4 | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | | | |
| | BOS01F0 BOS 18M-PA-IR20-S4 | BOS01HR BOS 18M-PA-IR21-S4 | | BOS01NE BOS 18M-PA-LR20-S4 | BOS01CE BOS 18M-PA-PR20-S4 |
| | 18M | 18M | 18M | 18M | 18M |
| | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | Collimated | Divergent |
| | LED infrared | LED infrared | LED infrared | Laser red light | LED, red light |
| | Ø 300 mm at 7 m | Ø 300 mm at 7 m | Ø 300 mm at 7 m | Ø 10 mm at 16 m | Ø 300 mm at 7 m |
| | 0...10 m | 0...7 m | 0...6 m | 0...16 m | 0...7 m |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Brass | Brass | Brass | Brass | Brass |
| | Glass, anti-glare | Glass, anti-glare | Glass, anti-glare | Glass | Glass, anti-glare |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE, EAC | CE, cULus, EAC | cULus, CE, EAC | cULus, CE, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
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| | | | | |
|---|---------------------------------------|--------------------------------------|--------------------------------------|--|
| PNP normally open | | | BOS01F8 BOS 18M-PS-PR23-S4 | |
| PNP normally open, PNP normally closed | BOS01FJ BOS 18M-PA-PR20-S4S | | | |
| PNP normally open/normally closed/IO-Link 1.1 | | BOS01UE BOS 18M-PI-PR30-S4 | | |
| Series | 18M | 18M | 18M | |
| Dimension | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 300 mm at 7 m | Ø 300 mm at 7 m | Ø 300 mm at 7 m | |
| Range | 0...7 m | 0...5 m | 0...4 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | Glass, anti-glare | Glass | Glass, anti-glare | |
| Operating voltage U _b | 10...30 VDC | 18...30 VDC | 10...30 VDC | |
| Approval/Conformity | cULus, CE, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
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| | BOS01KL BOS 18E-PA-PR20-S4 | BOS023Y BOS 18E-PA-PR30-S4 | | BOS01KK BOS G18E-PA-PR20-S4 | BOS0245 BOS G18E-PA-PR30-S4 |
|--|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
| | | | BOS023F BOS 18E-PI-PR30-S4 | | |
| | 18E | 18E | 18E | G18E | G18E |
| | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | LED, red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | Ø 300 mm at 7 m | Ø 300 mm at 7 m | Ø 300 mm at 7 m | Ø 300 mm at 7 m | Ø 300 mm at 7 m |
| | 5 m | 5 m | 0...5 m | 5 m | 5 m |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4571) | Stainless steel (1.4404) | Stainless steel (1.4404) |
| | Glass | PMMA | Glass | Glass | PMMA |
| | 10...30 VDC | 10...30 VDC | 18...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus, Ecolab, FDA compliant, EAC | Ecolab, cULus, CE, EAC | cULus, CE, EAC | FDA compliant, Ecolab, cULus, CE, EAC | Ecolab, cULus, CE, EAC |
| | — | — | — | — | — |
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| PNP normally open, PNP normally closed | BOS00LM BOS 18KW-PA-1LQH-S4-C | BOS00LW BOS 18KW-PA-1QC-S4-C | BOS00LZ BOS 18KW-PA-1TB-S4-C | |
|--|---|--|--|--|
| Series | 18KW | 18KW | 18KW | |
| Dimension | Ø 18 x 14 mm | Ø 18 x 14 mm | Ø 18 x 14 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| Special optical feature | — | — | Transparency detection | |
| Beam characteristic | — | — | — | |
| Light type | Laser red light | LED, red light | LED, red light | |
| Light spot size | — | — | — | |
| Range | 0...9 m | 0...3 m | 0...1.7 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | PBT | PBT | PBT | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | CE, cULus | |
| Trademark | Global | Global | Global | |
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| | BOS00K5 BOS 18KF-PA-1RE-S4-C | BOS00JT BOS 18KF-PA-1LQP-S4-C | BOS00K3 BOS 18KF-PA-1QD-S4-C | BOS00K7 BOS 18KF-PA-1TB-S4-C | |
|--|--|---|--|--|--|
| | 18KF | 18KF | 18KF | 18KF | |
| | Ø 18 x 71.5 mm | Ø 18 x 81.5 mm | Ø 18 x 81.5 mm | Ø 18 x 81.5 mm | |
| | — | — | — | — | |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| | — | — | — | Transparency detection | |
| | — | — | — | — | |
| | Infrared | Laser red light | LED, red light | LED, red light | |
| | — | — | — | — | |
| | 0...5 m | 0...16 m | 0...4.5 m | 0...1.7 m | |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector | Connector, M12x1 connector, 4-pin | |
| | PBT | PBT | PBT | PBT | |
| | PMMA | PMMA | PMMA | PMMA | |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| | CE, cULus, EAC | CE, cULus | CE, cULus | CE, cULus | |
| | Global | Global | Global | Global | |
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| | | | | |
|--------------------------------|--|--|---|--|
| PNP normally open | BOS01MU BOS Q08M-PS-LR20-00,2-S49 | BOS01MP BOS Q08M-PS-LR20-S49 | BOS01T9 BOS Q08M-PS-PR20-00,2-S49 | |
| PNP normally closed | BOS01MW BOS Q08M-PO-LR20-00,2-S49 | | | |
| Series | Q08M | Q08M | Q08M | |
| Dimension | 8 x 59 x 8 mm | 8 x 59 x 8 mm | 8 x 44 x 8 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Laser red light | Laser red light | LED, red light | |
| Light spot size | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | |
| Range | 0...1 m | 0...1 m | 0...1 m | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Connector, M8x1 connector, 3-pin | Cable with connector, 0.20 m, PUR | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | cULus, CE, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
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| | BOS01T8 BOS Q08M-PS-PR20-S49 | BOS020T BOS R020K-PS-PR11-00,2-S49 | BOS020U BOS R020K-PS-PR11-00,2-S75 | BOS020R BOS R020K-PS-PR11-02 | |
|--|--|--|--|--|--|
| | Q08M | R020K | R020K | R020K | |
| | 8 x 59 x 8 mm | 7.7 x 26.8 x 13.5 mm | 7.7 x 26.8 x 13.5 mm | 7.7 x 26.8 x 13.5 mm | |
| | — | — | — | — | |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| | — | — | — | — | |
| | Divergent | Divergent | Divergent | Divergent | |
| | LED, red light | LED, red light | LED, red light | LED, red light | |
| | Ø 3.0 mm Light exit | Ø 10 mm at 100 mm | Ø 10 mm at 100 mm | Ø 11 mm at 250 mm | |
| | 0...1 m | 0...3 m | 0...3 m | 0...3 m | |
| | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PVC | Cable with connector, M8x1 connector, 4-pin, 0.20 m, PVC | Cable, 2.00 m, PVC | |
| | Zinc, die-cast | ABS | ABS | ABS | |
| | PMMA | PMMA | PMMA | PMMA | |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| | cULus, CE, EAC | CE, cULus | CE, cULus | CE, cULus | |
| | — | — | — | — | |
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| | | | | |
|-----------------------------------|--|---------------------------------------|-------------------------------------|--|
| PNP normally open | BOS021L BOS R01E-PS-KR20-00,2-S49 | BOS021M BOS R01E-PS-KR20-02 | | |
| PNP normally closed | | | | |
| PNP normally open/normally closed | | | BOS01JT BOS 5K-PU-LR10-02 | |
| Series | R01E | R01E | 5K | |
| Dimension | 20 x 32 x 9 mm | 20 x 32 x 9 mm | 10.8 x 32.7 x 19.5 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | Laser red light | |
| Light spot size | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | Ø 5 mm at 3 m | |
| Range | 1 m | 1 m | 0...10 m | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable, 2.00 m, PUR | Cable, 2.00 m, PVC | |
| Housing material | Stainless steel (1.4404) | Stainless steel (1.4404) | PC PBT | |
| Material sensing surface | PA | PA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, Ecolab, EAC | CE, cULus, Ecolab, EAC | CE, cULus, CDRH, EAC | |
| Trademark | — | — | Global | |
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| | BOS012E BOS 5K-PS-RR10-S75 | BOS012C BOS 5K-PS-RR10-02 | BOS015E BOS 5K-PS-RR10-S49 | |
|--------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|--|
| | BOS0121 BOS 5K-PO-RR10-S75 | | | |
| BOS01JW BOS 5K-PU-LR10-S75 | | | | |
| 5K | 5K | 5K | 5K | |
| 10.8 x 43.5 x 19.5 mm | 10.8 x 43.5 x 19.5 mm | 10.8 x 32.7 x 19.5 mm | 10.8 x 43.5 x 19.5 mm | |
| — | — | — | — | |
| Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| — | — | — | — | |
| Divergent | Divergent | Divergent | Divergent | |
| Laser red light | LED, red light | LED, red light | LED, red light | |
| Ø 5 mm at 3 m | Ø 160 mm at 2 m | Ø 160 mm at 2 m | Ø 160 mm at 2 m | |
| 0...10 m | 0...4 m | 0...4 m | 0...4 m | |
| Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Cable, 2.00 m, PVC | Connector, M8x1 connector, 3-pin | |
| PC PBT | PC PBT | PC PBT | PC PBT | |
| PMMA | PMMA | PMMA | PMMA | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| cULus, CE, CDRH, EAC | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC | |
| Global | Global | Global | Global | |
| Page 422 | Page 422 | Page 422 | Page 422 | |



| | | | | |
|--|---|--------------------------------------|---|--|
| PNP normally open, PNP normally closed | | | | |
| PNP normally open/normally closed | BOS01M4 BOS 6K-PU-LK10-S75 | BOS01MH BOS 6K-PU-PR10-S49 | BOS01MJ BOS 6K-PU-PR10-S75 | |
| Series | 6K | 6K | 6K | |
| Dimension | 12 x 41.5 x 21.6 mm | 12 x 41.5 x 21.6 mm | 12 x 41.5 x 21.6 mm | |
| Input function | Same function as button, Key disable on/off | — | Key disable on/off, Same function as button | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| Special optical feature | Coaxial optics | — | — | |
| Beam characteristic | Collimated | Divergent | Divergent | |
| Light type | Laser red light | LED, red light | LED, red light | |
| Light spot size | Ø 2 mm at 2.5 m | 600 x 600 mm at 7 m | 600 x 600 mm at 7 m | |
| Range | 0...4 m | 0...6 m | 0...6 m | |
| Connection | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 4-pin | |
| Housing material | ABS | ABS | ABS | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | cULus, CE, EAC | |
| Trademark | — | — | — | |
| Productview | Page 422 | Page 423 | Page 423 | |



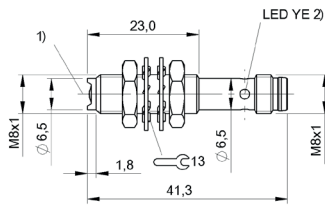
| | BOS01L8 BOS 6K-PU-PT10-S75 | BOS00TL BOS 21M-PA-LR10-S4 | BOS00TN BOS 21M-PA-PK10-S4 | BOS00TR BOS 21M-PA-PR10-S4 | BOS00TU BOS 21M-PA-PT10-S4 |
|--|---|--------------------------------------|--------------------------------------|--------------------------------------|--|
| | 6K | 21M | 21M | 21M | 21M |
| | 12 x 41.5 x 21.6 mm | 15 x 50 x 42.5 mm | 15 x 50 x 42.5 mm | 15 x 50 x 42.5 mm | 15 x 50 x 42.5 mm |
| | Key disable on/off, Same function as button | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor |
| | Coaxial optics, Transparency detection | — | Coaxial optics | — | Coaxial optics, Transparency detection |
| | Divergent | Collimated | Divergent | Divergent | — |
| | LED, red light | Laser red light | LED, red light | LED, red light | LED, red light |
| | 50 x 50 mm at 2 m | — | — | — | — |
| | 0...2 m | 0...20 m | 0...4 m | 0...8 m | 0...2 m |
| | Connector, M8x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | ABS | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum |
| | PMMA | PMMA | Glass | PMMA | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE, EAC | CE, cULus | CE, cULus, EAC | CE, cULus, EAC | cULus, CE, EAC |
| | — | — | — | — | — |
| | Page 423 | Page 423 | Page 423 | Page 423 | Page 423 |



| | | | | |
|--|--------------------------------------|---|--------------------------------------|--|
| PNP normally open, PNP normally closed | BOS01NC BOS 23K-PA-LK10-S4 | | BOS01FN BOS 23K-PA-RR10-S4 | |
| PNP normally open/normally closed | | BOS016U BOS 23K-PU-LR10-S4 | | |
| Relay normally open/normally closed | | | | |
| Series | 23K | 23K | 23K | |
| Dimension | 23 x 51 x 52.4 mm | 23 x 51 x 52.4 mm | 23 x 51 x 52.4 mm | |
| Input function | — | Key disable on/off, Same function as button | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Laser red light | Laser red light | LED, red light | |
| Light spot size | Ø 22 mm at 20 m | 9 x 9 mm at 12 mm | 300 x 300 mm at 12 m | |
| Range | 0...20 m | 0...14 m | 0...14 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | PC ABS | PC ABS | PC ABS | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | Ecolab, CE, cULus, EAC | Ecolab, CE, cULus, EAC | Ecolab, CE, cULus | |
| Trademark | — | — | — | |
| Productview | Page 423 | Page 423 | Page 423 | |

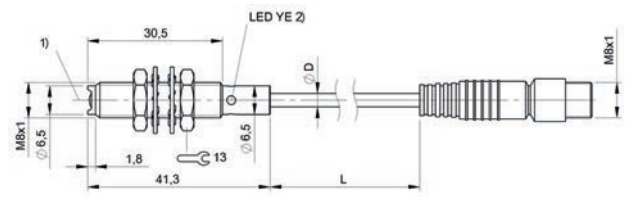


| | BOS008L BOS 26K-PA-1LQP-S4-C | BOS008M BOS 26K-PA-1QE-S4-C | BOS01CR BOS 50K-PA-PR10-S4 | |
|---|--|---------------------------------------|--------------------------------------|--------------------------------------|
| BOS016P BOS 23K-PU-RR10-S4 | | | | |
| | | | | BOS01K3 BOS 64K-AA-PR10-TG |
| 23K | 26K | 26K | 50K | 64K |
| 23 x 51 x 52.4 mm | 17 x 50 x 50 mm | 17 x 50 x 50 mm | 28.5 x 80.5 x 62 mm | 25 x 69.7 x 100.4 mm |
| Key disable on/off, Same function as button | — | — | — | — |
| Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor | Retroreflective sensor |
| — | Coaxial optics | Coaxial optics | — | — |
| Divergent | Collimated | — | Divergent | Divergent |
| LED, red light | Laser red light | LED, red light | LED, red light | LED, red light |
| 300 x 300 mm at 12 m | Ø 20 mm at 20 m | — | 200 x 200 mm at 10 m | — |
| 0...14 m | 0...25 m | 0...5.5 m | 0...18 m | 0...10 m |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Screw terminals |
| PC ABS | ABS | ABS | PC ABS | PBT, GF30 |
| PMMA | PMMA | PMMA | Glass | PC |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 24...60 VDC/24...240 VAC |
| Ecolab, CE, cULus | cULus, CE, EAC | CE, cULus | CE, cULus, EAC | CE, cULus, EAC |
| — | — | — | — | — |
| Page 423 | Page 424 | Page 424 | Page 424 | Page 424 |



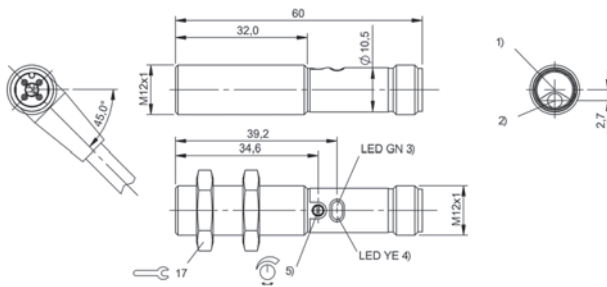
1) Optical axis, 2) Output function

BOS01RM, BOS01RK



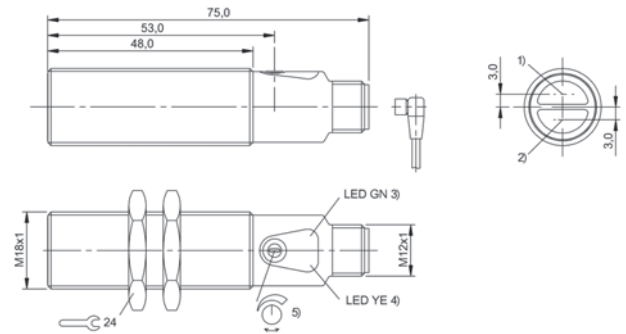
1) Optical axis, 2) Output function

BOS01RL



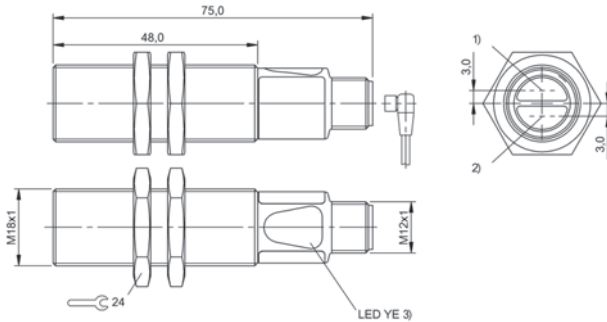
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area, 5) Sn

BOS01TT



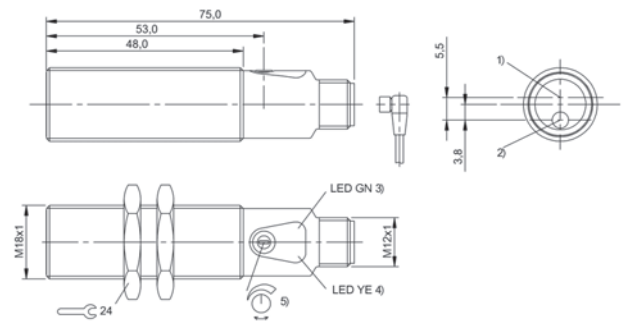
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area, 5) Sn

BOS01F0, BOS01HR, BOS01CE, BOS01FJ



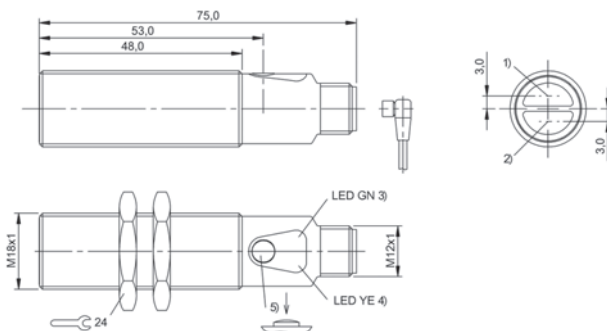
1) Optical axis receiver, 2) Optical axis emitter, 3) Light reception/limit area

BOS01HK, BOS01F8



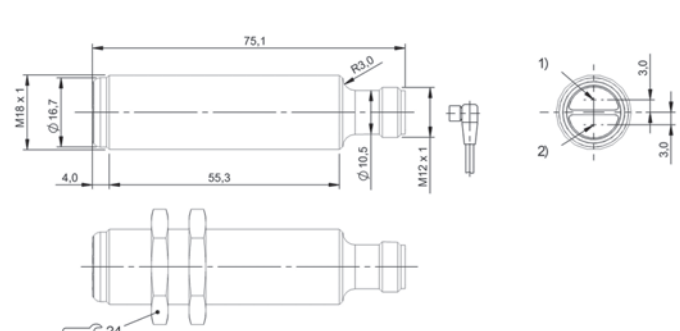
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage/Error, 4) Light reception/limit area, 5) Sn

BOS01NE



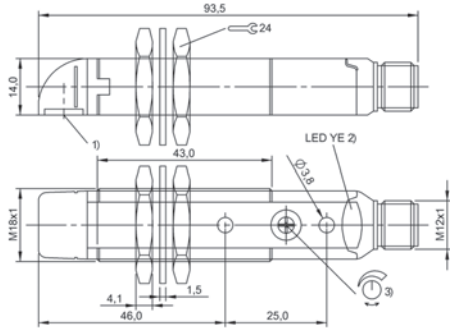
1) Optical axis receiver, 2) Optical axis emitter, 3) Power/short-circuit, 4) Light reception/limit area, 5) Sn

BOS01UE



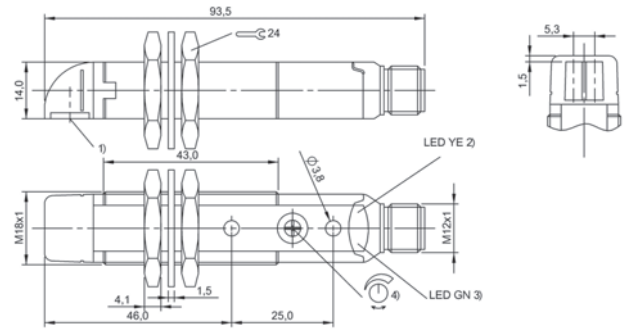
1) Optical axis receiver, 2) Optical axis emitter

BOS01KL, BOS023Y, BOS023F, BOS01KK, BOS0245



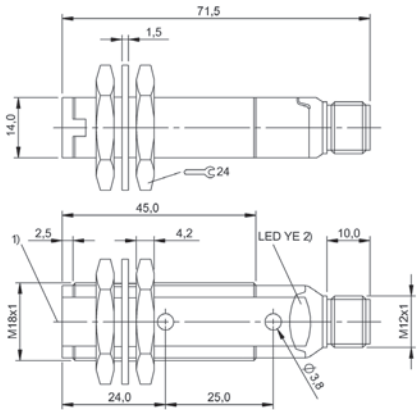
1) Optical axis, 2) Output function, 3) Sn

BOS00LM, BOS00LZ



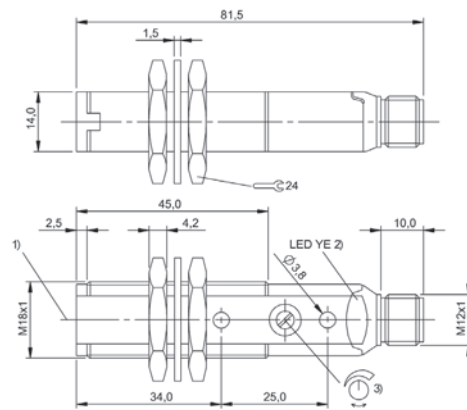
1) Optical axis, 2) Output function, 3) Stability, 4) Sn

BOS00LW



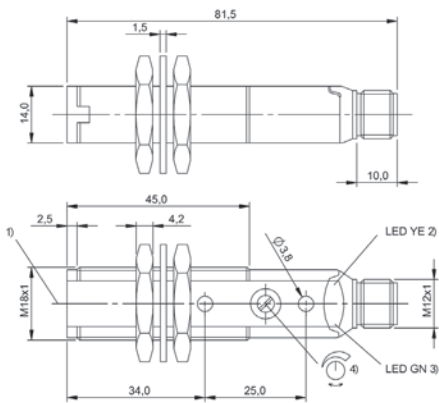
1) Optical axis, 2) Output function

BOS00K5



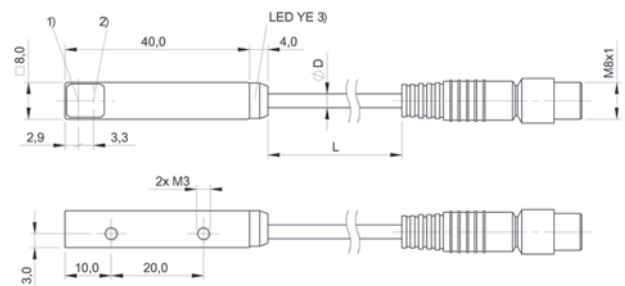
1) Optical axis, 2) Output function, 3) Sn

BOS00JT, BOS00K7



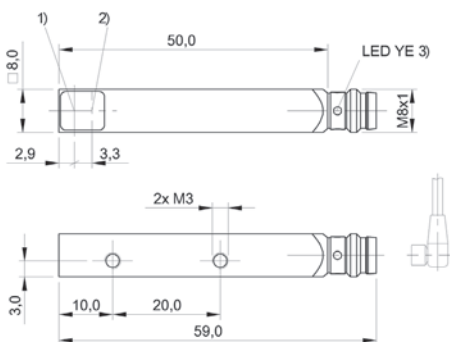
1) Optical axis, 2) Output function, 3) Stability, 4) Sn

BOS00K3



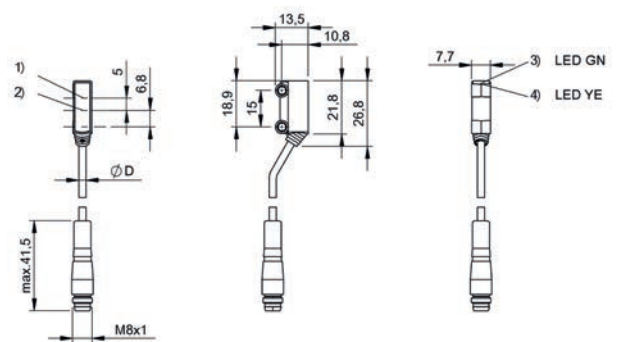
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS01MW, BOS01MU, BOS01T9



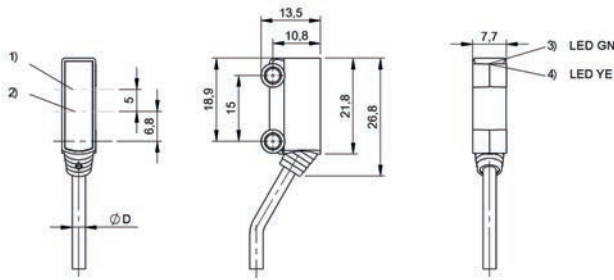
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS01MP, BOS01T8



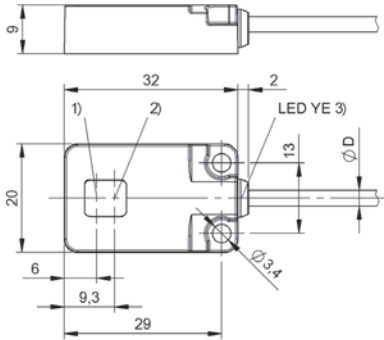
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception

BOS020T, BOS020U



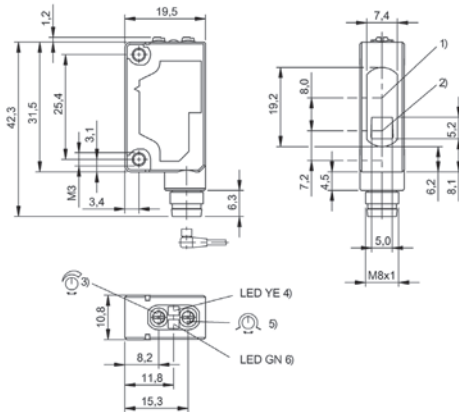
1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception

BOS020R



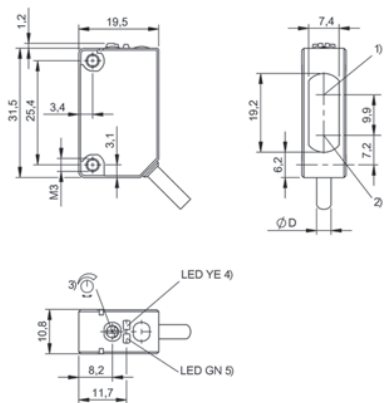
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS021M



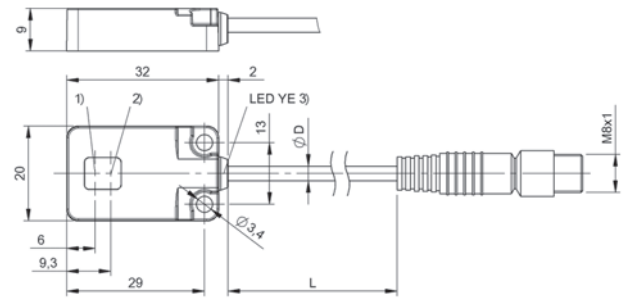
1) Optical axis receiver, 2) Optical axis emitter, 3) Sensitivity, 4) Output function, 5) Light-on/dark-on, 6) stability

BOS01JW



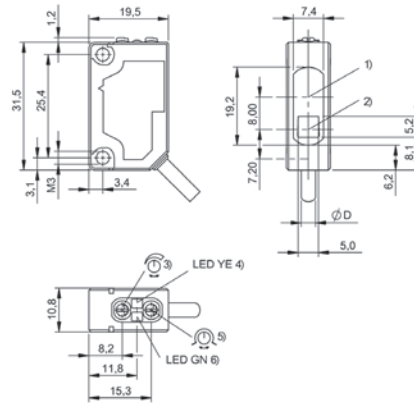
1) Optical axis receiver, 2) Optical axis emitter, 3) Sn, 4) Output function, 5) stability

BOS012C



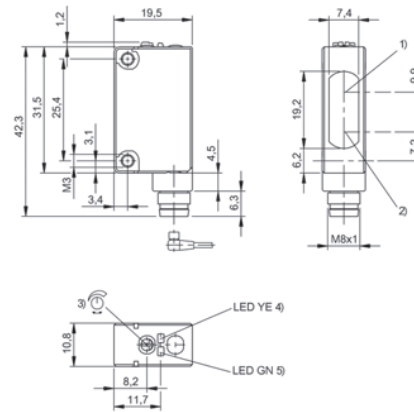
1) Optical axis emitter, 2) Optical axis receiver, 3) Output function

BOS021L



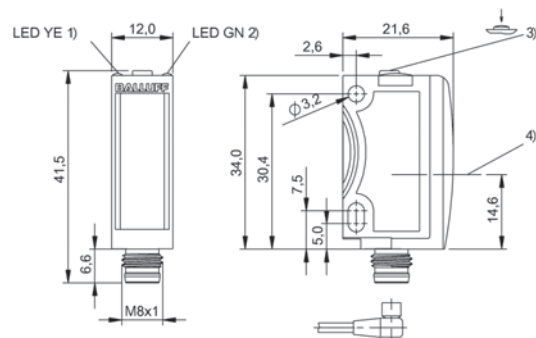
1) Optical axis receiver, 2) Optical axis emitter, 3) Sensitivity, 4) Output function, 5) Light-on/dark-on, 6) stability

BOS01JT



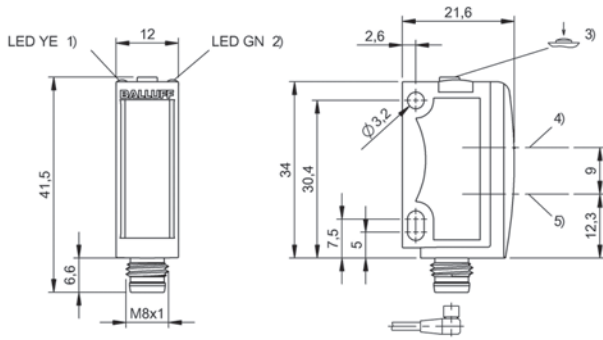
1) Optical axis receiver, 2) Optical axis emitter, 3) Sn, 4) Output function, 5) stability

BOS0121, BOS015E, BOS012E



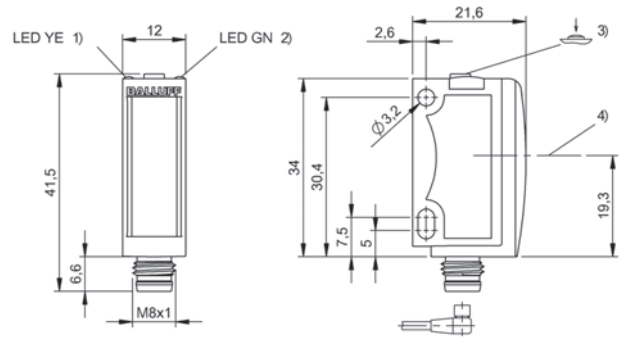
1) Output function, 2) Operating voltage, 3) Sensitivity, light/dark, 4) Optical axis

BOS01M4



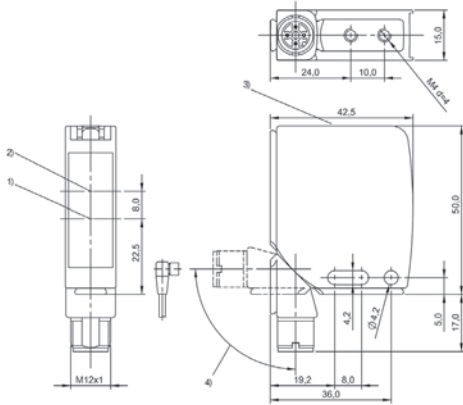
1) Output function, 2) Operating voltage, 3) Sensitivity, light/dark, 4) Optical axis receiver, 5) Optical axis emitter

BOS01MH, BOS01MJ



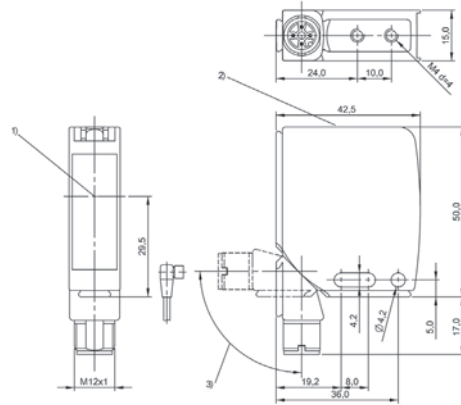
1) Output function, 2) Operating voltage, 3) Sensitivity, light/dark, 4) Optical axis

BOS01L8



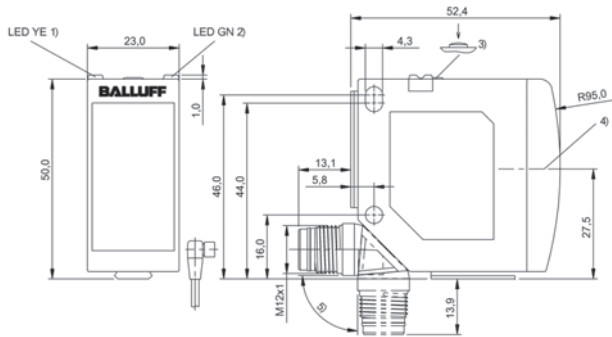
1) Optical axis emitter, 2) Optical axis receiver, 3) Display and control panel, 4) rotatable 270°

BOS00TL, BOS00TR



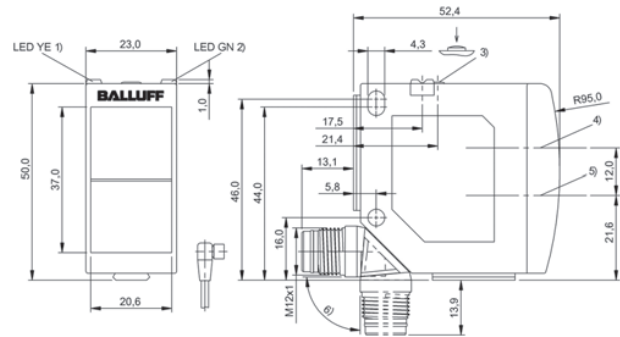
1) Optical axis, 2) Display and control panel, 3) rotatable 270°

BOS00TN, BOS00TU



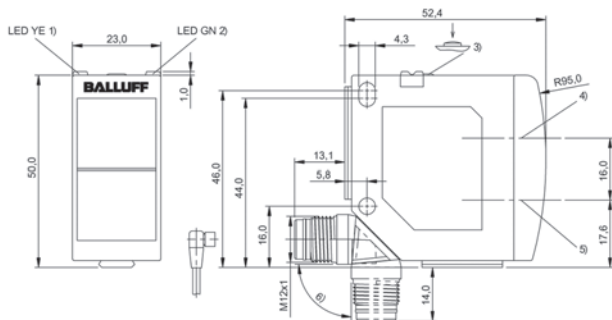
1) Output function/Error, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis, 5) rotatable 270°

BOS01NC



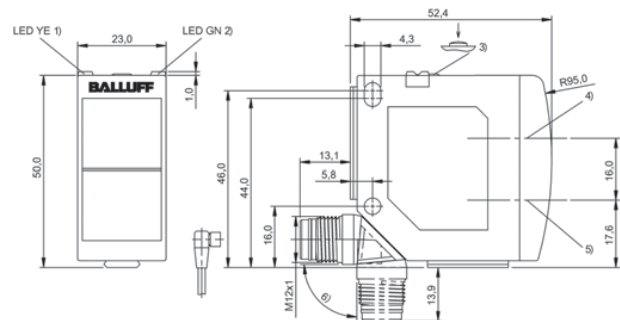
1) Output function/Error, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter, 6) rotatable 270°

BOS016U



1) Output function/Error, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter, 6) rotatable 270°

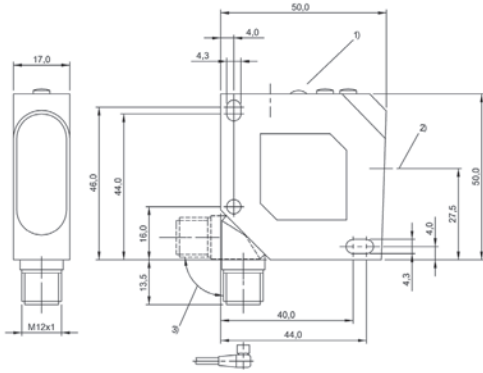
BOS01FN



1) Output function/Error, 2) Power/setting mode, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter, 6) rotatable 270°

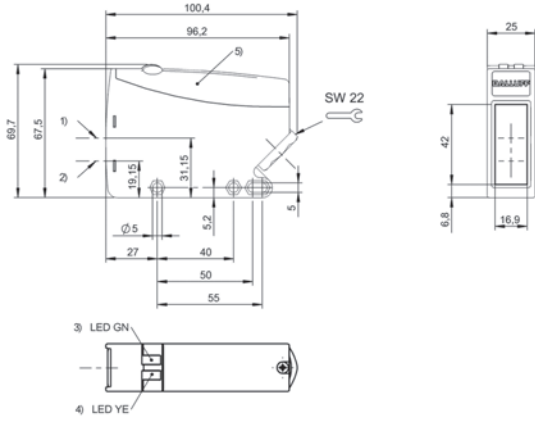
BOS016P

424 | Sensors | Photoelectric Sensors



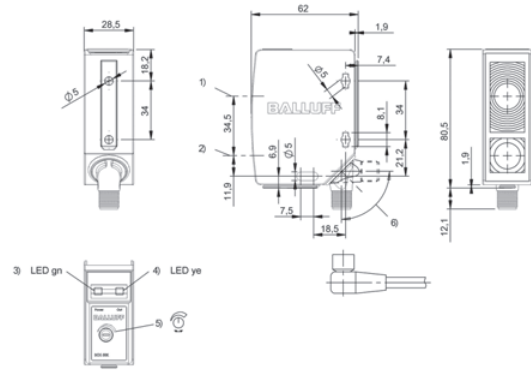
1) Display and control panel, 2) Optical axis, 3) rotatable 270°

BOS008L, BOS008M



1) Optical axis receiver, 2) Optical axis emitter, 3) Stability, 4) Output function, 5) Removable cover

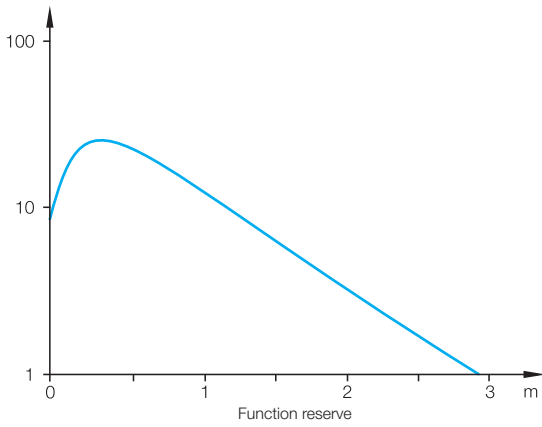
BOS01K3



1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area, 5) Sn, 6) rotatable 270°

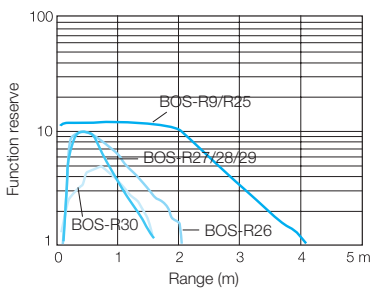
BOS01CR

Retroreflective sensor BOS 2K

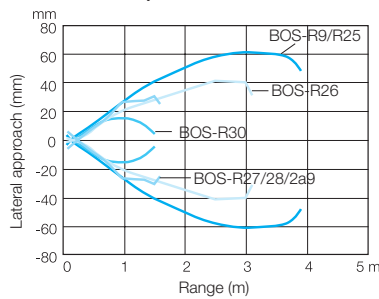


Retroreflective sensor BOS 5K-...-RR10-...

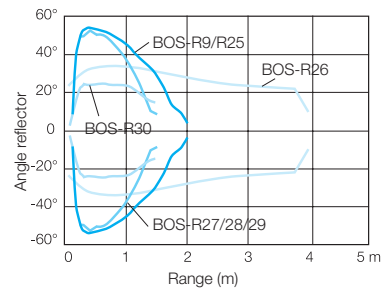
Receiving characteristics



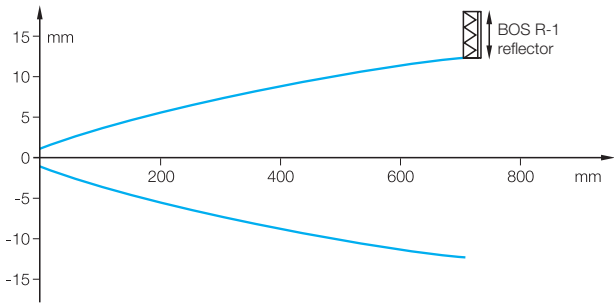
Characteristic response curve



Angular Offset

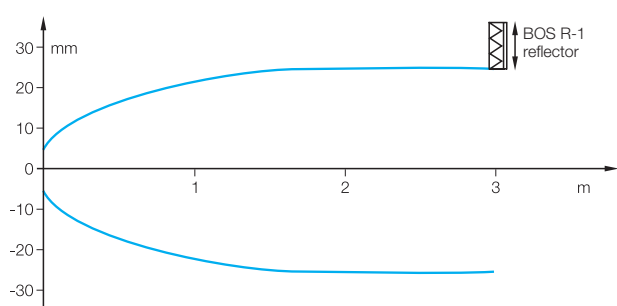


Retroreflective sensor BOS 6K-...-1QA-...



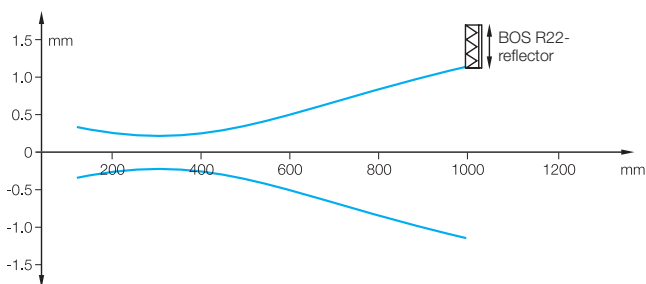
Range measured with side approach with reflector.

Retroreflective sensor BOS 6K-...-1QC-...



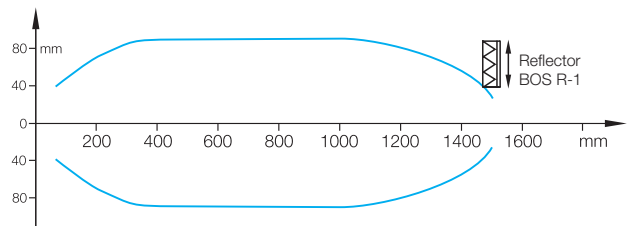
Range measured with side approach with reflector.

Retroreflective sensor BOS 6K-...-1LQA-...



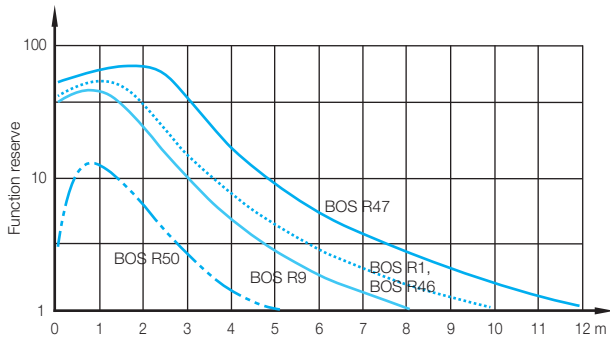
Range measured with side approach with reflector.

Retroreflective sensor BOS 12M-...-1QA-...

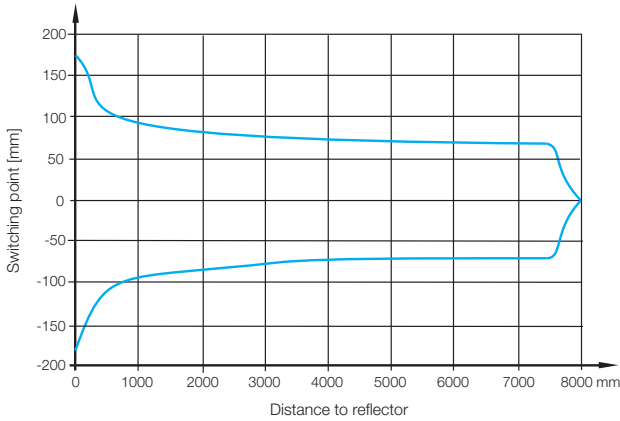


Range measured with side approach with reflector.

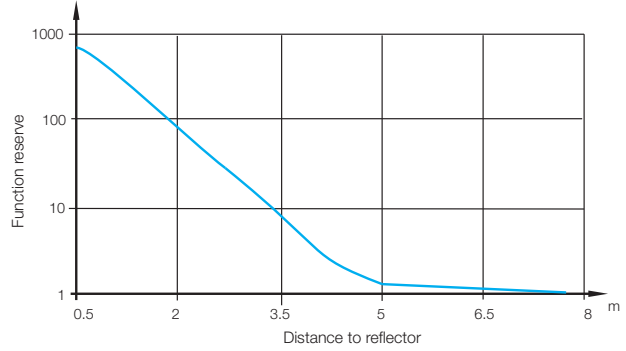
Retroreflective sensor BOS 18M...IR20/IR21-S4



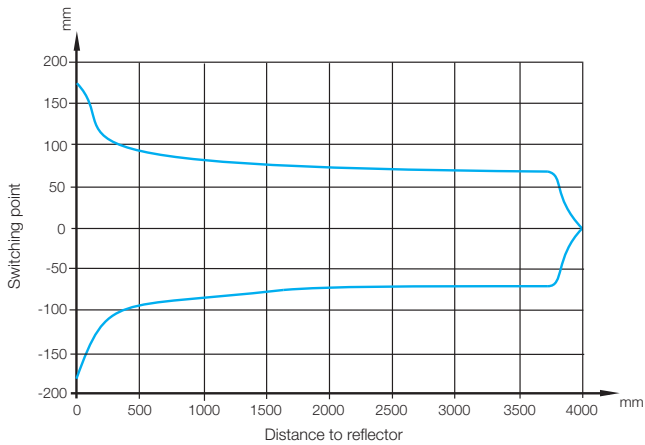
**Retroreflective sensor BOS 18M...PR20...
Response curve**



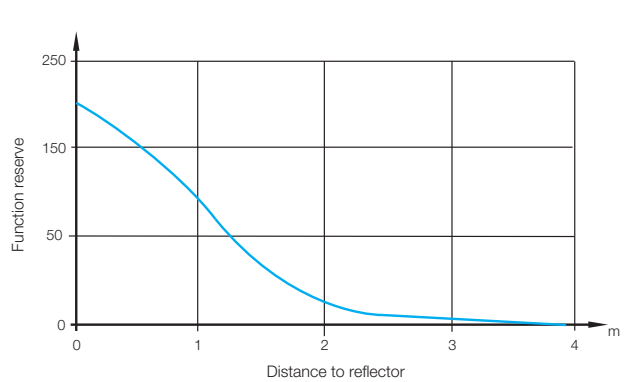
**Retroreflective sensor BOS 18M...PR20...
Function reserve**



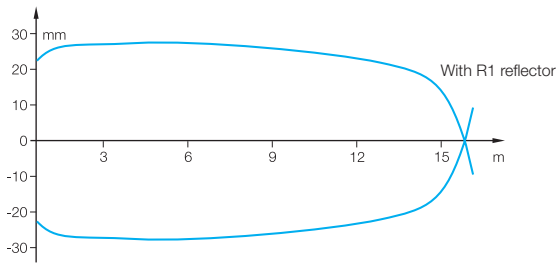
**Retroreflective sensor BOS 18M...PR23
response curve**



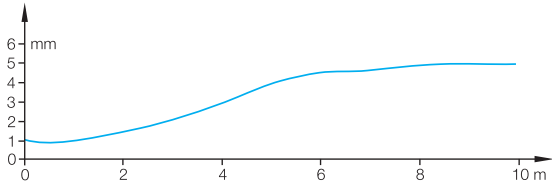
**Retroreflective sensor BOS 18M...PR23
Function reserve**



Retroreflective sensor BOS 18M-...-LR10-...

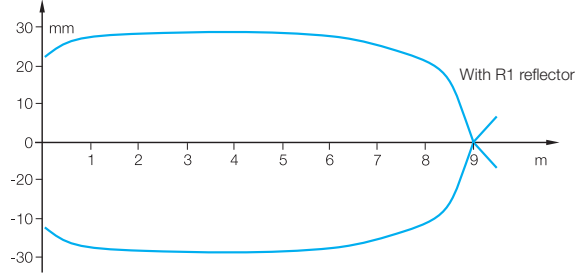


Detection range

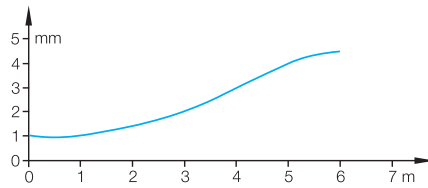


Resolution

Retroreflective sensor BOS 18MR-...-LR10-...

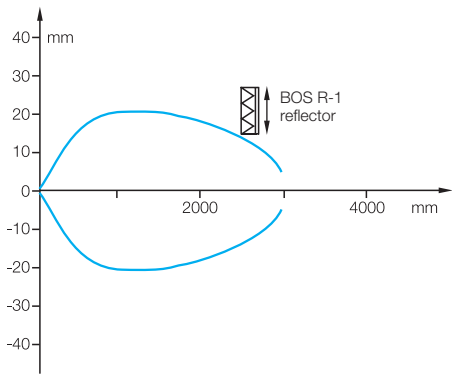


Detection range



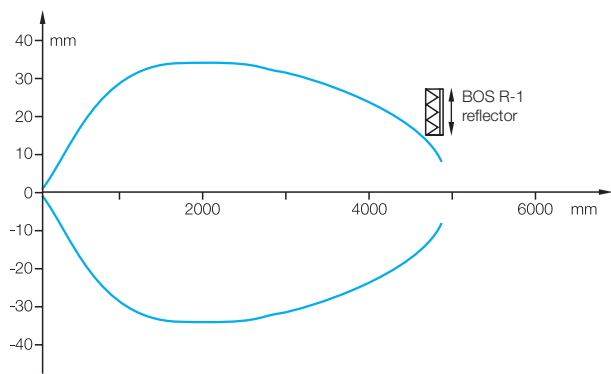
Resolution

Retroreflective sensor BOS 18E-...-1UB-...



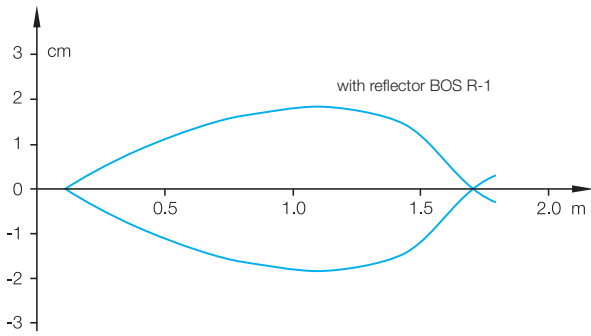
Range measured with side approach with reflector.

Retroreflective sensor BOS 18E-...-1WD-...

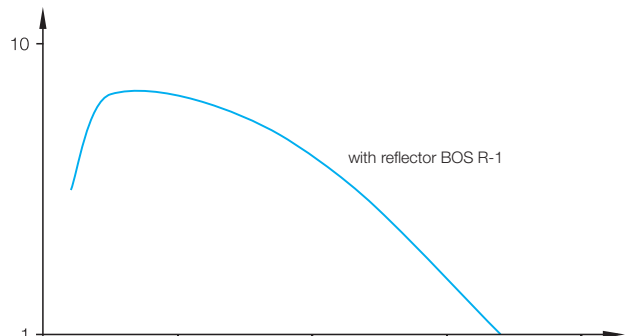


Range measured with side approach with reflector.

Retroreflective sensor BOS 18KF-...-1TB-...

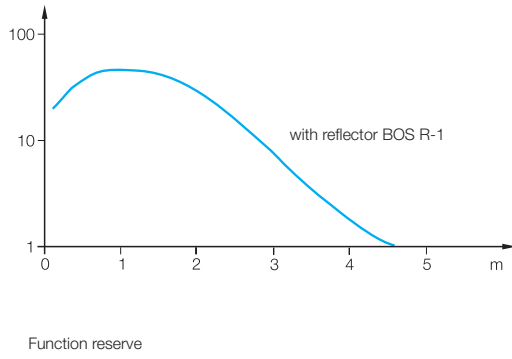
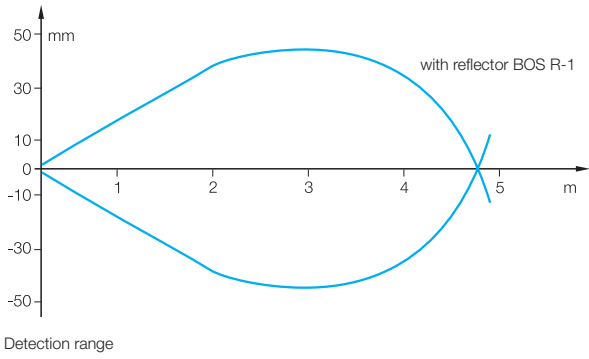


Detection range

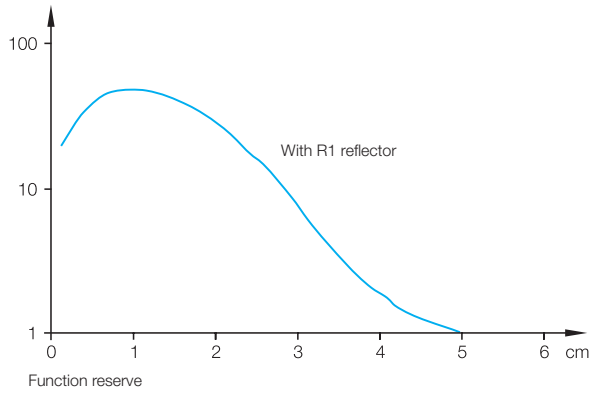
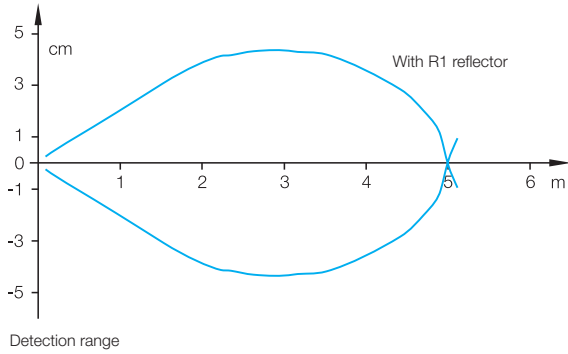


Function reserve

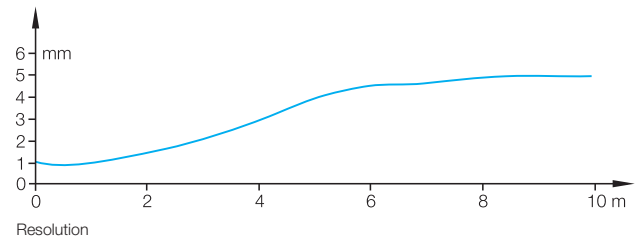
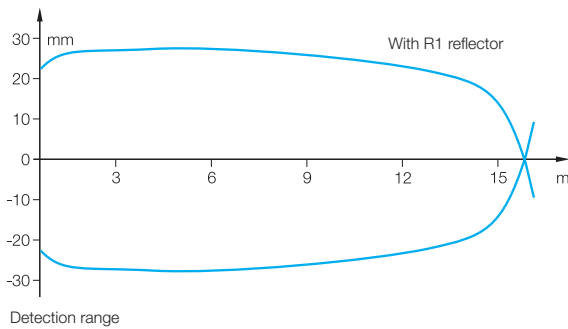
Retroreflective sensor BOS 18KF-...-1QD-...



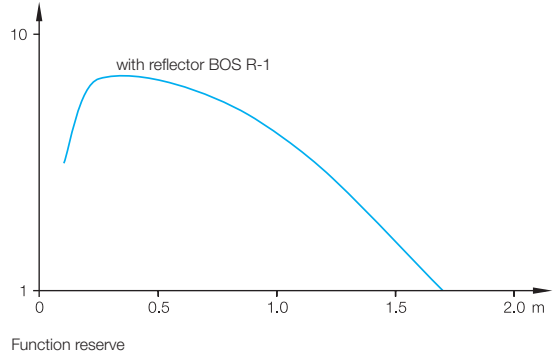
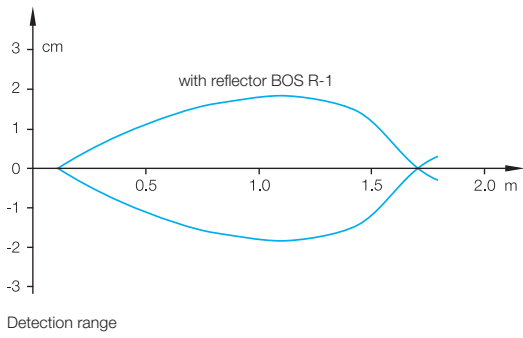
Retroreflective sensor BOS 18KF-...-1RE-...



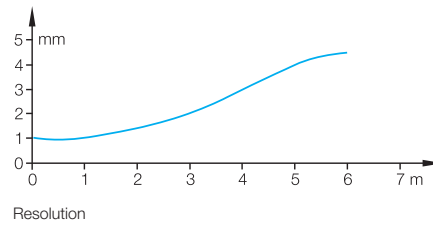
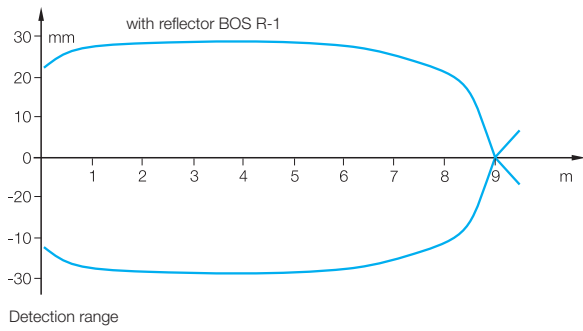
Retroreflective sensor BOS 18KF-...-1LQP-...



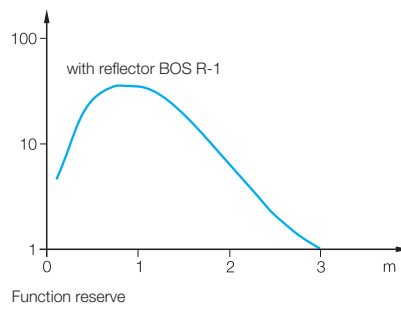
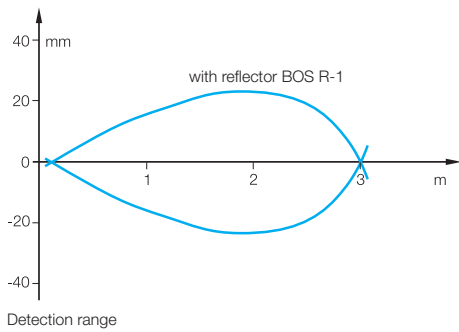
Retroreflective sensor BOS 18KW-..-1TB-...



Retroreflective BOS 18KW-..-1LQH-...



Retroreflective sensor BOS 18KW-..-1QC-...





| | | | | |
|--------------------------------|--|---------------------------------------|---------------------------------------|--|
| PNP normally open | BOS024L BOS 08E-PS-LE20-00,2-S49 | BOS01U3 BOS 08E-PS-LE20-S49 | BOS020F BOS 08E-PS-KE20-S49 | |
| PNP normally closed | | | BOS020A BOS 08E-P0-KE20-S49 | |
| Emitter | | | | |
| Series | 08E | 08E | 08E | |
| Dimension | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 40 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (receiver) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | — | — | |
| Light type | Laser red light | Laser red light | LED, red light | |
| Light spot size | — | — | — | |
| Range | 0...3 m | 0...3 m | 0...2.2 m | |
| Connection | — | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Stainless steel | Stainless steel | Stainless steel | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | — | cULus, CE, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
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| | | | | | |
|--|--|---|--------------------------------------|--|--------------------------------------|
| | BOS020C BOS 08E-PS-KE20-00,2-S49 | | | | |
| | | | | | |
| | | BOS024N BOS 08E-X-LS20-00,2-S49 | BOS01U8 BOS 08E-X-LS20-S49 | BOS01Z7 BOS 08E-X-KS20-00,2-S49 | BOS01Z5 BOS 08E-X-KS20-S49 |
| | 08E | 08E | 08E | 08E | 08E |
| | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 40 mm | Ø 8 x 40 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) |
| | — | — | — | — | — |
| | — | Collimated | Collimated | Divergent | Divergent |
| | LED, red light | Laser red light | Laser red light | LED, red light | LED, red light |
| | — | Ø 3.0 mm Light exit | Ø 3.0 mm Light exit | — | — |
| | 0...2.2 m | 0...3 m | 0...3 m | 0...2.2 m | 0...2.2 m |
| | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | — | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Connector, M8x1 connector, 3-pin |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE, EAC | — | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC |
| | — | — | — | — | — |
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|--|--------------------------------------|--------------------------------------|-------------------------------------|--|
| PNP normally open | | BOS01TY BOS 12M-PS-RE10-S4 | | |
| PNP normally open, PNP normally closed | BOS00WF BOS 12M-PA-LE10-S4 | | | |
| Emitter | | | BOS00WH BOS 12M-X-LS11-S4 | |
| Series | 12M | 12M | 12M | |
| Dimension | Ø 12 x 70 mm | Ø 12 x 60 mm | Ø 12 x 70 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | — | Focus, typical at 500 mm | |
| Light type | Laser red light | LED, red light | Laser red light | |
| Light spot size | — | — | Ø 2.5 mm Light exit | |
| Range | 0...30 m | 0...8 m | 0...3 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | PMMA | PMMA | Glass | |
| Operating voltage Ub | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus, EAC | CE, cULus | |
| Trademark | — | Global | — | |
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| | | | | | BOS01F3 BOS 18M-PA-IE20-S4 |
|--|-------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|
| | BOS00WJ BOS 12M-X-LS12-S4 | BOS00WL BOS 12M-XT-LS11-S4 | BOS00WN BOS 12M-XT-LS12-S4 | BOS01TW BOS 12M-X-RS10-S4 | |
| | 12M | 12M | 12M | 12M | 18M |
| | Ø 12 x 70 mm | Ø 12 x 70 mm | Ø 12 x 70 mm | Ø 12 x 60 mm | Ø 18 x 75 mm |
| | — | Test (Emitter off) | Test (Emitter off) | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (receiver) |
| | — | — | — | — | — |
| | Collimated | Focus, typical at 500 mm | Collimated | — | — |
| | Laser red light | Laser red light | Laser red light | LED, red light | Infrared |
| | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 280 mm at 8 m | — |
| | 0...30 m | 0...3 m | 0...30 m | 0...8 m | 0...50 m |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Brass | Brass | Brass | Brass | Brass |
| | Glass | Glass | Glass | PMMA | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus, EAC | cULus, CE, EAC |
| | — | — | — | Global | — |
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| | | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--|
| PNP normally open | | BOS01C2 BOS 18M-PS-RE20-S4 | | |
| PNP normally open, PNP normally closed | BOS01NJ BOS 18M-PA-LE20-S4 | BOS01CC BOS 18M-PA-RE20-S4 | | |
| PNP normally open/normally closed | | | | |
| PNP normally open/normally closed, IO-Link 1.1 | | | BOS01UC BOS 18M-PI-RE30-S4 | |
| Emitter | | | | |
| Series | 18M | 18M | 18M | |
| Dimension | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (receiver) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | — | — | |
| Light type | Laser red light | LED, red light | LED, red light | |
| Light spot size | — | — | — | |
| Range | 0...60 m | 0...20 m | 0...20 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 18...30 VDC | |
| Approval/Conformity | cULus, CE, EAC | CE, cULus, EAC | cULus, CE, EAC | |
| Trademark | — | — | — | |
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|--|--------------------------------------|---------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| | BOS01FE BOS 18M-PS-RE23-S4 | | | | |
| | | | | | |
| | | BOS01J7 BOS 18M-PUV-RE30-S4 | | | |
| | | | | | |
| | | | BOS01F5 BOS 18M-X-IS20-S4 | BOS01HN BOS 18M-XT-IS20-S4 | BOS01NH BOS 18M-XT-LS20-S4 |
| | 18M | 18M | 18M | 18M | 18M |
| | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm |
| | — | — | — | Test (Emitter off) | Test (Emitter off) |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) |
| | — | — | — | — | — |
| | — | — | — | — | Collimated |
| | LED, red light | LED, red light | Infrared | Infrared | Laser red light |
| | — | — | — | — | Ø 40 mm at 60 m |
| | 0...20 m | 0...20 m | 0...50 m | 0...50 m | 0...60 m |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Brass | Brass | Brass | Brass | Brass |
| | Glass | Glass | Glass | Glass | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE, EAC | cULus, CE, EAC | CE, cULus, EAC | CE, cULus, EAC | cULus, CE, EAC |
| | Global | — | — | — | — |
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| | | | | |
|--|-------------------------------------|-------------------------------------|-------------------------------------|--|
| PNP normally open, PNP normally closed | | | | |
| PNP normally open/normally closed, IO-Link 1.1 | | | | |
| Emitter | BOS01C0 BOS 18M-X-RS20-S4 | BOS01FH BOS 18M-X-RS23-S4 | BOS01CY BOS 18M-X-RS30-S4 | |
| Series | 18M | 18M | 18M | |
| Dimension | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | |
| Interface | — | — | — | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | — | — | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | — | — | — | |
| Range | 0...20 m | 0...20 m | 0...20 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | — | Global | — | |
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| | BOS01KM BOS 18E-PA-RE20-S4 | BOS023W BOS 18E-PA-RE30-S4 | | BOS023H BOS 18E-PI-RE30-S4 | BOS01KR BOS G18E-PA-RE20-S4 |
|--------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|
| BOS01UF BOS 18M-XI-RS30-S4 | | | | | |
| 18M | 18E | 18E | 18E | 18E | G18E |
| Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm |
| IO-Link 1.1 | — | — | — | — | — |
| — | — | — | — | — | — |
| Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| Through-beam sensor (Emitter) | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (receiver) |
| — | — | — | — | — | — |
| — | — | — | — | — | — |
| LED, red light | LED, red light | LED, red light | LED, red light | LED, red light | LED, red light |
| — | — | — | — | — | — |
| 0...20 m | 0...20 m | 0...20 m | 0...20 m | 0...20 m | 0...20 m |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| Brass | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4571) | Stainless steel (1.4404) | Stainless steel (1.4404) |
| Glass | Glass | PMMA | Glass | Glass | Glass |
| 18...30 VDC | 10...30 VDC | 10...30 VDC | 18...30 VDC | 10...30 VDC | 10...30 VDC |
| cULus, CE, EAC | FDA compliant, Ecolab, CE, cULus, EAC | CE, cULus, Ecolab, EAC | cULus, CE, EAC | Ecolab, CE, FDA compliant, cULus, EAC | Ecolab, CE, FDA compliant, cULus, EAC |
| — | — | — | — | — | — |
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|--|---------------------------------------|---------------------------------------|-------------------------------------|--|
| PNP normally open, PNP normally closed | BOS0243 BOS G18E-PA-RE30-S4 | | | |
| Emitter | | BOS01KT BOS 18E-X-RS20-S4 | BOS023U BOS 18E-X-RS30-S4 | |
| Series | G18E | 18E | 18E | |
| Dimension | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | |
| Interface | — | — | — | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | — | — | — | |
| Range | 0...20 m | 0...20 m | 0...20 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4404) | |
| Material sensing surface | PMMA | Glass | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | Ecolab, cULus, CE, EAC | FDA compliant, Ecolab, cULus, CE, EAC | CE, cULus, Ecolab, EAC | |
| Trademark | — | — | — | |
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| | | | | BOS00CT BLE 18KW-PA-1LT-S4-C | BOS00CW BLE 18KW-PA-1PP-S4-C |
|--|--------------------------------------|---------------------------------------|--------------------------------------|--|--|
| | BOS023J BOS 18E-XI-RS30-S4 | BOS01KU BOS G18E-X-RS20-S4 | BOS0242 BOS G18E-X-RS30-S4 | | |
| | 18E | G18E | G18E | 18KW | 18KW |
| | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 75 mm | Ø 18 x 14 mm | Ø 18 x 14 mm |
| | IO-Link 1.1 | — | — | — | — |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (receiver) | Through-beam sensor (receiver) |
| | — | — | — | — | — |
| | — | Divergent | Divergent | — | — |
| | LED, red light | LED, red light | LED, red light | Laser red light | Infrared |
| | — | — | — | — | — |
| | 0...20 m | 0...20 m | 0...20 m | 0...50 m | 0...15 m |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Stainless steel (1.4571) | Stainless steel (1.4404) | Stainless steel (1.4404) | PBT | PBT |
| | Glass | Glass | PMMA | PMMA | PMMA |
| | 18...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE, EAC | CE, cULus, Ecolab, FDA compliant, EAC | CE, cULus, Ecolab, EAC | CE, cULus | CE, cULus |
| | — | — | — | Global | Global |
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| | | | | |
|--|---------------------------------------|--|--|--|
| PNP normally open | | | | |
| PNP normally closed | | | | |
| PNP normally open, PNP normally closed | | | BOS00CH BLE 18KF-PA-1LT-S4-C | |
| Emitter | BOS00EW BLS 18KW-XX-1P-S4-L | BOS00ET BLS 18KW-XX-1LT-S4-L | | |
| Series | 18KW | 18KW | 18KF | |
| Dimension | Ø 18 x 14 mm | Ø 18 x 14 mm | Ø 18 x 81.5 mm | |
| Input function | Test (Emitter off) | Test (Emitter off) | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (receiver) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | — | — | |
| Light type | Infrared | Laser red light | Laser red light | |
| Light spot size | — | — | — | |
| Range | 0...15 m | 0...50 m | 0...60 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | PBT | PBT | PBT | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus | CE, cULus | |
| Trademark | Global | Global | Global | |
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| | | | | | |
|--|---------------------------------------|--|----------------------------------|--|---|
| | | | | BOS0199 BOS Q08M-PS-LE20-S49 | BOS0197 BOS Q08M-PS-LE20-00,2-S49 |
| | | | | BOS0196 BOS Q08M-PO-LE20-S49 | |
| BOS00CK BLE 18KF-PA-1PP-S4-C | | | | | |
| | BOS00EP BLS 18KF-XX-1P-S4-L | BOS00EM BLS 18KF-XX-1LT-S4-L | | | |
| 18KF | 18KF | 18KF | Q08M | Q08M | |
| Ø 18 x 81.5 mm | Ø 18 x 71.5 mm | Ø 18 x 71.5 mm | 8 x 59 x 8 mm | 8 x 44 x 8 mm | |
| — | Test (Emitter off) | Test (Emitter off) | — | — | |
| Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Through-beam sensor (receiver) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (receiver) | Through-beam sensor (receiver) | |
| — | — | — | — | — | |
| — | — | — | — | — | |
| Infrared | Infrared | Laser red light | Laser red light | Laser red light | |
| — | — | — | — | — | |
| 0...20 m | 0...20 m | 0...60 m | 0...3 m | 0...3 m | |
| Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | |
| PBT | PBT | PBT | Zinc, die-cast | Zinc, die-cast | |
| PMMA | PMMA | PMMA | PMMA | PMMA | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| CE, cULus | CE, cULus, EAC | CE, cULus | CE, cULus, EAC | CE, cULus, EAC | |
| Global | Global | Global | — | — | |
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| | | | | |
|--------------------------------|--|--|--|--|
| PNP normally open | BOS01Y4 BOS Q08M-PS-KE21-S49 | BOS01Y6 BOS Q08M-PS-KE21-00,2-S49 | | |
| PNP normally closed | BOS01Y7 BOS Q08M-PO-KE21-S49 | | | |
| Emitter | | | BOS019M BOS Q08M-X-LS20-00,2-S49 | |
| Series | Q08M | Q08M | Q08M | |
| Dimension | 8 x 59 x 8 mm | 8 x 44 x 8 mm | 8 x 44 x 8 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | — | divergent, 2 mrad | |
| Light type | Red light | Red light | Laser red light | |
| Light spot size | — | — | Ø 3.0 mm Light exit | |
| Range | 0...2.2 m | 0...2.2 m | 0...3 m | |
| Connection | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
| Productview | Page 455 | Page 455 | Page 455 | |



| | | | | BOS0214 BOS R020K-PS-RX11-00,2-S49 | BOS0211 BOS R020K-PS-RX11-02 |
|--|---------------------------------------|--|---------------------------------------|--|--|
| | BOS018K BOS Q08M-X-LS20-S49 | BOS01YM BOS Q08M-X-KS21-00,2-S49 | BOS01YK BOS Q08M-X-KS21-S49 | | |
| | Q08M | Q08M | Q08M | R020K | R020K |
| | 8 x 59 x 8 mm | 8 x 44 x 8 mm | 8 x 59 x 8 mm | 7.7 x 26.8 x 13.5 mm | 7.7 x 26.8 x 13.5 mm |
| | — | — | — | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor | Through-beam sensor |
| | — | — | — | — | — |
| | divergent, 2 mrad | Divergent | Divergent | Divergent | Divergent |
| | Laser red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | Ø 3.0 mm Light exit | — | — | Ø 23 mm at 500 mm | Ø 23 mm at 500 mm |
| | 0...3 m | 0...2.2 m | 0...2.2 m | 0...2 m | 0...2 m |
| | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Connector, M8x1 connector, 3-pin | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PVC | Cable, 2.00 m, PVC |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | PC PBT | PC PBT |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus, EAC | cULus, CE, EAC | CE, cULus, EAC | cULus, CE | cULus, CE |
| | — | — | — | — | — |
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| | | | | |
|-----------------------------------|--|---------------------------------------|--|--|
| PNP normally open | BOS021N BOS R01E-PS-KE20-00,2-S49 | BOS021P BOS R01E-PS-KE20-02 | | |
| PNP normally closed | | | | |
| PNP normally open/normally closed | | | | |
| Emitter | | | BOS021R BOS R01E-X-KS20-00,2-S49 | |
| Series | R01E | R01E | R01E | |
| Dimension | 20 x 32 x 9 mm | 20 x 32 x 9 mm | 20 x 32 x 9 mm | |
| Input function | — | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | — | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | — | — | Ø 3.0 mm Light exit | |
| Range | 0...2.2 m | 0...2.2 m | 0...2.2 m | |
| Connection | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | Cable, 2.00 m, PUR | Cable with connector, M8x1 connector, 3-pin, 0.20 m, PUR | |
| Housing material | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4404) | |
| Material sensing surface | PA | PA | PA | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, Ecolab, EAC | cULus, CE, Ecolab, EAC | cULus, CE, Ecolab, EAC | |
| Trademark | — | — | — | |
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| | | | | | |
|--------------------------------------|----------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| | | BOS0126 BOS 5K-PS-IX10-S75 | BOS0125 BOS 5K-PS-IX10-02 | | |
| | | BOS011R BOS 5K-P0-IX10-S75 | | | |
| | | | | BOS01JP BOS 5K-PU-LX10-S75 | BOS01LU BOS 6K-PU-LE10-S49 |
| BOS021T BOS R01E-X-KS20-02 | | | | | |
| R01E | 5K | 5K | 5K | 5K | 6K |
| 20 x 32 x 9 mm | 10.8 x 43.5 x 19.5 mm | 10.8 x 32.7 x 19.5 mm | 10.8 x 43.5 x 19.5 mm | 10.8 x 43.5 x 19.5 mm | 12 x 41.5 x 21.6 mm |
| — | — | — | — | — | — |
| Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor (receiver) |
| — | — | — | — | — | — |
| Divergent | Divergent | Divergent | Divergent | Divergent | — |
| LED, red light | Infrared | Infrared | Laser red light | Laser red light | — |
| Ø 3.0 mm Light exit | Ø 90 mm at 2 m | Ø 90 mm at 2 m | Ø 5 mm at 3 m | — | — |
| 0...2.2 m | 0...20 m | 0...20 m | 0...30 m | 0...18 m | — |
| Cable, 2.00 m, PUR | Connector, M8x1 connector, 4-pin | Cable, 2.00 m, PVC | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | — |
| Stainless steel (1.4404) | PC PBT | PC PBT | PC PBT | ABS | — |
| PA | PMMA | PMMA | PMMA | PMMA | — |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | — |
| cULus, CE, Ecolab, EAC | cULus, CE, EAC | cULus, CE, EAC | CE, cULus, CDRH, EAC | CE, cULus, EAC | — |
| — | Global | Global | Global | — | — |
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| | | | | |
|--|---|--------------------------------------|--------------------------------------|--|
| PNP normally open, PNP normally closed | | | | |
| PNP normally open/normally closed | BOS01LW BOS 6K-PU-LE10-S75 | | | |
| Emitter | | BOS01M1 BOS 6K-XT-LS10-S49 | BOS01M2 BOS 6K-XT-LS10-S75 | |
| Series | 6K | 6K | 6K | |
| Dimension | 12 x 41.5 x 21.6 mm | 12 x 41 x 21.6 mm | 12 x 41 x 21.6 mm | |
| Input function | Same function as button, Key disable on/off | — | — | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | Divergent | Divergent | |
| Light type | Laser red light | Laser red light | Laser red light | |
| Light spot size | — | 14 x 14 mm at 20 m | 14 x 14 mm at 20 m | |
| Range | 0...18 m | 0...18 m | 0...18 m | |
| Connection | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 4-pin | |
| Housing material | ABS | ABS | ABS | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage Ub | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC | |
| Trademark | — | — | — | |
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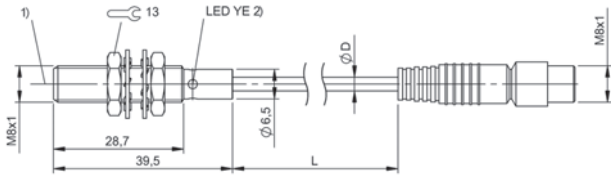
| | BOS00WT BOS 21M-PA-IE10-S4 | BOS00WW BOS 21M-PA-LE10-S4 | | | BOS01FU BOS 23K-PA-LE10-S4 |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|---|
| | | | | | BOS016L BOS 23K-PU-LE10-S4 |
| | | | BOS00WZ BOS 21M-XT-IS11-S4 | BOS00YO BOS 21M-XT-LS11-S4 | |
| | 21M | 21M | 21M | 21M | 23K |
| | 15 x 50 x 42.5 mm | 15 x 50 x 42.5 mm | 15 x 50 x 42.5 mm | 15 x 50 x 42.5 mm | 23 x 51 x 52.4 mm |
| | — | — | Test (Emitter off) | Test (Emitter off) | Same function as button, Key disable on/off |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | Through-beam sensor (Emitter) | Through-beam sensor (receiver) |
| | — | — | — | — | — |
| | — | — | — | — | — |
| | Infrared | Laser red light | Infrared | Laser red light | Laser red light |
| | — | — | — | — | — |
| | 0...20 m | 0...60 m | 0...20 m | 0...60 m | 0...30 m |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | PC ABS |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus | Ecolab, CE, cULus |
| | — | — | — | — | — |
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| | | | | |
|--|--------------------------------------|--|--------------------------------------|--|
| PNP normally open, PNP normally closed | BOS01FP BOS 23K-PA-RE10-S4 | | | |
| PNP normally open/normally closed | | BOS016F BOS 23K-PU-RE10-S4 | | |
| Relay normally open/normally closed | | | | |
| Emitter | | | BOS016K BOS 23K-XT-LS11-S4 | |
| Series | 23K | 23K | 23K | |
| Dimension | 23 x 51 x 52.4 mm | 23 x 51 x 52.4 mm | 23 x 51 x 52.4 mm | |
| Input function | — | Same function as button, Key disable on/off | Test (Emitter off) | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | |
| Principle of optical operation | Through-beam sensor (receiver) | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | |
| Special optical feature | — | — | — | |
| Beam characteristic | — | — | Divergent | |
| Light type | LED, red light | LED, red light | Laser red light | |
| Light spot size | — | — | 30 x 30 mm at 25 m | |
| Range | 0...25 m | 0...25 m | 0...30 m | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | PC ABS | PC ABS | PC ABS | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage Ub | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | Ecolab, CE, cULus, EAC | CE, Ecolab, cULus, EAC | CE, cULus, Ecolab | |
| Trademark | — | — | — | |
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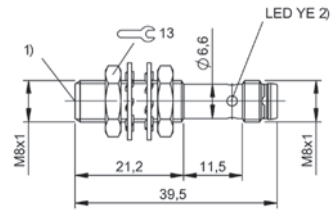


| | | BOS01CK BOS 50K-PA-RE10-S4 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | | BOS01K4 BOS 64K-AA-IE10-TG | |
| | BOS016E BOS 23K-XT-RS11-S4 | | BOS01CN BOS 50K-XT-RS10-S4 | | BOS01K5 BOS 64K-AA-IS10-TG |
| | 23K | 50K | 50K | 64K | 64K |
| | 23 x 51 x 52.4 mm | 28.5 x 80.5 x 62 mm | 28.5 x 80.5 x 62 mm | 25 x 69.7 x 100.4 mm | 25 x 69.7 x 100.4 mm |
| | Test (Emitter off) | — | Test (Emitter off) | — | — |
| | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor | Photoelectric sensor |
| | Through-beam sensor (Emitter) | Through-beam sensor (receiver) | Through-beam sensor (Emitter) | Through-beam sensor (receiver) | Through-beam sensor (Emitter) |
| | — | — | — | — | — |
| | Divergent | — | Divergent | — | Divergent |
| | LED, red light | LED, red light | LED, red light | Infrared | Infrared |
| | 600 x 600 mm at 20 m | — | 200 x 200 mm at 10 m | — | — |
| | 0...25 m | 0...60 m | 0...60 m | 0...50 m | 0...50 m |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Screw terminals | Screw terminals |
| | PC ABS | PC ABS | PC ABS | PBT, GF30 | PBT, GF30 |
| | PMMA | Glass | Glass | PC | PC |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 24...60 VDC/24...240 VAC | 24...60 VDC/24...240 VAC |
| | CE, Ecolab, cULus, EAC | CE, cULus, EAC | CE, cULus | cULus, CE, EAC | cULus, CE, EAC |
| | — | — | — | — | — |
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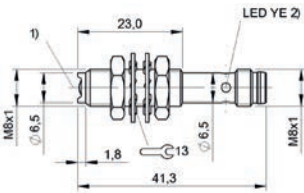
1) Optical axis, 2) Output function

BOS024L



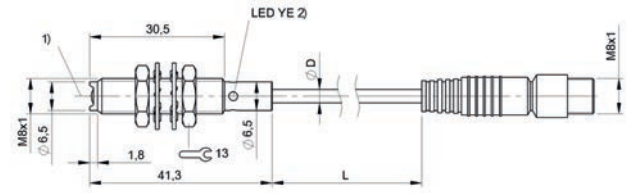
1) Optical axis, 2) Output function

BOS01U3



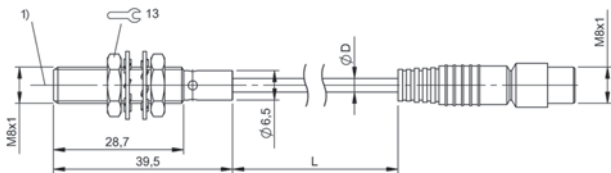
1) Optical axis, 2) Output function

BOS020A, BOS020F, BOS01Z5



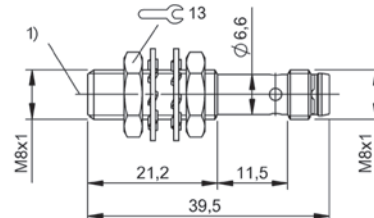
1) Optical axis, 2) Output function

BOS020C, BOS01Z7



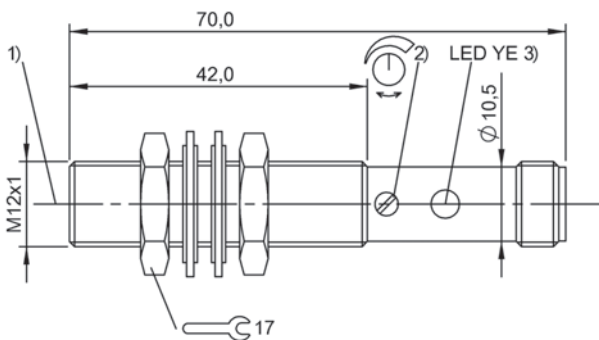
1) Optical axis

BOS024N



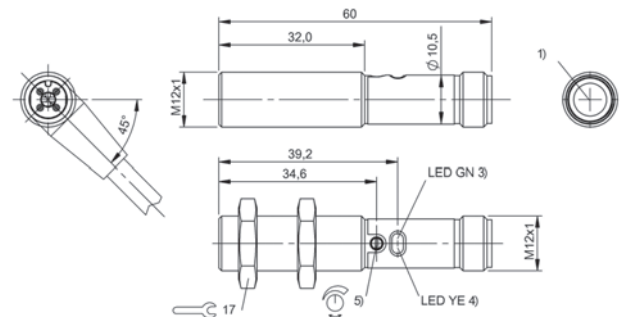
1) Optical axis

BOS01U8



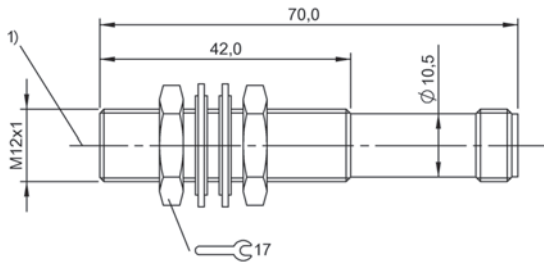
1) Optical axis, 2) Sn, 3) Output function

BOS00WF



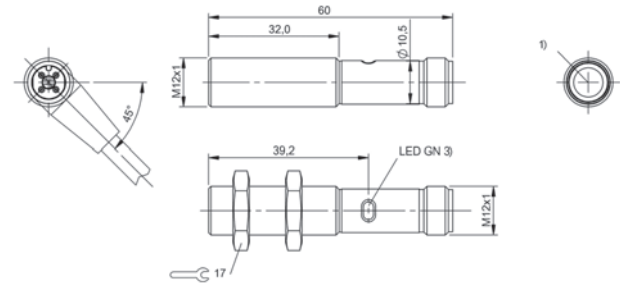
1) Optical axis receiver, 3) Operating voltage, 4) Light reception/limit area, 5) Sn

BOS01TY



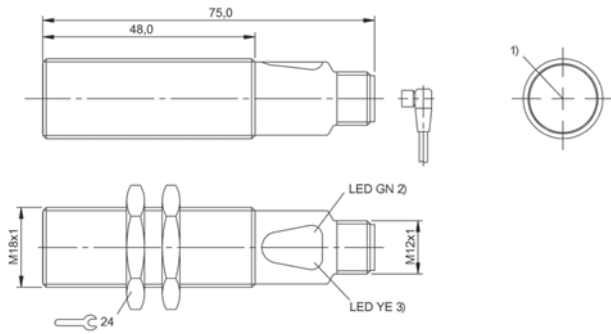
1) Optical axis

BOS00WH, BOS00WJ, BOS00WL, BOS00WN



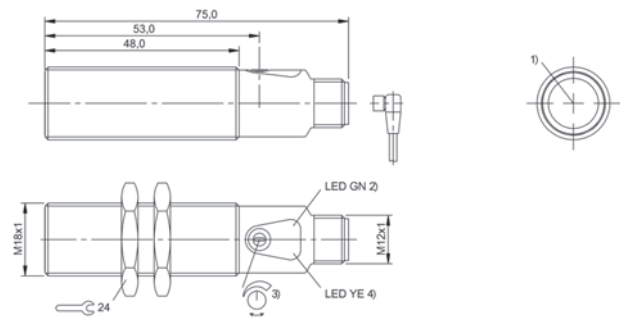
1) Optical axis emitter, 3) Operating voltage

BOS01TW



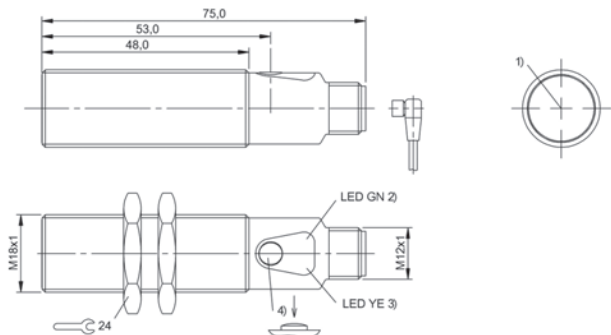
1) Optical axis, 2) Operating voltage, 3) Light reception/limit area

BOS01F3, BOS01CC, BOS01FK, BOS01C2



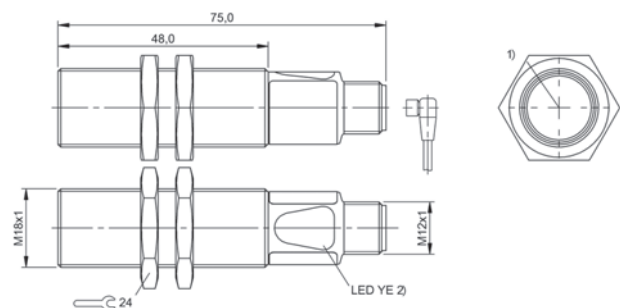
1) Optical axis, 2) Operating voltage/Error, 3) Sn, 4) Light reception/limit area

BOS01NJ



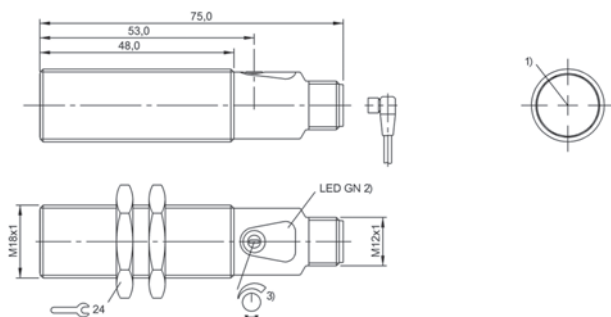
1) Optical axis, 2) Power/short-circuit, 3) Light reception/limit area, 4) Sn

BOS01UC, BOS01J7



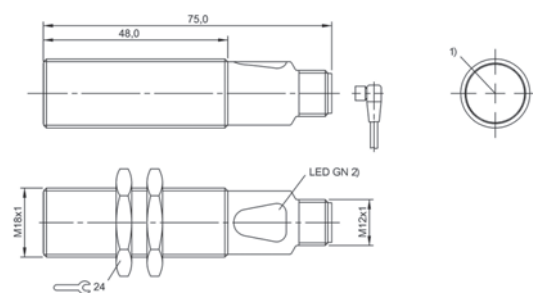
1) Optical axis, 2) Light reception

BOS01FE



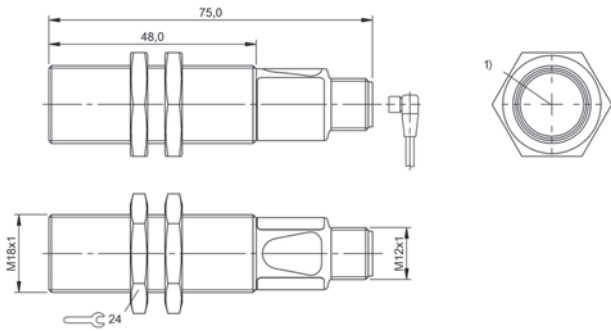
1) Optical axis, 2) Operating voltage, 3) Sn

BOS01F5, BOS01HN, BOS01C0



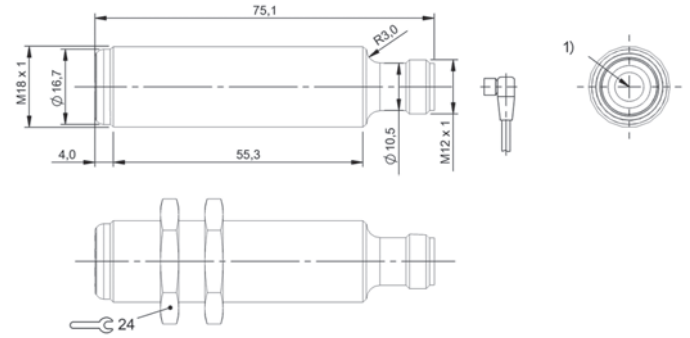
1) Optical axis, 2) Operating voltage

BOS01NH, BOS01CY, BOS01UF



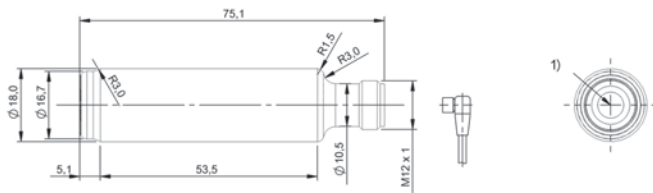
1) Optical axis

BOS01FH



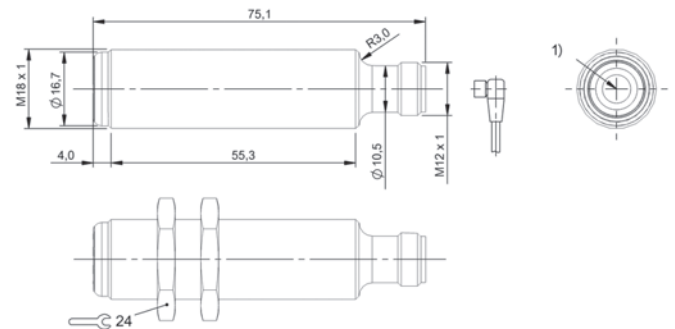
1) Optical axis receiver

BOS01KM, BOS023W, BOS023H



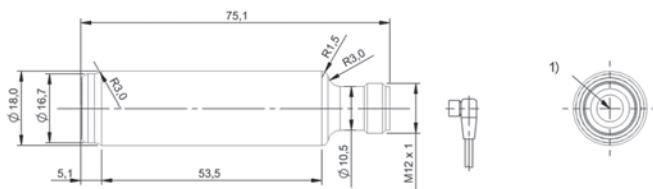
1) Optical axis receiver

BOS01KR, BOS0243



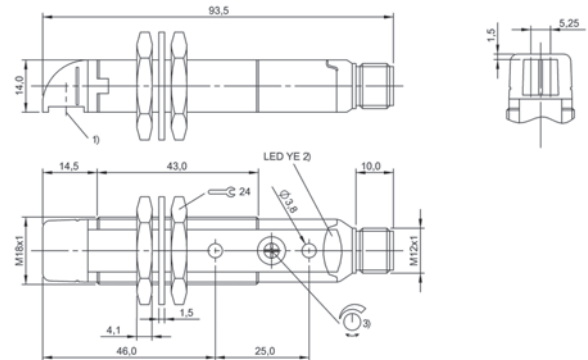
1) Optical axis emitter

BOS01KT, BOS023U, BOS023J



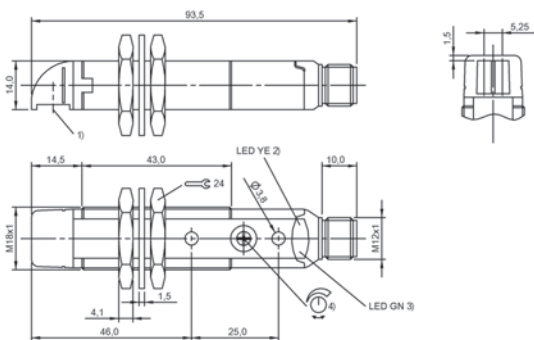
1) Optical axis emitter

BOS01KU, BOS0242



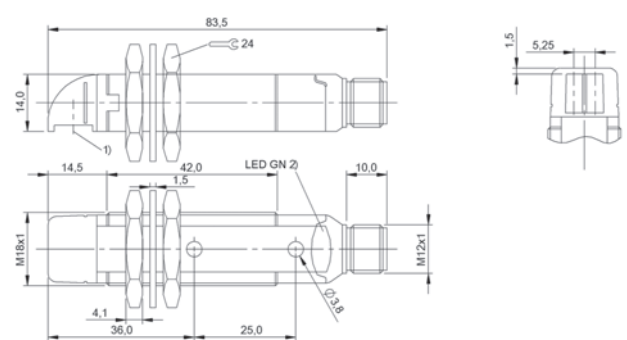
1) Optical axis, 1) Output function, 3) Sn

BOS00CT



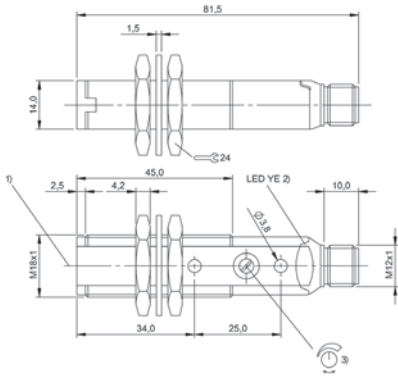
1) Optical axis, 2) Output function, 3) Stability, 4) Sn

BOS00CW



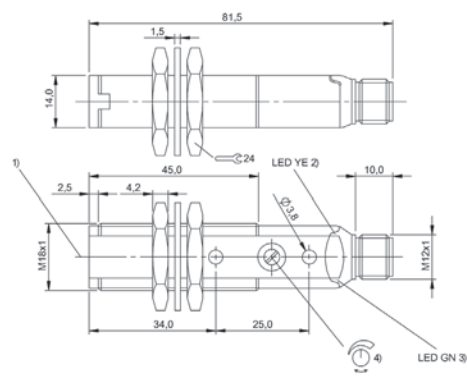
1) Optical axis, 2) Operating voltage

BOS00EW, BOS00ET



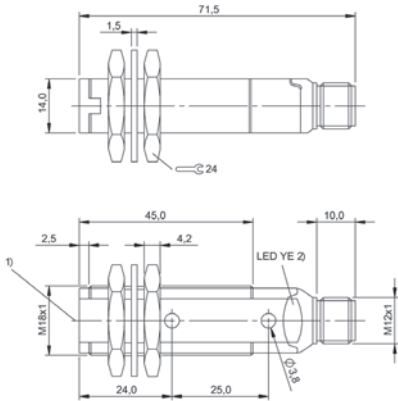
1) Optical axis, 2) Output function, 3) Sn

BOS00CH



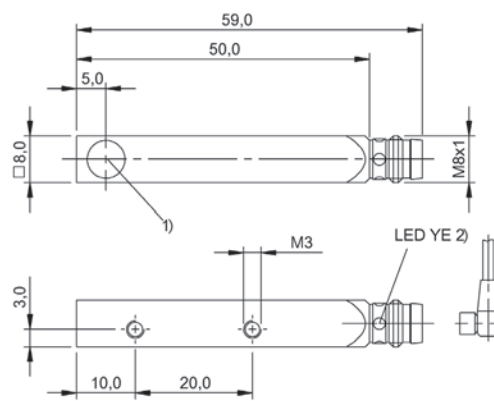
1) Optical axis, 2) Output function, 3) Stability, 4) Sn

BOS00CK



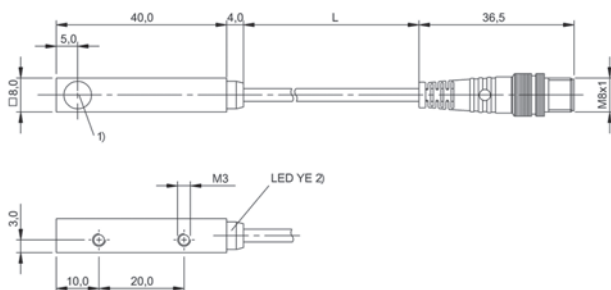
1) Optical axis, 2) Operating voltage

BOS00EP, BOS00EM



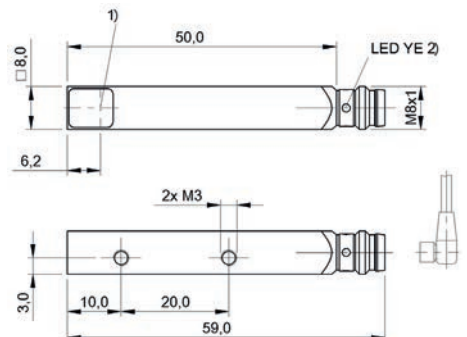
1) Optical axis, 2) Light reception

BOS0196, BOS0199



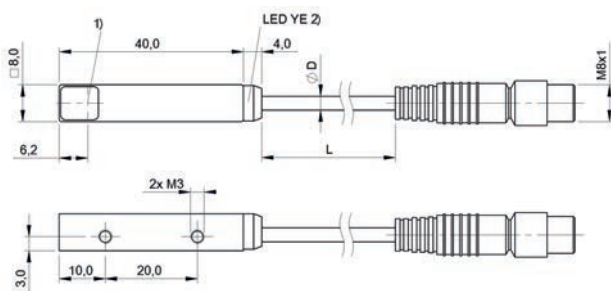
1) Optical axis, 2) Light reception

BOS0197



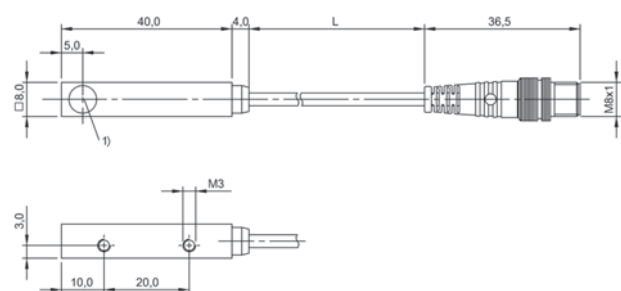
1) Optical axis receiver, 2) Output function

BOS01Y7, BOS01Y4



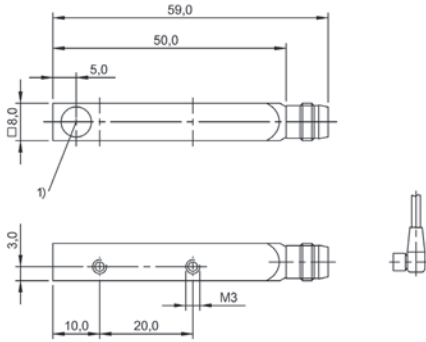
1) Optical axis receiver, 2) Output function

BOS01Y6



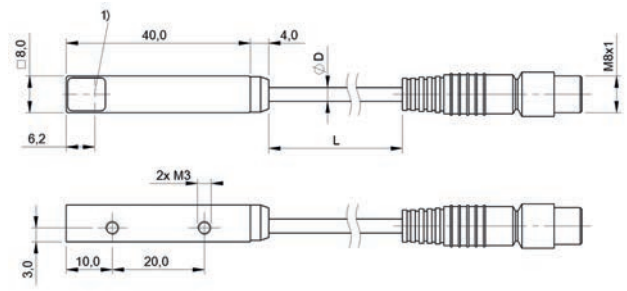
1) Sensing surface

BOS019M



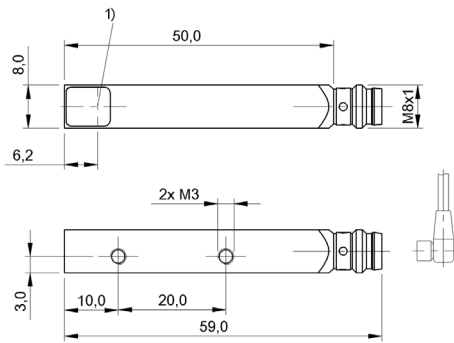
1) Sensing surface

BOS018K



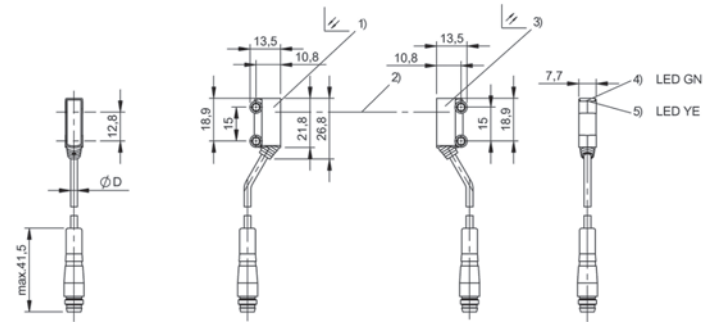
1) Optical axis emitter

BOS01YM



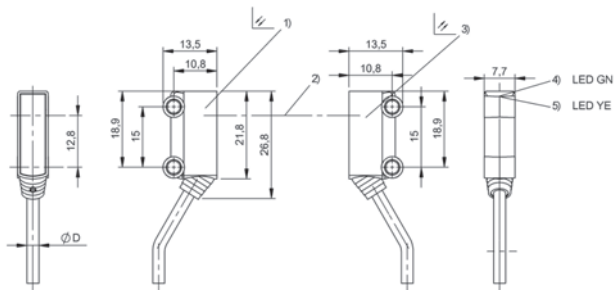
1) Optical axis emitter

BOS01YK



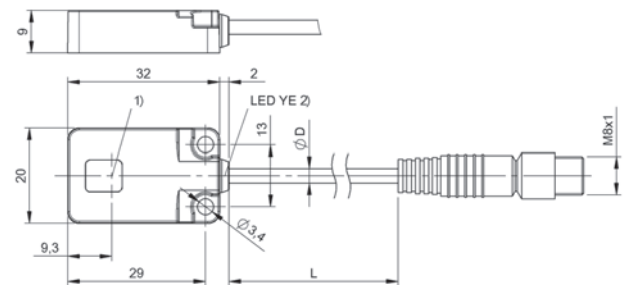
1) Emitter, 2) Optical axis, 3) Receiver, 4) Operating voltage, 5) Output function

BOS0214



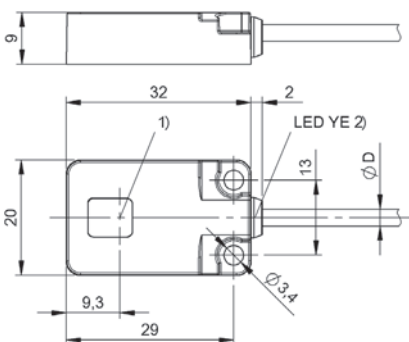
1) Emitter, 2) Optical axis, 3) Receiver, 4) Operating voltage, 5) Output function

BOS0211



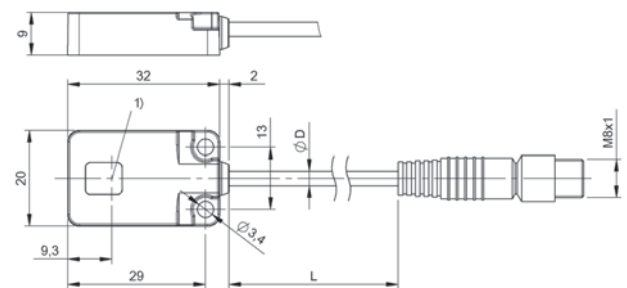
1) Optical axis receiver, 2) Output function

BOS021N



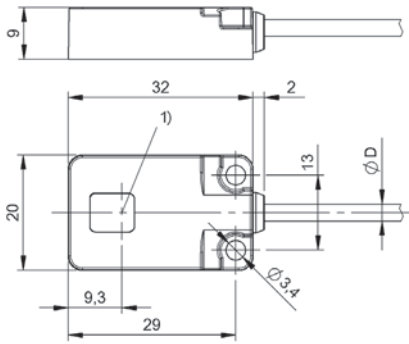
1) Optical axis receiver, 2) Output function

BOS021P



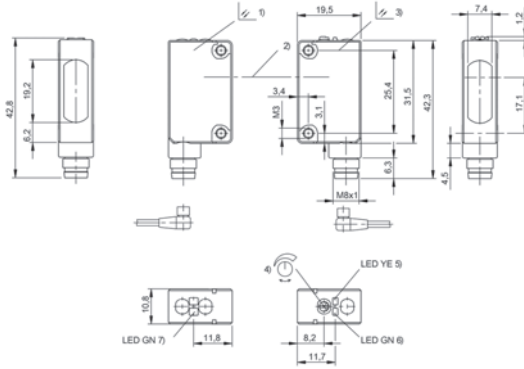
1) Optical axis emitter

BOS021R



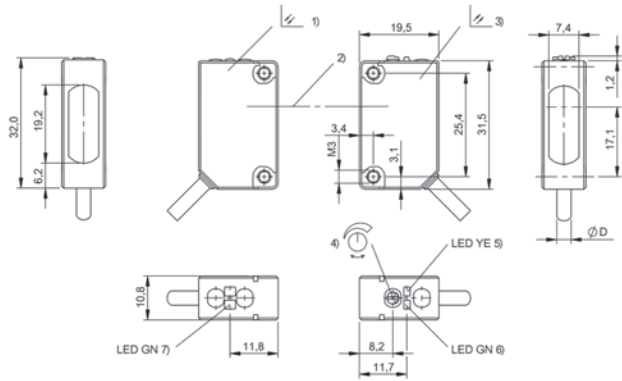
1) Optical axis emitter

BOS021T



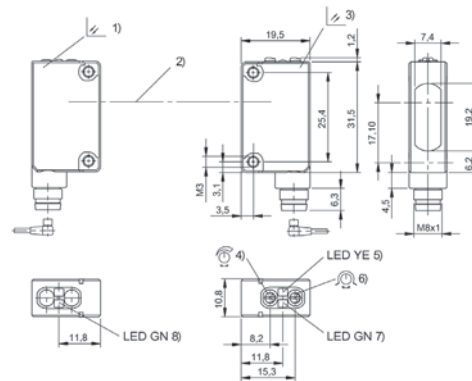
1) Emitter, 2) Optical axis, 3) Receiver, 4) Sensitivity, 5) Output function, 6) stability, 7) Operating voltage

BOS011R, BOS0126



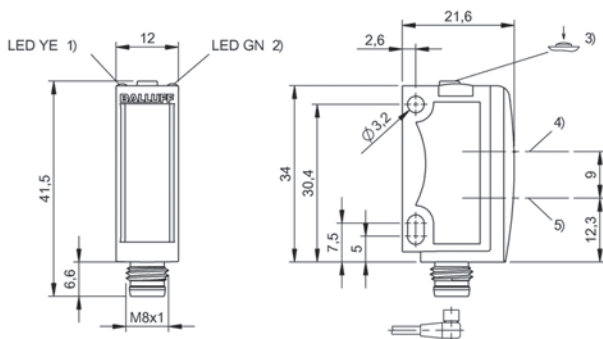
1) Emitter, 2) Optical axis, 3) Receiver, 4) Sensitivity, 5) Output function, 6) stability, 7) Operating voltage

BOS0125



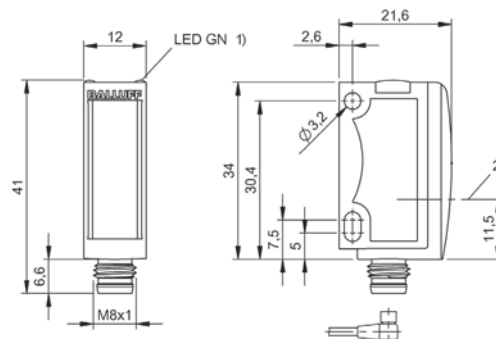
1) Emitter, 2) Optical axis, 3) Receiver, 4) Sensitivity, 5) Output function, 6) Light-on/dark-on, 7) stability, 8) Operating voltage

BOS01JP



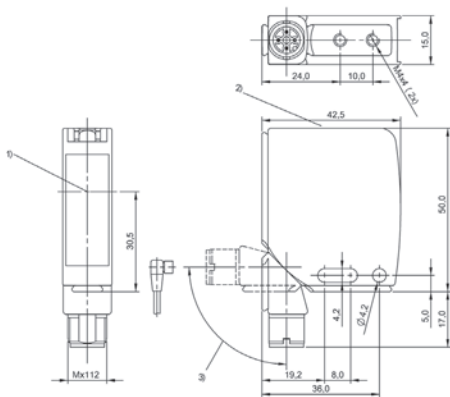
1) Output function, 2) Operating voltage, 3) Sensitivity, light/dark, 4) Optical axis

BOS01LU, BOS01LW



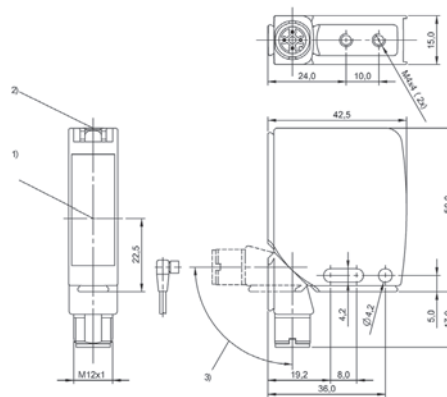
1) Operating voltage, 2) Optical axis

BOS01M1, BOS01M2



1) Optical axis, 2) Display and control panel, 3) rotatable 270°

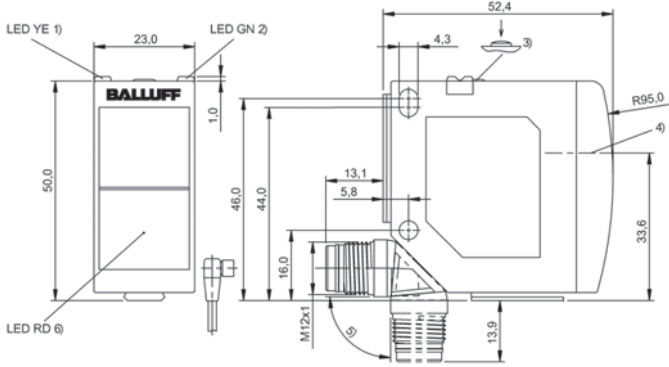
BOS00WT, BOS00WW



1) Optical axis, 2) Operating voltage, 3) rotatable 270°

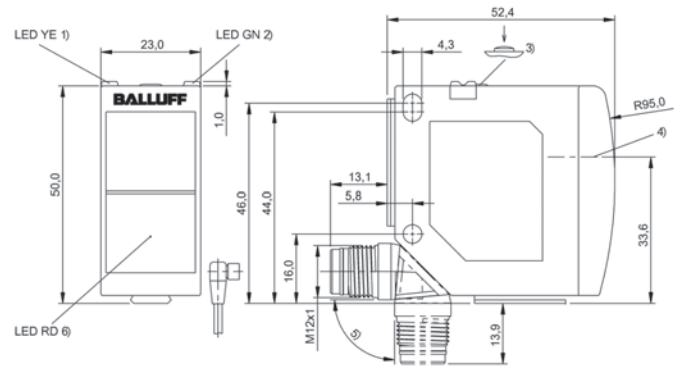
BOS00WZ, BOS00Y0

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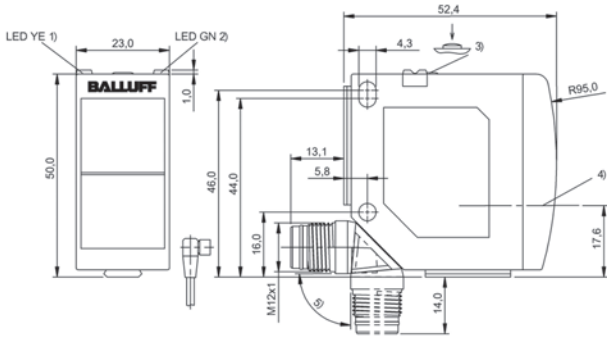
- 1) Output function/Error, 2) Power/setting mode, 3) Sn, light/dark, 4) Optical axis, 5) rotatable 270°, 6) Alignment good/limit area

BOS01FU, BOS016L, BOS016F



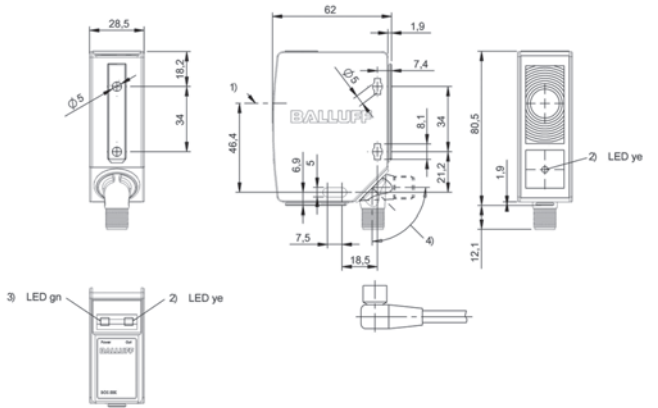
- 1) Output function/Error, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis, 5) rotatable 270°, 6) Alignment good/limit area

BOS01FP



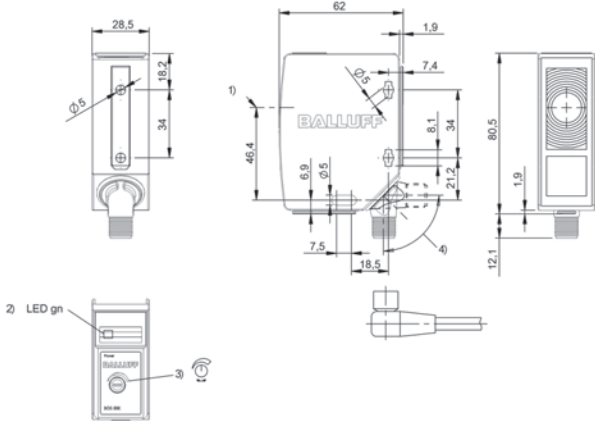
- 1) Alignment mode active, 2) Power/alignment mode active, 3) Alignment mode on/off, 4) Optical axis, 5) rotatable 270°

BOS016K, BOS016E



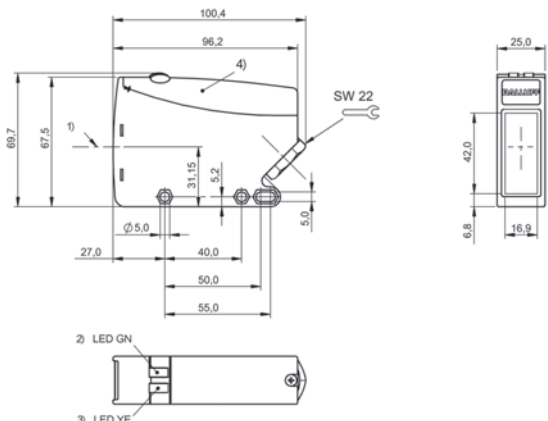
- 1) Optical axis receiver, 2) Light reception, 3) Operating voltage, 4) rotatable 270°

BOS01CK



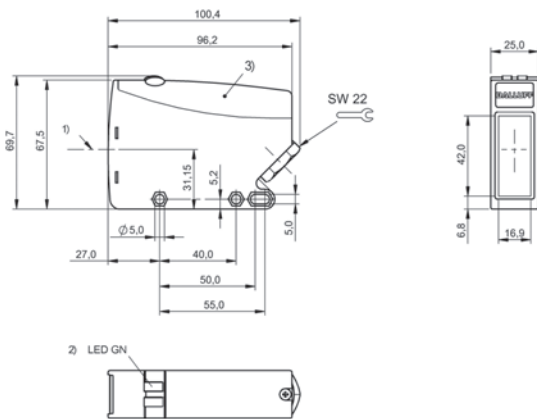
- 1) Optical axis emitter, 2) Operating voltage, 3) Sn, 4) rotatable 270°

BOS01CN



- 1) Optical axis, 2) Stability, 3) Output function, 4) Removable cover

BOS01K4

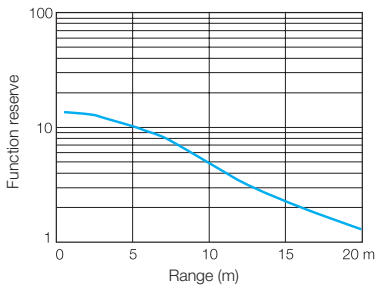


- 1) Optical axis, 2) Operating voltage, 3) Removable cover

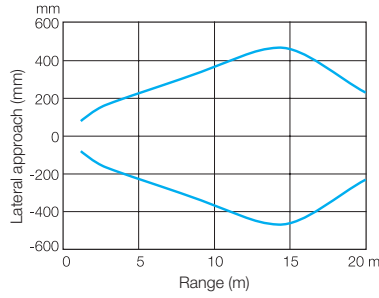
BOS01K5

Through-beam sensor BOS 5K-IX10-

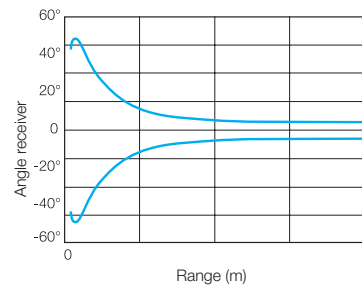
Receiving characteristics



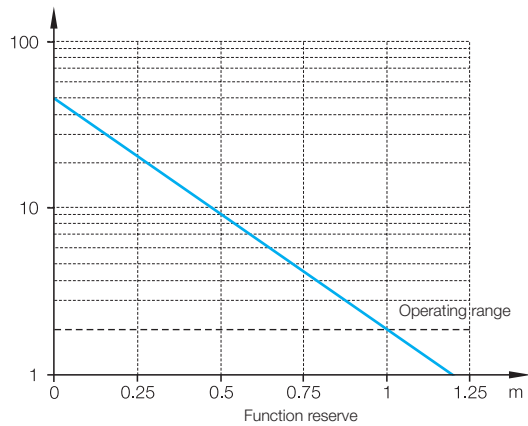
Characteristic response curve



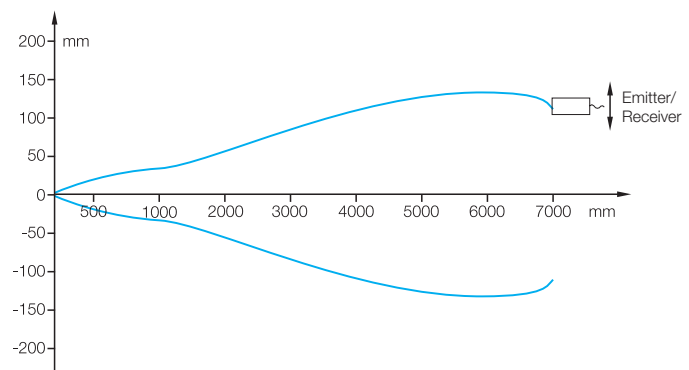
Angular Offset



Through-beam sensor BOS 2K

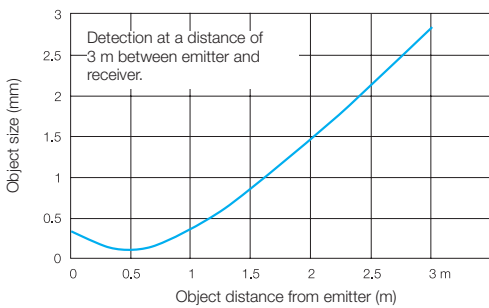


Through-beam sensor BLE/BLS 12M-...

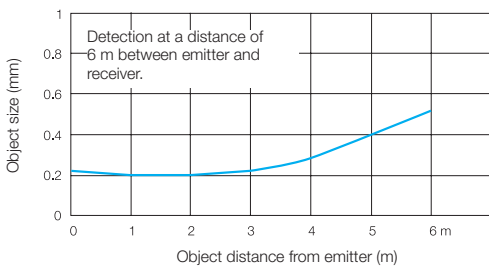


The maximum possible offset between the emitter and receiver is measured for the through-beam sensor.

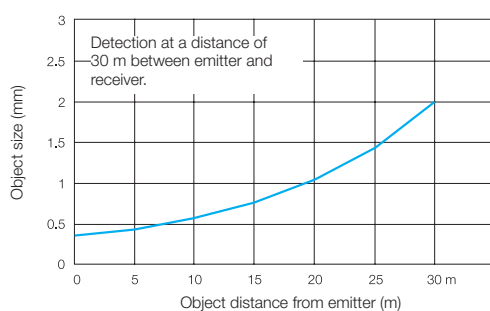
Through-beam sensor small parts detection BOS 12M-XT-LS11-..



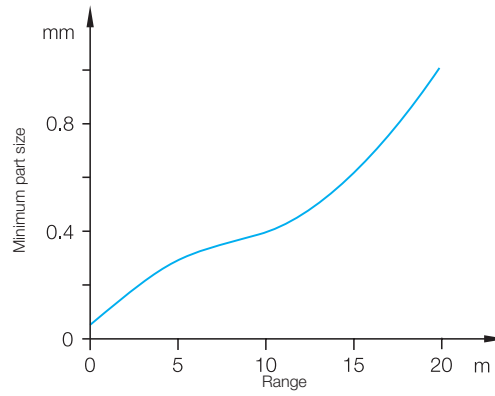
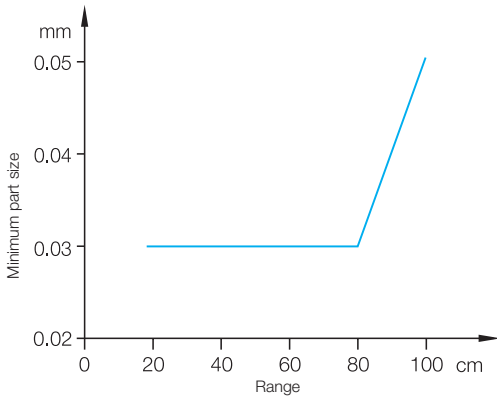
Through-beam sensor small parts detection BOS 12M-XT-LS12-..



Through-beam sensor small parts detection BOS 12M-XT-LS12-..

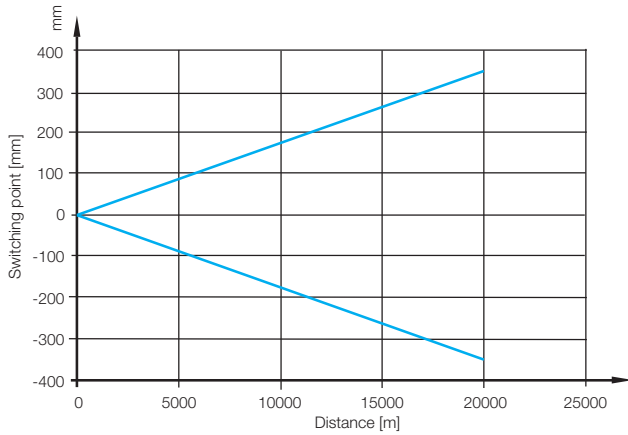


Accuracy diagram for BOS 18M laser through-beam sensor
Smallest detectable part size as a function of range.

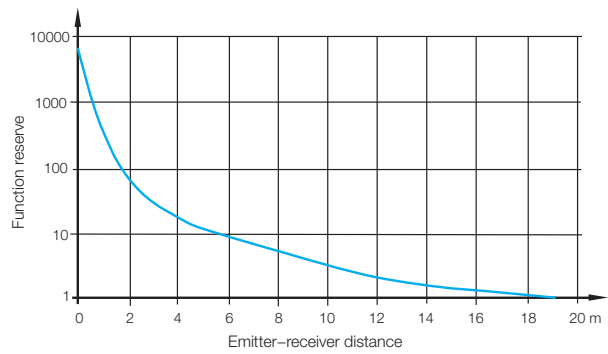


Light spot perpendicular to transport direction of the object.

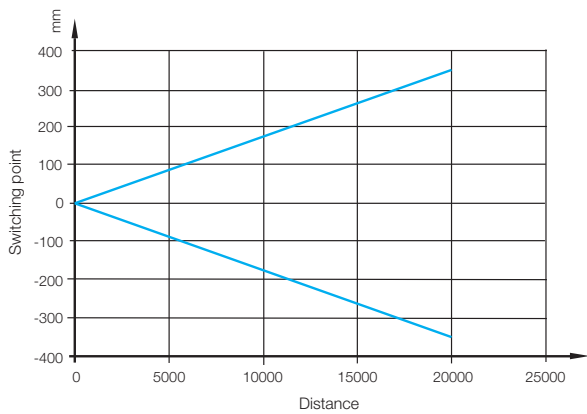
Through-beam sensor BOS 18M...RE/RS20
Response curve



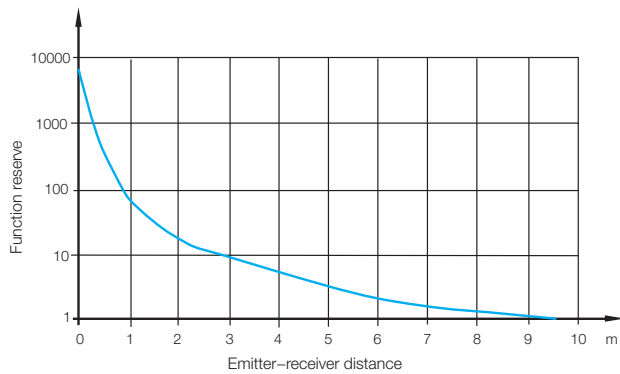
Through-beam sensor BOS 18M...RE/RS20
Function reserve



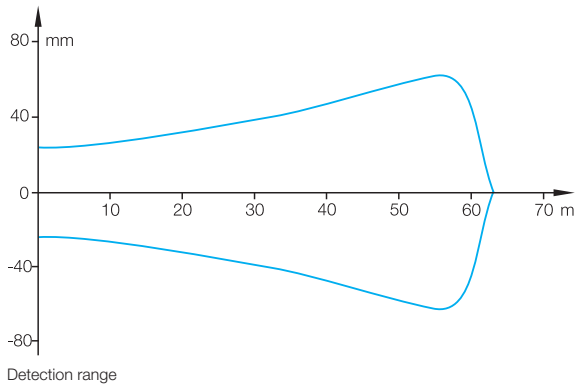
Through-beam sensor BOS 18M...RE/RS23
response curve



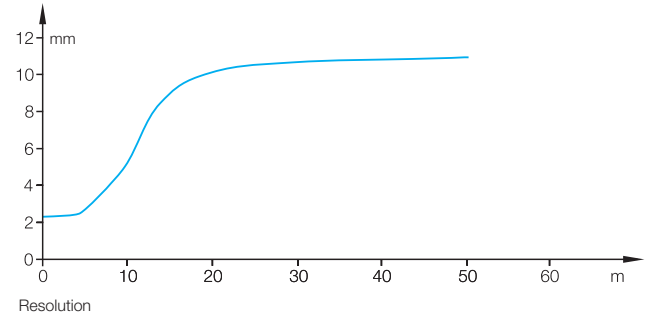
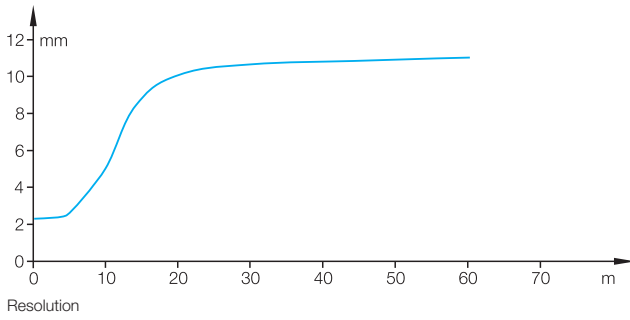
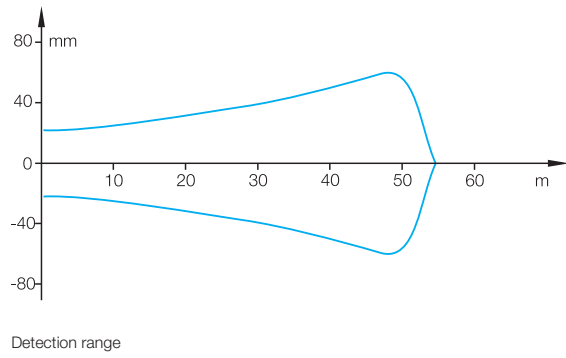
Through-beam sensor BOS 18M...RE/RS23
Function reserve



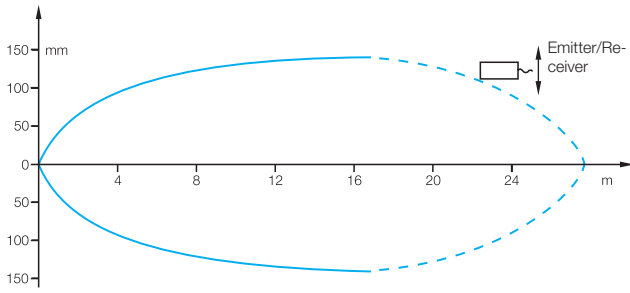
Through-beam sensor BOS 18M...-LE/LS10-...



Through-beam sensor BOS 18MR...-LE/LS10-...

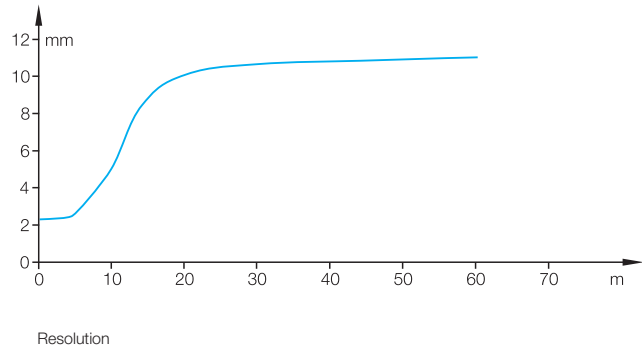
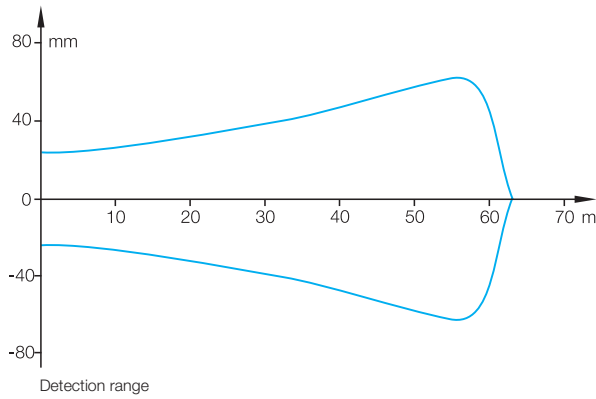


Through-beam BLE/BLS 18E-...

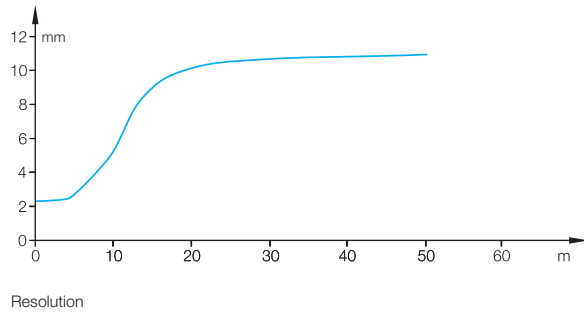
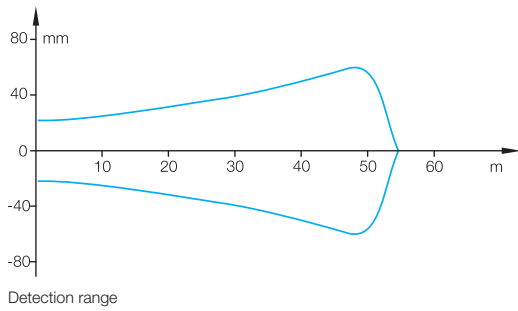


For a through-beam sensor, the maximum possible offset between the emitter and receiver is measured.

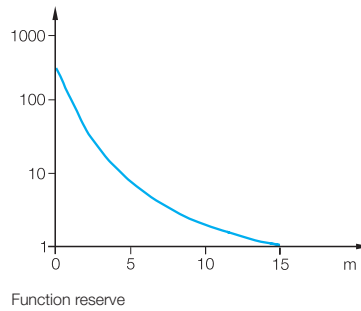
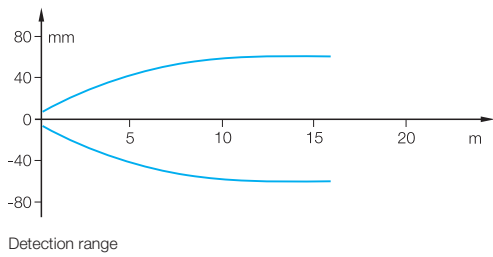
Through-beam sensor BLE/BLS 18KF--1LT--...



Through-beam sensor BLE/BLS 18KW--1LT--...



Through-beam BLE/BLS 18KW--1PP/1P--...





| | | | | |
|---|----------------------------------|----------------------------------|----------------------------------|--|
| PNP normally open/normally closed | | | BGL0021 BGL 5A-007-S49 | |
| PNP normally open/normally closed, NPN normally open/normally closed | BGL002L BGL 21-IR | BGL002M BGL 21-RG | | |
| Series | 21 | 21 | A | |
| Dimension | 20 x 26 x 90 mm | 20 x 26 x 90 mm | 10 x 25 x 54 mm | |
| Fork opening | 2 mm | 2 mm | 5 mm | |
| Principle of operation | Fork sensor | Fork sensor | Fork sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Infrared | green light/red light | Infrared | |
| Light spot size | 0.5 x 4 mm Light exit | 0.5 x 4 mm Light exit | Ø 2.0 mm Light exit | |
| Connection | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Aluminum | Aluminum | Zinc, die-cast | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE | CE | CE, cULus, EAC | |
| Trademark | — | — | — | |
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| | BGL0005 BGL 10A-007-S49 | BGL000Y BGL 20A-007-S49 | BGL001F BGL 30A-007-S49 | BGL003J BGL 30A-011-S49 | BGL001T BGL 50A-007-S49 |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | A | A | A | A | A |
| | 10 x 30 x 54 mm | 10 x 40 x 58 mm | 10 x 50 x 68 mm | 10 x 50 x 68 mm | 10 x 70 x 88 mm |
| | 10 mm | 20 mm | 30 mm | 30 mm | 50 mm |
| | Fork sensor | Fork sensor | Fork sensor | Fork sensor | Fork sensor |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | — | — | — | Water detection | — |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | Infrared | Infrared | Infrared | Infrared | Infrared |
| | Ø 2.0 mm Light exit | Ø 2.0 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| | Glass | Glass | Glass | Glass | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
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Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

Accessories



| PNP normally open/normally closed | BGL0029 BGL 80A-007-S49 | BGL003L BGL 80A-011-S49 | BGL000F BGL 120A-007-S49 | |
|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|--|
| Series | A | A | A | |
| Dimension | 10 x 100 x 88 mm | 10 x 100 x 88 mm | 10 x 140 x 93 mm | |
| Fork opening | 80 mm | 80 mm | 120 mm | |
| Principle of operation | Fork sensor | Fork sensor | Fork sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | Water detection | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Infrared | Infrared | Infrared | |
| Light spot size | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
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| | BGL000N BGL 180A-007-S49 | BGL0014 BGL 220A-007-S49 | BGL0019 BGL 30A-003-S49 | BGL001M BGL 50A-003-S49 | BGL0025 BGL 80A-003-S49 |
|--|------------------------------------|------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | A | A | A | A | A |
| | 10 x 200 x 153 mm | 10 x 240 x 153 mm | 10 x 50 x 68 mm | 10 x 70 x 88 mm | 10 x 100 x 88 mm |
| | 180 mm | 220 mm | 30 mm | 50 mm | 80 mm |
| | Fork sensor | Fork sensor | Fork sensor | Fork sensor | Fork sensor |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | — | — | — | — | — |
| | Divergent | Divergent | Collimated | Collimated | Collimated |
| | Infrared | Infrared | Laser red light | Laser red light | Laser red light |
| | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 0.3 mm Light exit | Ø 0.3 mm Light exit | Ø 0.3 mm Light exit |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| | Glass | Glass | Glass | Glass | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
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Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

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Industrial Networking

Power Supply

Connectivity

Accessories



| PNP normally open/normally closed | BGL0009 BGL 120A-003-S49 | BGL001Z BGL 5A-005-S49 | BGL0003 BGL 10A-005-S49 | |
|-----------------------------------|------------------------------------|----------------------------------|-----------------------------------|--|
| Series | A | A | A | |
| Dimension | 10 x 140 x 93 mm | 10 x 25 x 54 mm | 10 x 30 x 54 mm | |
| Fork opening | 120 mm | 5 mm | 10 mm | |
| Principle of operation | Fork sensor | Fork sensor | Fork sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Collimated | Divergent | Divergent | |
| Light type | Laser red light | Red light | Red light | |
| Light spot size | Ø 0.3 mm Light exit | Ø 1.0 mm Light exit | Ø 1.0 mm Light exit | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | cULus, CE, EAC | cULus, CE, EAC | |
| Trademark | — | — | — | |
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| | BGL000U BGL 20A-005-S49 | BGL001C BGL 30A-005-S49 | BGL001P BGL 50A-005-S49 | BGL0027 BGL 80A-005-S49 | BGL000C BGL 120A-005-S49 |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|
| | A | A | A | A | A |
| | 10 x 40 x 58 mm | 10 x 50 x 68 mm | 10 x 70 x 88 mm | 10 x 100 x 88 mm | 10 x 140 x 93 mm |
| | 20 mm | 30 mm | 50 mm | 80 mm | 120 mm |
| | Fork sensor | Fork sensor | Fork sensor | Fork sensor | Fork sensor |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | Red light | Red light | Red light | Red light | Red light |
| | Ø 1.0 mm Light exit | Ø 1.0 mm Light exit | Ø 1.5 mm Light exit | Ø 2.0 mm Light exit | Ø 2.5 mm Light exit |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| | Glass | Glass | Glass | Glass | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC | cULus, CE, EAC |
| | — | — | — | — | — |
| | Page 484 | Page 481 | Page 481 | Page 482 | Page 482 |



| PNP normally open/normally closed | BGL000L BGL 180A-005-S49 | BGL0012 BGL 220A-005-S49 | BGL001W BGL 5A-001-S49 | |
|-----------------------------------|------------------------------------|------------------------------------|----------------------------------|--|
| Series | A | A | A | |
| Dimension | 10 x 200 x 153 mm | 10 x 240 x 153 mm | 10 x 25 x 54 mm | |
| Fork opening | 180 mm | 220 mm | 5 mm | |
| Principle of operation | Fork sensor | Fork sensor | Fork sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Red light | Red light | LED, red light | |
| Light spot size | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 1.0 mm Light exit | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | cULus, CE, EAC | cULus, CE, EAC | CE, cULus, EAC | |
| Trademark | — | — | Global | |
| Productview | Page 484 | Page 485 | Page 483 | |



| | BGL0001 BGL 10A-001-S49 | BGL000R BGL 20A-001-S49 | BGL0016 BGL 30A-001-S49 | BGL001J BGL 50A-001-S49 | BGL0023 BGL 80A-001-S49 |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | A | A | A | A | A |
| | 10 x 30 x 54 mm | 10 x 40 x 58 mm | 10 x 50 x 68 mm | 10 x 70 x 88 mm | 10 x 100 x 88 mm |
| | 10 mm | 20 mm | 30 mm | 50 mm | 80 mm |
| | Fork sensor | Fork sensor | Fork sensor | Fork sensor | Fork sensor |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | LED, red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | Ø 1.2 mm Light exit | Ø 1.0 mm Light exit | Ø 1.2 mm Light exit | Ø 1.5 mm Light exit | Ø 2.0 mm Light exit |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| | Glass | Glass | Glass | Glass | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | Global | Global | Global | Global | Global |
| | Page 483 | Page 484 | Page 481 | Page 481 | Page 482 |



| | | | | |
|--|------------------------------------|------------------------------------|------------------------------------|--|
| IO-Link, normally open/normally closed | | | | |
| PNP normally open/normally closed | BGL0007 BGL 120A-001-S49 | BGL000J BGL 180A-001-S49 | BGL0010 BGL 220A-001-S49 | |
| PNP normally open/normally closed, analog, voltage 0...10 V | | | | |
| PNP normally open/normally closed, analog, current 4...20 mA | | | | |
| Series | A | A | A | |
| Dimension | 10 x 140 x 93 mm | 10 x 200 x 153 mm | 10 x 25 x 54 mm | |
| Fork opening | 120 mm | 180 mm | 220 mm | |
| Principle of operation | Fork sensor | Fork sensor | Fork sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | Global | Global | Global | |
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| | | | | | |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| | BGL0035 BGL 30C-007-S4 | BGL003F BGL 50C-007-S4 | | | |
| | | | | BGL0033 BGL 30C-005-S4 | |
| | | | BGL0031 BGL 30C-003-S4 | | BGL0039 BGL 50C-003-S4 |
| | C | C | C | C | C |
| | 18 x 80 x 93.5 mm | 18 x 100 x 93.5 mm | 18 x 80 x 93.5 mm | 18 x 80 x 93.5 mm | 18 x 100 x 93.5 mm |
| | 30 mm | 50 mm | 30 mm | 30 mm | 50 mm |
| | Fork sensor | Fork sensor | Fork sensor | Fork sensor | Fork sensor |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | Light array | Light array | Light array | Light array | Light array |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | LED, red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | 3 x 28 mm Light exit | 3 x 28 mm Light exit | 3 x 28 mm Light exit | 3 x 28 mm Light exit | 3 x 28 mm Light exit |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin |
| | Aluminum | Aluminum | Aluminum | Aluminum | Aluminum |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC |
| | CE | CE | CE | CE | CE |
| | — | — | — | — | — |
| | Page 485 | Page 486 | Page 486 | Page 486 | Page 487 |

Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

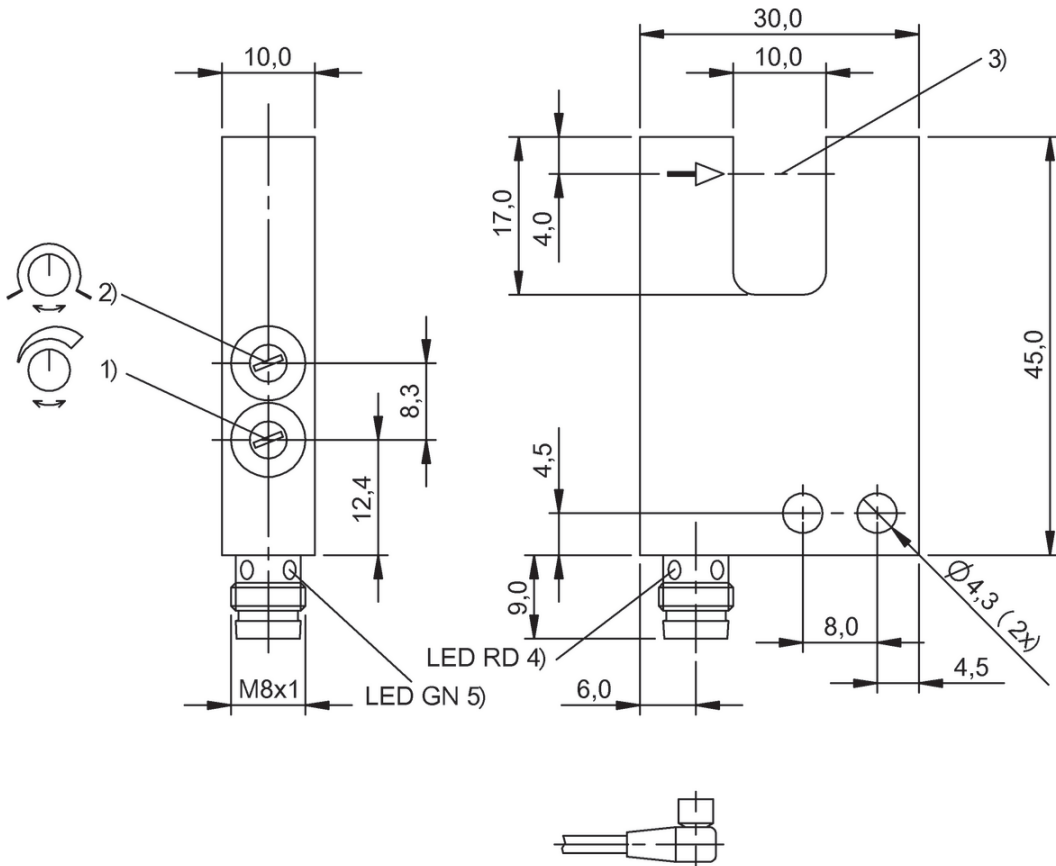
Accessories



| | | | | |
|---|-----------------------------------|-----------------------------------|-----------------------------------|--|
| 2 × PNP normally open/normally closed | | BGL002Z BGL 30C-001-S4 | BGL0037 BGL 50C-001-S4 | |
| PNP normally open/normally closed, analog, voltage 0...10 V | BGL003C BGL 50C-005-S4 | | | |
| Series | C | C | C | |
| Dimension | 18 x 100 x 93.5 mm | 18 x 80 x 93.5 mm | 18 x 100 x 93.5 mm | |
| Fork opening | 50 mm | 30 mm | 50 mm | |
| Principle of operation | Fork sensor | Fork sensor | Fork sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | Light array | Light array | Light array | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | 3 x 28 mm Light exit | 3 x 28 mm Light exit | 3 x 28 mm Light exit | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Aluminum | Aluminum | Aluminum | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 18...30 VDC | 18...30 VDC | 18...30 VDC | |
| Approval/Conformity | CE | CE | CE | |
| Trademark | — | — | — | |
| Productview | Page 487 | Page 487 | Page 488 | |

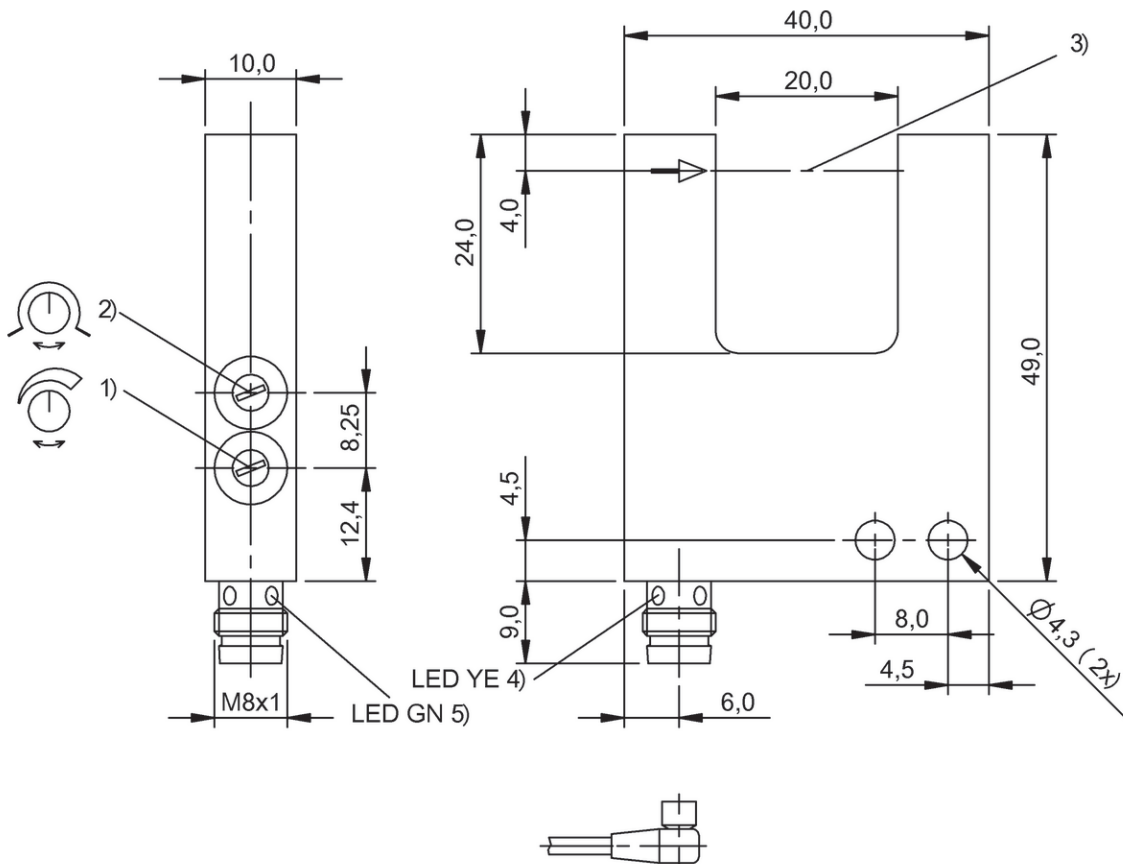


| | BGL004M BGL 50F-007-00,2-S4 | BGL004P BGL 80F-007-00,2-S4 | BGL004L BGL 50F-001-00,2-S4 | BGL004N BGL 80F-001-00,2-S4 | |
|--|---|---|---|---|--|
| | F | F | F | F | |
| | 12 x 85 x 86 mm | 12 x 115 x 86 mm | 12 x 85 x 86 mm | 12 x 115 x 86 mm | |
| | 50 mm | 80 mm | 50 mm | 80 mm | |
| | Fork sensor | Fork sensor | Fork sensor | Fork sensor | |
| | Fork sensor | Fork sensor | Fork sensor | Fork sensor | |
| | — | — | — | — | |
| | Divergent | Divergent | Divergent | Divergent | |
| | Infrared | Infrared | LED, red light | LED, red light | |
| | Ø 2.0 mm Light exit | Ø 2.5 mm Light exit | Ø 1.25 mm Light exit | Ø 1.75 mm Light exit | |
| | Cable with connector, M12x1 connector, 4-pin, 0.25 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.25 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.25 m, PUR | Cable with connector, M12x1 connector, 4-pin, 0.25 m, PUR | |
| | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4404) | Stainless steel (1.4404) | |
| | PMMA | PMMA | PMMA | PMMA | |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| | CE, Ecolab | CE, Ecolab | Ecolab, CE | Ecolab, CE | |
| | — | — | — | — | |
| | Page 488 | Page 489 | Page 488 | Page 489 | |



1) Sensitivity, 2) Light-on/dark-on, 3) Optical axis, 4) Output function, 5) Operating voltage

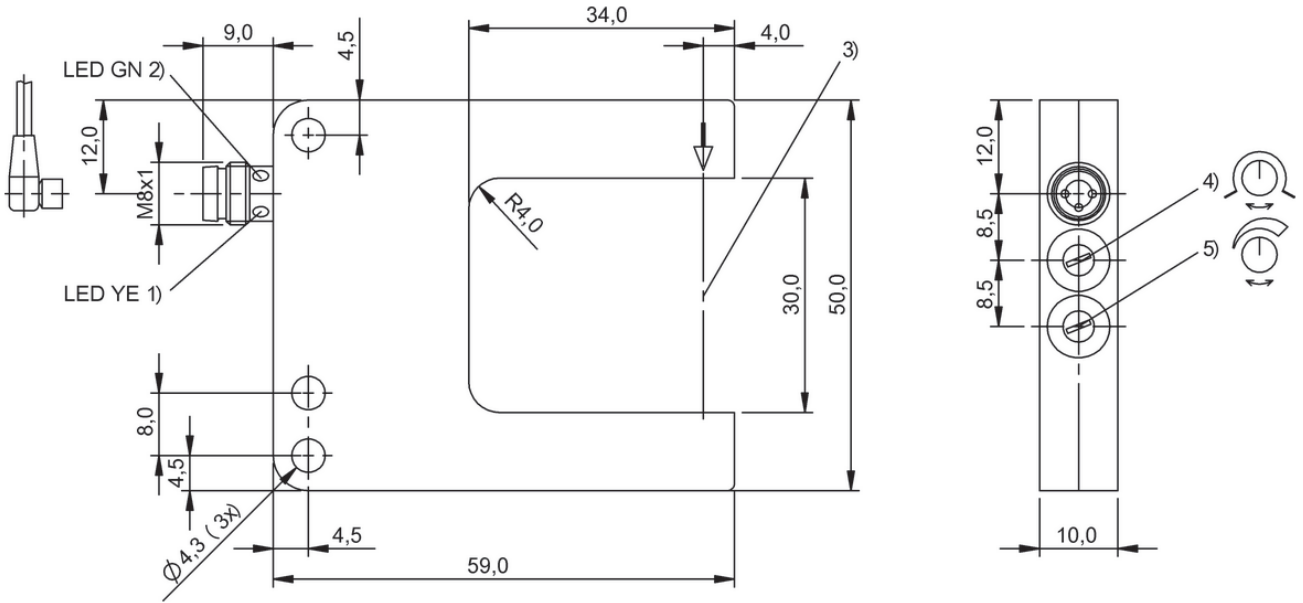
BGL0005



1) Sensitivity, 2) Light-on/dark-on, 3) Optical axis, 4) Output function, 5) Operating voltage

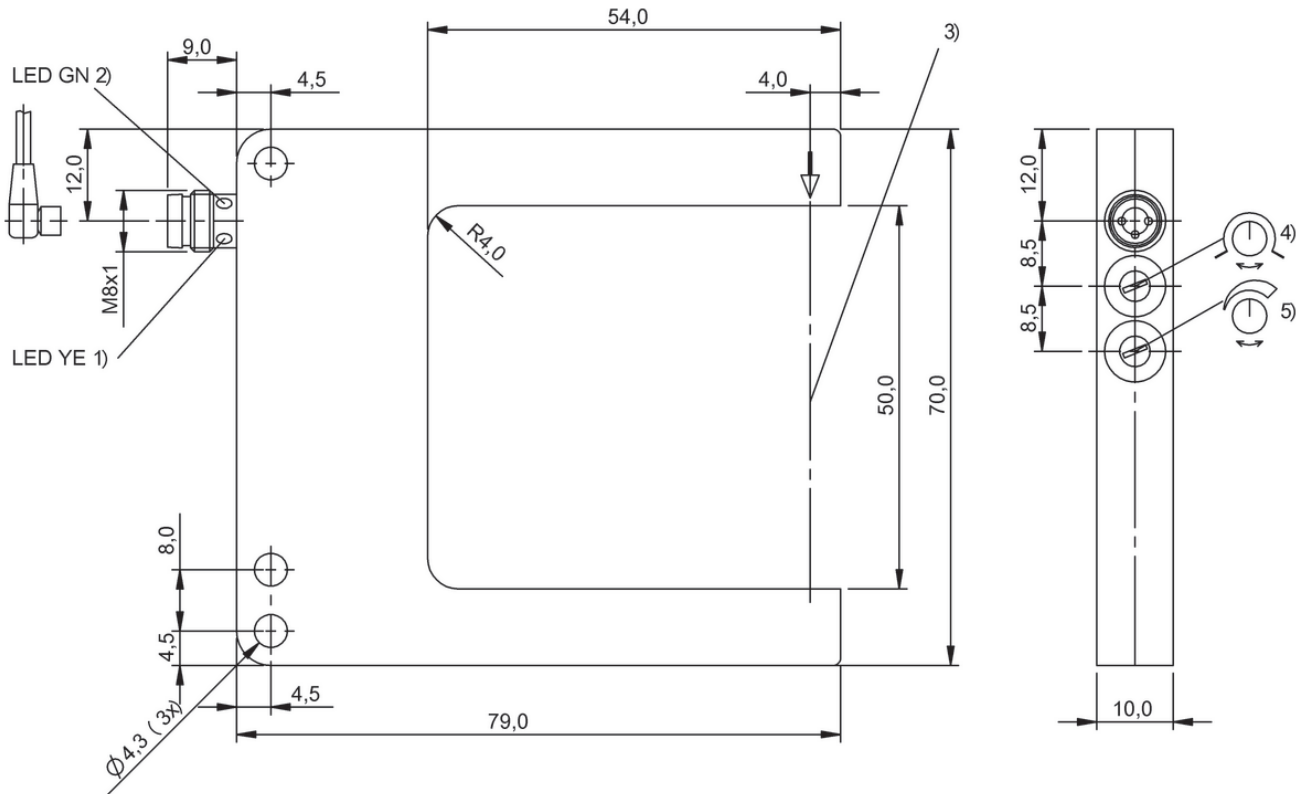
BGL000Y

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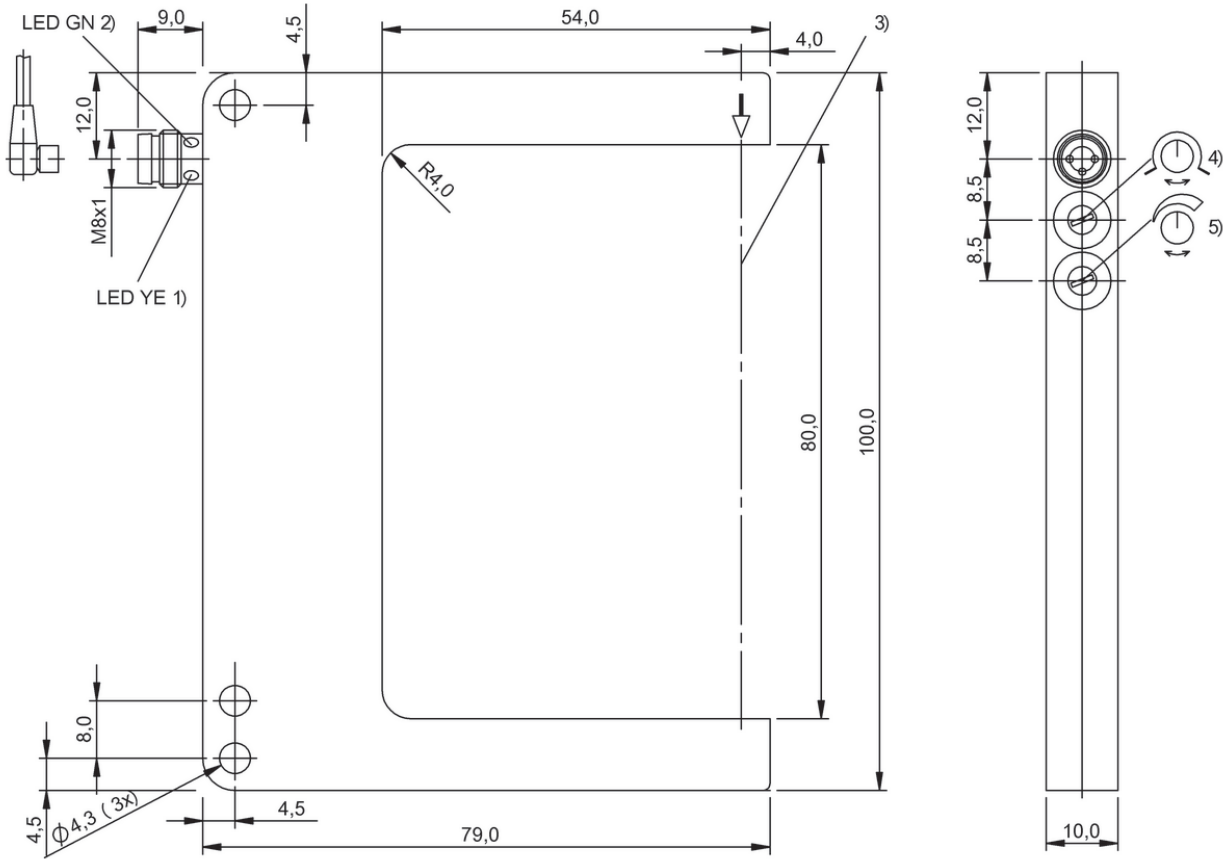
1) Output function, 2) Operating voltage, 3) Optical axis, 4) Light-on/dark-on, 5) Sensitivity

BGL001F, BGL003J



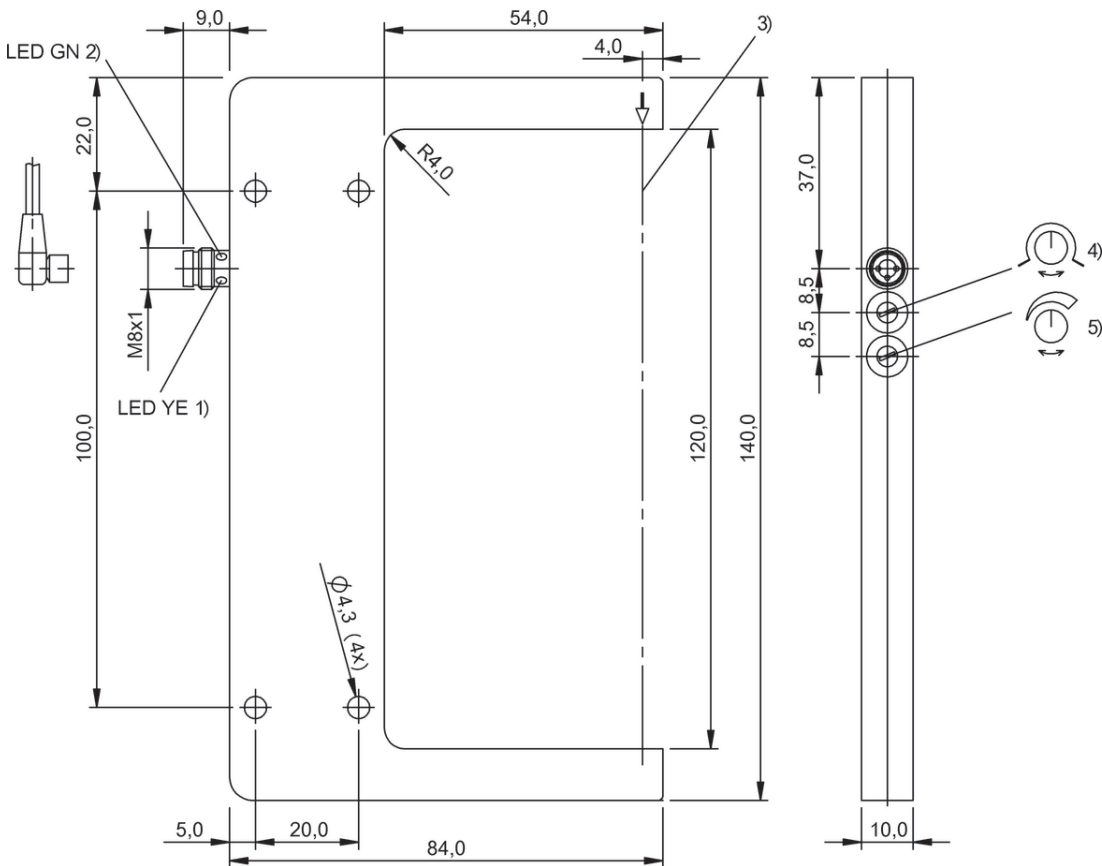
1) Output function, 2) Operating voltage, 3) Optical axis, 4) Light-on/dark-on, 5) Sensitivity

BGL001T



1) Output function, 2) Operating voltage, 3) Optical axis, 4) Light-on/dark-on, 5) Sensitivity

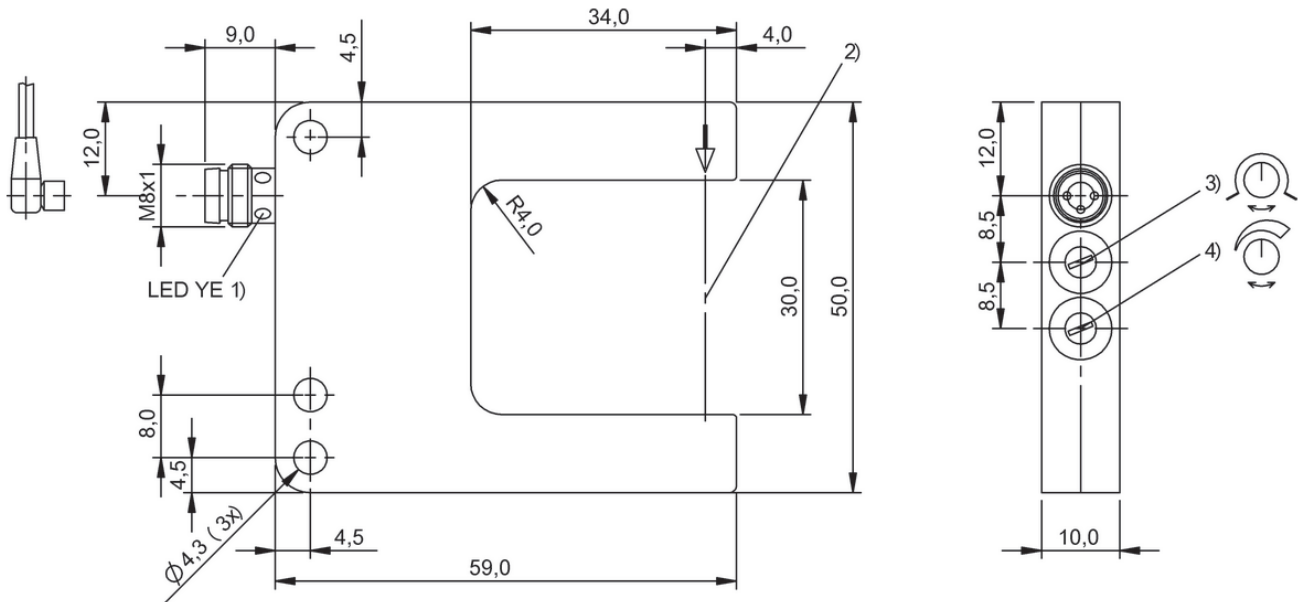
BGL0029, BGL003L



1) Output function, 2) Operating voltage, 3) Optical axis, 4) Light-on/dark-on, 5) Sensitivity

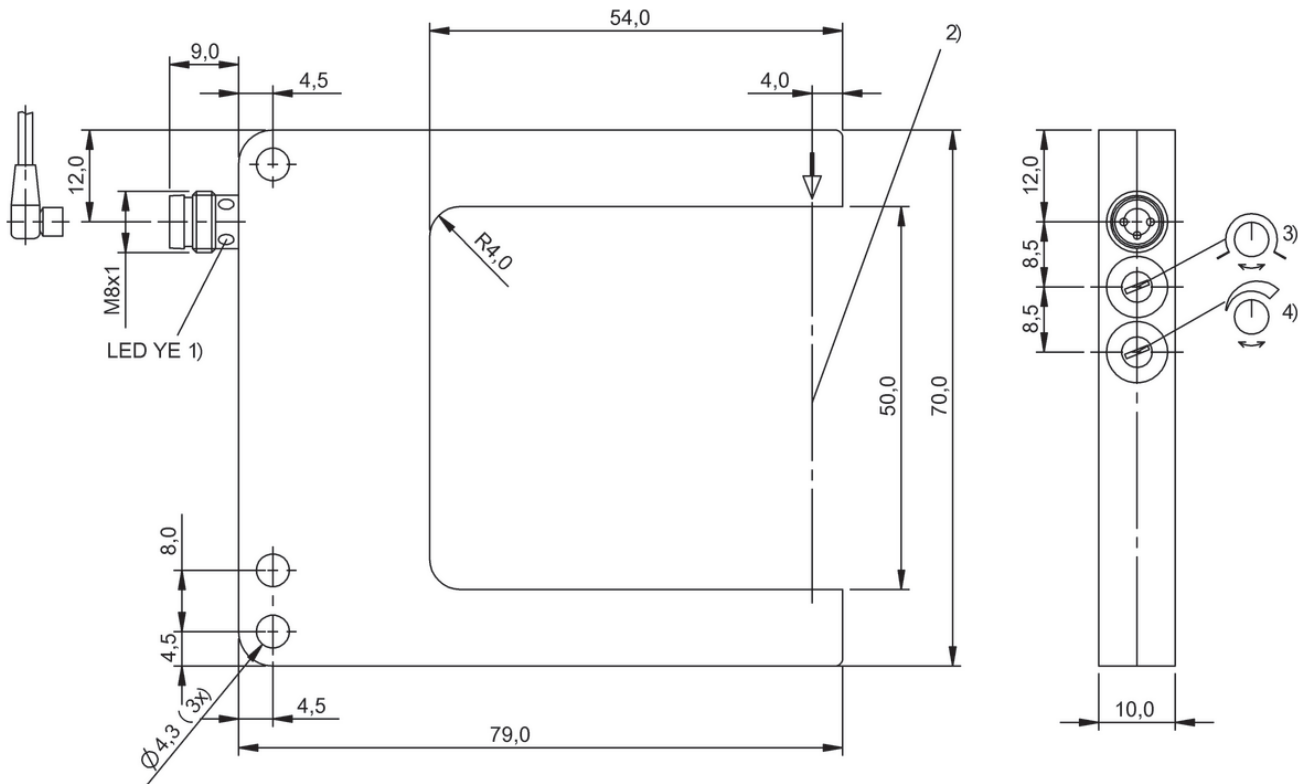
BGL000F

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1) Output function, 2) Optical axis, 3) Light-on/dark-on, 4) Sensitivity

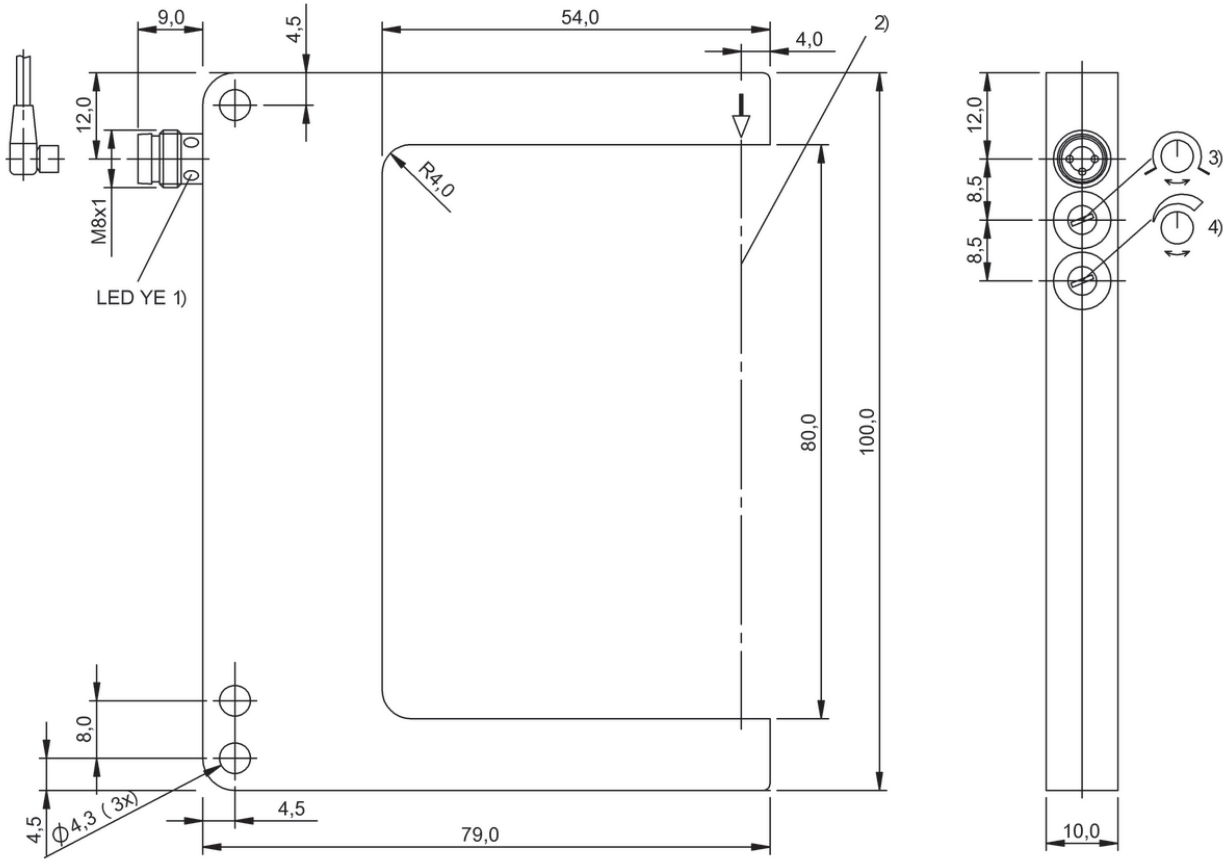
BGL0019, BGL001C, BGL0016



1) Output function, 2) Optical axis, 3) Light-on/dark-on, 4) Sensitivity

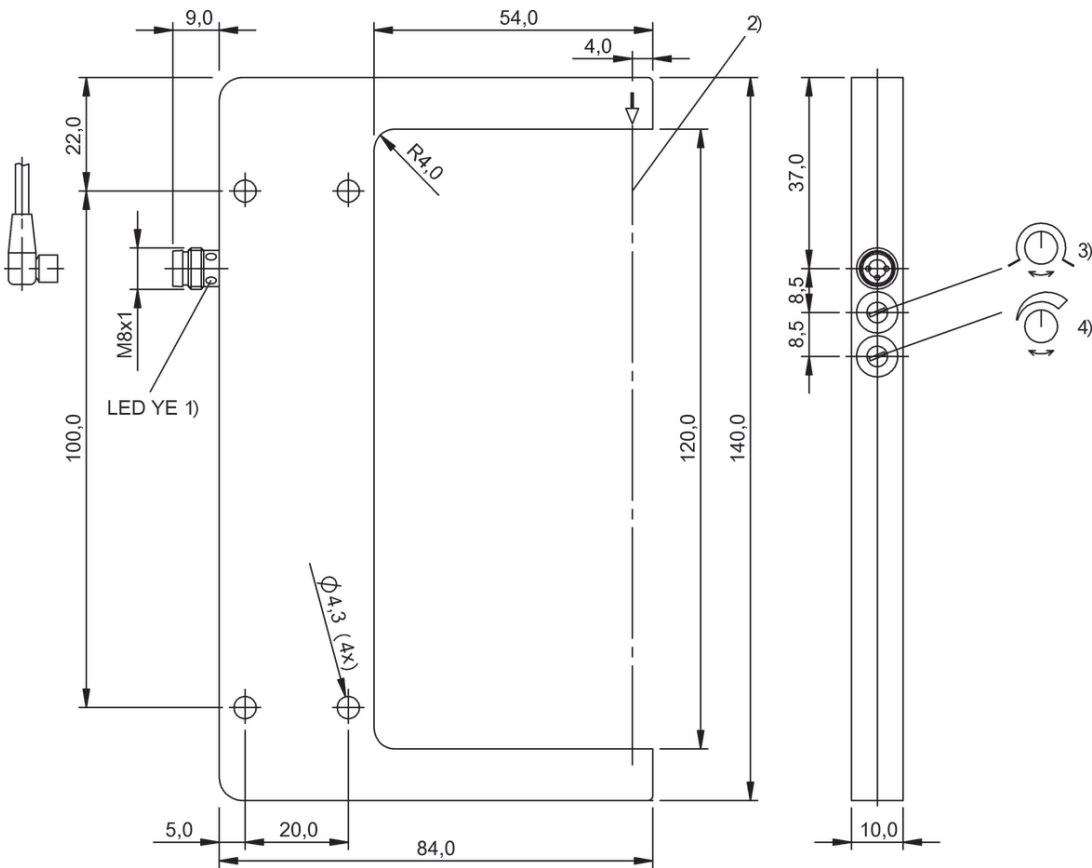
BGL001M, BGL001P, BGL001J

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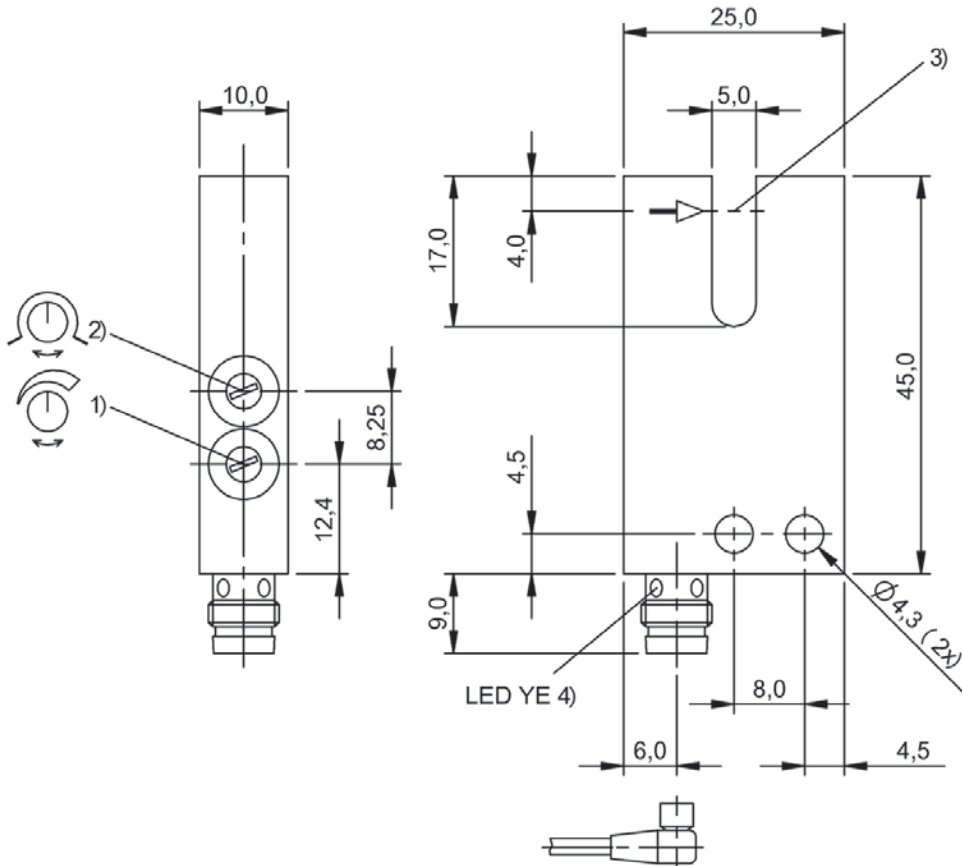
1) Output function, 2) Optical axis, 3) Light-on/dark-on, 4) Sensitivity

BGL0025, BGL0027, BGL0023



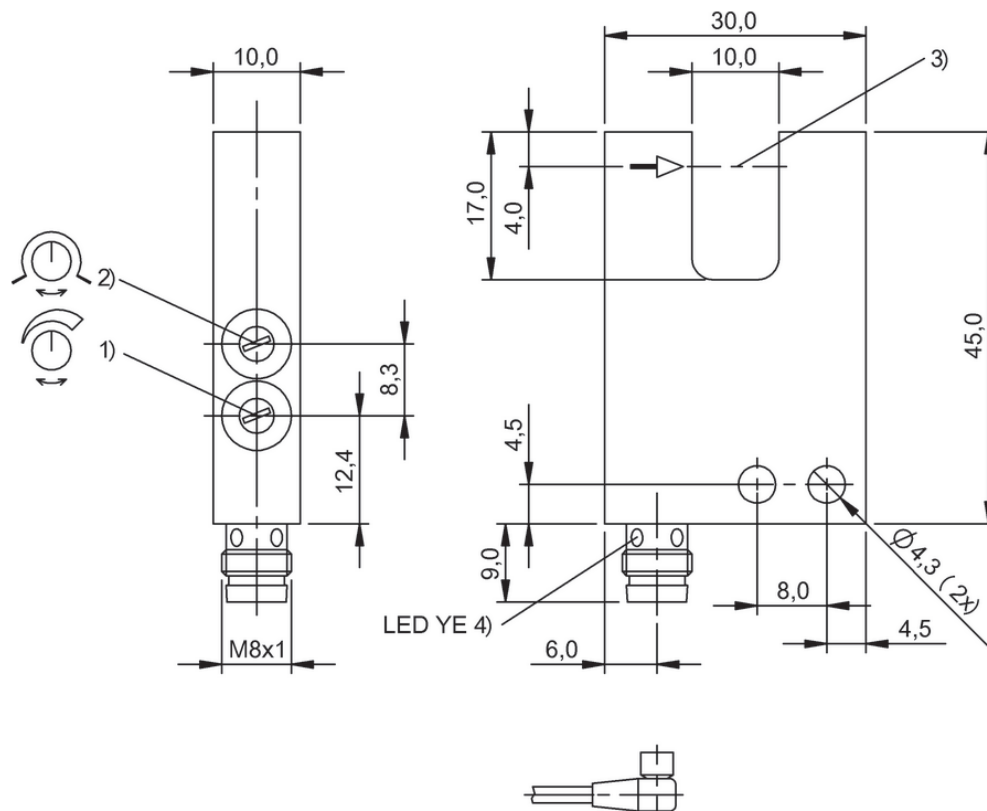
1) Output function, 2) Optical axis, 3) Light-on/dark-on, 4) Sensitivity

BGL0009, BGL000C, BGL0007



1) Sensitivity, 2) Light-on/dark-on, 3) Optical axis, 4) Output function

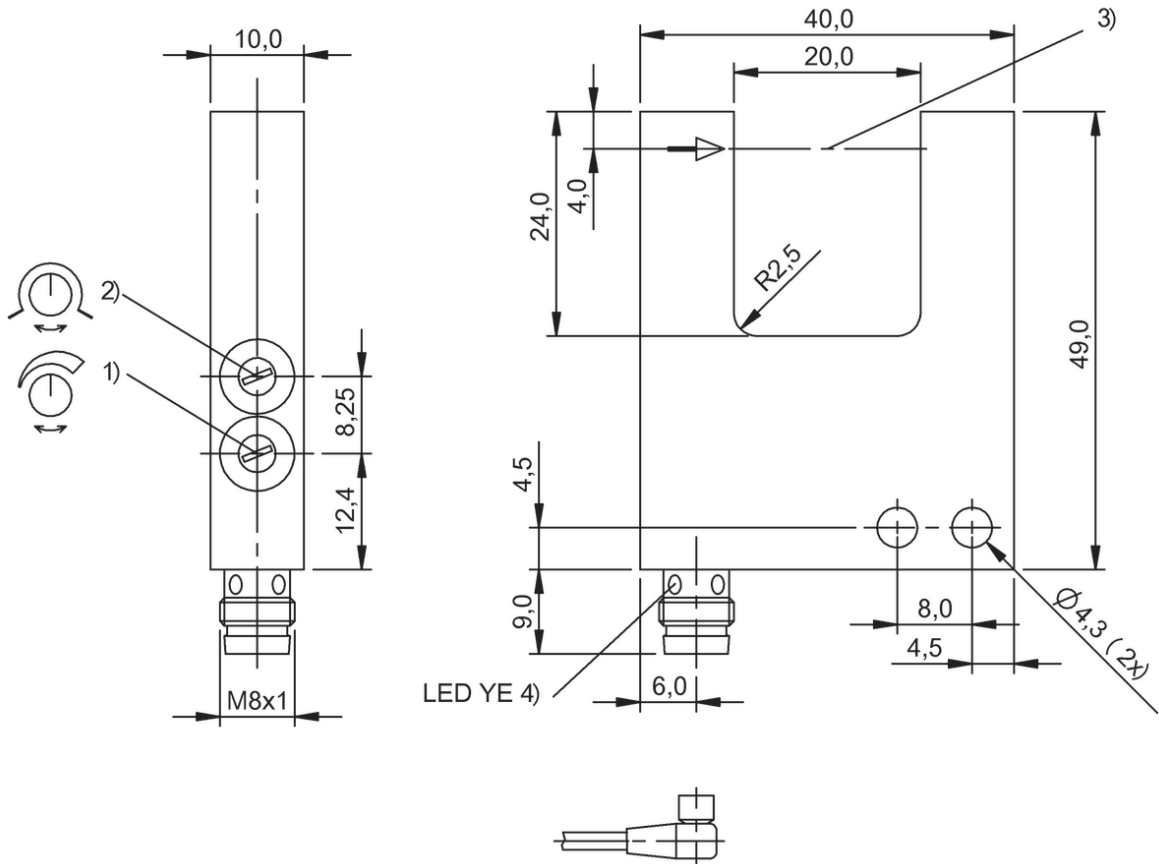
BGL001Z, BGL001W



1) Sensitivity, 2) Light-on/dark-on, 3) Optical axis, 4) Output function

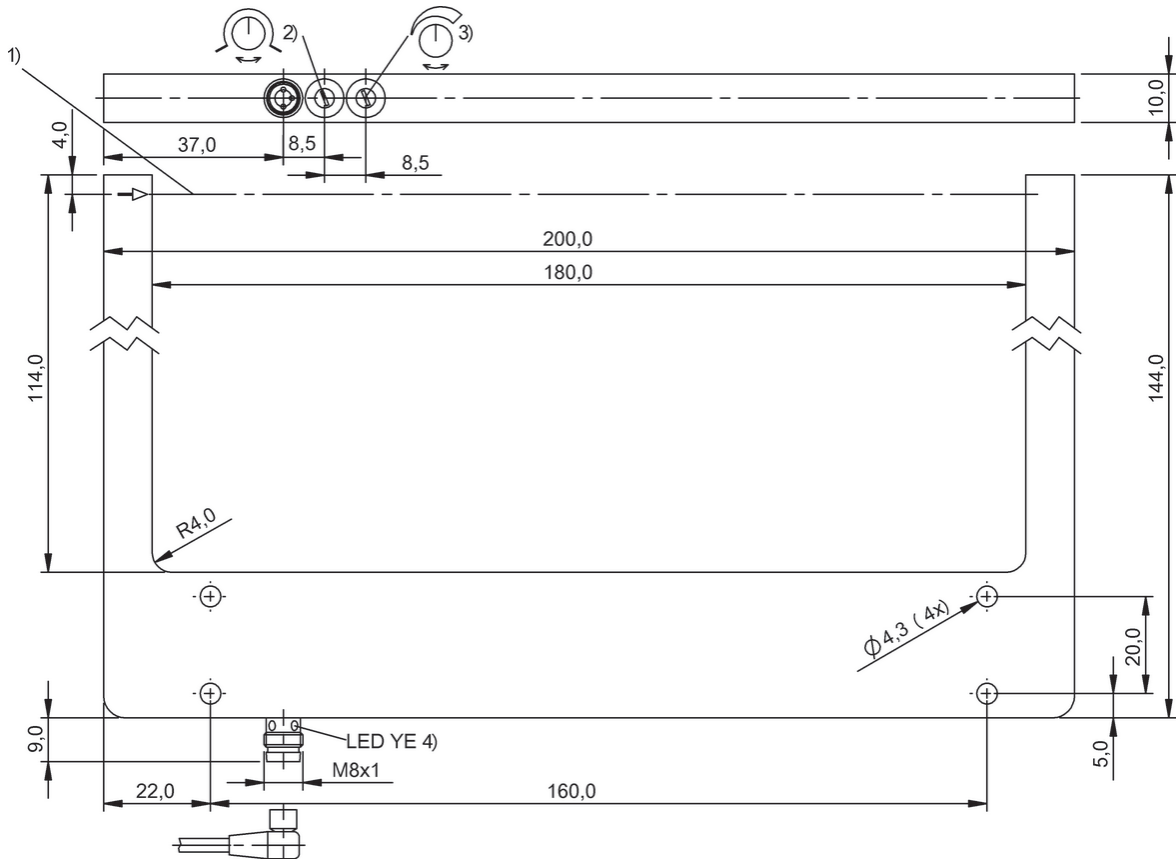
BGL0003, BGL0001

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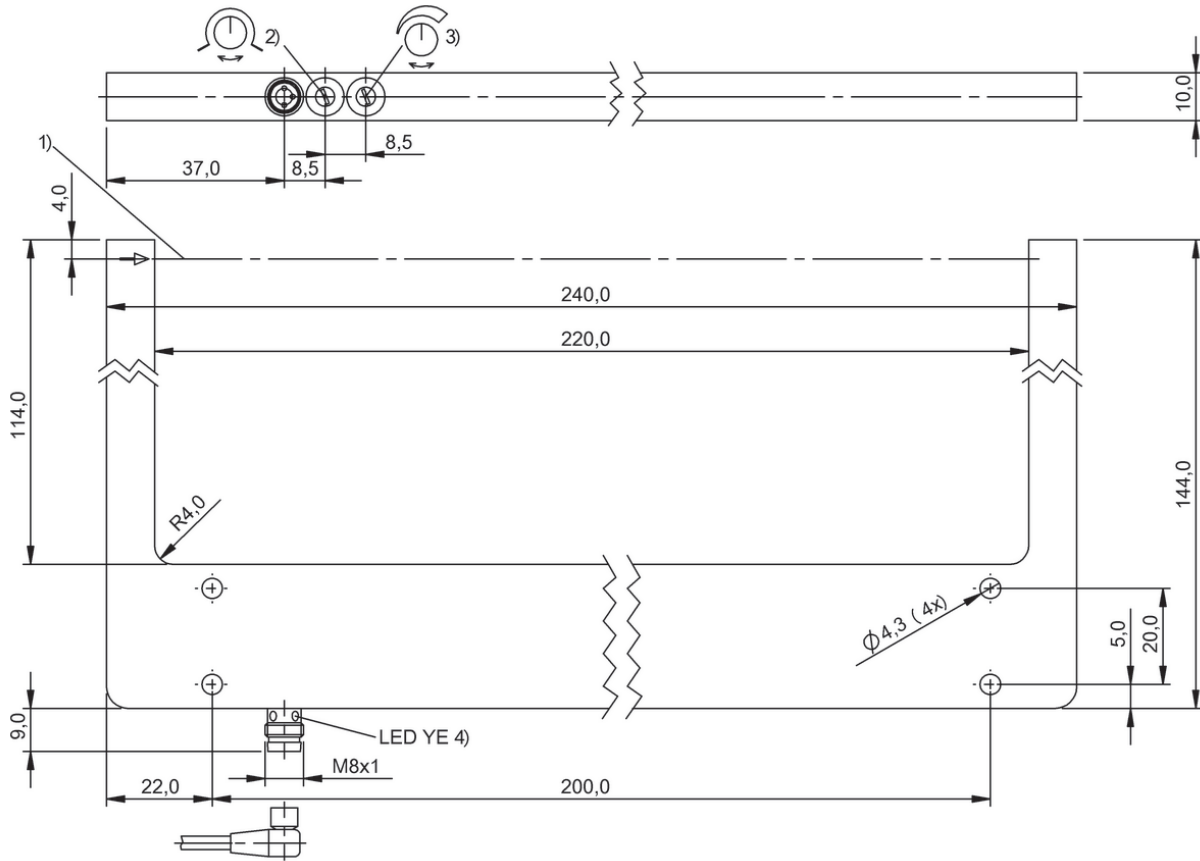
1) Sensitivity, 2) Light-on/dark-on, 3) Optical axis, 4) Output function

BGL000U, BGL000R



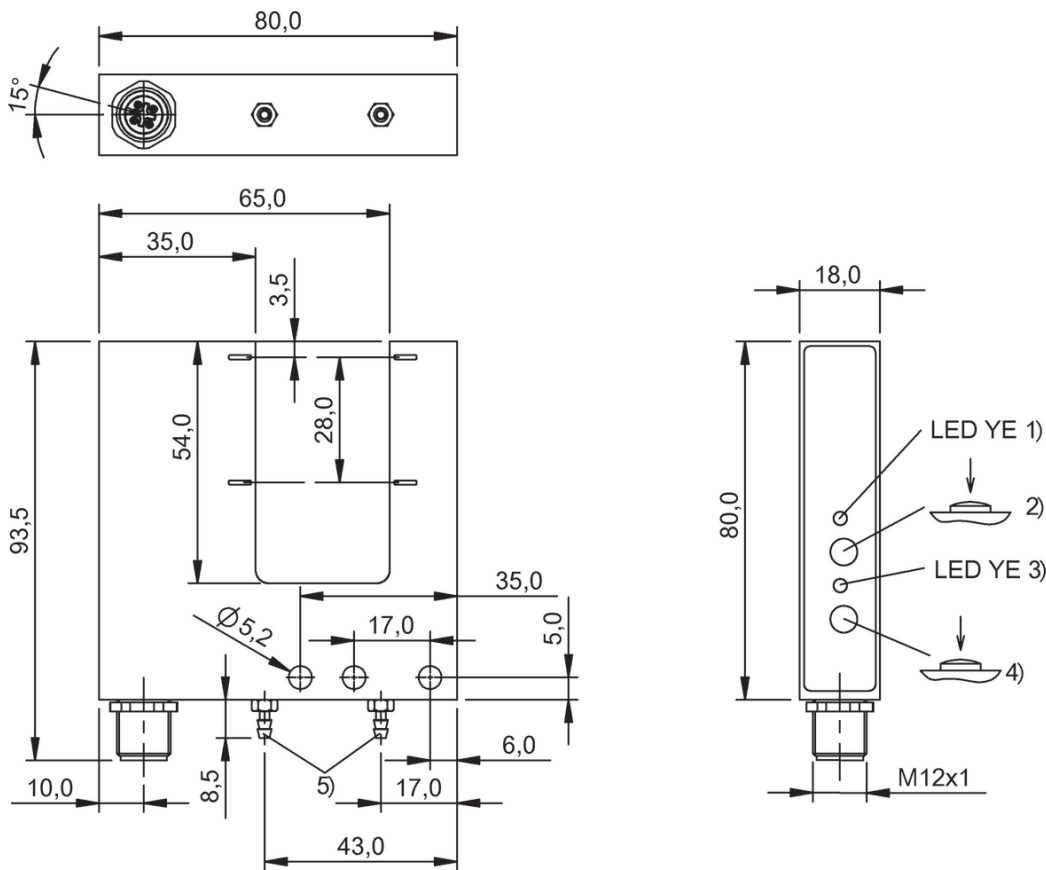
1) Optical axis, 2) Sensitivity, 3) Light-on/dark-on, 4) Output function

BGL000L, BGL000J



1) Optical axis, 2) Sensitivity, 3) Light-on/dark-on, 4) Output function

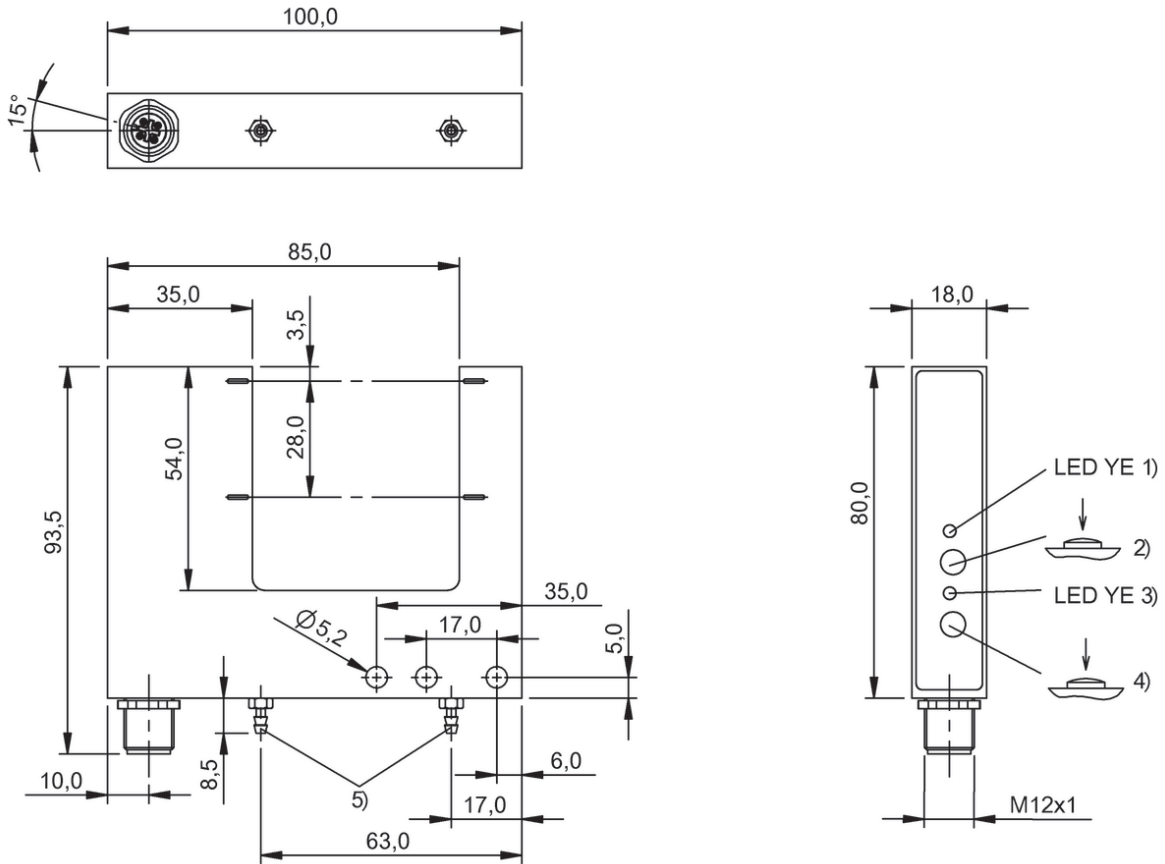
BGL0012, BGL0010



1) SP1 active / error, 2) SP1: recvr., light/dark, 3) SP2 active / error, 4) SP2: recvr., light/dark, 5) Pneumatics connection PK-3

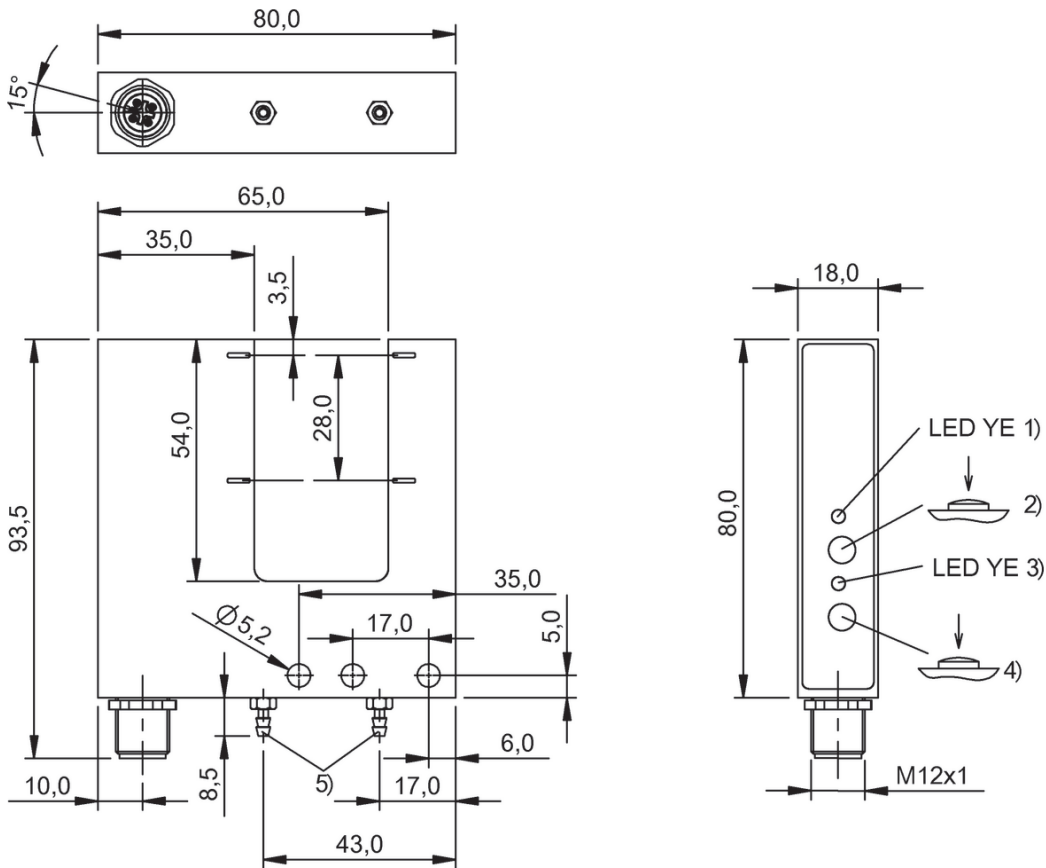
BGL0035

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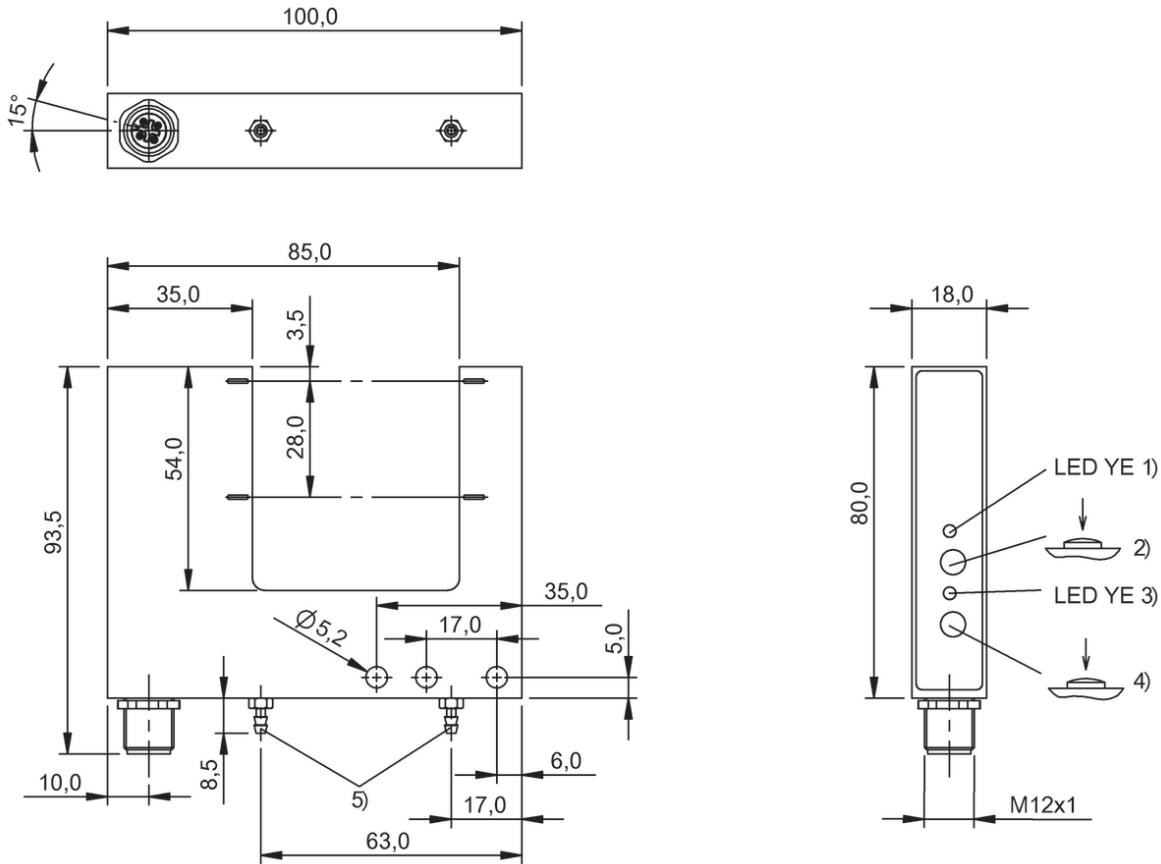
1) SP1 active / error, 2) SP1: recvr., light/dark, 3) SP2 active / error, 4) SP2: recvr., light/dark, 5) Pneumatics connection PK-3

BGL003F



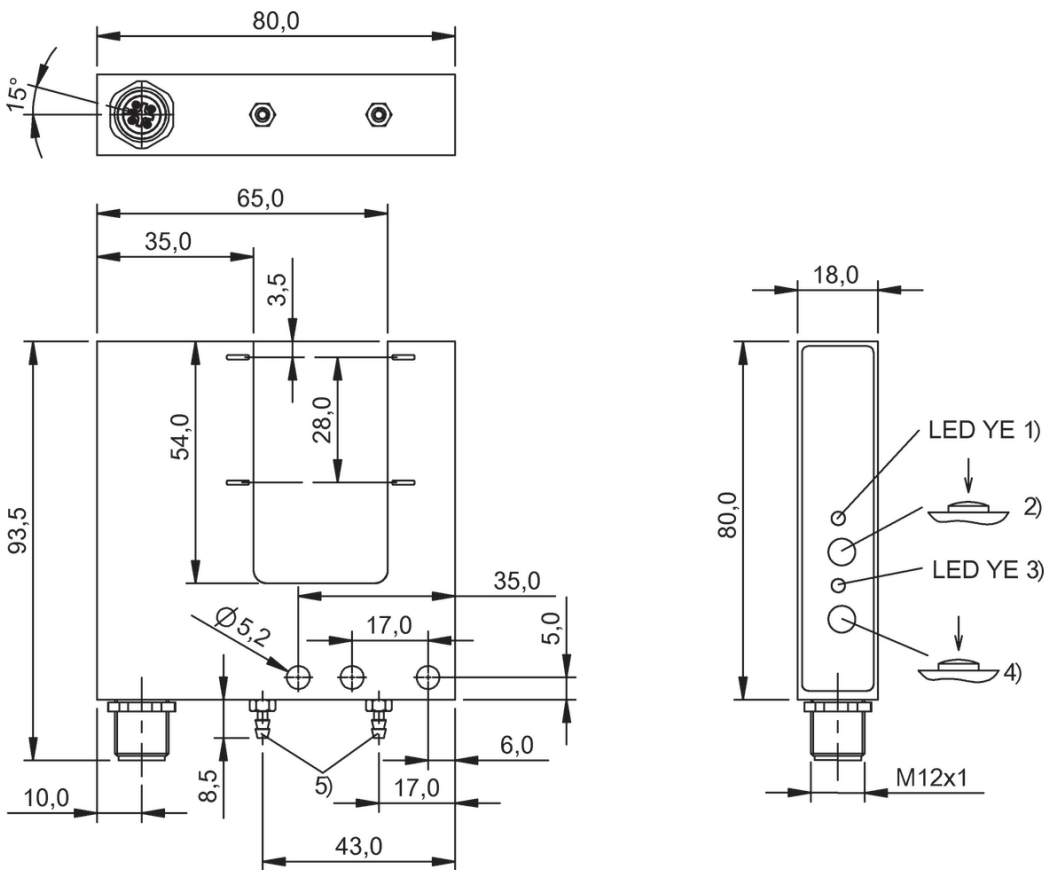
1) Output function/Error, 2) Output mode, recvr., L/D, 3) Error, 4) Output curve rising/falling, 5) Pneumatics connection PK-3

BGL0031, BGL0033



1) Output function/Error, 2) Output mode, recvr., L/D, 3) Error, 4) Output curve rising/falling, 5) Pneumatics connection PK-3

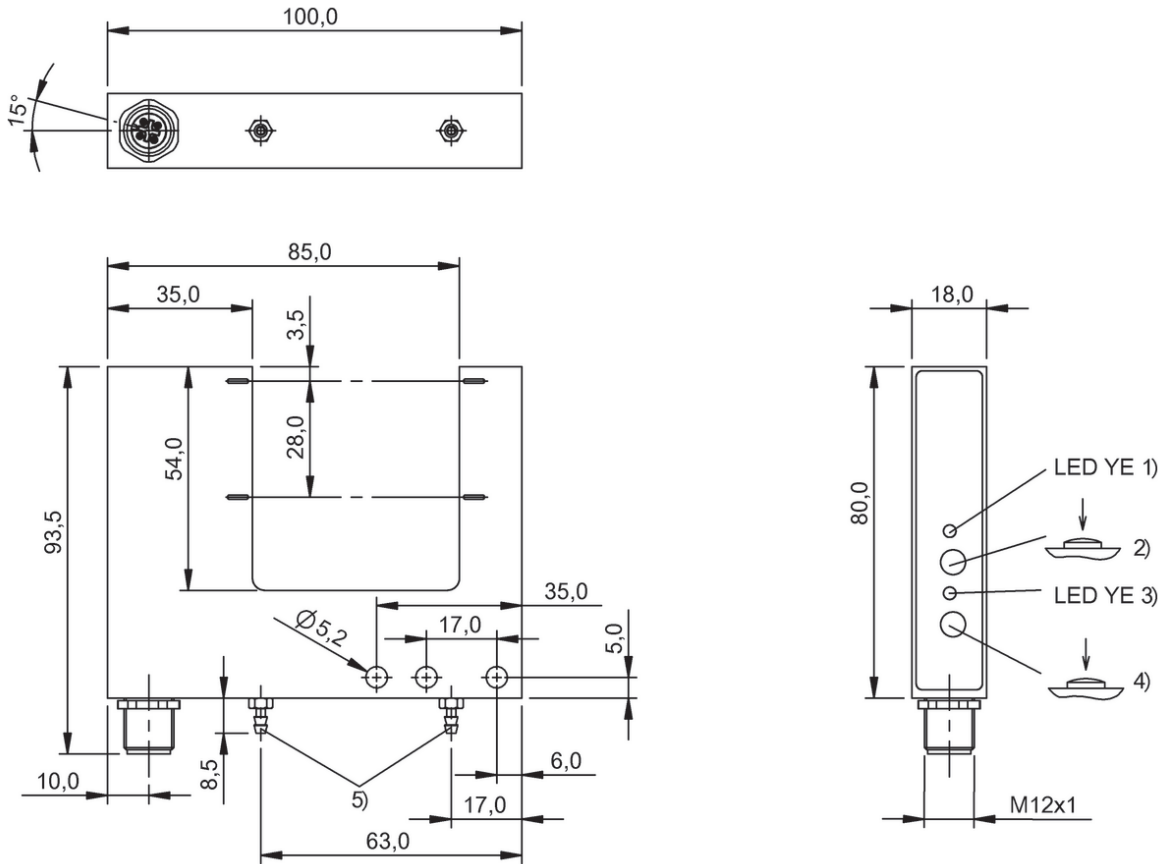
BGL0039, BGL003C



1) Q1 active / error, 2) Q1: recvr., light/dark, 3) Q2 active / error, 4) Q2: recvr., light/dark, 5) Pneumatics connection PK-3

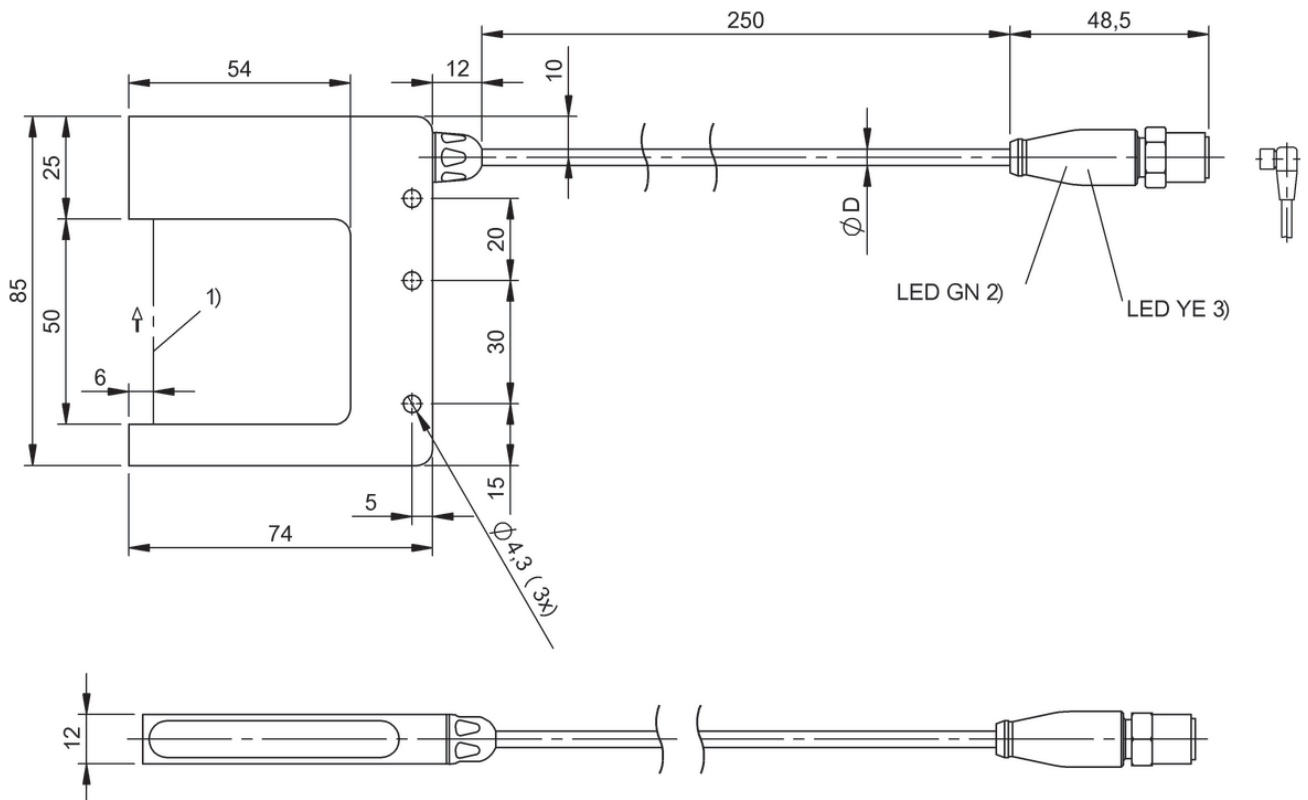
BGL002Z

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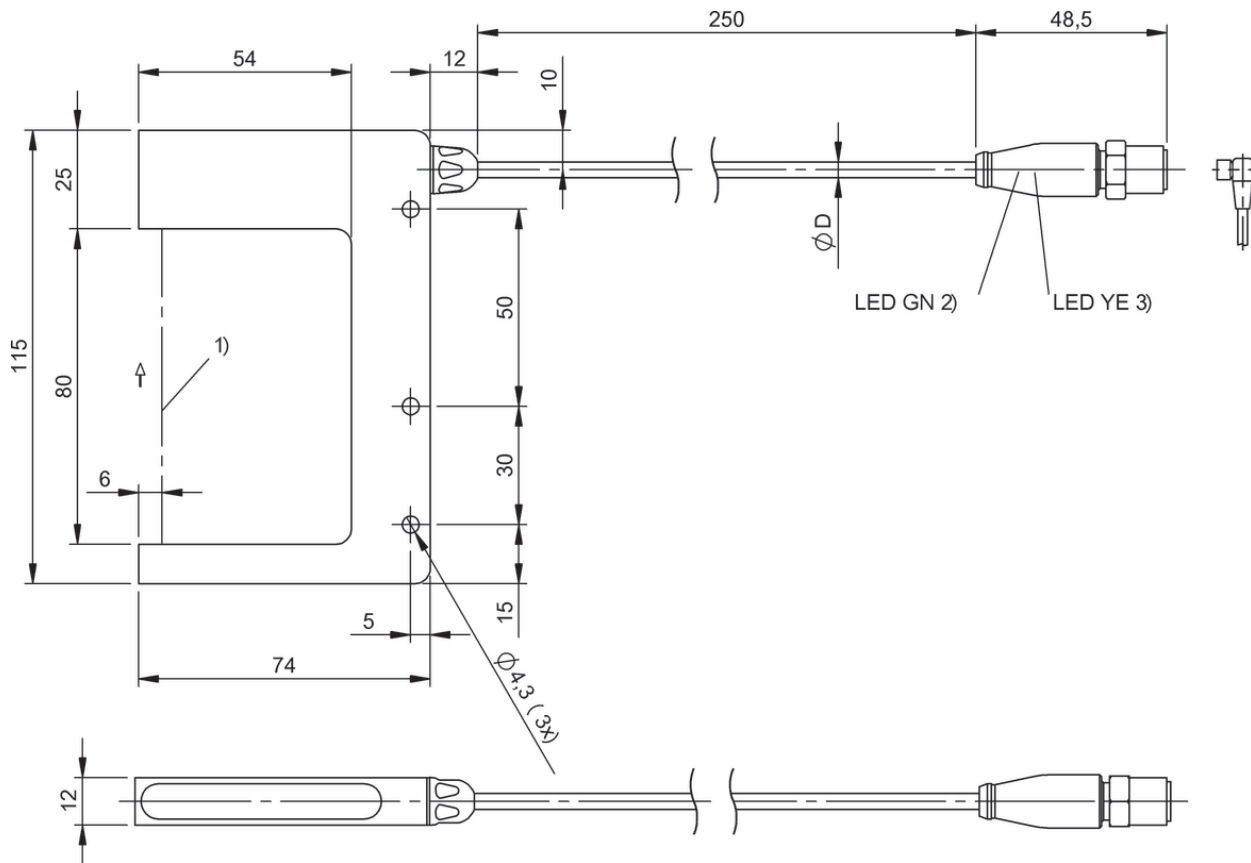
1) Q1 active / error, 2) Q1: recvr., light/dark, 3) Q2 active / error, 4) Q2: recvr., light/dark, 5) Pneumatics connection PK-3

BGL0037



1) Optical axis, 2) Operating voltage, 3) Output function normally open

BGL004M, BGL004L



1) Optical axis, 2) Operating voltage, 3) Output function normally open

BGL004P, BGL004N



| PNP normally open/normally closed | BWL0009 BWL 4040D-I011-S49 | BWL000L BWL 5454D-I011-S49 | BWL000Y BWL 6868D-I011-S49 | |
|-----------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|
| Series | D | D | D | |
| Dimension | 10 x 75 x 84 mm | 10 x 90 x 99 mm | 10 x 105 x 114 mm | |
| Principle of operation | Angle sensor | Angle sensor | Angle sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Infrared | Infrared | Infrared | |
| Light spot size | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | CE, cULus | CE, cULus | |
| Trademark | — | — | — | |
| Productview | Page 496 | Page 496 | Page 497 | |



| | BWL0015 BWL 9090D-I011-S49 | BWL0001 BWL 110110D-I011-S49 | BWL000C BWL 4040D-L011-S49 | BWL000N BWL 5454D-L011-S49 | BWL0010 BWL 6868D-L011-S49 |
|--|--------------------------------------|--|--------------------------------------|--------------------------------------|--------------------------------------|
| | D | D | D | D | D |
| | 12 x 125 x 134 mm | 12 x 150 x 159 mm | 10 x 75 x 84 mm | 10 x 90 x 99 mm | 10 x 105 x 114 mm |
| | Angle sensor | Angle sensor | Angle sensor | Angle sensor | Angle sensor |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | Divergent | Divergent | Collimated | Collimated | Collimated |
| | Infrared | Infrared | Laser red light | Laser red light | Laser red light |
| | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 0.2 mm Light exit | Ø 0.2 mm Light exit | Ø 0.2 mm Light exit |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| | Glass | Glass | Glass | Glass | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus | CE, cULus | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
| | Page 497 | Page 498 | Page 498 | Page 499 | Page 499 |



| PNP normally open/normally closed | BWL0017 BWL 9090D-L011-S49 | BWL0003 BWL 110110D-L011-S49 | BWL000J BWL 4040D-R013-S49 | |
|-----------------------------------|--------------------------------------|--|--------------------------------------|--|
| Series | D | D | D | |
| Dimension | 12 x 125 x 134 mm | 12 x 150 x 159 mm | 10 x 75 x 84 mm | |
| Principle of operation | Angle sensor | Angle sensor | Angle sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Beam characteristic | Collimated | Collimated | Divergent | |
| Light type | Laser red light | Laser red light | Red light | |
| Light spot size | Ø 0.2 mm Light exit | Ø 0.2 mm Light exit | Ø 1.7 mm Light exit | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus | |
| Trademark | — | — | — | |
| Productview | Page 500 | Page 500 | Page 498 | |



| | BWL000U BWL 5454D-R013-S49 | BWL001N BWL 6868D-R013-S49 | BWL001C BWL 9090D-R013-S49 | BWL0007 BWL 110110D-R013-S49 | BWL000F BWL 4040D-R011-S49 |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--|--------------------------------------|
| | D | D | D | D | D |
| | 10 x 90 x 99 mm | 10 x 105 x 114 mm | 12 x 125 x 134 mm | 12 x 150 x 159 mm | 10 x 75 x 84 mm |
| | Angle sensor | Angle sensor | Angle sensor | Angle sensor | Angle sensor |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | Red light | Red light | Red light | Red light | LED, red light |
| | Ø 2.0 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | Ø 1.7 mm Light exit |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| | Glass | Glass | Glass | Glass | Glass |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus | CE, cULus, EAC |
| | — | — | — | — | Global |
| | Page 499 | Page 499 | Page 500 | Page 500 | Page 498 |



| PNP normally open/normally closed | BWL000R BWL 5454D-R011-S49 | BWL0012 BWL 6868D-R011-S49 | BWL0019 BWL 9090D-R011-S49 | |
|-----------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|
| Series | D | D | D | |
| Dimension | 10 x 90 x 99 mm | 10 x 105 x 114 mm | 12 x 125 x 134 mm | |
| Principle of operation | Angle sensor | Angle sensor | Angle sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 2.0 mm Light exit | Ø 2.5 mm Light exit | Ø 2.5 mm Light exit | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | |
| Material sensing surface | Glass | Glass | Glass | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | Global | Global | Global | |
| Productview | Page 499 | Page 499 | Page 500 | |



| | | | | |
|--|--|--|--|--|
| BWL0005 BWL 110110D-R011-S49 | | | | |
| D | | | | |
| 12 x 150 x 159 mm | | | | |
| Angle sensor | | | | |
| Through-beam sensor | | | | |
| Divergent | | | | |
| LED, red light | | | | |
| Ø 2.5 mm Light exit | | | | |
| Connector, M8x1 connector, 3-pin | | | | |
| Zinc, die-cast | | | | |
| Glass | | | | |
| 10...30 VDC | | | | |
| CE, cULus, EAC | | | | |
| Global | | | | |
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Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

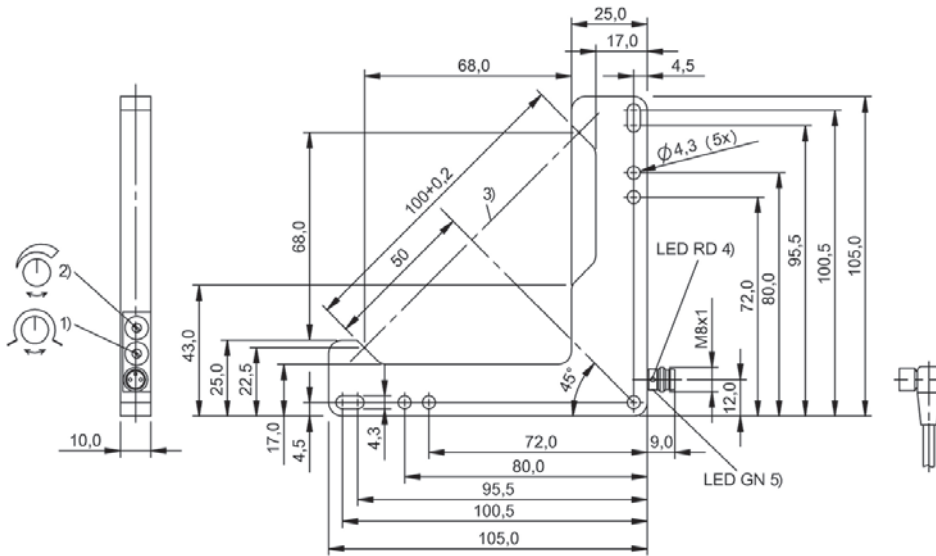
Safety

Industrial Networking

Power Supply

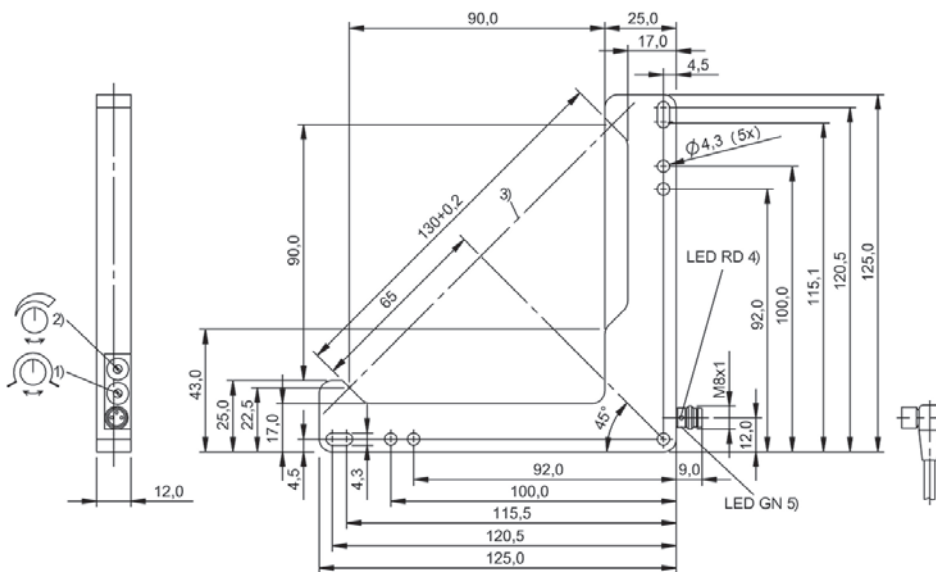
Connectivity

Accessories



1) Light-on/dark-on, 2) Sensitivity, 3) Optical axis, 4) Output function, 5) Operating voltage

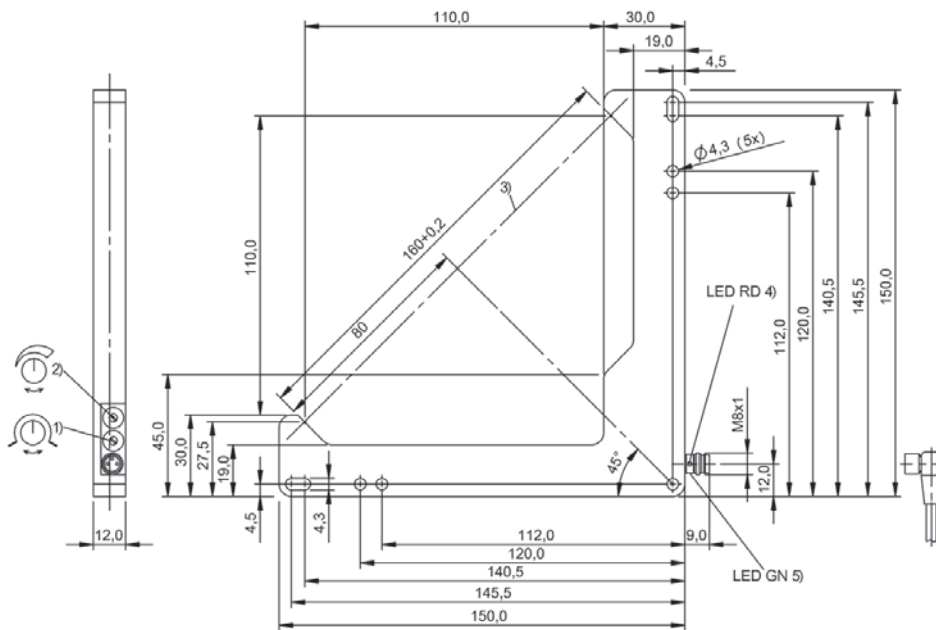
BWL000Y



1) Light-on/dark-on, 2) Sensitivity, 3) Optical axis, 4) Output function, 5) Operating voltage

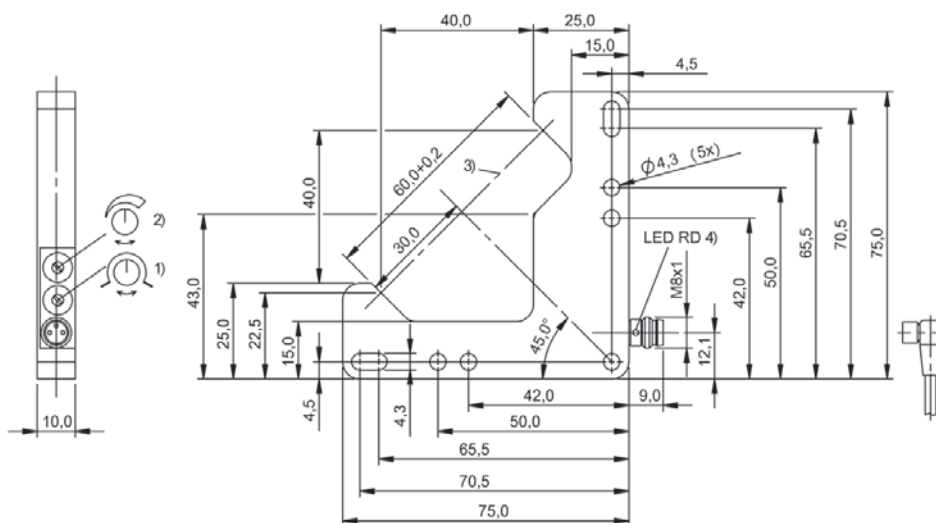
BWL0015

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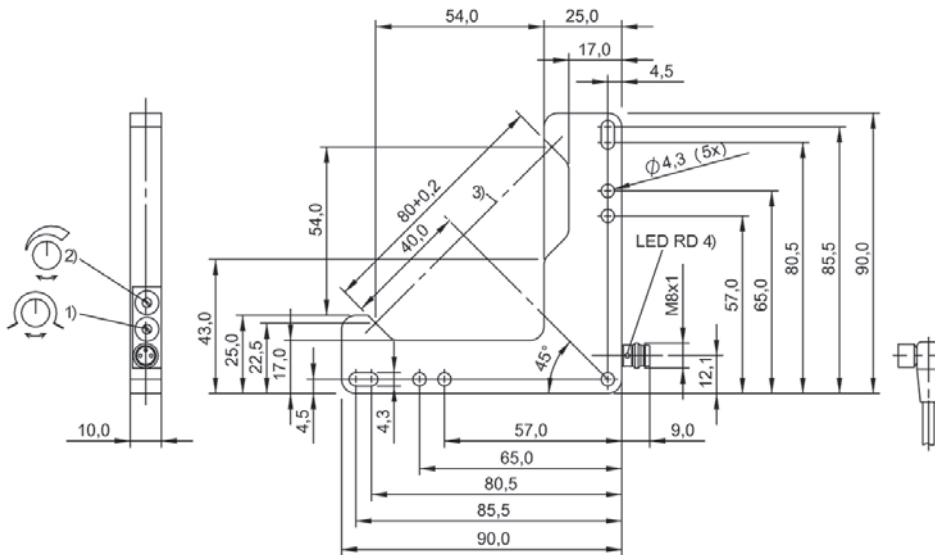
1) Light-on/dark-on, 2) Sensitivity, 3) Optical axis, 4) Output function, 5) Operating voltage

BWL0001



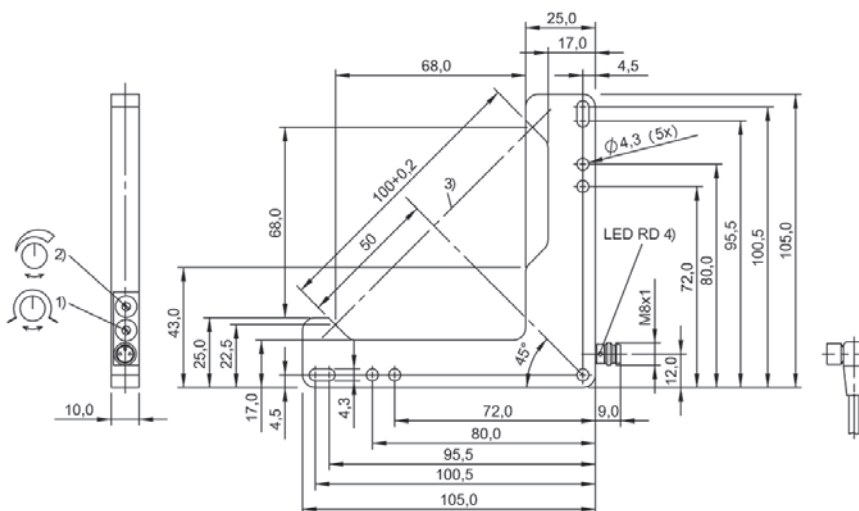
1) Light-on/dark-on, 2) Sensitivity, 3) Optical axis, 4) Output function

BWL000C, BWL000J, BWL000F



1) Light-on/dark-on, 2) Sensitivity, 3) Optical axis, 4) Output function

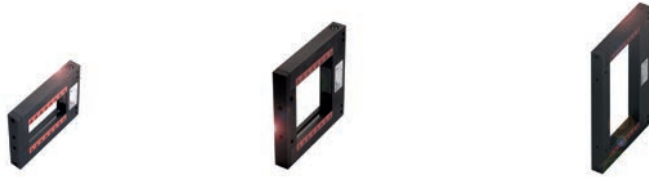
BWL000N, BWL000U, BWL000R



1) Light-on/dark-on, 2) Sensitivity, 3) Optical axis, 4) Output function

BWL0010, BWL001N, BWL0012

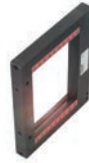
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| | | | | |
|---|---------------------------------------|---------------------------------------|---------------------------------------|--|
| PNP dynamic normally open | BOW001A BOW A-0408-PS-C-S49 | BOW001J BOW A-0808-PS-C-S49 | BOW0012 BOW A-1208-PS-C-S49 | |
| NPN dynamic normally open | | | | |
| PNP statisch normally open/normally closed, NPN statisch normally open/normally closed | | | | |
| Series | A | A | A | |
| Dimension | 18 x 90 x 140 mm | 18 x 130 x 140 mm | 18 x 170 x 140 mm | |
| Active window (PL x AL) | 40 x 80 mm | 80 x 80 mm | 120 x 80 mm | |
| Principle of operation | Optical window sensor | Optical window sensor | Optical window sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Infrared | Infrared | Infrared | |
| Connection | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | |
| Housing material | Aluminum | Aluminum | Aluminum | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE | CE | CE | |
| Productview | Page 506 | Page 506 | Page 507 | |



| | BOW002H BOW A-1216-PS-C-S49 | | BOW002J BOW A-1616-PS-C-S49 | |
|--|---------------------------------------|----------------------------------|---------------------------------------|---------------------------------------|
| | BOW0029 BOW A-1216-NS-C-S49 | | BOW002A BOW A-1616-NS-C-S49 | |
| | | | | BOW002U BOW B-0404-DU-C-S75 |
| | A | A | A | B |
| | 18 x 170 x 220 mm | 18 x 170 x 220 mm | 18 x 210 x 220 mm | 18 x 210 x 220 mm |
| | 120 x 160 mm | 120 x 160 mm | 160 x 160 mm | 160 x 160 mm |
| | Optical window sensor | Optical window sensor | Optical window sensor | Optical window sensor |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | Divergent | Divergent | Divergent | Divergent |
| | Infrared | Infrared | Infrared | Infrared |
| | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 3-pin | Connector, M8x1 connector, 4-pin |
| | Aluminum | Aluminum | Aluminum | Aluminum |
| | PMMA | PMMA | PMMA | PMMA |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | CE | CE | CE | CE, EAC |
| | Page 507 | Page 507 | Page 508 | Page 508 |



| PNP statisch normally open/normally closed, NPN statisch normally open/normally closed | BOW002Y BOW B-0808-DU-C-S75 | BOW0031 BOW B-1212-DU-C-S75 | BOW0034 BOW B-1616-DU-C-S75 | |
|---|---------------------------------------|---------------------------------------|---------------------------------------|--|
| Series | B | B | B | |
| Dimension | 15 x 130 x 134 mm | 15 x 170 x 174 mm | 15 x 210 x 214 mm | |
| Active window (PL x AL) | 80 x 80 mm | 120 x 120 mm | 160 x 160 mm | |
| Principle of operation | Optical window sensor | Optical window sensor | Optical window sensor | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Infrared | Infrared | Infrared | |
| Connection | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | |
| Housing material | Aluminum | Aluminum | Aluminum | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Operating voltage U_b | 15...30 VDC | 15...30 VDC | 15...30 VDC | |
| Approval/Conformity | CE, EAC | CE, EAC | CE, EAC | |
| Productview | Page 509 | Page 509 | Page 510 | |



| | | | | |
|---------------------------------------|--|--|--|--|
| BOW0037 BOW B-2020-DU-C-S75 | | | | |
| B | | | | |
| 15 x 250 x 244 mm | | | | |
| 200 x 200 mm | | | | |
| Optical window sensor | | | | |
| Through-beam sensor | | | | |
| Divergent | | | | |
| Infrared | | | | |
| Connector, M8x1 connector, 4-pin | | | | |
| Aluminum | | | | |
| PMMA | | | | |
| 15...30 VDC | | | | |
| CE, EAC | | | | |
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Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

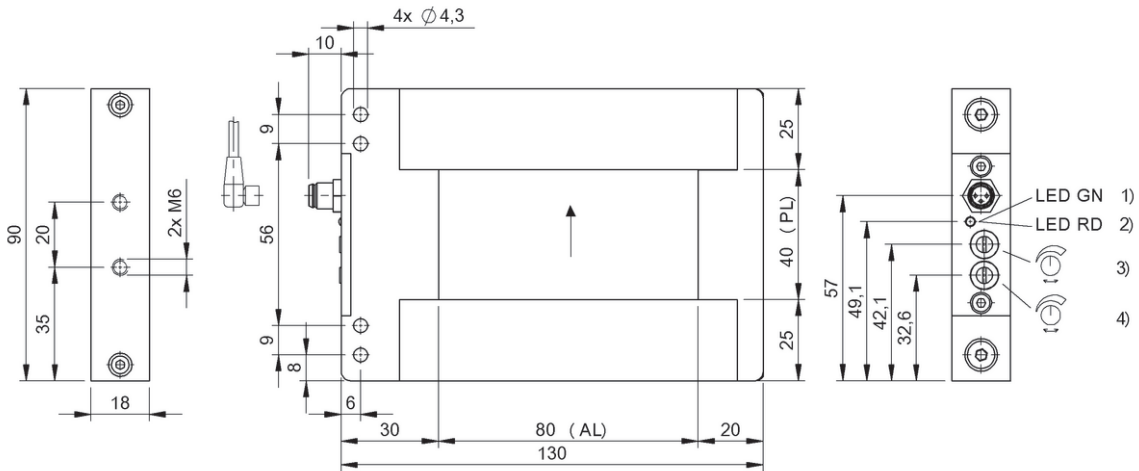
Safety

Industrial Networking

Power Supply

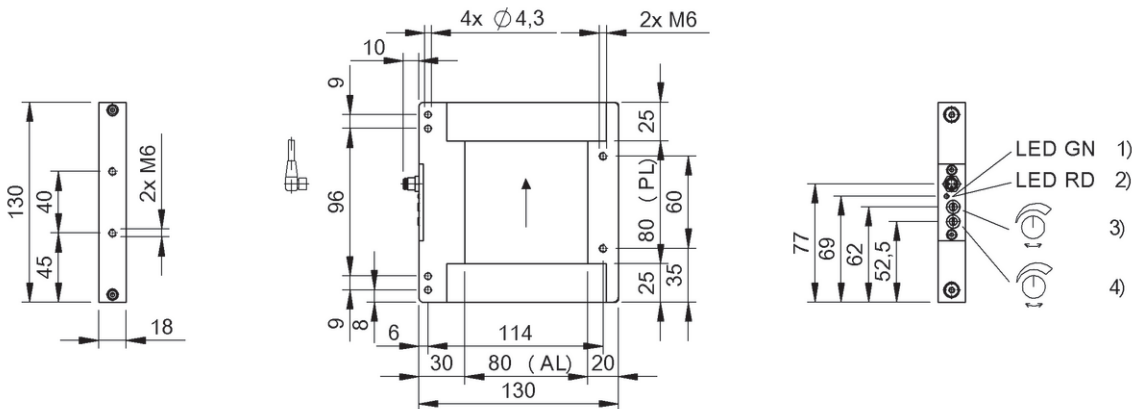
Connectivity

Accessories



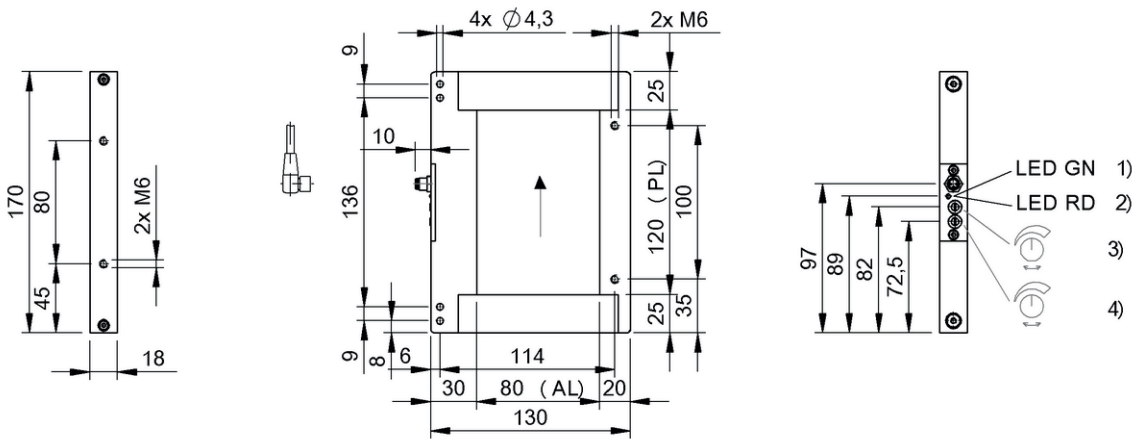
1) Power, 2) Output function, 3) Delay time, 4) Sensitivity

BOW001A



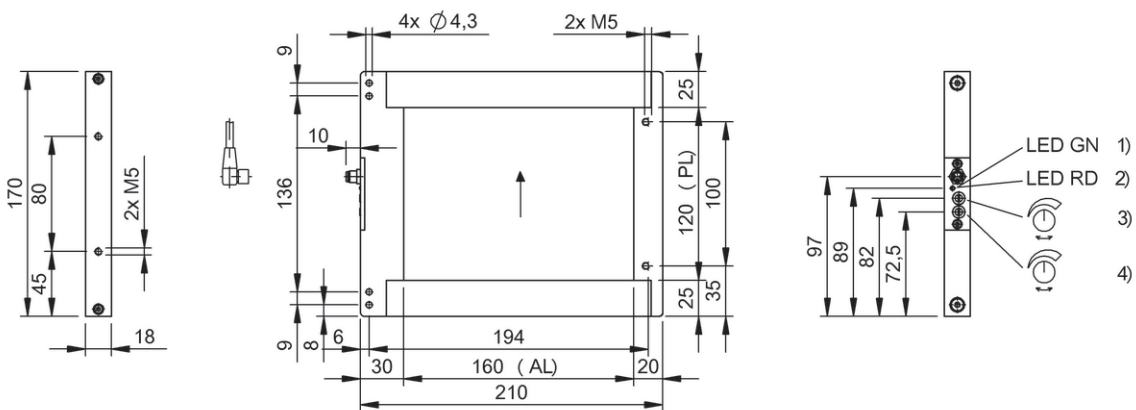
1) Power, 2) Output function, 3) Delay time, 4) Sensitivity

BOW001J



1) Power, 2) Output function, 3) Delay time, 4) Sensitivity

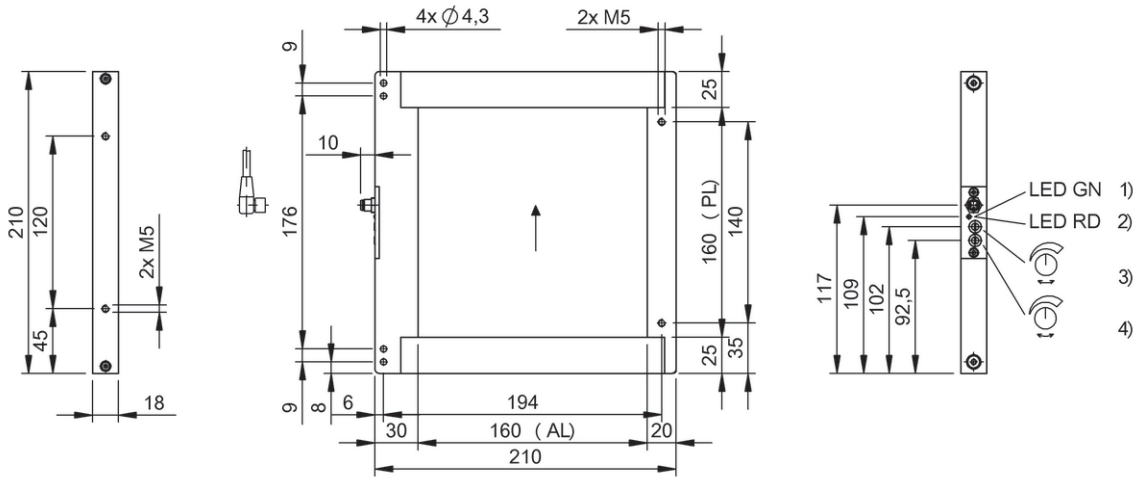
BOW0012



1) Power, 2) Output function, 3) Delay time, 4) Sensitivity

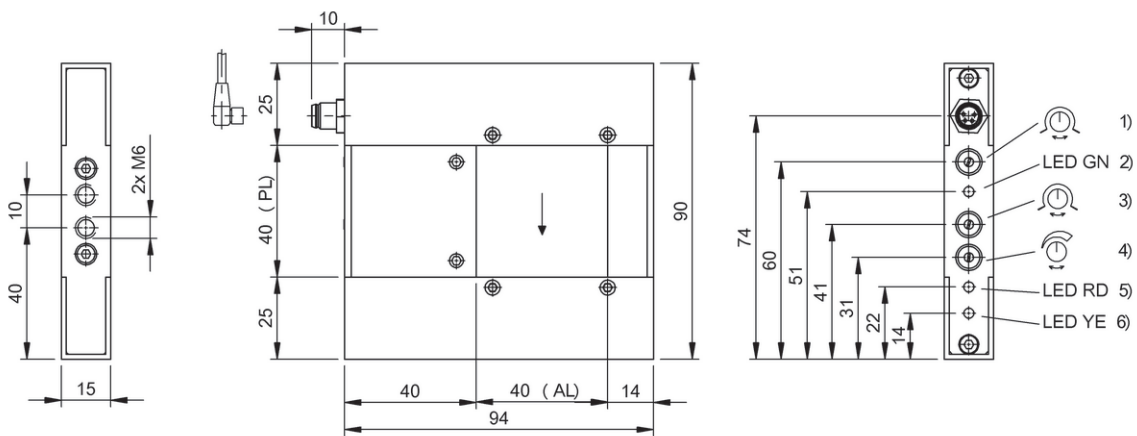
BOW0029, BOW002H

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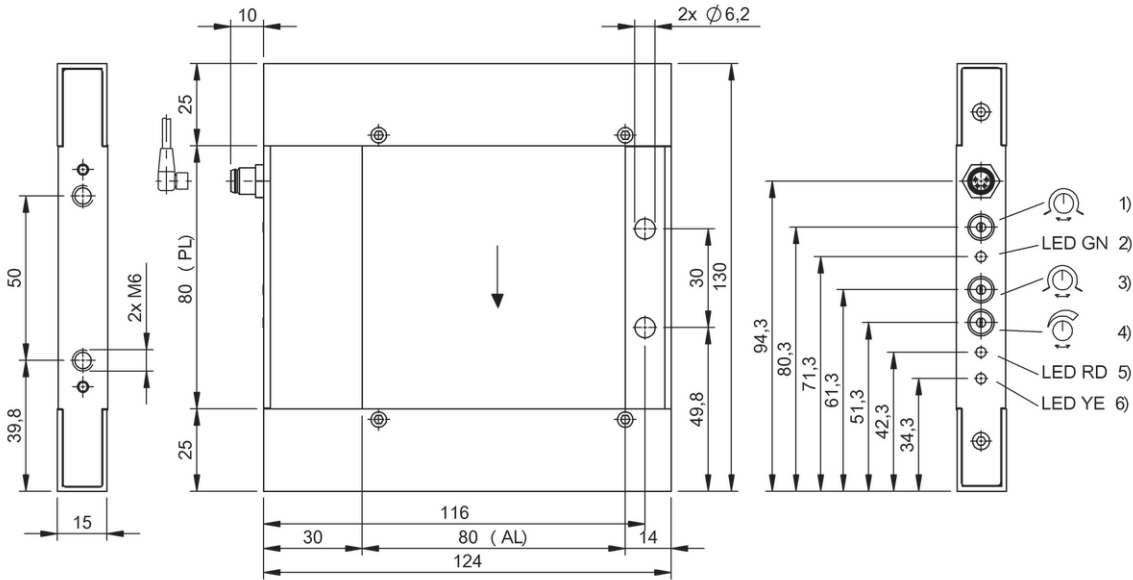
1) Power, 2) Output function, 3) Delay time, 4) Sensitivity

BOW002A, BOW002J



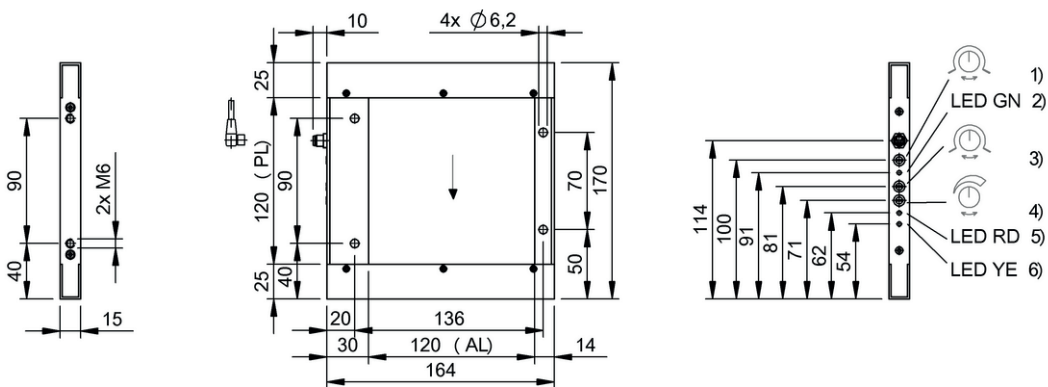
1) Pulse extender, 2) LED Power, 3) Switching function, 4) Object resolution, 5) LED warning indicator, 6) LED function indicator, 7) Optical axis

BOW002U



1) Pulse extender, 2) LED Power, 3) Switching function, 4) Object resolution, 5) LED warning indicator, 6) LED function indicator, 7) Optical axis

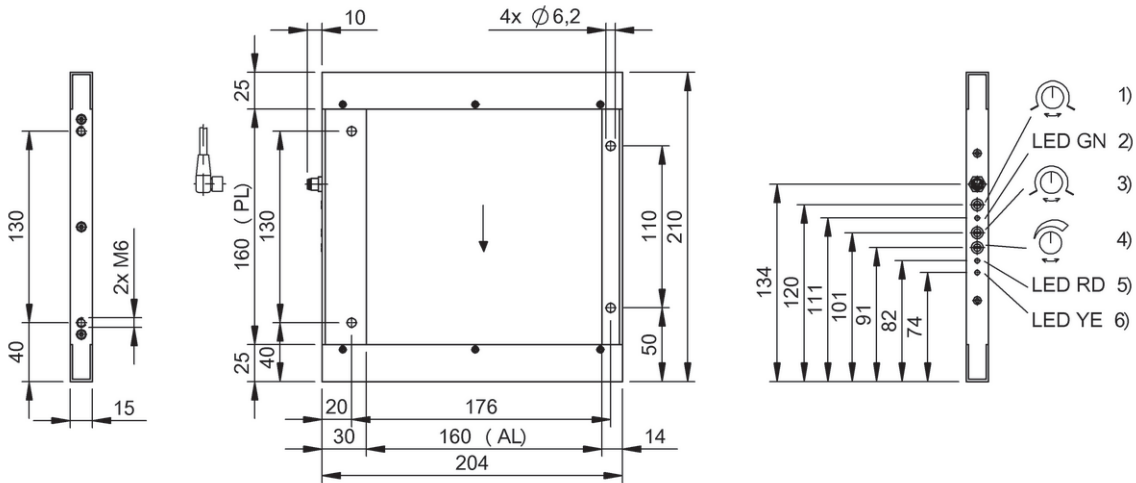
BOW002Y



1) Pulse extender, 2) LED Power, 3) Switching function, 4) Object resolution, 5) LED warning indicator, 6) LED function indicator, 7) Optical axis

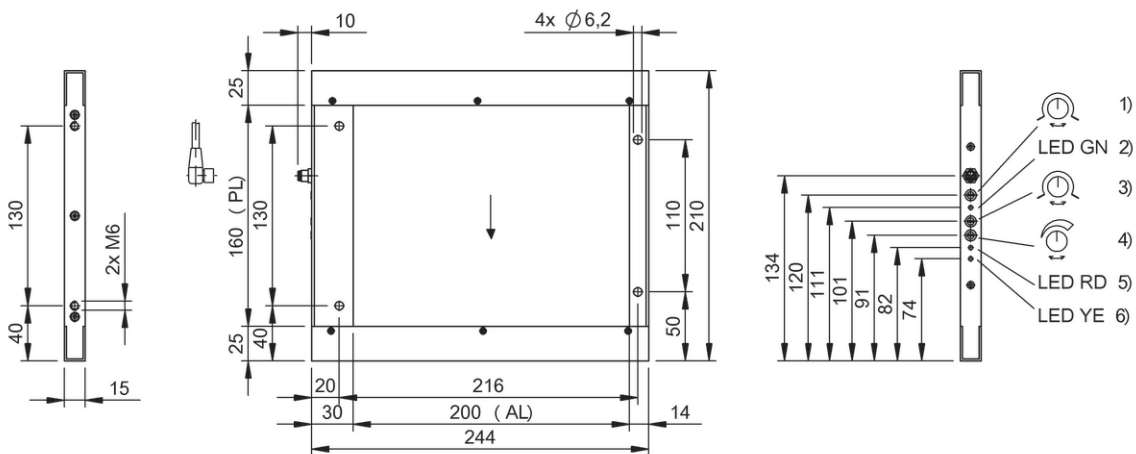
BOW0031

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1) Pulse extender, 2) LED Power, 3) Switching function, 4) Object resolution, 5) LED warning indicator, 6) LED function indicator, 7) Optical axis

BOW0034



1) Pulse extender, 2) LED Power, 3) Switching function, 4) Object resolution, 5) LED warning indicator, 6) LED function indicator, 7) Optical axis

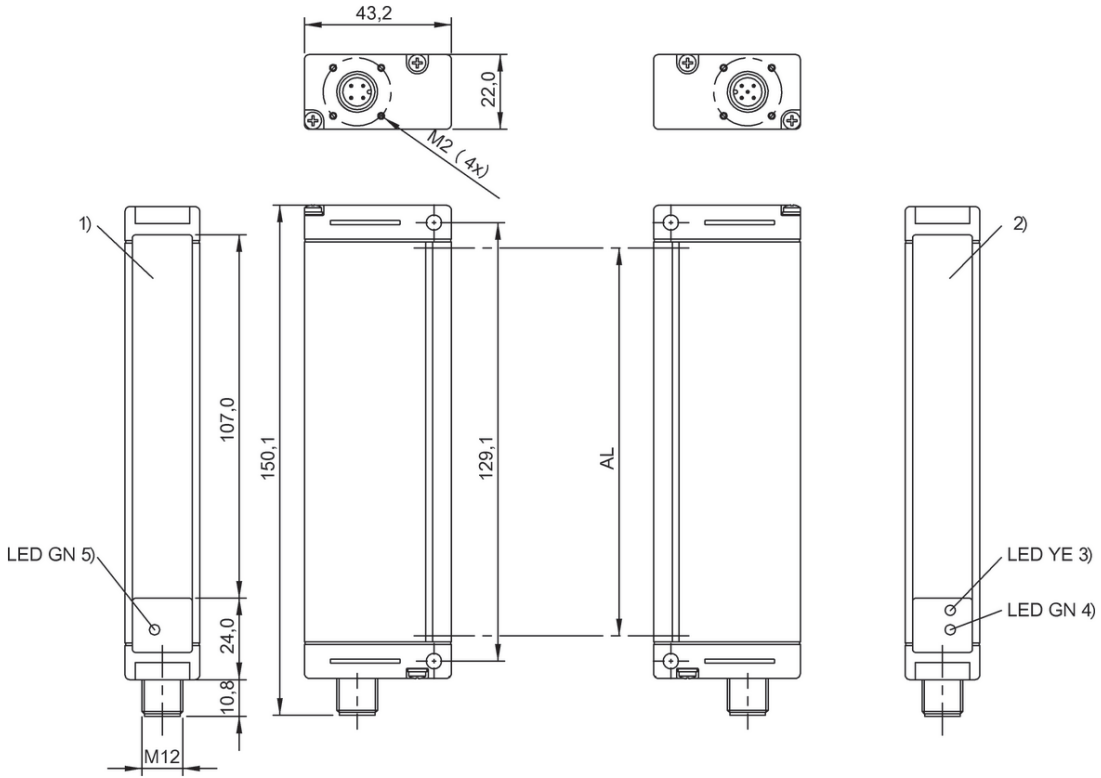
BOW0037



| | BLG0001 BLG 1-010-210-050-PV01-SX | |
|--------------------------------|--|--|
| Series | 1-010 | |
| Dimension | 22 x 150.1 x 43.2 mm | |
| Active length AL 1 | 100 mm | |
| Interface | Analog, voltage 0...10 V PNP Normally open (NO) | |
| Principle of operation | Light grid | |
| Principle of optical operation | Through-beam sensor | |
| Special optical feature | — | |
| Beam characteristic | Divergent | |
| Light type | Infrared | |
| Range | 0...2.1 m | |
| Smallest part typ. | 5.0 at t 0.5 x Sn, R 0 = 2.1 m | |
| Connection | Connector, M12x1 connector | |
| Housing material | Aluminum | |
| Material sensing surface | PMMA | |
| Operating voltage Ub | 20...28 VDC | |
| Approval/Conformity | CE | |
| Productview | Page 514 | |

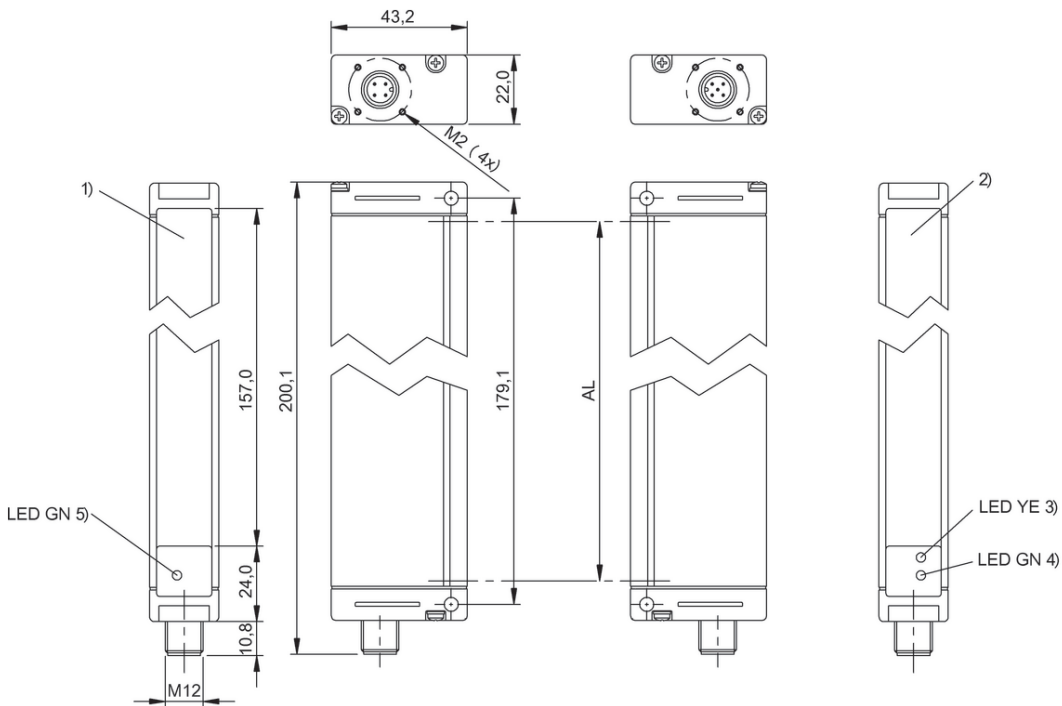


| | BLG0002 BLG 1-010-210-070-PV01-SX | BLG0003 BLG 1-015-210-050-PV01-SX | BLG0005 BLG 1-030-210-070-PV01-SX |
|--|--|--|--|
| | 1-010 | 1-015 | 1-030 |
| | 22 x 150.1 x 43.2 mm | 22 x 200.1 x 43.2 mm | 22 x 350.1 x 43.2 mm |
| | 100 mm | 150 mm | 300 mm |
| | Analog, voltage 0...10 V PNP Normally open (NO) | Analog, voltage 0...10 V PNP Normally open (NO) | Analog, voltage 0...10 V PNP Normally open (NO) |
| | Light grid | Light grid | Light grid |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | — | — | — |
| | Divergent | Divergent | Divergent |
| | Infrared | Infrared | Infrared |
| | 0...2.1 m | 0...2.1 m | 0...2.1 m |
| | 7.0 at t 0.5 x Sn, R0 = 2.1 m | 5.0 at t 0.5 x Sn, R0 = 2.1 m | 7.0 at t 0.5 x Sn, R0 = 2.1 m |
| | Connector, M12x1 connector | Connector, M12x1 connector | Connector, M12x1 connector |
| | Aluminum | Aluminum | Aluminum |
| | PMMA | PMMA | PMMA |
| | 20...28 VDC | 20...28 VDC | 20...28 VDC |
| | CE | CE | CE |
| | Page 514 | Page 514 | Page 515 |



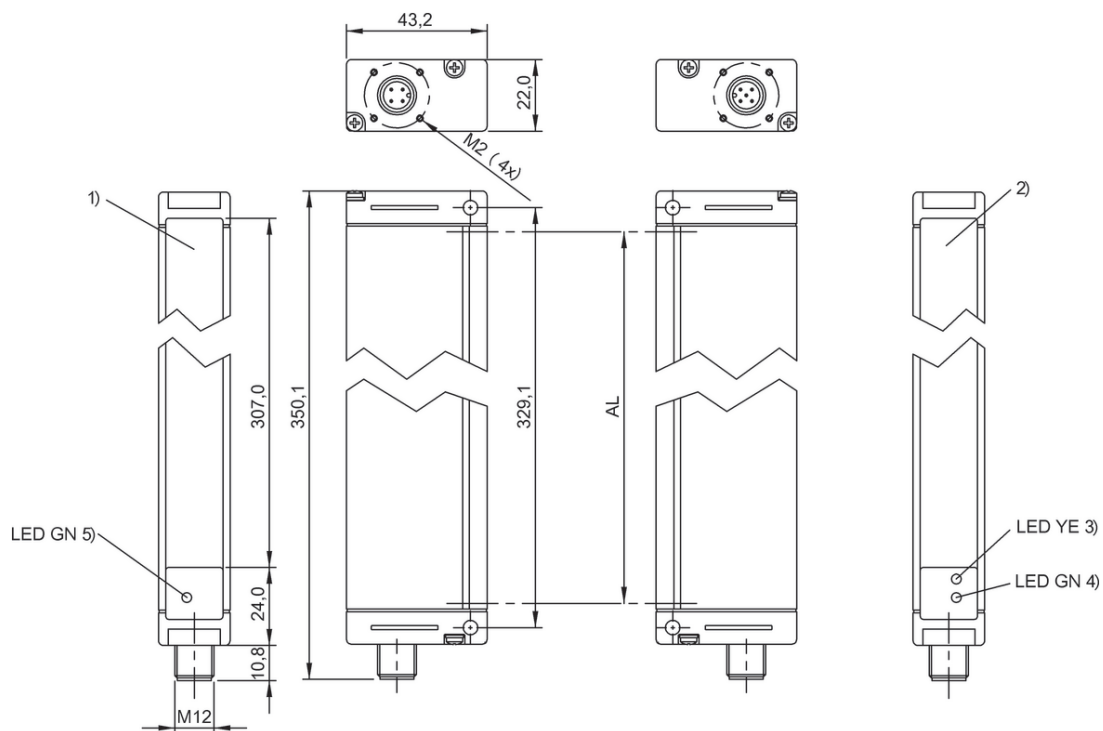
1) Sensing surface, 2) Sensing surface, 3) Output function, 4) stability/error, 5) Operating voltage

BLG0001, BLG0002



1) Sensing surface, 2) Sensing surface, 3) Output function, 4) stability/error, 5) Operating voltage

BLG0003



1) Sensing surface, 2) Sensing surface, 3) Output function, 4) stability/error, 5) Operating voltage

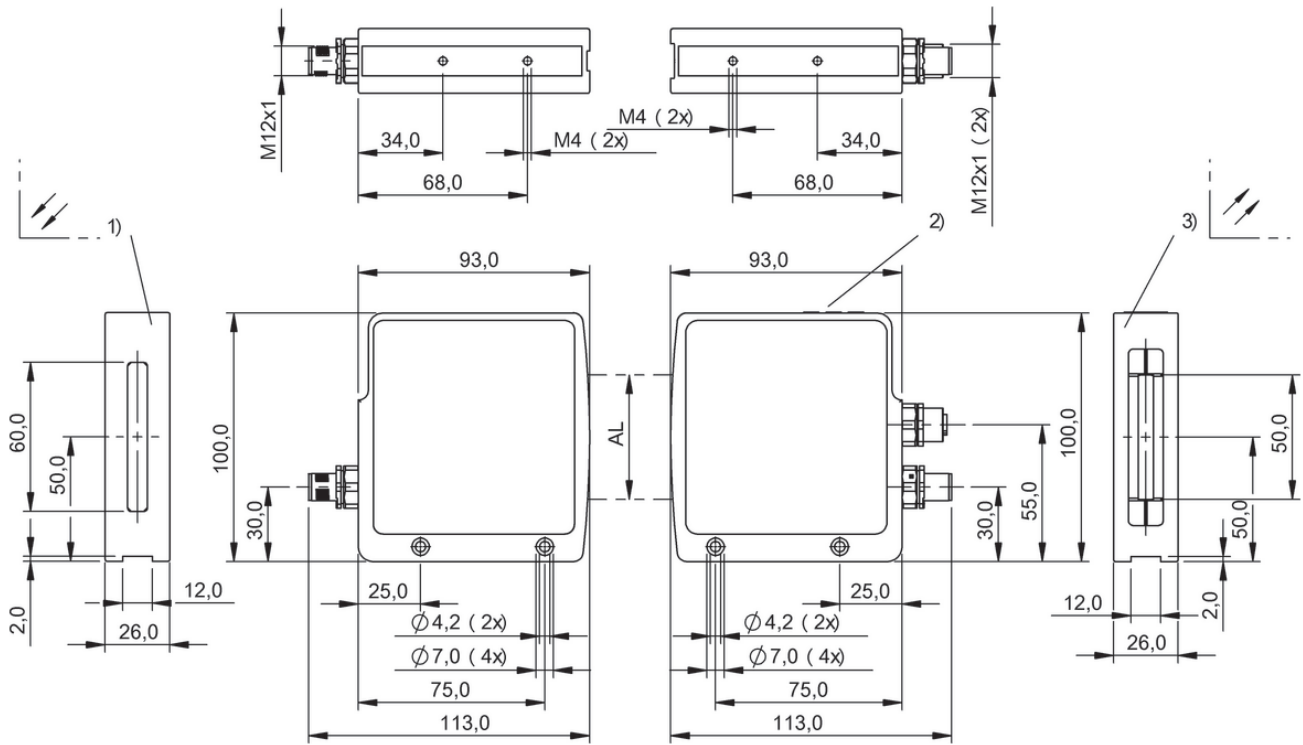
BLG0005



| | BLA0001 BLA 50A-001-S115 | |
|-------------------------|--|--|
| Series | A | |
| Dimension | 100 x 26 x 93 mm | |
| Interface | 2x Analog, voltage/analog, current 0...10 V/4...20 mA 3x PNP Normally open (NO) | |
| Principle of operation | Light array | |
| Special optical feature | CCD technology | |
| Beam characteristic | Collimated light strip, width 54 mm | |
| Light type | Laser red light | |
| Range | 0...2 m | |
| Connection 1 | M12x1-Male, 4-pole, A-coded | |
| Connection 2 | M12x1-Female, 4-pole, A-coded | |
| Connection 3 | M12x1-Male, 8-pole, A-coded | |
| Housing material | Aluminum | |
| Operating voltage U_b | 15...30 VDC | |
| Approval/Conformity | CE | |
| Productview | Page 518 | |



| | |
|-------------------------------------|--|
| BLA0003 BLA 50A-002-S4 | |
| A | |
| 100 x 27 x 93 mm | |
| IO-Link 1.1 | |
| Light array | |
| CCD technology | |
| Collimated light strip, width 54 mm | |
| Laser red light | |
| 0...2 m | |
| M12x1-Male, 4-pole | |
| M12x1-Female, 4-pole | |
| M12x1-Male, 4-pole | |
| Aluminum | |
| 18...30 VDC | |
| CE | |
| Page 518 | |



1) Emitter, 2) Display and control panel, 3) Receiver

BLA0001, BLA0003



| | | |
|--------------------------------|---|--|
| | BFS0001 BFS 26K-PS-L01-S115 | |
| Series | 26K | |
| Dimension | 17 x 50 x 50 mm | |
| Interface | 3x PNP normally open (NO) | |
| Input function | Emitter on/off, Key disable on/off, Teach color (switchpoint) | |
| Principle of operation | Color sensor | |
| Principle of optical operation | Diffuse sensor, fixed focus | |
| Beam characteristic | Focused | |
| Light type | White light | |
| Light spot size | Ø 4 mm at 22 mm | |
| Range | 12...32 mm | |
| Connection | Connector, M12x1 connector, 8-pin | |
| Housing material | ABS | |
| Material sensing surface | PMMA | |
| Operating voltage U_b | 12...28 VDC | |
| Approval/Conformity | CE, cULus, EAC | |
| Productview | Page 522 | |



| BFS000M | BFS000L | |
|----------------------------------|---|--|
| BFS 33M-GSI-F01-S75 | BFS 33M-GSS-F01-PU-02 | |
| 33M | 33M | |
| 21 x 58.3 x 58 mm | 21 x 58.3 x 74 mm | |
| IO-Link 1.1 2x NO/NC | 3x PNP/NPN normally open/normally closed (NO/NC) | |
| — | — | |
| Color sensor | Color sensor | |
| Diffuse sensor | — | |
| — | — | |
| White light | White light | |
| — | — | |
| — | — | |
| Connector, M8x1 connector, 4-pin | Cable, 2.00 m, PUR | |
| Aluminum | Aluminum | |
| — | — | |
| 21.6...26.4 VDC | 21.6...26.4 VDC | |
| CE | CE | |
| Page 522 | Page 523 | |

Sensors

RFID

Machine Vision and
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Human Machine
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Systems

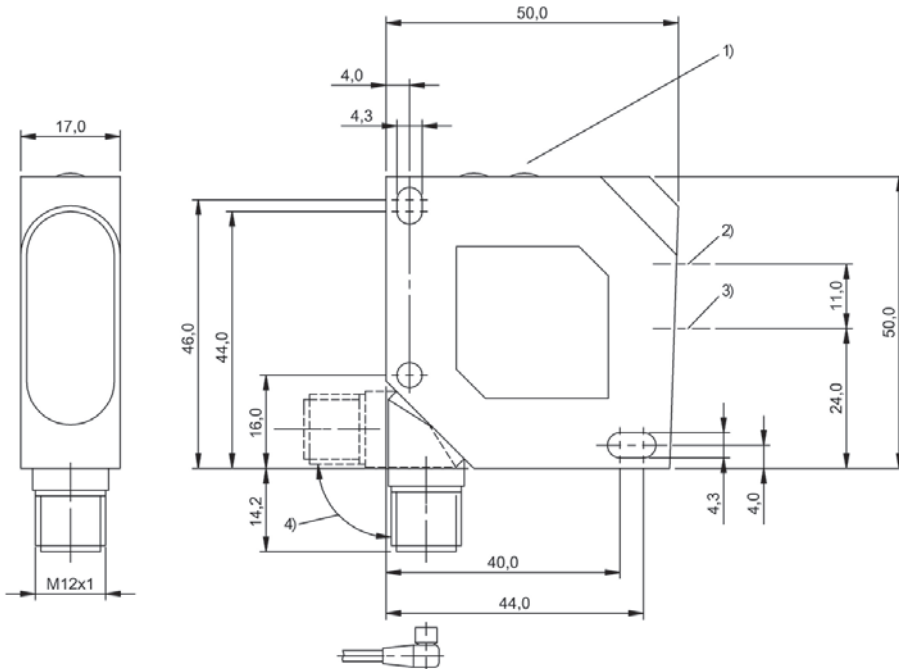
Safety

Industrial Networking

Power Supply

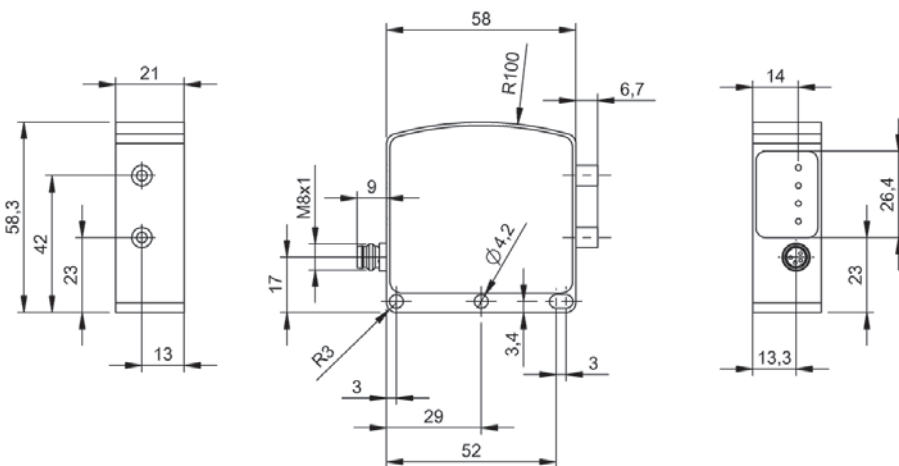
Connectivity

Accessories

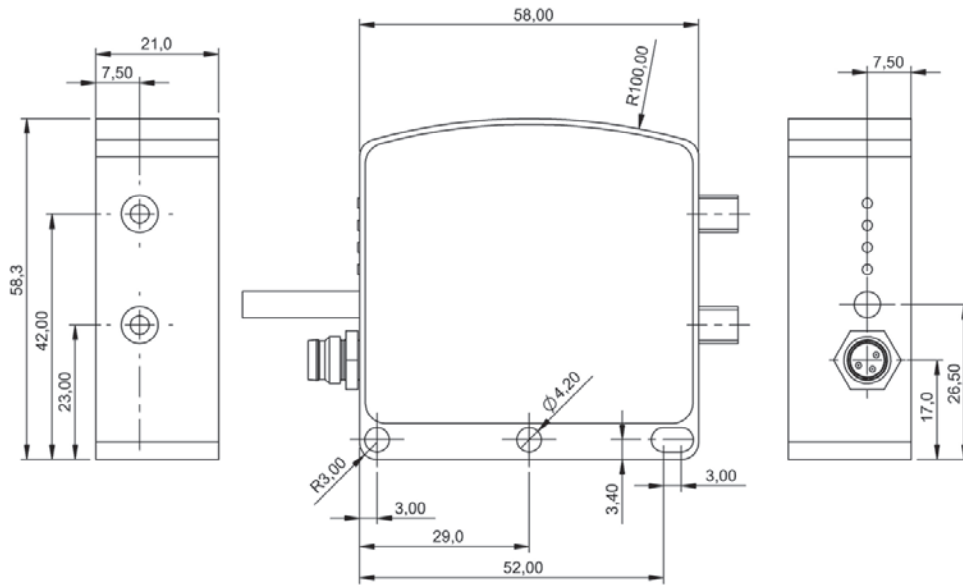


1) Display and control panel, 2) Optical axis emitter, 3) Optical axis receiver, 4) rotatable 270°

BFS0001



BFS000M



BFS000L



| | | | | |
|---|-------------------------------------|---|--|--|
| PNP normally open, PNP normally closed | BKT000H BKT 18KF-001-P-S4 | | | |
| PNP normally open/normally closed | | BKT0010 BKT 6K-002-P-S75 | BKT000Y BKT 21M-002-P-S4 | |
| PNP/NPN normally open/normally closed, analog, voltage 1...5.5 V | | | | |
| PNP/NPN normally open/normally closed | | | | |
| Series | 18KF | 6K | 21M | |
| Dimension | Ø 18 x 81.5 mm | 12 x 41.5 x 21.6 mm | 12 x 50 x 42.5 mm | |
| Input function | — | Key disable on/off, Same function as button | Key disable on/off, Teach Contrast (switching point) | |
| Principle of operation | Contrast sensor | Contrast sensor | Contrast sensor | |
| Principle of optical operation | Diffuse sensor, Focused | Diffuse sensor, Focused | Diffuse sensor, Focused | |
| Special optical feature | — | — | Coaxial Optics | |
| Beam characteristic | Focused | Focused | Focused | |
| Light type | White light | Laser red light | White light | |
| Light spot size | Ø 4.5 mm at 10 mm | 0.7 x 0.7 mm at 250 mm | Ø 3.5 mm at 19 mm | |
| Range | 8...12 mm | 1...250 mm | 17...21 mm | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | PBT | ABS | Zinc, die-cast Aluminum | |
| Material sensing surface | PMMA | PMMA | Glass | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, cULus | cULus, CE, EAC | cULus, CE, EAC | |
| Productview | Page 526 | Page 526 | Page 527 | |



| | | | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|
| | | | | | |
| | | | | | |
| | BKT003 BKT 67M-003-U-S92 | | | BKT001 BKT 67M-001-U-S92 | |
| | | BKT005 BKT 67M-005-U-S92 | BKT006 BKT 67M-006-U-S92 | | |
| | 67M | 67M | 67M | 67M | |
| | 32 x 64 x 82 mm | 32 x 64 x 82 mm | 32 x 64 x 82 mm | 32 x 64 x 82 mm | |
| | Same function as SET button | Same function as SET button | Same function as SET button | Time function on/off | |
| | Contrast sensor | Contrast sensor | Contrast sensor | Contrast sensor | |
| | Diffuse sensor, Focused | Diffuse sensor, Focused | Diffuse sensor, Focused | Diffuse sensor, Focused | |
| | — | — | — | — | |
| | Focused | Focused | Focused | Focused | |
| | blue light/green light/ red light | blue light/green light/ red light | blue light/green light/ red light | blue light/green light/ red light | |
| | 1.5 x 5 mm at 9 mm | 1.5 x 5 mm at 9 mm | 5 x 1.5 mm at 9 mm | 1.5 x 5 mm at 9 mm | |
| | 6...12 mm | 6...12 mm | 6...12 mm | 6...12 mm | |
| | Connector, M12x1 connector | Connector, M12x1 connector | Connector, M12x1 connector | Connector, M12x1 connector | |
| | Aluminum, die-cast | Aluminum, die-cast | Aluminum, die-cast | Aluminum, die-cast | |
| | Glass | Glass | Glass | PMMA | |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus | |
| | Page 527 | Page 528 | Page 528 | Page 528 | |

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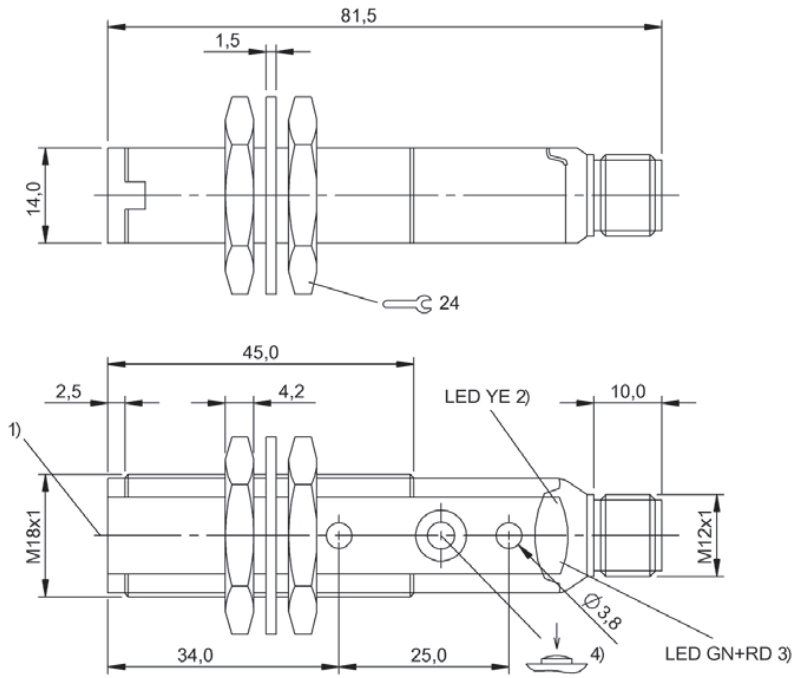
Safety

Industrial Networking

Power Supply

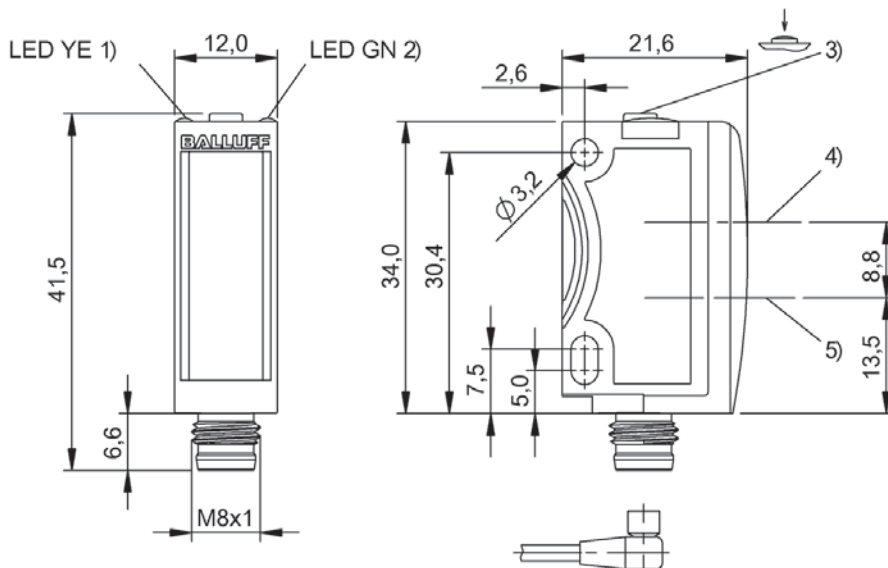
Connectivity

Accessories



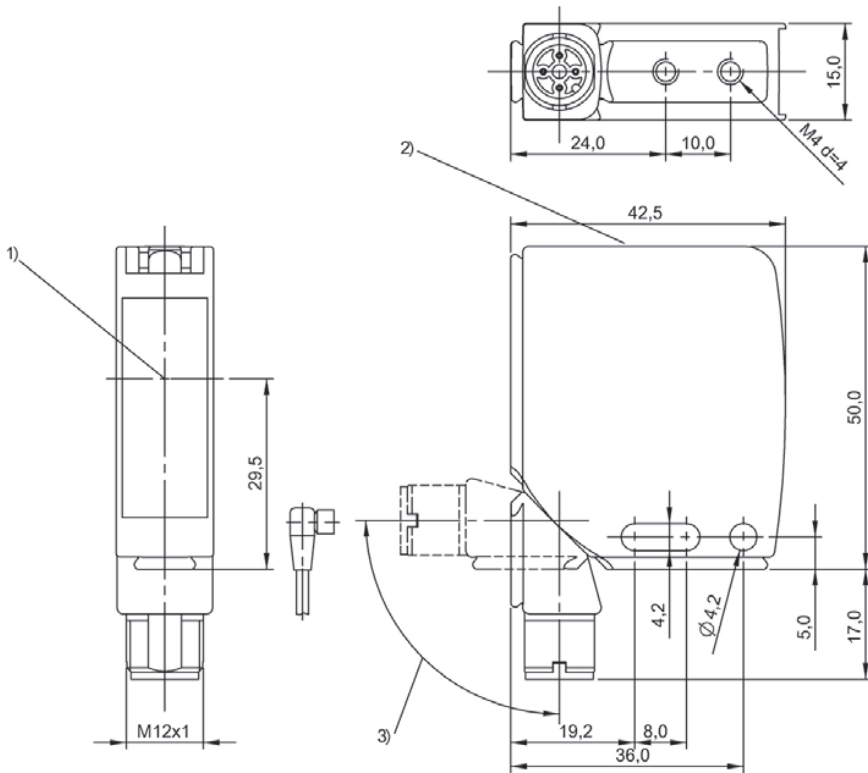
1) Optical axis, 2) Output function, 3) stability/error, 4) Sn

BKT000H



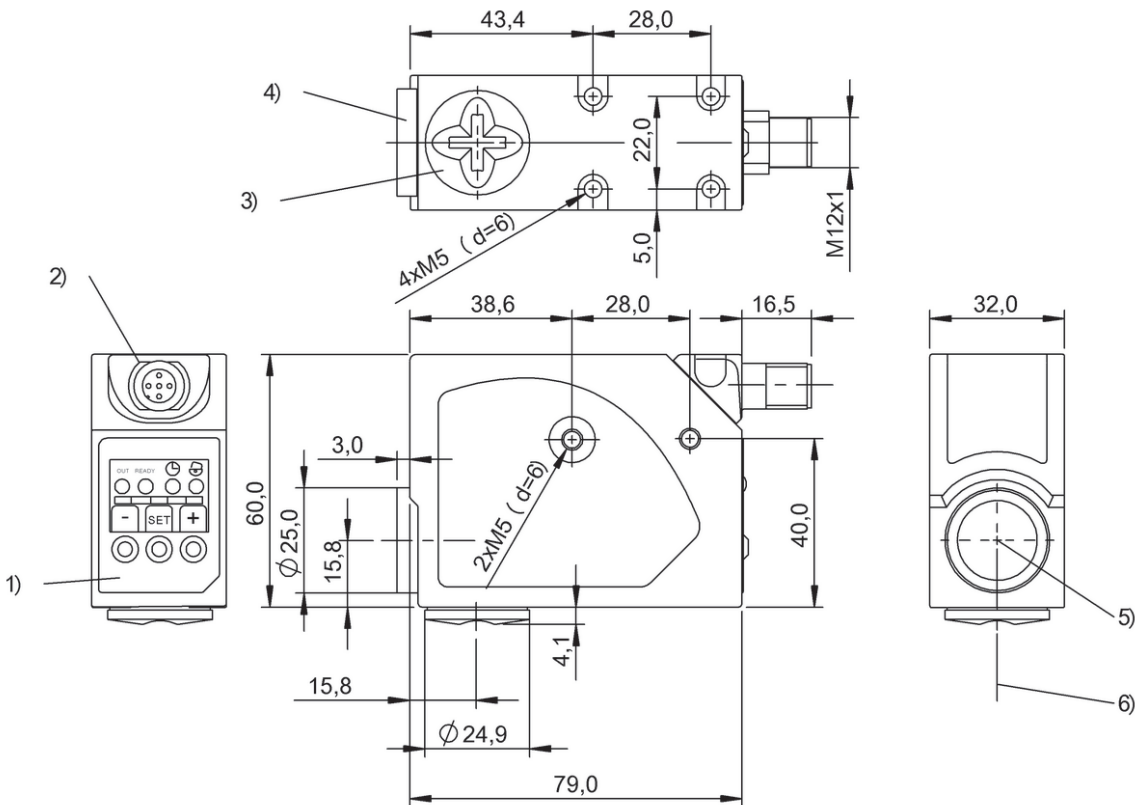
1) Output function, 2) Operating voltage, 3) Sensitivity, light/dark, 4) Optical axis receiver, 5) Optical axis emitter

BKT0010



1) Optical axis, 2) Display and control panel, 3) rotatable 270°

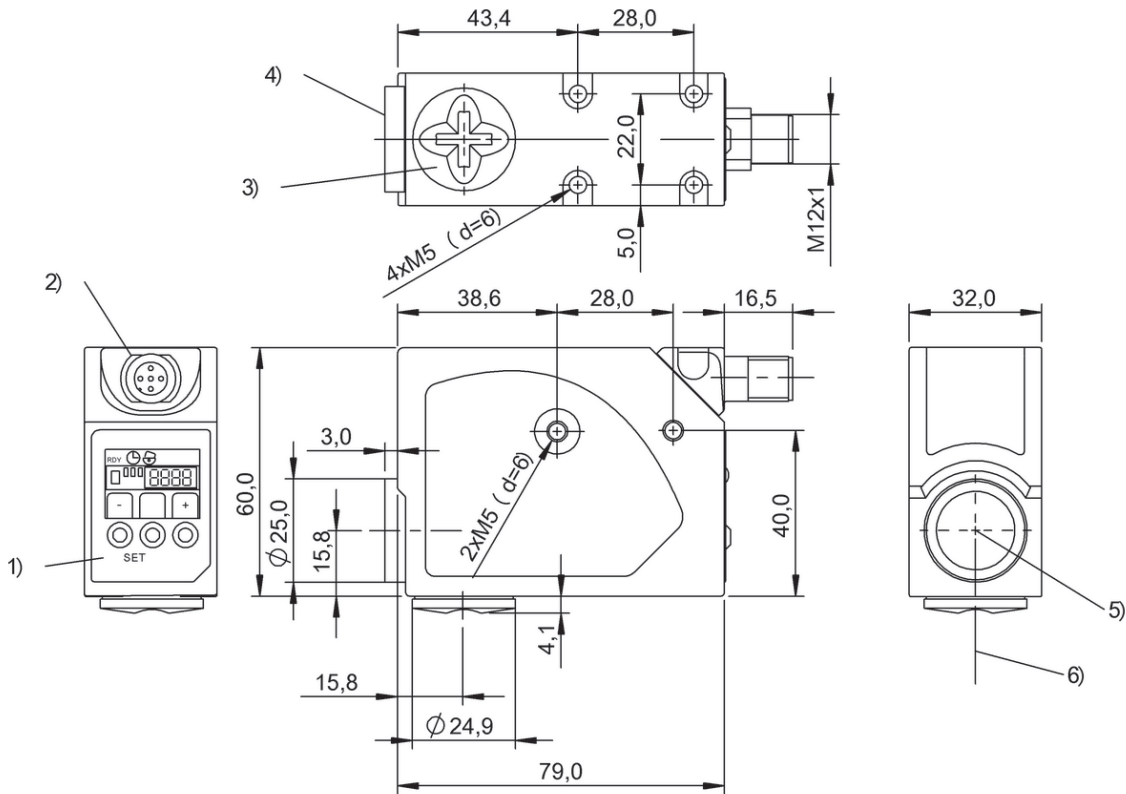
BKT000Y



1) Display and control panel, 2) rotatable 270°, 3) Cover cap, removable, 4) standard lens, removable, 5) Light exit standard, 6) Light exit optional

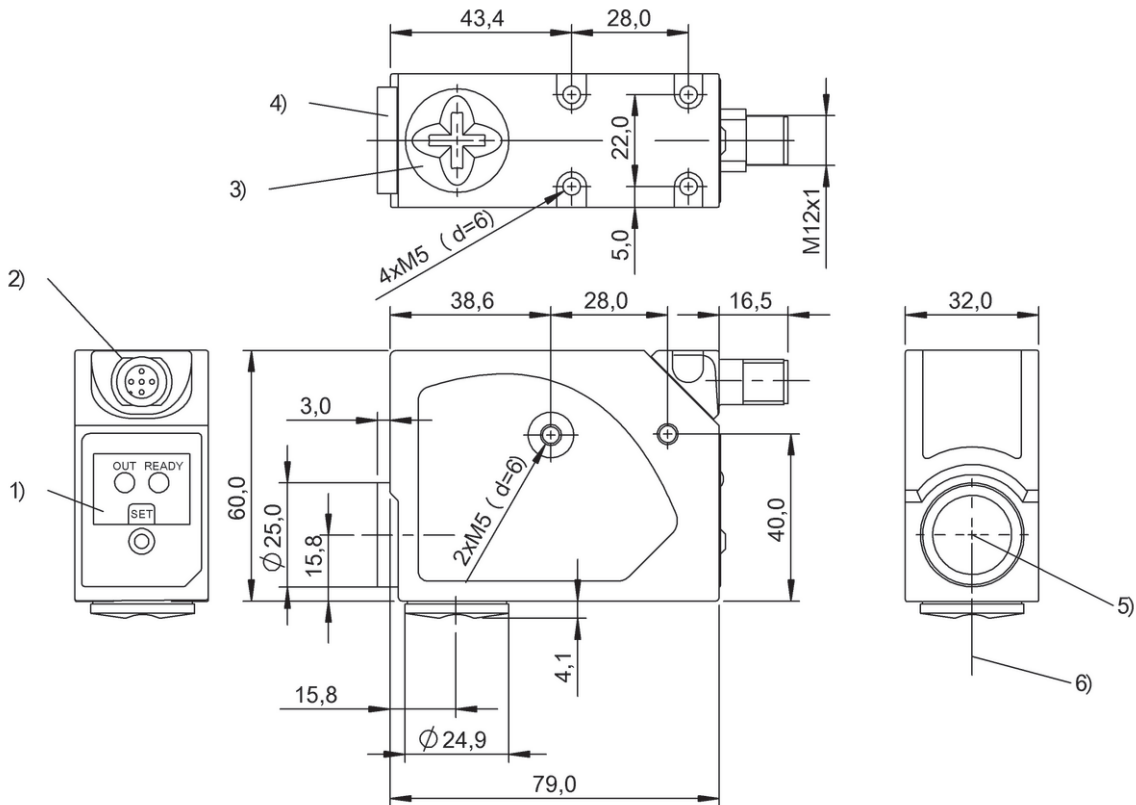
BKT0003

Do you need more details? Our Product Finder at www.balluff.com provides you with product-specific information, including technical drawings, data sheets, user guides and more for each individual product. All items are available for download.



1) Display and control panel, 2) rotatable 270°, 3) Cover cap, removable, 4) standard lens, removable, 5) Light exit standard, 6) Light exit optional

BKT0005, BKT0006



1) Display and control panel, 2) rotatable 270°, 3) Cover cap, removable, 4) standard lens, removable, 5) Light exit standard, 6) Light exit optional

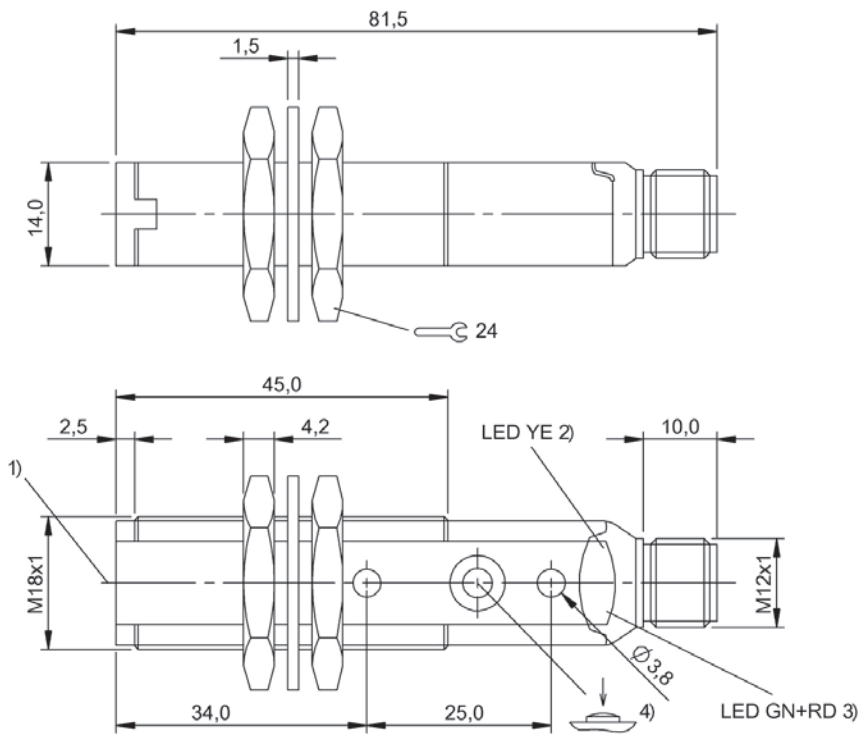
BKT0001



| | | |
|--|-------------------------------------|--|
| PNP normally open, PNP normally closed | BLT0004 BLT 18KF-001-P-S4 | |
| PNP normally open/normally closed | | |
| Series | 18KF | |
| Dimension | Ø 18 x 81.5 mm | |
| Input function | — | |
| Principle of operation | Luminescence sensor | |
| Principle of optical operation | Diffuse sensor, Focused | |
| Special optical feature | — | |
| Beam characteristic | Focused | |
| Light type | Ultraviolet light | |
| Light spot size | Ø 3 mm at 20 mm | |
| Range | 8...20 mm | |
| Connection | Connector, M12x1 connector, 4-pin | |
| Housing material | PBT | |
| Material sensing surface | PMMA | |
| Operating voltage U_b | 10...30 VDC | |
| Approval/Conformity | CE, cULus | |
| Productview | Page 532 | |

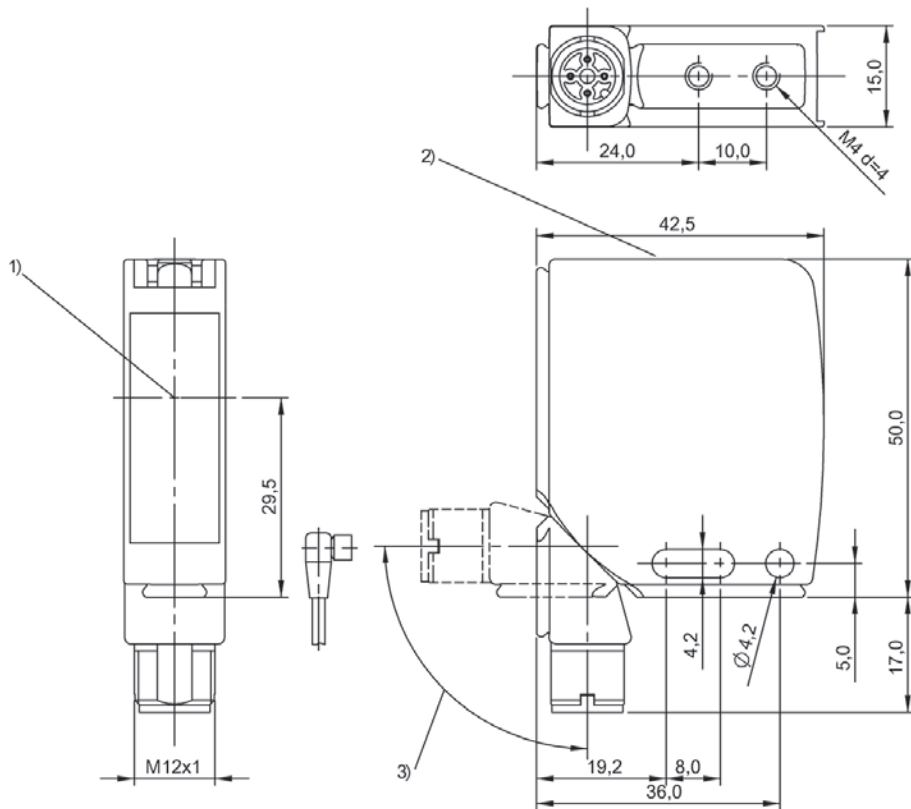


| | | |
|--|--|--|
| | | |
| | BLT0009 BLT 21M-001-P-S4 | |
| | 21M | |
| | 12 x 50 x 42.5 mm | |
| | Key disable on/off, Teach Contrast (switching point) | |
| | Luminescence sensor | |
| | Diffuse sensor, Focused | |
| | Coaxial Optics | |
| | Focused | |
| | Ultraviolet light | |
| | Ø 1.5 mm at 10 mm | |
| | 0...40 mm | |
| | Connector, M12x1 connector, 4-pin | |
| | Zinc, die-cast Aluminum | |
| | Glass | |
| | 10...30 VDC | |
| | cULus, CE | |
| | Page 532 | |



1) Optical axis, 2) Output function, 3) stability/error, 4) Sn

BLT0004



1) Optical axis, 2) Display and control panel, 3) rotatable 270°

BLT0009



| | | | |
|---|--|--|--|
| 2 × PNP normally open/normally closed | | | |
| PNP normally open/normally closed | | BFB0006 BFB 75K-002-P-S75 | |
| PNP normally open/normally closed, analog, voltage 0...10 V | BFB0008 BFB 75K-003-P-02 | | |
| Series | 75K | 75K | |
| Dimension | 10.4 x 35.4 x 79.3 mm | 10.4 x 35.4 x 84 mm | |
| Principle of operation | Fiber optic device | Fiber optic device | |
| Input function | Teach Sn, Key disable on/off | Teach Sn, Key disable on/off | |
| Setting | Rated switching distance (Sn), 2 values, Duration of single pulse, Mode normal/fine/fast/far, LCD read direction, Time function, Factory setting (Reset), display on/off, Delay time, Key disable on/off, Light-on/dark-on, Sensitivity (Sn) | LCD read direction, Time function, Factory setting (Reset), Mode normal/fine/fast/far, Duration of single pulse, Rated switching distance (Sn), 2 values, display on/off, Delay time, Key disable on/off, Light-on/dark-on, Sensitivity (Sn) | |
| Operating voltage Ub | — | 10...30 VDC | |
| Light type | LED, red light | LED, red light | |
| Connection | Cable, 2.00 m, PVC | Connector, M8x1 connector, 4-pin | |
| Housing material | ABS | ABS | |
| Switching frequency | 8000 Hz /1000 Hz/125 Hz | 8000 Hz /1000 Hz/125 Hz | |
| Approval/Conformity | cULus, CE | cULus, CE | |
| Productview | Page 538 | Page 538 | |



| | | | BFB000C BFB M18M-011-P-S4 | BFB000E BFB M18M-012-P-S4 |
|--|---|---|-------------------------------------|-------------------------------------|
| | BFB0003 BFB 75K-001-P-02 | BFB0004 BFB 75K-001-P-S75 | | |
| | 75K | 75K | 18M | 18M |
| | 10.4 x 35.4 x 79.3 mm | 10.4 x 35.4 x 84 mm | Ø 18 x 75 mm | Ø 18 x 75 mm |
| | Fiber optic device | Fiber optic device | Photoelectric sensor | Photoelectric sensor |
| | Key disable on/off, Same function as button | Same function as button, Key disable on/off | — | — |
| | Factory setting (Reset), Light-on/dark-on, Sensitivity (Sn) | Light-on/dark-on, Factory setting (Reset), Sensitivity (Sn) | Sensitivity (Sn) | Sensitivity (Sn) |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | LED, red light | LED, red light | LED infrared | LED infrared |
| | Cable, 2.00 m, PVC | Connector, M8x1 connector, 4-pin | Connector-plug, 4-pin | Connector-plug, 4-pin |
| | ABS | ABS | Brass | Brass |
| | 1500 Hz | 1500 Hz | 1000 Hz | 3000 Hz |
| | cULus, CE, EAC | CE, cULus, EAC | CE, EAC, cULus, DC, Code 81U2 | CE, EAC, cULus, DC, Code 81U2 |
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| | | | |
|--|-------------------------------------|-------------------------------------|--|
| 2 × PNP normally open/normally closed | BFB0009 BFB M18M-001-P-S4 | BFB000A BFB M18M-002-P-S4 | |
| PNP normally open, PNP normally closed | | | |
| Series | 18M | 18M | |
| Dimension | Ø 18 x 75 mm | Ø 18 x 75 mm | |
| Principle of operation | Photoelectric sensor | Photoelectric sensor | |
| Input function | — | — | |
| Setting | Sensitivity (Sn) | Sensitivity (Sn) | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Light type | LED, red light | LED, red light | |
| Connection | Connector-plug, 4-pin | Connector-plug, 4-pin | |
| Housing material | Brass | Brass | |
| Switching frequency | 1000 Hz | 3000 Hz | |
| Approval/Conformity | CE, EAC, cULus, DC, Code 81U2 | CE, EAC, cULus, DC, Code 81U2 | |
| Productview | Page 538 | Page 538 | |



| | | | | |
|--|--|--|--|--|
| | | | | |
| | BOS00JJ BOS 18KF-PA-1FR-S4-C | | | |
| | 18KF | | | |
| | Ø 18 x 87 mm | | | |
| | Fiber optic device | | | |
| | — | | | |
| | Sensitivity (Sn) | | | |
| | 10...30 VDC | | | |
| | LED, red light | | | |
| | Connector, M12x1 connector, 4-pin | | | |
| | PBT | | | |
| | 1000 Hz | | | |
| | CE, cULus | | | |
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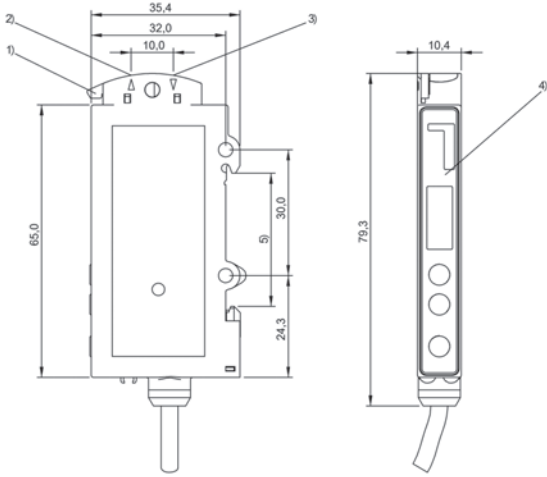
Safety

Industrial Networking

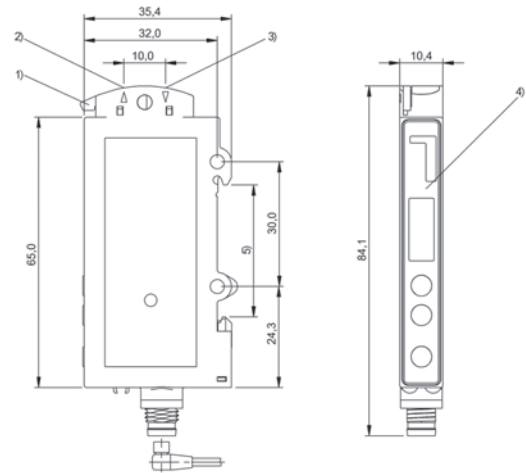
Power Supply

Connectivity

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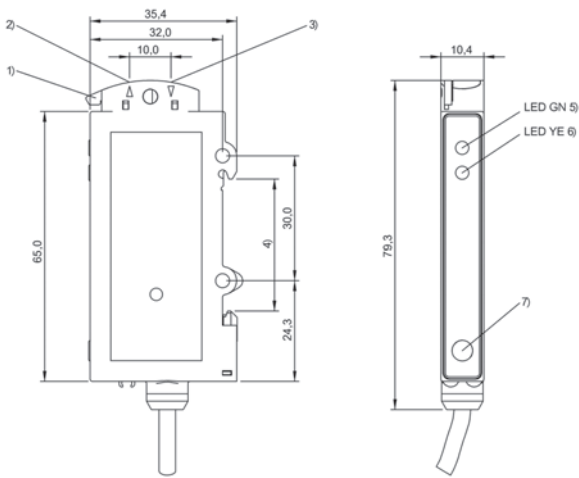
1) Fiber clamp, 2) Receiver, 3) Emitter, 4) Display and control panel, 5) For DIN rail 35mm



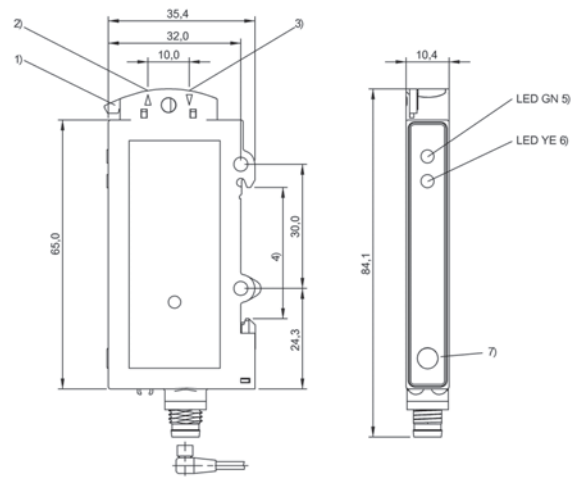
1) Fiber clamp, 2) Receiver, 3) Emitter, 4) Display and control panel, 5) For DIN rail 35mm

BFB0008

BFB0006



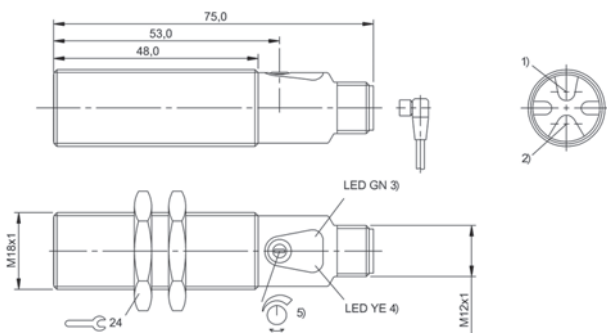
1) Fiber clamp, 2) Emitter, 3) Receiver, 4) For DIN rail 35mm, 5) stability, 6) Output function, 7) Sn



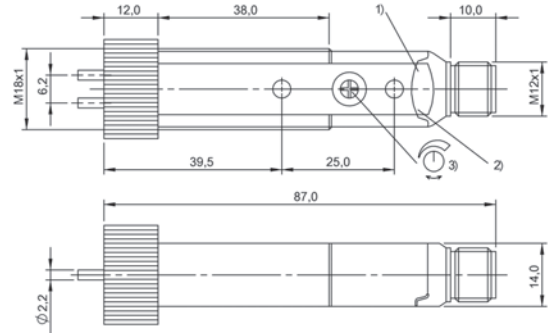
1) Fiber clamp, 2) Emitter, 3) Receiver, 4) For DIN rail 35mm, 5) stability, 6) Output function, 7) Sn

BFB0003

BFB0004



1) Optical axis receiver, 2) Optical axis emitter, 3) Operating voltage, 4) Light reception/limit area, 5) Screw



1) Output function, 2) Stability, 3) Sn

BFB000C, BFB000E, BFB0009, BFB000A

BOS00JJ



| | BF0000F BFO 18A-LAA-MZG-20-0,5 | BF0000H BFO 18A-LAA-MZG-20-1 | BF0000J BFO 18A-LAA-MZG-20-1,5 | |
|-----------------------------------|--|--|--|--|
| Version | M5, standard | M5, standard | M5, standard | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | |
| Fiber type material | Glass | Glass | Glass | |
| Cable length L | 0.50 m | 1.00 m | 1.50 m | |
| Material jacket | Stainless steel | Stainless steel | Stainless steel | |
| Range | 200 mm | 200 mm | 200 mm | |
| Ambient temperature | -20...250 °C | -20...250 °C | -20...250 °C | |
| Material | Brass blackened | Brass blackened | Brass blackened | |
| Active surface, fibers | Bundle Ø 1.0 mm | Bundle Ø 1.0 mm | Bundle Ø 1.0 mm | |
| Active surface, fiber arrangement | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | |
| Protection degree | IP50 | IP50 | IP50 | |
| Productview | Page 568 | Page 568 | Page 568 | |



| | BF0000M BFO 18A-LAA-UZG-20-0,5 | BF0000N BFO 18A-LAA-UZG-20-1 | BF0001Z BFO 18A-LGG-MZG-10-0,5 | BF00020 BFO 18A-LGG-MZG-10-1 | BF00023 BFO 18A-LGG-SMG-10-0,5 |
|--|--|--|--|--|--|
| | M5, standard | M5, standard | Ø 2, standard | Ø 2, standard | Ø 2, standard |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 |
| | Glass | Glass | Glass | Glass | Glass |
| | 0.50 m | 1.00 m | 0.50 m | 1.00 m | 0.50 m |
| | PUR | PUR | Stainless steel | Stainless steel | Silicone, on stainless steel |
| | 200 mm | 200 mm | 100 mm | 100 mm | 100 mm |
| | -20...85 °C | -20...85 °C | -20...250 °C | -20...250 °C | -40...150 °C |
| | Brass blackened | Brass blackened | Stainless steel | Stainless steel | Stainless steel |
| | Bundle Ø 1.0 mm | Bundle Ø 1.0 mm | Bundle Ø 1.4 mm | Bundle Ø 1.4 mm | Bundle Ø 1.4 mm |
| | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle |
| | IP67 | IP67 | IP50 | IP50 | IP67 |
| | Page 568 | Page 568 | Page 569 | Page 569 | Page 569 |

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| | BF00024 BFO 18A-LGG-SMG-10-1 | BF0000U BFO 18A-LCC-SMG-20-0,5 | BF0000W BFO 18A-LCC-SMG-20-1 | |
|-----------------------------------|--|--|--|--|
| Version | Ø 2, standard | Ø 6, standard | Ø 6, standard | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | |
| Fiber type material | Glass | Glass | Glass | |
| Cable length L | 1.00 m | 0.50 m | 1.00 m | |
| Material jacket | Silicone, on stainless steel | Silicone, on stainless steel | Silicone, on stainless steel | |
| Range | 100 mm | 200 mm | 200 mm | |
| Ambient temperature | -40...150 °C | -40...150 °C | -40...150 °C | |
| Material | Stainless steel | Brass blackened | Brass blackened | |
| Active surface, fibers | Bundle Ø 1.4 mm | Bundle Ø 1.0 mm | Bundle Ø 1.0 mm | |
| Active surface, fiber arrangement | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | |
| Protection degree | IP67 | IP67 | IP67 | |
| Productview | Page 569 | Page 570 | Page 570 | |



| | BF0000Z BFO 18A-LCC-UZG-20-1 | BF0003Y BFO 18V-LCC-MZG-23-0,5 | BF0003Z BFO 18V-LCC-MZG-23-0,75 | BF00042 BFO 18V-LCC-SMG-23-0,5 | BF0001P BFO 18A-LFF-MZG-10-0,5 |
|--|--|--|---|--|--|
| | Ø 6, standard | Ø 6, standard | Ø 6, standard | Ø 6, standard | Ø 2, 90° optics |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 |
| | Glass | Glass | Glass | Glass | Glass |
| | 1.00 m | 0.50 m | 0.75 m | 0.50 m | 0.50 m |
| | PUR | Stainless steel | Stainless steel | Silicone, on stainless steel | Stainless steel |
| | 200 mm | 200 mm | 200 mm | 200 mm | 100 mm |
| | -20...85 °C | -20...250 °C | -20...250 °C | -40...150 °C | -20...250 °C |
| | Brass blackened | Brass blackened | Brass blackened | Brass blackened | Stainless steel |
| | Bundle Ø 1.0 mm | Bundle Ø 2.1 mm | Bundle Ø 2.1 mm | Bundle Ø 2.1 mm | Bundle Ø 1.4 mm |
| | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle |
| | IP67 | IP50 | IP50 | IP67 | IP50 |
| | Page 570 | Page 571 | Page 571 | Page 571 | Page 572 |



| | BF0001R BFO 18A-LFF-MZG-10-1 | BF0001U BFO 18A-LFF-SMG-10-0,5 | BF0001W BFO 18A-LFF-SMG-10-1 | |
|-----------------------------------|--|--|--|--|
| Version | Ø 2, 90° optics | Ø 2, 90° optics | Ø 2, 90° optics | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | |
| Fiber type material | Glass | Glass | Glass | |
| Cable length L | 1.00 m | 0.50 m | 1.00 m | |
| Material jacket | Stainless steel | Silicone, on stainless steel | Silicone, on stainless steel | |
| Range | 100 mm | 100 mm | 100 mm | |
| Ambient temperature | -20...250 °C | -40...150 °C | -40...150 °C | |
| Material | Stainless steel | Stainless steel | Stainless steel | |
| Active surface, fibers | Bundle Ø 1.4 mm | Bundle Ø 1.4 mm | Bundle Ø 1.4 mm | |
| Active surface, fiber arrangement | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | |
| Protection degree | IP50 | IP67 | IP67 | |
| Productview | Page 572 | Page 572 | Page 572 | |



| | BF00013 BFO 18A-LEE-MZG-20-0,5 | BF00014 BFO 18A-LEE-MZG-20-1 | BF00019 BFO 18A-LEE-SMG-20-0,5 | BF0001A BFO 18A-LEE-SMG-20-1 | BF0001F BFO 18A-LEE-UZG-20-0,5 |
|--|--|--|--|--|--|
| | Ø 6, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 |
| | Glass | Glass | Glass | Glass | Glass |
| | 0.50 m | 1.00 m | 0.50 m | 1.00 m | 0.50 m |
| | Stainless steel | Stainless steel | Silicone, on stainless steel | Silicone, on stainless steel | PUR |
| | 200 mm | 200 mm | 200 mm | 200 mm | 200 mm |
| | -20...250 °C | -20...250 °C | -40...150 °C | -40...150 °C | -20...85 °C |
| | Brass blackened | Brass blackened | Brass blackened | Brass blackened | Brass blackened |
| | Bundle Ø 1.0 mm | Bundle Ø 1.0 mm | Bundle Ø 1.0 mm | Bundle Ø 1.0 mm | Bundle Ø 1.0 mm |
| | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle |
| | IP50 | IP50 | IP67 | IP67 | IP67 |
| | Page 573 | Page 573 | Page 573 | Page 573 | Page 574 |



| | BF0001H BFO 18A-LEE-UZG-20-1 | BF00047 BFO 18V-LDD-MZG-23-0,75 | BF00049 BFO 18V-LDD-MZG-23-2,0 | |
|-----------------------------------|--|---|--|--|
| Version | Ø 6, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | |
| Fiber type material | Glass | Glass | Glass | |
| Cable length L | 1.00 m | 0.75 m | 2.00 m | |
| Material jacket | PUR | Stainless steel | Stainless steel | |
| Range | 200 mm | 200 mm | 200 mm | |
| Ambient temperature | -20...85 °C | -20...250 °C | -20...250 °C | |
| Material | Brass blackened | Brass blackened | Brass blackened | |
| Active surface, fibers | Bundle Ø 1.0 mm | Bundle Ø 2.1 mm | Bundle Ø 2.1 mm | |
| Active surface, fiber arrangement | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | |
| Protection degree | IP67 | IP50 | IP50 | |
| Productview | Page 574 | Page 574 | Page 574 | |



| | BF0004A BFO 18V-LDD-MZG-23-3 | BF0004C BFO 18V-LDD-SMG-23-0,5 | BF0004F BFO 18V-LDD-SMG-23-1 | BF00026 BFO 18A-XAA-MZG-30-0,5 | BF00027 BFO 18A-XAA-MZG-30-1 |
|--|--|--|--|--|--|
| | Ø 6, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics | M5, standard | M5, standard |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 |
| | Glass | Glass | Glass | Glass | Glass |
| | 3.00 m | 0.50 m | 1.00 m | 0.50 m | 1.00 m |
| | Stainless steel | Silicone, on stainless steel | Silicone, on stainless steel | Stainless steel | Stainless steel |
| | 200 mm | 200 mm | 200 mm | 20 mm | 20 mm |
| | -20...250 °C | -40...150 °C | -40...150 °C | -20...250 °C | -20...250 °C |
| | Brass blackened | Brass blackened | Brass blackened | Brass blackened | Brass blackened |
| | Bundle Ø 2.1 mm | Bundle Ø 2.1 mm | Bundle Ø 2.1 mm | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm |
| | Homogeneous bundle | Homogeneous bundle | Homogeneous bundle | Segmented bundle | Segmented bundle |
| | IP50 | IP67 | IP67 | IP50 | IP50 |
| | Page 574 | Page 575 | Page 575 | Page 575 | Page 575 |



| | BF000H3 BFO 18A-XAA-MZG-30-5 | BF0002F BFO 18A-XAA-SMG-30-0,5 | BF0002H BFO 18A-XAA-SMG-30-1 | |
|-----------------------------------|--|--|--|--|
| Version | M5, standard | M5, standard | M5, standard | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | |
| Fiber type material | Glass | Glass | Glass | |
| Cable length L | 5.00 m | 0.50 m | 1.00 m | |
| Material jacket | Stainless steel | Silicone, on stainless steel | Silicone, on stainless steel | |
| Range | 20 mm | 20 mm | 20 mm | |
| Ambient temperature | -20...250 °C | -40...150 °C | -40...150 °C | |
| Material | Brass blackened | Brass blackened | Brass blackened | |
| Active surface, fibers | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | |
| Active surface, fiber arrangement | Segmented bundle | Segmented bundle | Segmented bundle | |
| Protection degree | IP50 | IP67 | IP67 | |
| Productview | Page 575 | Page 576 | Page 576 | |



| | BF0002M BFO 18A-XAA-UZG-30-0,5 | BF0002N BFO 18A-XAA-UZG-30-1 | BF000H8 BFO NU1-XB-05K-MZG-11-01 | BF0003R BFO 18A-XAG-MZG-15-0,5 | BF0003T BFO 18A-XAG-MZG-15-1 |
|--|--|--|--|--|--|
| | M5, standard | M5, standard | M4, standard | Ø 2, standard | Ø 2, standard |
| | For fiber optic base units BFB | For fiber optic base units BFB | For photoelectric color sensors BFS | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFS 33M-GSS-.. | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 |
| | Glass | Glass | Glass | Glass | Glass |
| | 0.50 m | 1.00 m | 1.00 m | 0.50 m | 1.00 m |
| | PUR | PUR | PE | Stainless steel | Stainless steel |
| | 20 mm | 20 mm | 60 mm | 10 mm | 10 mm |
| | -20...85 °C | -20...85 °C | -20...170 °C | -20...250 °C | -20...250 °C |
| | Brass blackened | Brass blackened | Stainless steel (1.4305) | Stainless steel | Stainless steel |
| | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | Ø 1.0 mm | Bundle Ø 1.7 mm | Bundle Ø 1.7 mm |
| | Segmented bundle | Segmented bundle | Ring around individual fiber | Segmented bundle | Segmented bundle |
| | IP67 | IP67 | IP50 | IP50 | IP50 |
| | Page 576 | Page 576 | Page 576 | Page 576 | Page 576 |



| | BF0002U BFO 18A-XAC-SMG-30-0,5 | BF0002W BFO 18A-XAC-SMG-30-1 | BF0004M BFO 18V-XAC-MZG-30-0,5 | |
|-----------------------------------|--|--|--|--|
| Version | Ø 6, standard | Ø 6, standard | Ø 6, standard | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | |
| Fiber type material | Glass | Glass | Glass | |
| Cable length L | 0.50 m | 1.00 m | 0.50 m | |
| Material jacket | Silicone, on stainless steel | Silicone, on stainless steel | Stainless steel | |
| Range | 20 mm | 20 mm | 20 mm | |
| Ambient temperature | -40...150 °C | -40...150 °C | -20...250 °C | |
| Material | Brass blackened | Brass blackened | Brass blackened | |
| Active surface, fibers | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | |
| Active surface, fiber arrangement | Segmented bundle | Segmented bundle | Segmented bundle | |
| Protection degree | IP67 | IP67 | IP50 | |
| Productview | Page 576 | Page 576 | Page 576 | |



| | BF0004P BFO 18V-XAC-SMG-30-0,5 | BF0004R BFO 18V-XAC-SMG-30-1 | BF0003H BFO 18A-XAF-MZG-15-0,5 | BF0003J BFO 18A-XAF-MZG-15-1 | BF0003M BFO 18A-XAF-SMG-15-0,5 |
|--|--|--|--|--|--|
| | Ø 6, standard | Ø 6, standard | Ø 2, 90° optics | Ø 2, 90° optics | Ø 2, 90° optics |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 |
| | Glass | Glass | Glass | Glass | Glass |
| | 0.50 m | 1.00 m | 0.50 m | 1.00 m | 0.50 m |
| | Silicone, on stainless steel | Silicone, on stainless steel | Stainless steel | Stainless steel | Silicone, on stainless steel |
| | 20 mm | 20 mm | 10 mm | 10 mm | 10 mm |
| | -40...150 °C | -40...150 °C | -20...250 °C | -20...250 °C | -40...150 °C |
| | Brass blackened | Brass blackened | Stainless steel | Stainless steel | Stainless steel |
| | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | Bundle Ø 1.4 mm | Bundle Ø 1.4 mm | Bundle Ø 1.4 mm |
| | Segmented bundle | Segmented bundle | Segmented bundle | Segmented bundle | Segmented bundle |
| | IP67 | IP67 | IP50 | IP50 | IP67 |
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| | BFO003N BFO 18A-XAF-SMG-15-1 | BFO0031 BFO 18A-XAE-MZG-30-0,5 | BFO0032 BFO 18A-XAE-MZG-30-1 | |
|-----------------------------------|--|--|--|--|
| Version | Ø 2, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | |
| Fiber type material | Glass | Glass | Glass | |
| Cable length L | 1.00 m | 0.50 m | 1.00 m | |
| Material jacket | Silicone, on stainless steel | Stainless steel | Stainless steel | |
| Range | 10 mm | 20 mm | 20 mm | |
| Ambient temperature | -40...150 °C | -20...250 °C | -20...250 °C | |
| Material | Stainless steel | Brass blackened | Brass blackened | |
| Active surface, fibers | Bundle Ø 1.4 mm | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | |
| Active surface, fiber arrangement | Segmented bundle | Segmented bundle | Segmented bundle | |
| Protection degree | IP67 | IP50 | IP50 | |
| Productview | Page 577 | Page 577 | Page 577 | |



| | BF00037 BFO 18A-XAE-SMG-30-0,5 | BF00038 BFO 18A-XAE-SMG-30-1 | BF0003C BFO 18A-XAE-UZG-30-0,5 | BF0003E BFO 18A-XAE-UZG-30-1 | BF0004U BFO 18V-XAD-MZG-30-0,5 |
|--|--|--|--|--|--|
| | Ø 6, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics | Ø 6, 90° optics |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 |
| | Glass | Glass | Glass | Glass | Glass |
| | 0.50 m | 1.00 m | 0.50 m | 1.00 m | 0.50 m |
| | Silicone, on stainless steel | Silicone, on stainless steel | PUR | PUR | Stainless steel |
| | 20 mm | 20 mm | 20 mm | 20 mm | 20 mm |
| | -40...150 °C | -40...150 °C | -20...85 °C | -20...85 °C | -20...70 °C |
| | Brass blackened | Brass blackened | Brass blackened | Brass blackened | Brass blackened |
| | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm |
| | Segmented bundle | Segmented bundle | Segmented bundle | Segmented bundle | Segmented bundle |
| | IP67 | IP67 | IP67 | IP67 | IP50 |
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| | BF0004Y BFO 18V-XAD-SMG-30-0,5 | BF0004Z BFO 18V-XAD-SMG-30-1 | BF0005Y BFO D22-LD-EAK-10-20 | |
|-----------------------------------|--|--|--|--|
| Version | Ø 6, 90° optics | Ø 6, 90° optics | 4.4x2.2 Duplex cable | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB M18M-011-P-S4 | BFB M18M-011-P-S4 | BFB 75K-001-.. | |
| Fiber type material | Glass | Glass | PMMA | |
| Cable length L | 0.50 m | 1.00 m | 20.00 m | |
| Material jacket | Silicone, on stainless steel | Silicone, on stainless steel | PE | |
| Range | 20 mm | 20 mm | 120 mm For L = 2 m | |
| Ambient temperature | -40...150 °C | -40...150 °C | -40...85 °C | |
| Material | Brass blackened | Brass blackened | — | |
| Active surface, fibers | Bundle Ø 3.0 mm | Bundle Ø 3.0 mm | Ø 1.0 mm (2x) | |
| Active surface, fiber arrangement | Segmented bundle | Segmented bundle | Adjacent to one another | |
| Protection degree | IP67 | IP67 | IP65 | |
| Productview | Page 577 | Page 577 | Page 577 | |



| | BF0000C BFO N22-LA-FB-EAK-05-01 | BF0005R BFO D22-LA-RB-EAK-10-02 | BF0005M BFO D22-LA-KB-EAK-10-02 | BF0005U BFO D22-LAP-KB-EAK-15-02 | BF0005T BFO D22-LAH-KB-EAK-10-02 |
|--|---|---|---|--|--|
| | M2, standard | M3, standard | M4, standard | M4, standard | M4, standard, flexible cable |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 1.00 m | 2.00 m | 2.00 m | 2.00 m | 2.00 m |
| | PE | PE | PE | PE | PE |
| | 140 mm | 500 mm | 500 mm | 800 mm | 400 mm |
| | -40...60 °C | -55...70 °C | -40...70 °C | -55...70 °C | -40...70 °C |
| | Brass nickel plated | Stainless steel (1.4305) | Stainless steel (1.4305) | Stainless steel (1.4305) | Stainless steel (1.4305) |
| | Ø 0.5 mm | Ø 1.0 mm | Ø 1.0 mm | Ø 1.5 mm | Ø 1.0 mm |
| | Single fiber | Single fiber | Single fiber | Single fiber | Single fiber |
| | IP65 | IP65 | IP65 | IP65 | IP65 |
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| | BF0005W BFO D22-LAT-KB-EAK-10-02 | BF0005N BFO D22-LA-NB-EAK-10-02 | BF00002 BFO D22-LA-TB-EAK-10-02 | |
|-----------------------------------|--|--|---|--|
| Version | M4, standard, high temp. | M4, bendable tip | M4, bendable tip | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | |
| Fiber type material | PC | PMMA | PMMA | |
| Cable length L | 2.00 m | 2.00 m | 2.00 m | |
| Material jacket | PE, cross-linked | PE | PE | |
| Range | 600 mm | 500 mm | 450 mm | |
| Ambient temperature | -55...115 °C | -55...70 °C | -40...60 °C | |
| Material | Stainless steel (1.4305) | Stainless steel (1.4301) nickel plated Brass | Stainless steel | |
| Active surface, fibers | Ø 1.0 mm | Ø 1.0 mm | Ø 1.0 mm | |
| Active surface, fiber arrangement | Single fiber | Single fiber | Single fiber | |
| Protection degree | IP65 | IP65 | IP65 | |
| Productview | Page 578 | Page 578 | Page 578 | |



| | BF00051 BFO D10-LA-CB-EAK-05-02 | BF000AY BFO D22-LAT-YB-EAK-10-0,5 | BF00057 BFO D13-LA-WB-EAK-05-02 | BF0005P BFO D22-LA-QB-PAK-05-02 | BF000H6 BFO D22-LAH-JD-EAK-10-02 |
|--|---|---|---|---|--|
| | Ø 2, standard | Ø 3, 90° optics, high temperature | Ø 3, thin point, 90° optics | Ø 3, thin point, 90° optics | Ø 3, thin point, 90° optics |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. |
| | PMMA | PC | PMMA | PMMA | PMMA |
| | 2.00 m | 0.50 m | 2.00 m | 2.00 m | 2.00 m |
| | PE | PE, cross-linked | PE | PVC | PE |
| | 130 mm | 600 mm | 75 mm | 120 mm | 300 mm |
| | -55...70 °C | -55...115 °C | -40...70 °C | -40...70 °C | -40...70 °C |
| | Stainless steel (1.4305) | Stainless steel (1.4305) | Stainless steel | Stainless steel | Brass nickel plated |
| | Ø 0.5 mm | Ø 1.0 mm | Ø 1.0 mm | Ø 1.0 mm | Ø 1.0 mm |
| | Single fiber | Single fiber | Single fiber | Single fiber | Single fiber |
| | IP65 | IP65 | IP65 | IP65 | IP65 |
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| | BF00056 BFO D13-LA-QB-EAK-05-02 | BF000AW BFO D22-LAH-BK-EAK-10-02 | BF000C8 BFO D25 LA-HD-EAK-465-02 | |
|-----------------------------------|---|--|--|--|
| Version | Ø 3, thin point, 90° optics | M4, 90° conn., flex. cable | 0.25x46.5, 90°-light grid | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | |
| Fiber type material | PMMA | PMMA | PMMA | |
| Cable length L | 2.00 m | 2.00 m | 2.00 m | |
| Material jacket | PE | PE | PE | |
| Range | 110 mm | 250 mm | 550 mm | |
| Ambient temperature | -30...70 °C | -40...70 °C | -55...70 °C | |
| Material | Stainless steel | Brass nickel plated | ABS | |
| Active surface, fibers | Ø 0.5 mm | Ø 1.0 mm | Ø 0.25 mm (32x) | |
| Active surface, fiber arrangement | Single fiber | Single fiber | Row | |
| Protection degree | IP65 | IP65 | IP65 | |
| Productview | Page 579 | Page 579 | Page 579 | |



| | BF000C6 BFO D10-LAH-CK-EAK-05-02 | BF000C7 BFO D10-LAH-DK-EAK-05-02 | BF000AP BFO D22-LA-GD-EAK-52-02 | BF00067 BFO D25-LA-CD-EAK-110-02 | BF000C5 BFO D25-LA-ED-EAK-250-0,5 |
|--|--|--|---|--|---|
| | 0.5 mm, 90° | 0.5 mm, 90° | 5x10, light grid | 6x19, light grid | 0.25x24.8, 90°-light grid |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 2.00 m | 2.00 m | 2.00 m | 2.00 m | 0.50 m |
| | PE | PE | PE | PE | PE |
| | 55 mm | 50 mm | 500 mm | 600 mm | 550 mm |
| | -40...70 °C | -40...70 °C | -55...70 °C | -55...70 °C | -55...70 °C |
| | Brass nickel plated | Brass nickel plated | Brass nickel plated | Brass nickel plated | ABS |
| | Ø 0.5 mm | Ø 0.5 mm | Ø 0.25 mm (16x) | Ø 0.25 mm (32x) | Ø 0.25 mm (32x) |
| | Single fiber | Single fiber | Row | Row | Row |
| | IP65 | IP65 | IP65 | IP65 | IP65 |
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| | BF00068 BFO D25-LA-ED-EAK-250-02 | BF0005K BFO D22-LA-BD-EAK-52-02 | BF00059 BFO D13-LG-10-EAK-30-02 | |
|-----------------------------------|--|---|---|--|
| Version | 5.5x38, 90°-light grid | 5x15, 90° light grid | Fork, coaxial optics | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | |
| Fiber type material | PMMA | PMMA | PMMA | |
| Cable length L | 2.00 m | 2.00 m | 2.00 m | |
| Material jacket | PE | PE | PE | |
| Range | 550 mm | 400 mm | 10 mm | |
| Ambient temperature | -55...70 °C | -55...70 °C | -55...70 °C | |
| Material | ABS | Brass nickel plated | Plastic | |
| Active surface, fibers | Ø 0.25 mm (32x) | Ø 0.25 mm (16x) | Ø 0.25 mm (2x) | |
| Active surface, fiber arrangement | Row | Row | opposing | |
| Protection degree | IP65 | IP65 | IP65 | |
| Productview | Page 580 | Page 580 | Page 580 | |



| | BF00058 BFO D13-LG-05-EAK-30-02 | BF0005E BFO D13-XB-RB-EAK-10-02 | BF00054 BFO D10-XA-RB-EAK-10-02 | BF000C3 BFO D10-XA-VB-EAK-10-02 | BF00052 BFO D10-XA-GB-EAK-10-02 |
|--|---|---|---|--|--|
| | Fork, coaxial optics | M3, coaxial optics | M3, standard | M3, standard | M3, bendable tip |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 2.00 m | 2.00 m | 2.00 m | 2.00 m | 2.00 m |
| | PE | PE | PE | PE | PE |
| | 5 mm | 60 mm | 50 mm | 50 mm | 50 mm |
| | -55...70 °C | -55...70 °C | -55...70 °C | -55...70 °C | -55...70 °C |
| | Plastic | Stainless steel (1.4305) | Stainless steel (1.4305) | Stainless steel (1.4301) nickel plated Brass | Stainless steel (1.4301) nickel plated Brass |
| | Ø 0.25 mm (2x) | Ø 0.5 mm, Ø 0.25 mm (10x) | Ø 0.5 mm (2x) | Ø 0.5 mm (2x) | Ø 0.5 mm (2x) |
| | opposing | Ring around individual fiber | Adjacent to one another | Adjacent to one another | Adjacent to one another |
| | IP65 | IP65 | IP65 | IP65 | IP65 |
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| | BF0005C BFO D13-XB-KB-EAK-10-02 | BF00006 BFO D22-XB-UB-EAK-15-02 | BF000C9 BFO D22-XB-UB-EAK-15-SA1-02 | |
|-----------------------------------|---|---|---|--|
| Version | M4, coaxial optics | M4, coaxial optics | M4, coaxial optics | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB 75K-001-.. | BFB 75K-001-.. | BFS 33M-GSS-.. | |
| Fiber type material | PMMA | PMMA | PMMA | |
| Cable length L | 2.00 m | 2.00 m | 2.00 m | |
| Material jacket | PE | PE | PE | |
| Range | 60 mm | 130 mm | 130 mm | |
| Ambient temperature | -55...70 °C | -40...60 °C | -40...60 °C | |
| Material | Stainless steel (1.4305) | Brass nickel plated | Brass nickel plated | |
| Active surface, fibers | Ø 0.5 mm, Ø 0.25 mm (10x) | Ø 0.25 mm (16x), Ø 1.0 mm | Ø 0.25 mm (16x), Ø 1.0 mm | |
| Active surface, fiber arrangement | Ring around individual fiber | Ring around individual fiber | Ring around individual fiber | |
| Protection degree | IP65 | IP65 | IP65 | |
| Productview | Page 581 | Page 581 | Page 581 | |



| | BF00055 BFO D10-XAH-KB-EAK-10-02 | BF00005 BFO D22-XA-UB-EAK-20-02 | BF00053 BFO D10-XA-HB-EAK-10-02 | BF00066 BFO D22-XB-LB-EAK-15-02 | BF000H4 BFO D22-XB-LB-EAK-15-SA1-0,5 |
|--|--|---|--|---|--|
| | M4, standard | M4, standard | M4, bendable tip | M6, coaxial optics | M6, coaxial optics |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFS 33M-GSS-.. |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 2.00 m | 2.00 m | 2.00 m | 2.00 m | 0.50 m |
| | PE | PE | PE | PE | PE |
| | 50 mm | 150 mm | 50 mm | 120 mm | 80 mm |
| | -40...70 °C | -55...70 °C | -55...70 °C | -55...70 °C | -55...70 °C |
| | Stainless steel (1.4305) | Stainless steel (1.4305) | Stainless steel (1.4301) nickel plated Brass | Stainless steel (1.4305) | Stainless steel (1.4305) |
| | Ø 0.5 mm (2x) | Ø 1.0 mm (2x) | Ø 0.5 mm (2x) | Ø 1.0 mm, Ø 0.25 mm (16x) | Ø 1.0 mm, Ø 0.25 mm (16x) |
| | Adjacent to one another | Adjacent to one another | Adjacent to one another | Ring around individual fiber | Ring around individual fiber |
| | IP65 | IP65 | IP65 | IP65 | IP65 |
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| | BF000FP BFO D22-XB-LB-EAK-15-SA1-01 | BF000C4 BFO D22-XB-LB-EAK-15-SA1-02 | BF000FN BFO D22-XB-LB-EAK-15-SA1-05 | |
|-----------------------------------|---|---|---|--|
| Version | M6, coaxial optics | M6, coaxial optics | M6, coaxial optics | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFS 33M-GSS-.. | BFS 33M-GSS-.. | BFS 33M-GSS-.. | |
| Fiber type material | PMMA | PMMA | PMMA | |
| Cable length L | 1.00 m | 2.00 m | 5 m | |
| Material jacket | PE | PE | PE | |
| Range | 80 mm | 80 mm | 80 mm | |
| Ambient temperature | -55...70 °C | -55...70 °C | -55...70 °C | |
| Material | Stainless steel (1.4305) | Stainless steel (1.4305) | Stainless steel (1.4305) | |
| Active surface, fibers | Ø 0.25 mm (16x), Ø 1.0 mm | Ø 1.0 mm, Ø 0.25 mm (16x) | Ø 0.25 mm (16x), Ø 1.0 mm | |
| Active surface, fiber arrangement | Ring around individual fiber | Ring around individual fiber | Ring around individual fiber | |
| Protection degree | IP65 | IP65 | IP65 | |
| Productview | Page 582 | Page 582 | Page 582 | |



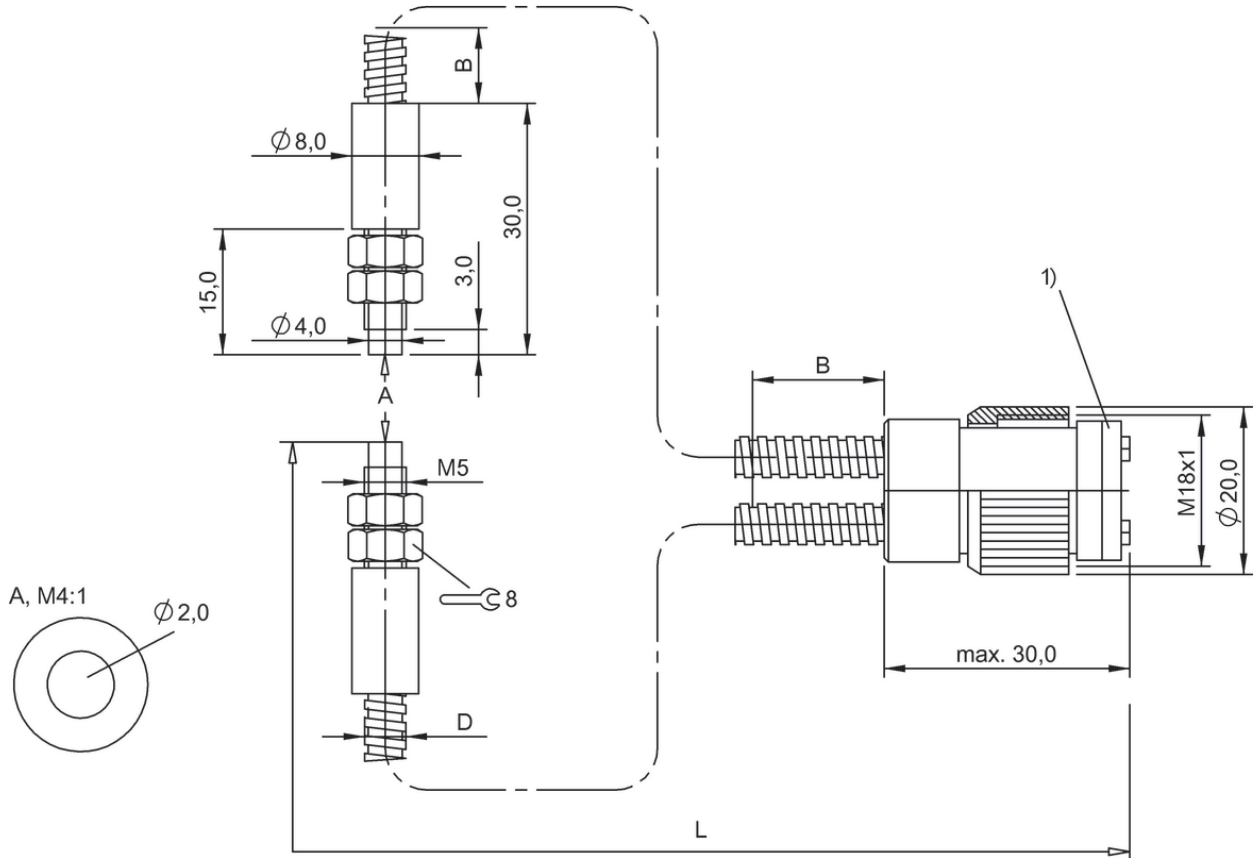
| | BF00007 BFO D22-XBF-LB-EAK-15-02 | BF000H5 BFO D22-XA-08B-EAK-26-02 | BF00064 BFO D22-XAP-LB-EAK-30-02 | BF00003 BFO D22-XA-DB-EAK-20-01 | BF00063 BFO D22-XAH-LB-EAK-20-02 |
|--|--|--|--|---|--|
| | M6, coax. optics, flex. cable | M6, standard | M6, standard | M6, standard | M6, standard, flexible cable |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 2.00 m | 2.00 m | 2.00 m | 1.00 m | 2.00 m |
| | PE | PE | PE | PE | PE |
| | 110 mm | 180 mm | 180 mm | 140 mm | 120 mm |
| | -40...60 °C | -55...70 °C | -55...70 °C | -40...60 °C | -40...70 °C |
| | Brass nickel plated | Brass nickel plated | Stainless steel (1.4305) | Brass nickel plated | Stainless steel (1.4305) |
| | Ø 1.0 mm, Ø 0.25 mm (16x) | Ø 1.0 mm (2x) | Ø 1.5 mm (2x) | Ø 1.0 mm (2x) | Ø 1.0 mm (2x) |
| | Ring around individual fiber | Adjacent to one another | Adjacent to one another | Adjacent to one another | Adjacent to one another |
| | IP65 | IP65 | IP65 | IP65 | IP65 |
| | Page 582 | Page 582 | Page 582 | Page 582 | Page 583 |



| | BF00065 BFO D22-XAT-LB-EAK-20-02 | BF00004 BFO D22-XA-SB-EAK-20-02 | BF000AT BFO D13-XB-AB-EAK-10-01 | |
|-----------------------------------|--|--|---|--|
| Version | M6, standard, high temp. | M6, thin tip, standard | Ø 2.5, coax optics | |
| Use | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | |
| Reference base unit | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | |
| Fiber type material | PC | PMMA | PMMA | |
| Cable length L | 2.00 m | 2.00 m | 1.00 m | |
| Material jacket | PE, cross-linked | PE | PE | |
| Range | 130 mm | 150 mm | 60 mm | |
| Ambient temperature | -55...115 °C | -55...70 °C | -55...70 °C | |
| Material | Stainless steel (1.4305) | Stainless steel (1.4301) nickel plated Brass | Stainless steel (1.4305) | |
| Active surface, fibers | Ø 1.0 mm (2x) | Ø 1.0 mm (2x) | Ø 0.5 mm, Ø 0.25 mm (9x) | |
| Active surface, fiber arrangement | Adjacent to one another | Adjacent to one another | Ring around individual fiber | |
| Protection degree | IP65 | IP65 | IP65 | |
| Productview | Page 583 | Page 583 | Page 583 | |

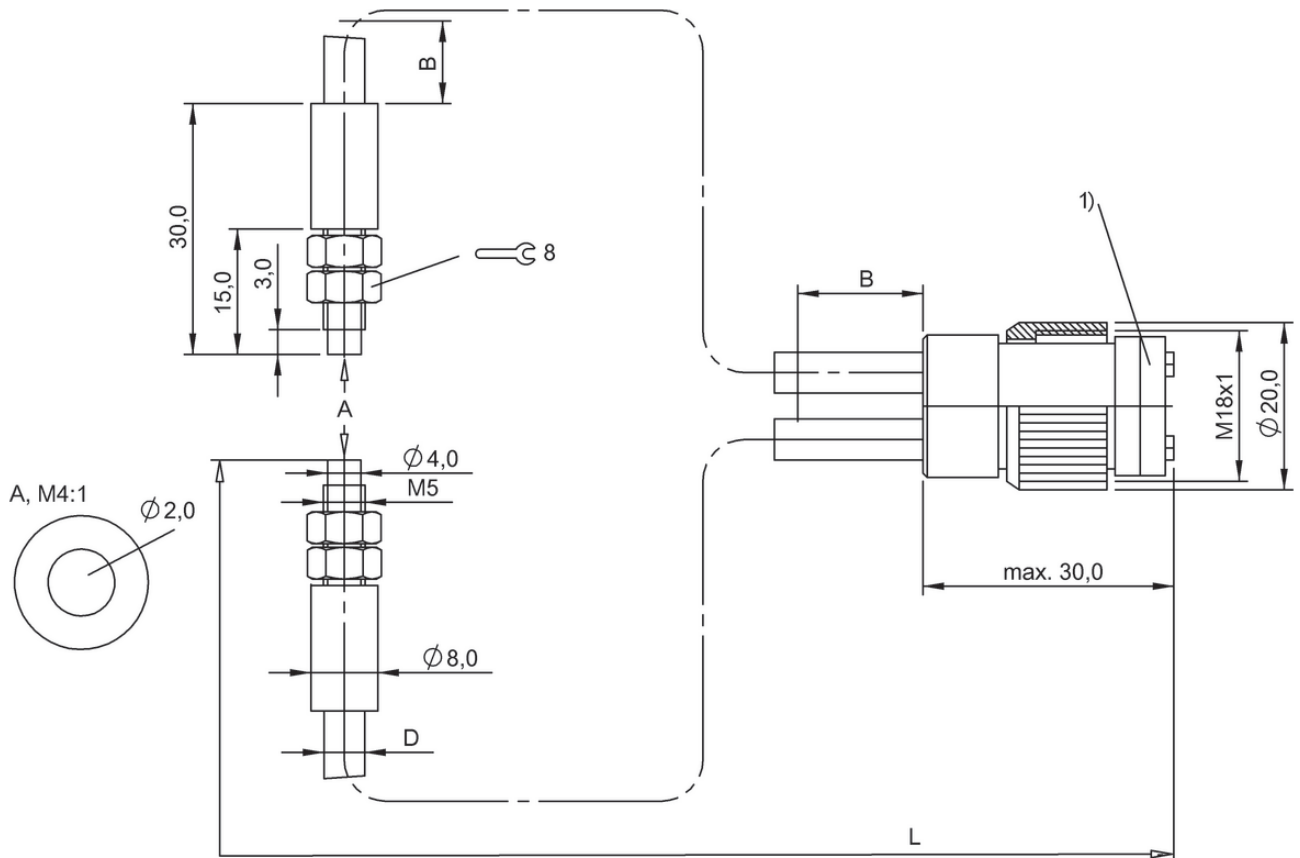


| | BF0005A BFO D13-XA-JB-EAK-20-02 | BF00062 BFO D22-XA-MB-PAK-10-02 | BF0005Z BFO D22-XA-CD-EAK-110-02 | BF000AR BFO D13-XV-AK-EAK-50-02 | BF00060 BFO D22-XA-ED-EAK-250-02 |
|--|---|---|--|---|--|
| | Ø 3, Standard | Ø 3, thin point, 90° optics | 6x19, light grid | 13x19.7, 90° optics | 5.5x38, 90°-light grid |
| | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB | For fiber optic base units BFB |
| | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. | BFB 75K-001-.. |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | 2.00 m | 2.00 m | 2.00 m | 2.00 m | 2.00 m |
| | PE | PVC | PE | PE | PE |
| | 130 mm | 35 mm | 100 mm | 6 mm | 90 mm |
| | -55...70 °C | -40...70 °C | -55...70 °C | -55...70 °C | -55...70 °C |
| | Stainless steel (1.4305) | Stainless steel | Brass nickel plated | Plastic | ABS |
| | Ø 0.5 mm (2x) | Ø 0.5 mm (2x) | Ø 0.25 mm (32x) | Ø 0.5 mm (2x) | Ø 0.25 mm (32x) |
| | Adjacent to one another | Adjacent to one another | Row | Distance | Row |
| | IP65 | IP65 | IP65 | IP65 | IP65 |
| | Page 583 | Page 583 | Page 583 | Page 583 | Page 584 |



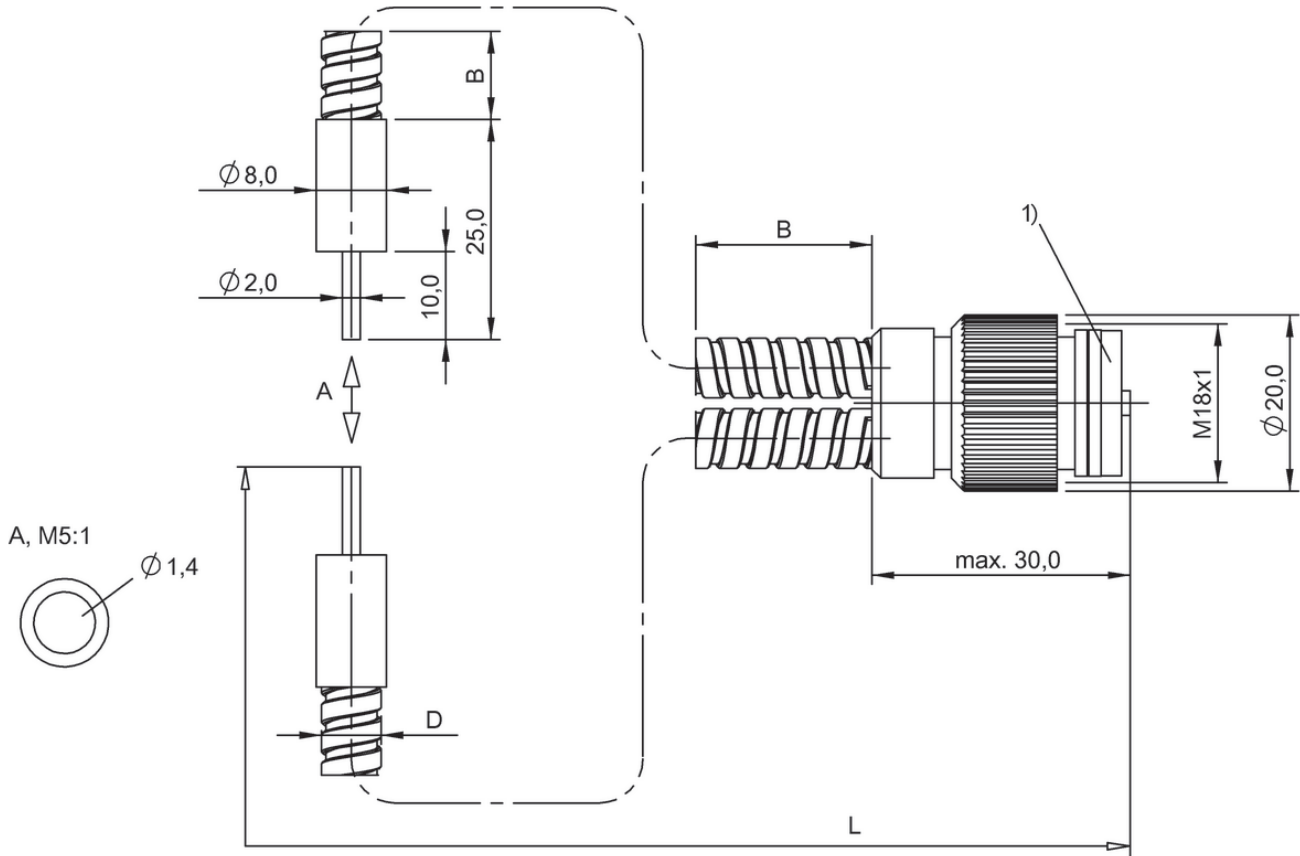
1) Disc removable

BF0000F, BF0000H, BF0000J



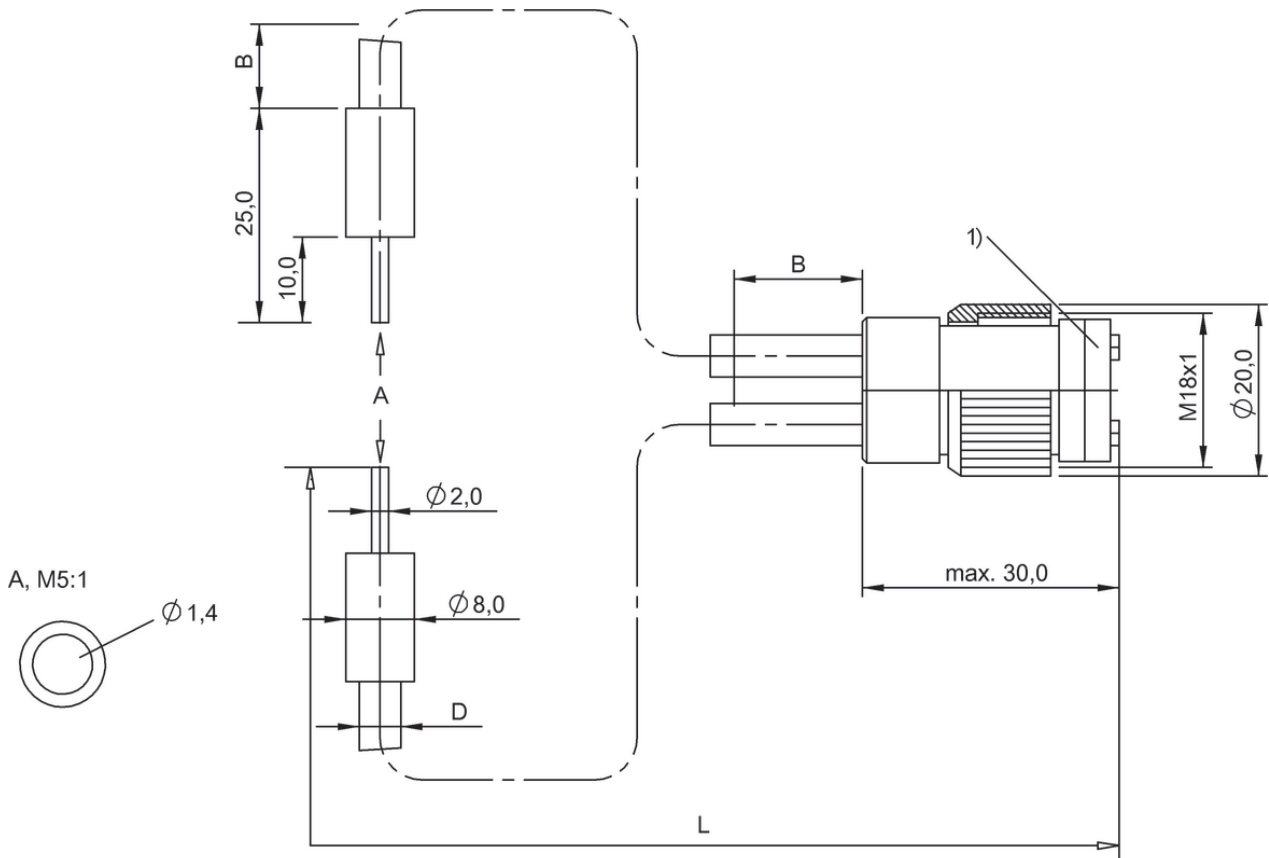
1) Disc removable

BF0000M, BF0000N



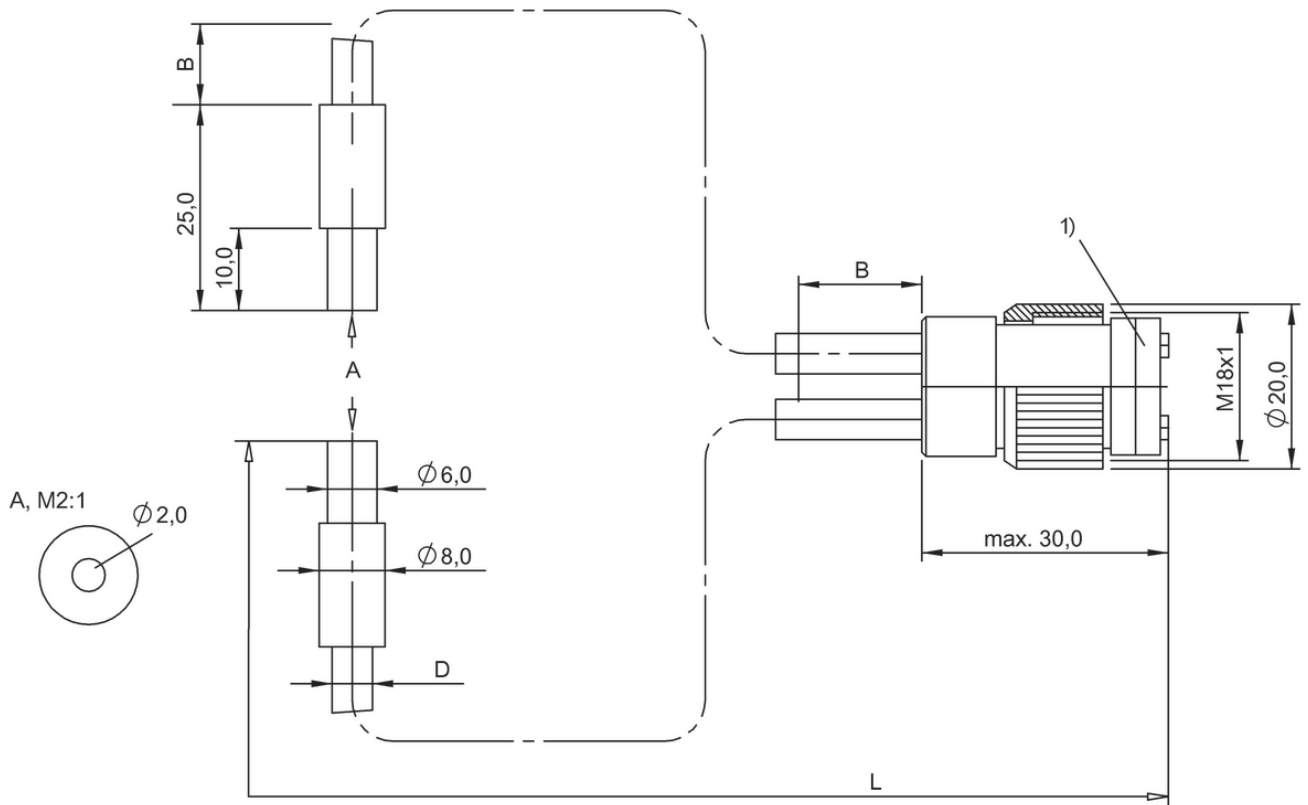
1) Disc removable

BF0001Z, BF00020



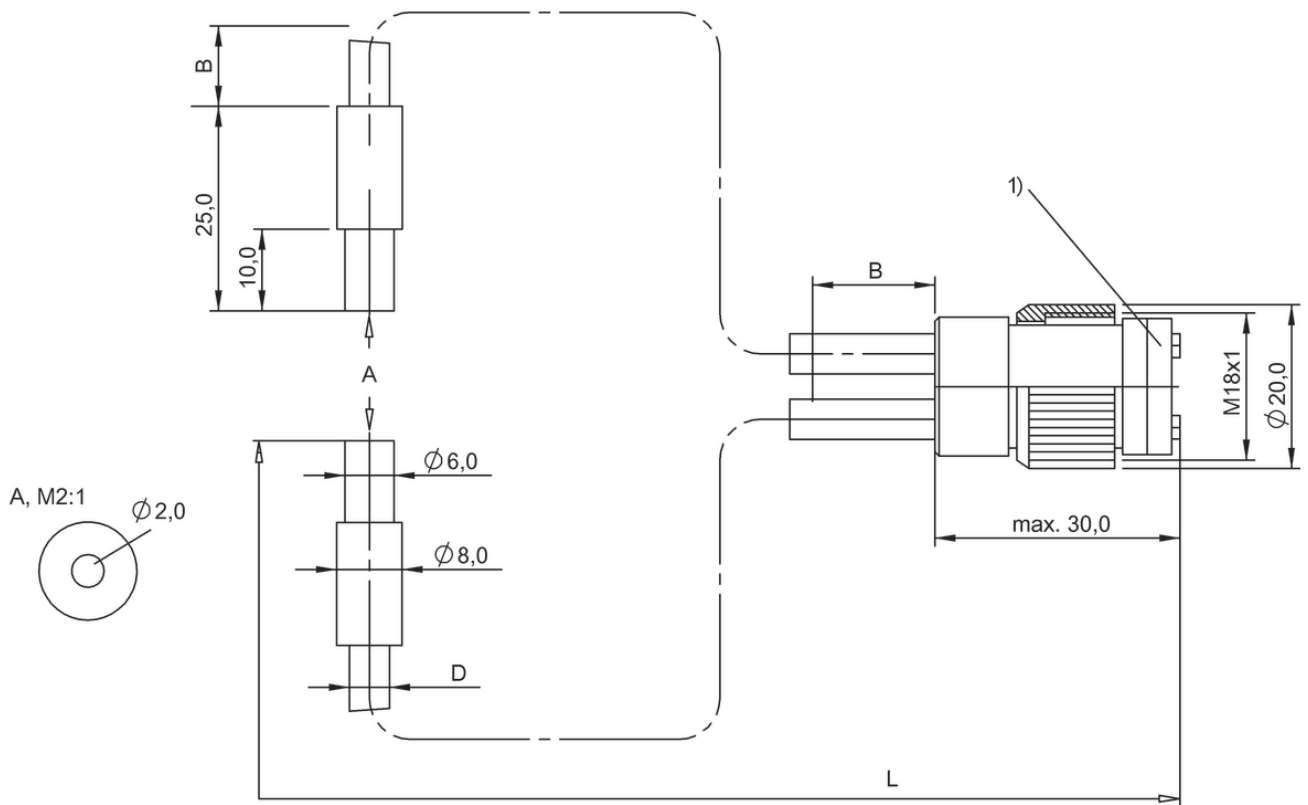
1) Disc removable

BF00023, BF00024



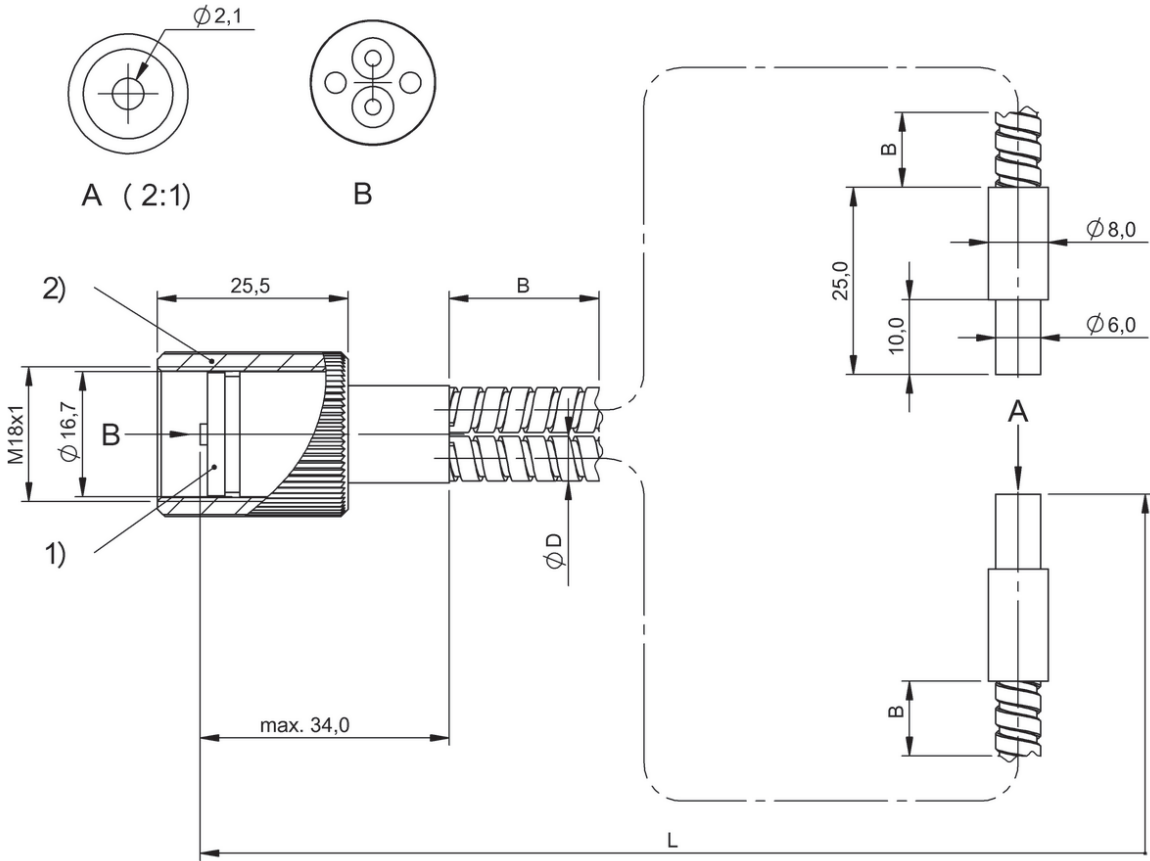
1) Disc removable

BF0000U, BF0000W



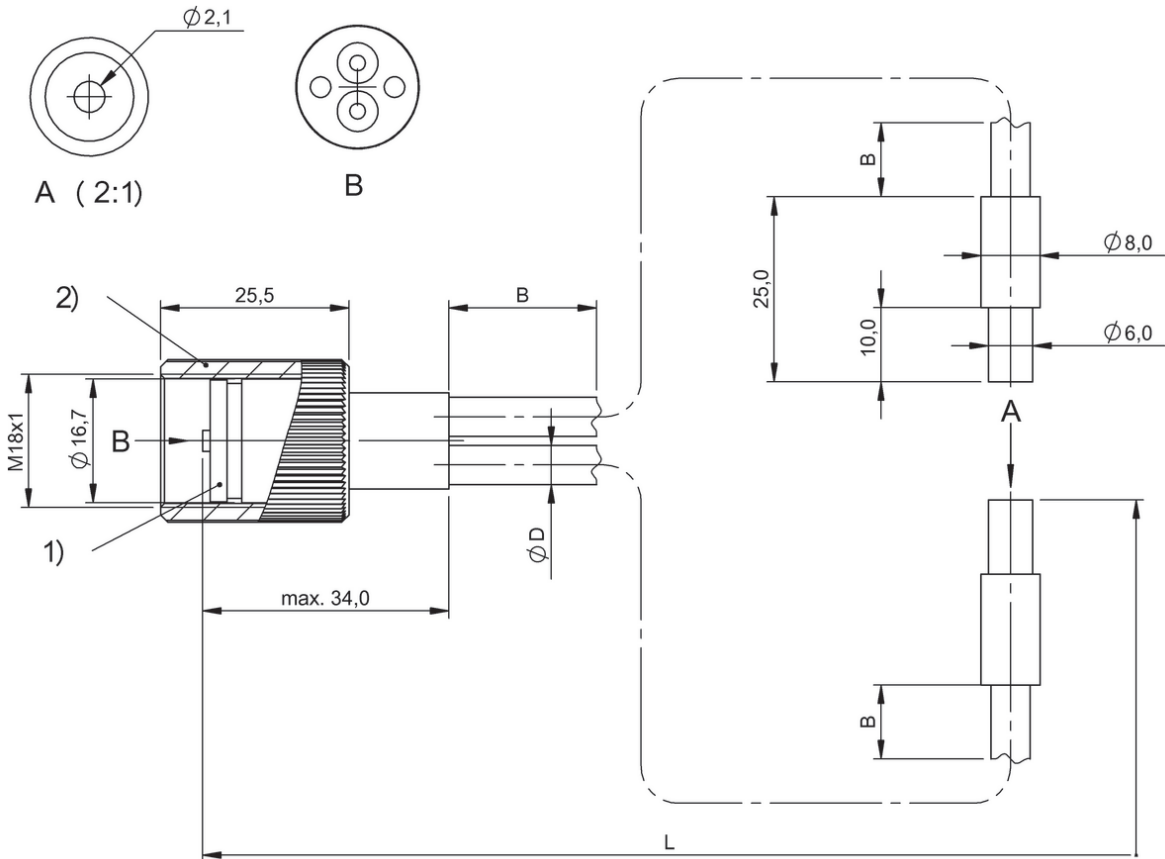
1) Disc removable

BF0000Z



1) Disc removable, 2) cap nut

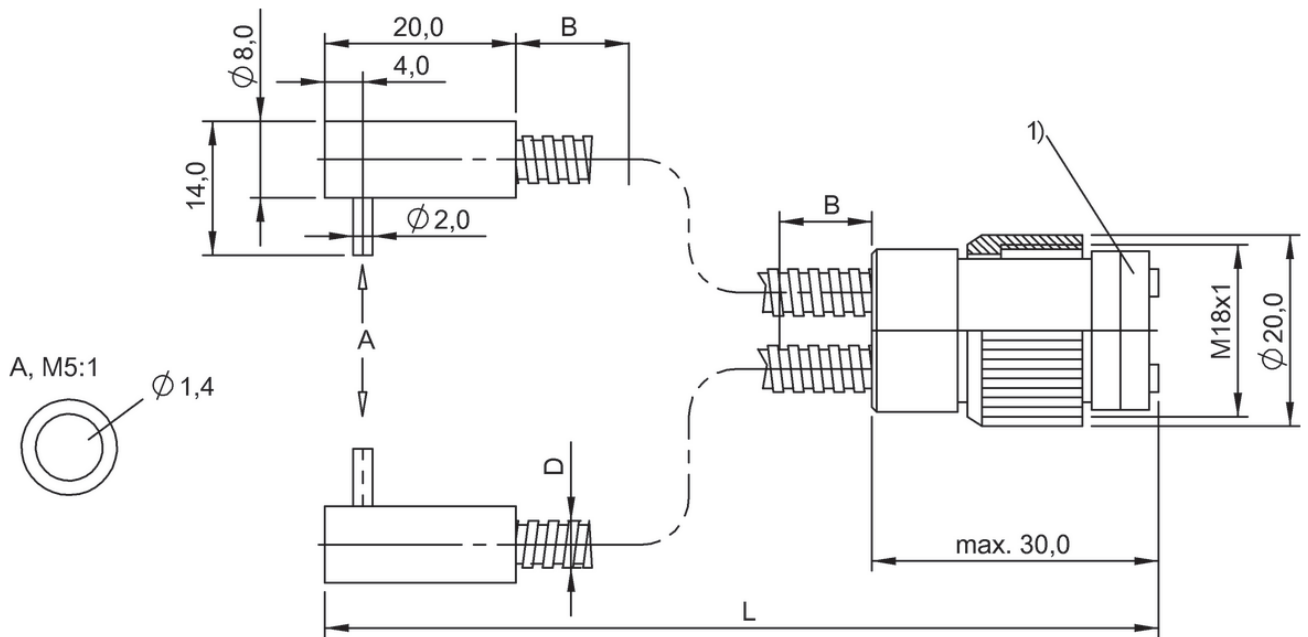
BF0003Y, BF0003Z



1) Disc removable, 2) cap nut

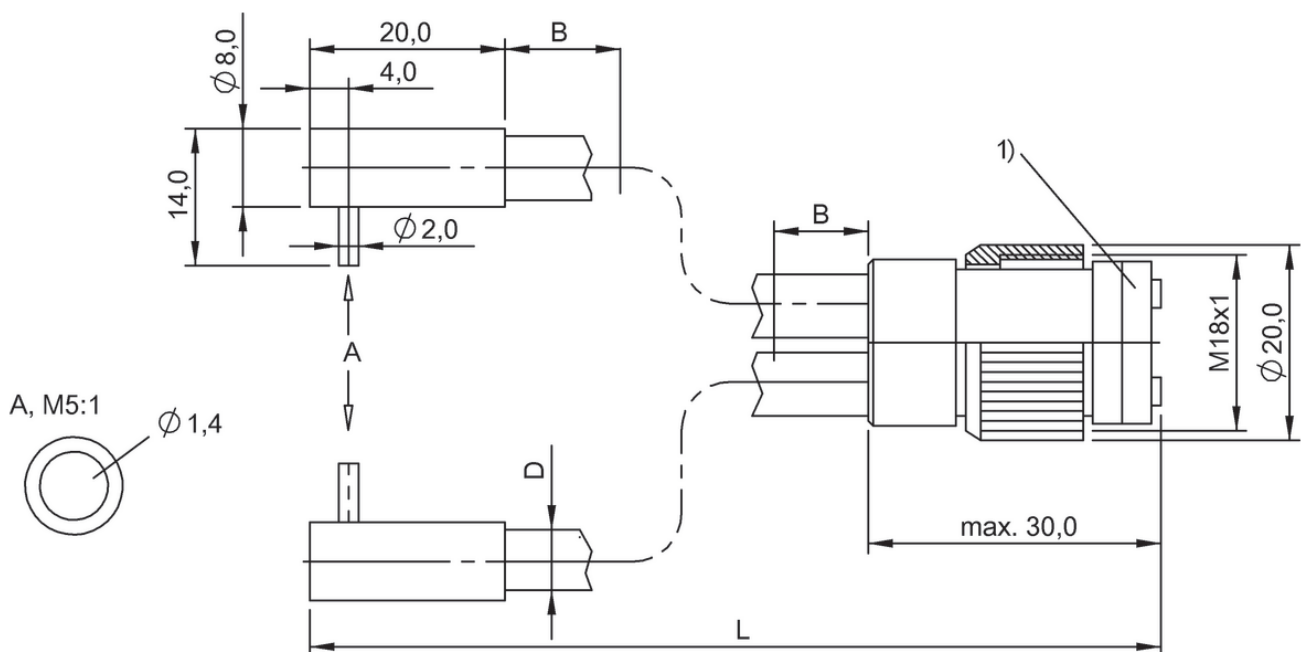
BF00042

Do you need more details? Our Product Finder at www.balluff.com provides you with product-specific information, including technical drawings, data sheets, user guides and more for each individual product. All items are available for download.



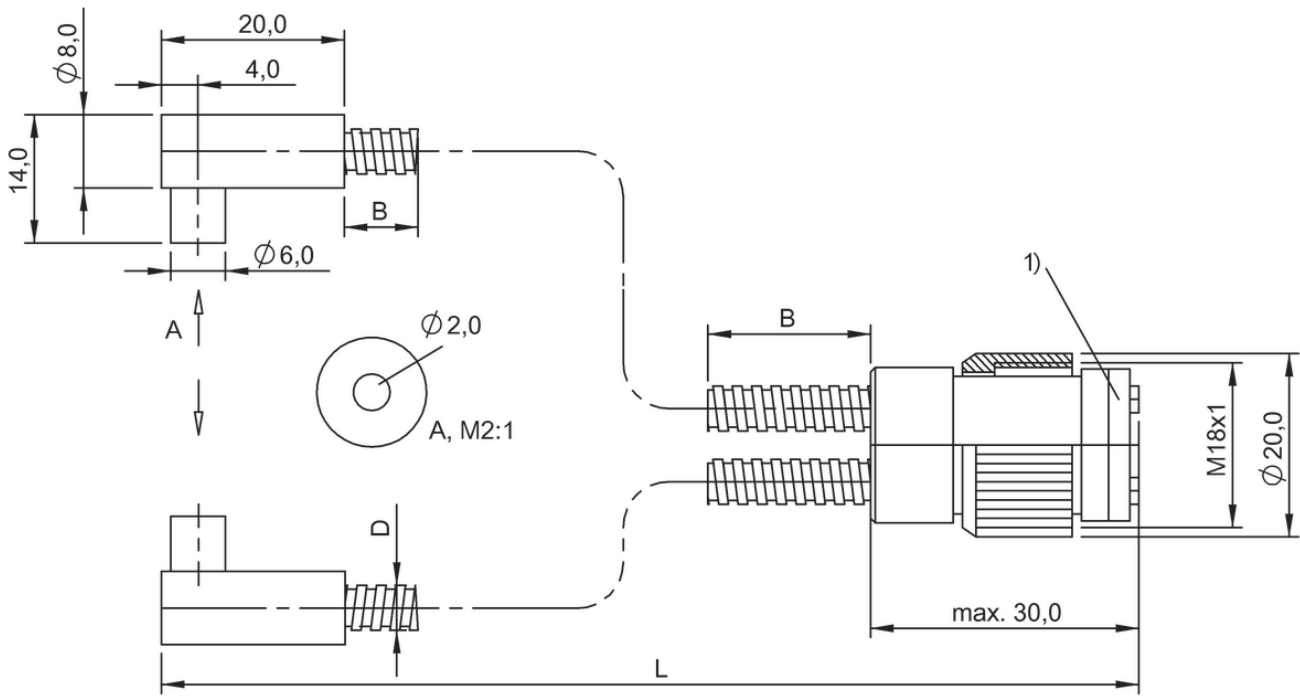
1) Disc removable

BF0001P, BF0001R



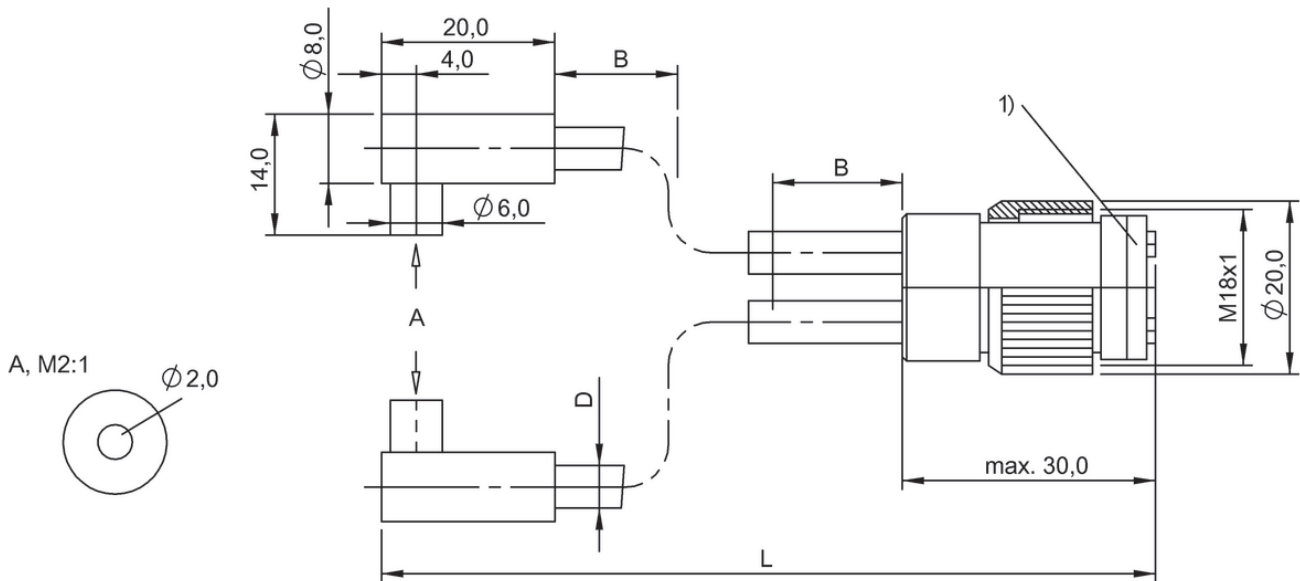
1) Disc removable

BF0001U, BF0001W



1) Disc removable

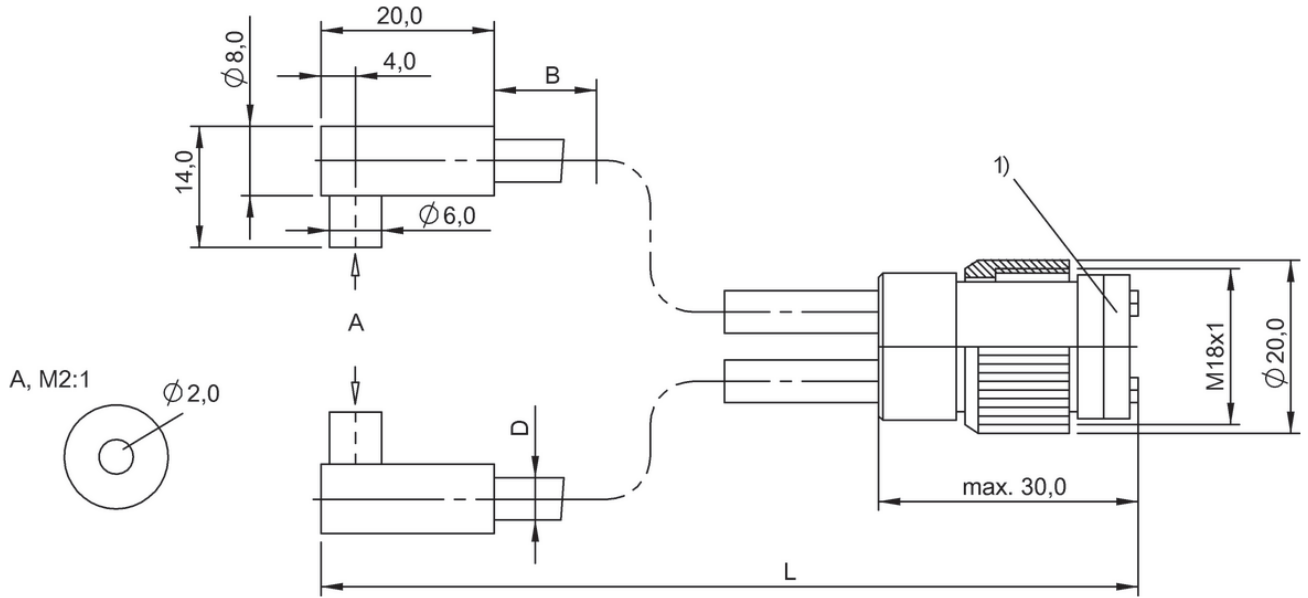
BF00013, BF00014



1) Disc removable

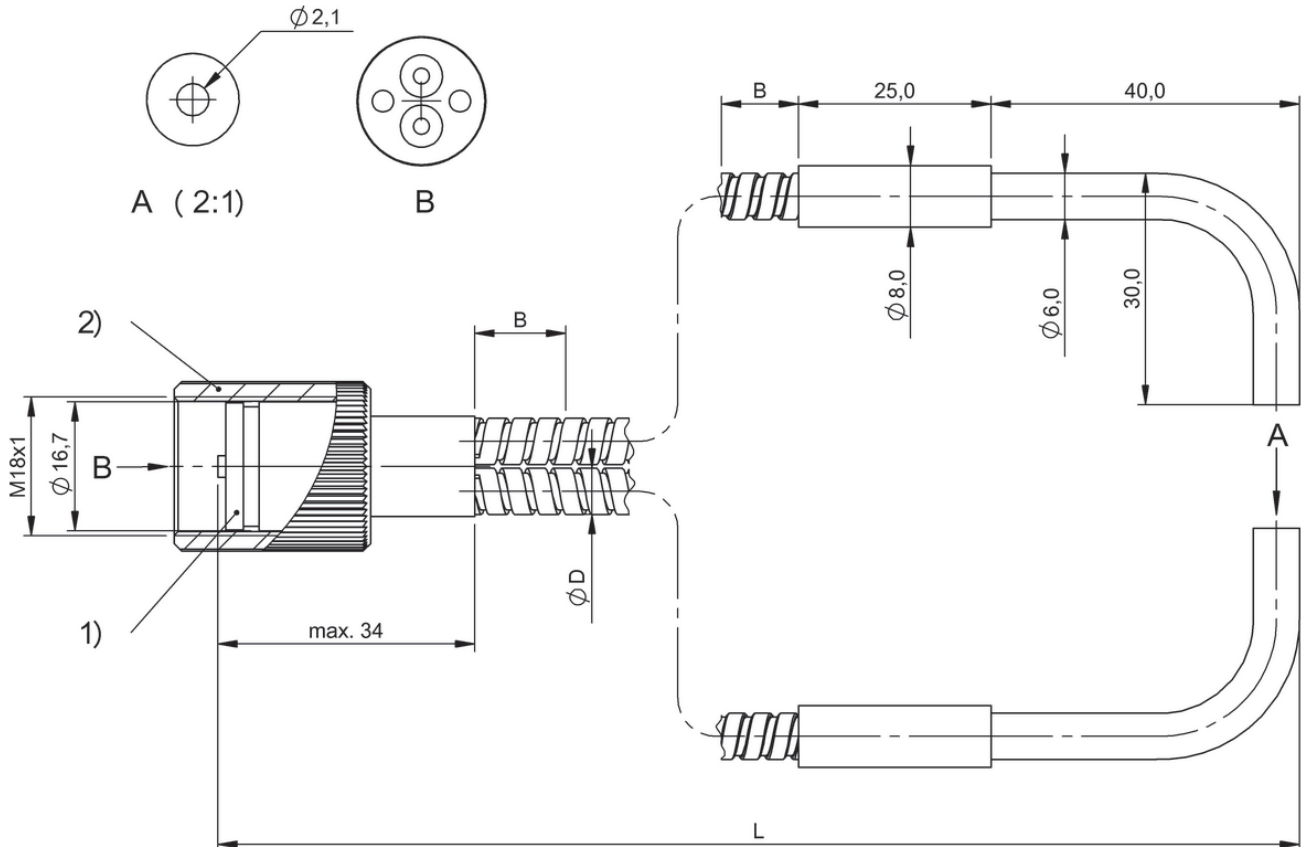
BF00019, BF0001A

Do you need more details? Our Product Finder at www.balluff.com provides you with product-specific information, including technical drawings, data sheets, user guides and more for each individual product. All items are available for download.



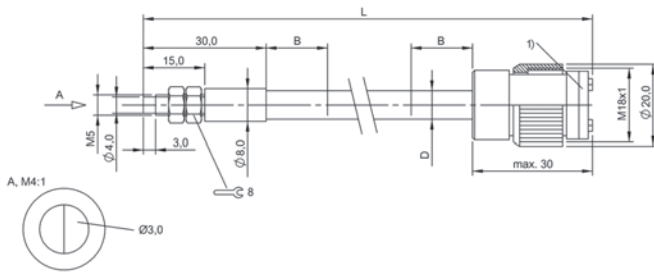
1) Disc removable

BF0001F, BF0001H



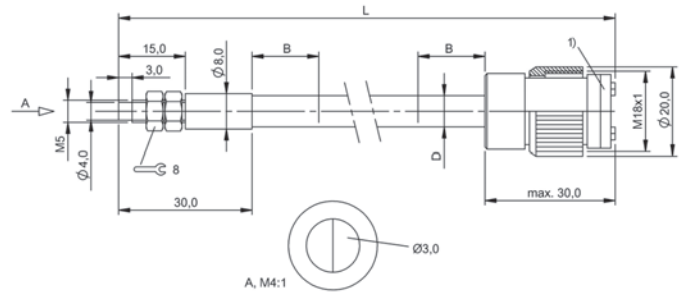
1) Disc removable, 2) cap nut

BF00047, BF00049, BF0004A



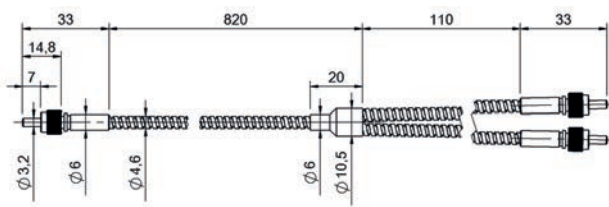
1) Disc removable

BF0002F, BF0002H

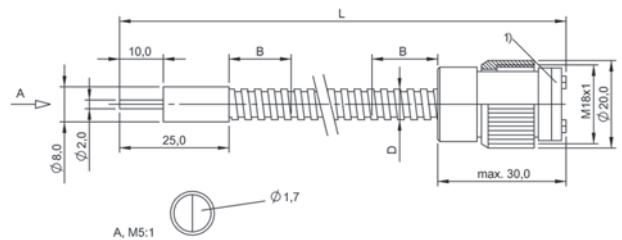


1) Disc removable

BF0002M, BF0002N

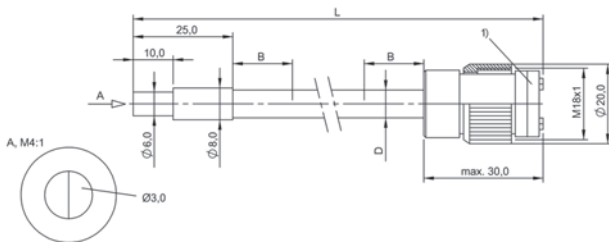


BF0000H8



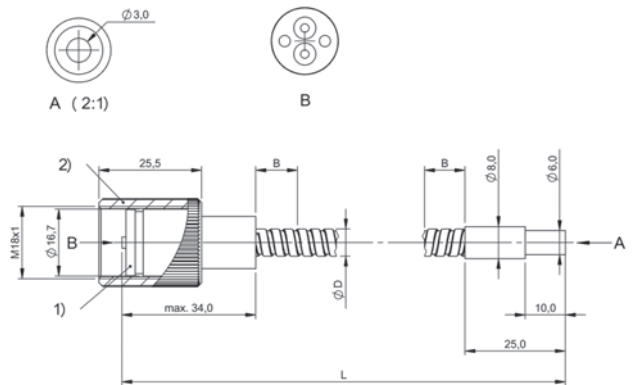
1) Disc removable

BF0003R, BF0003T



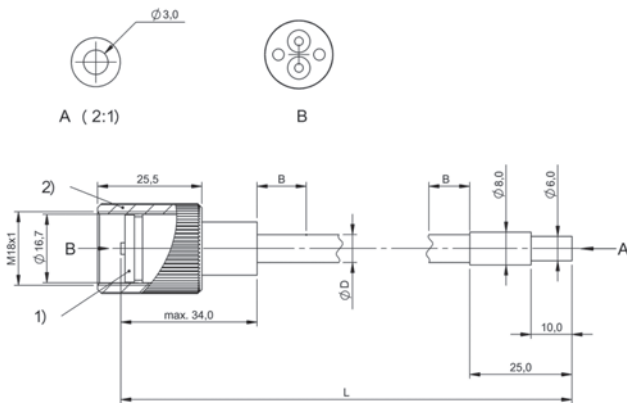
1) Disc removable

BF00002U, BF00002W



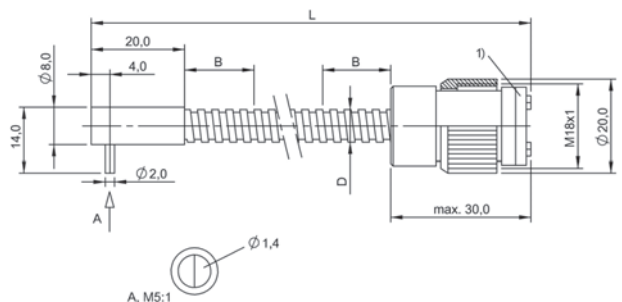
1) Disc removable, 2) cap nut

BF00004M



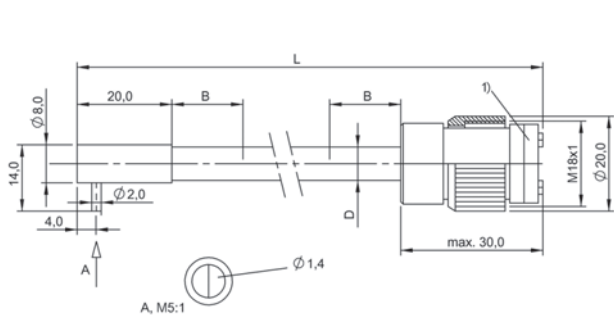
1) Disc removable, 2) cap nut

BF00004P, BF00004R



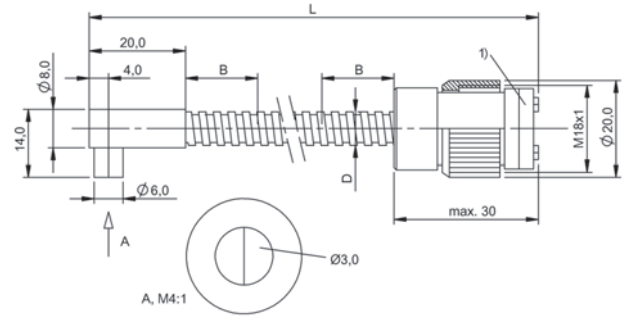
1) Disc removable

BF00003H, BF00003J



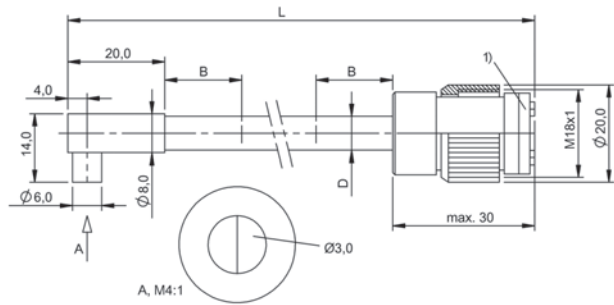
1) Disc removable

BF0003M, BF0003N



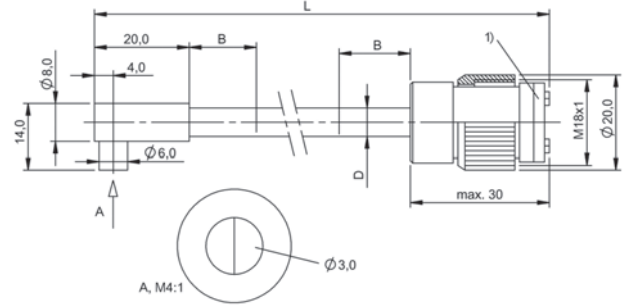
1) Disc removable

BF00031, BF00032



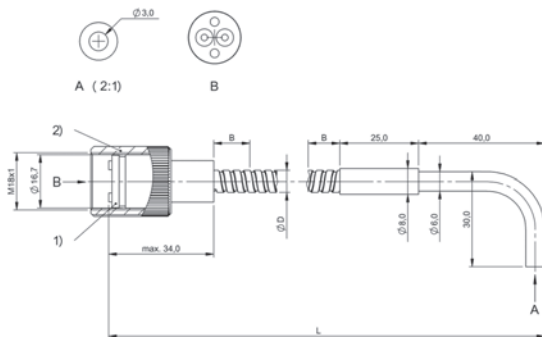
1) Disc removable

BF00037, BF00038



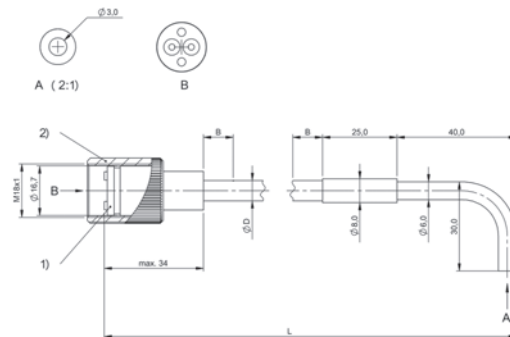
1) Disc removable

BF0003C, BF0003E



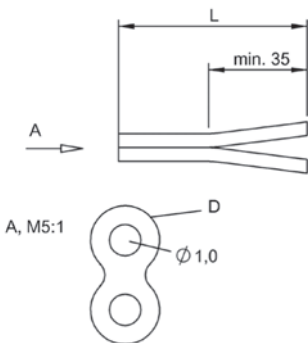
1) Disc removable, 2) cap nut

BF0004U

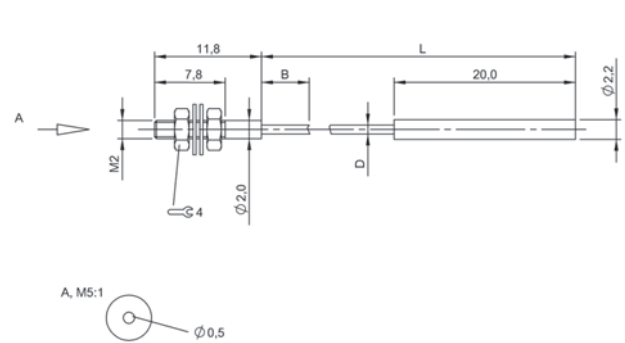


1) Disc removable, 2) cap nut

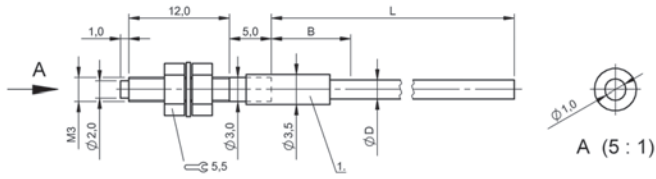
BF0004Y, BF0004Z



BF0005Y

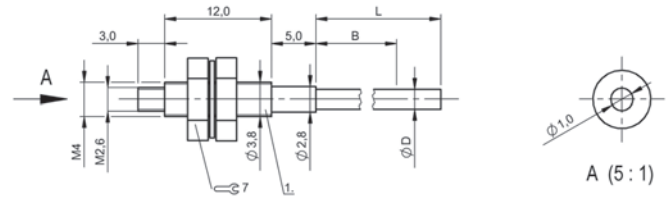


BF0000C



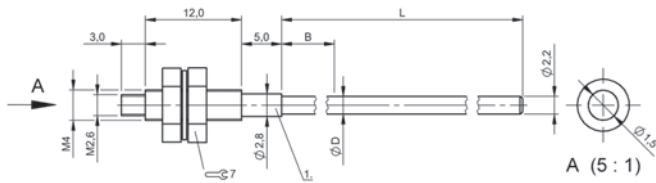
1) Protective tube

BF0005R



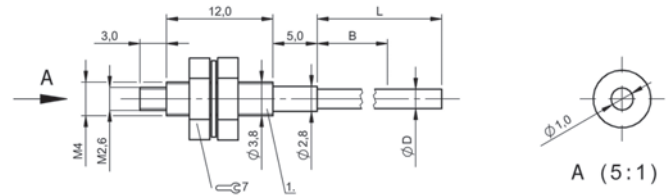
1) Protective tube

BF0005M



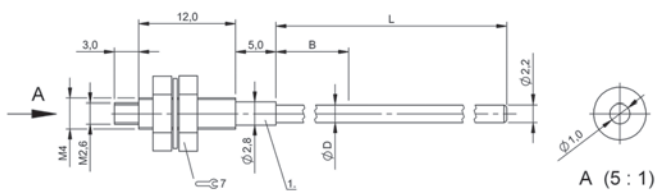
1) Protective tube

BF0005U



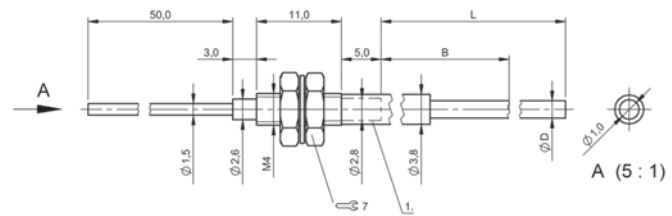
1) Protective tube

BF0005T



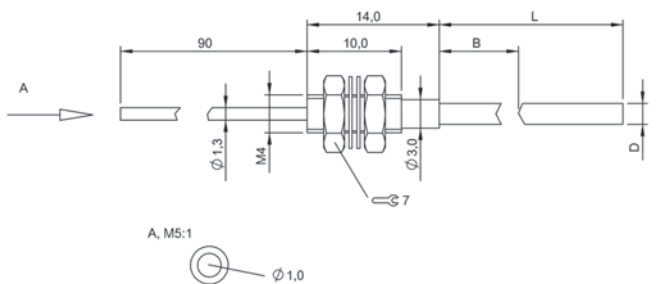
1) Protective tube

BF0005W

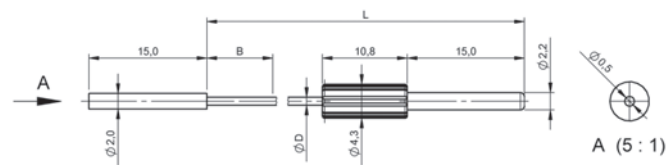


1) Protective tube

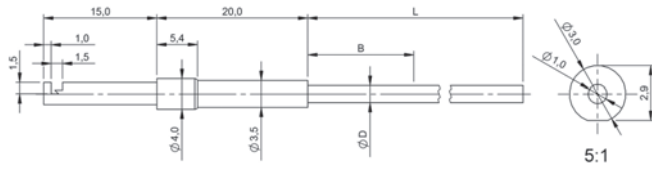
BF0005N



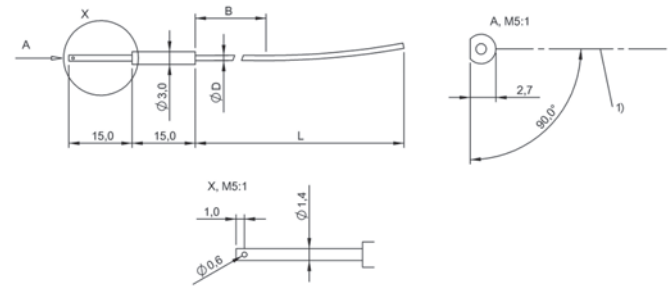
BF00002



BF00051

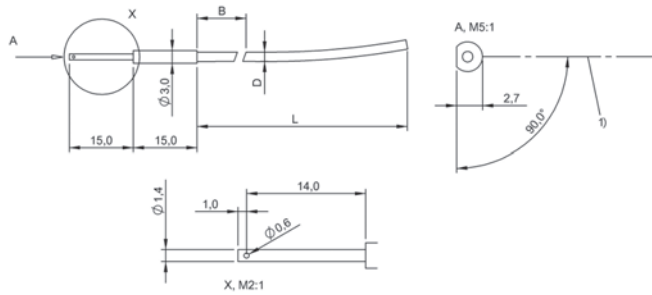


BF0004Y



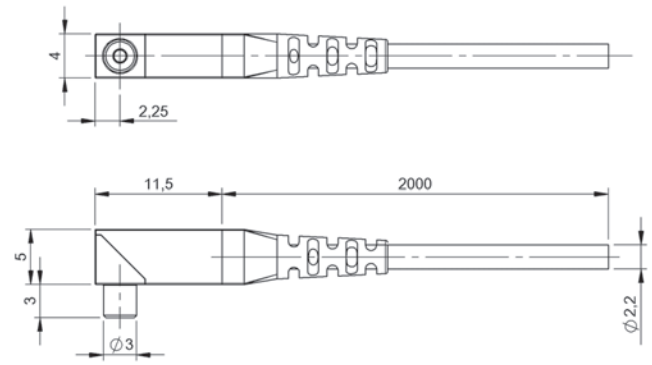
1) Optical axis

BF00057

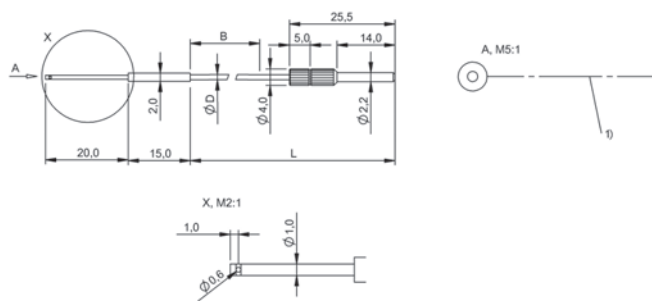


1) Optical axis

BF0005P

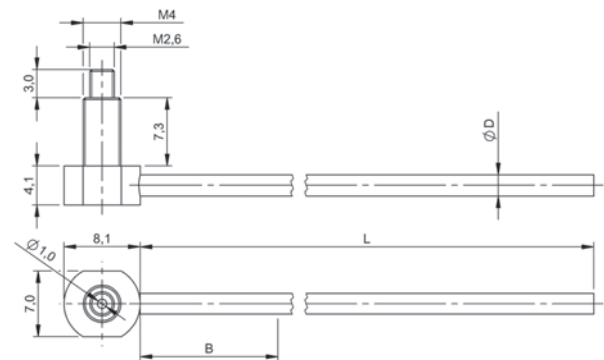


BF0005H

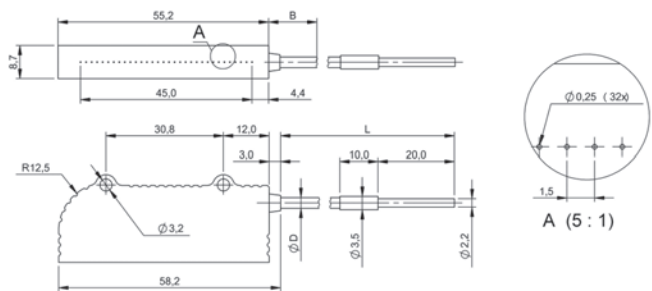


1) Optical axis

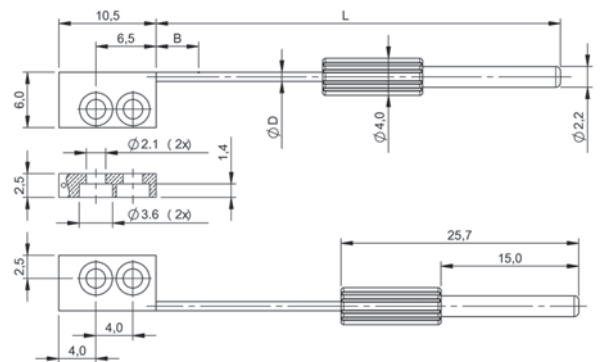
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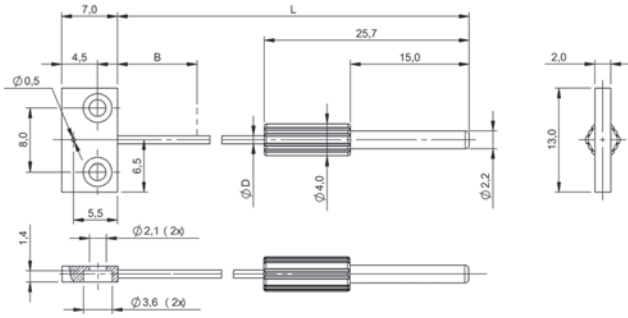
BF0006H



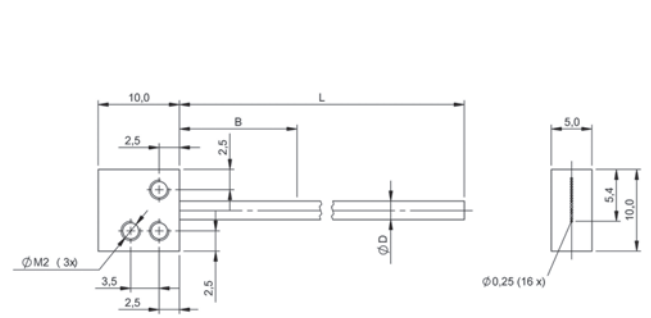
BF0006C



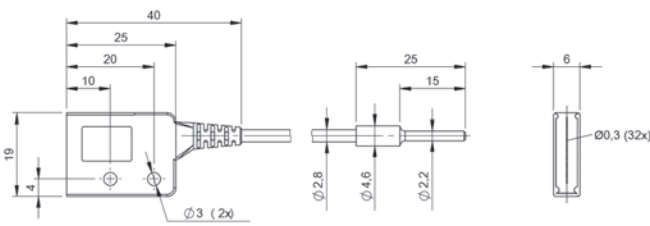
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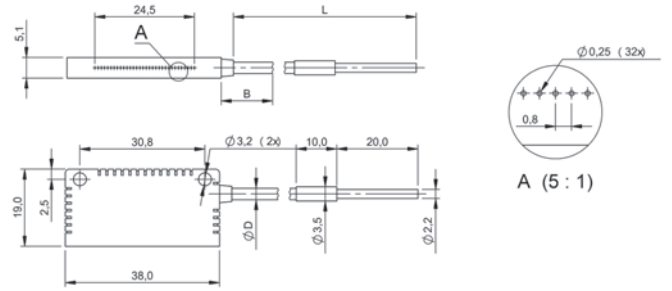
BF000C7



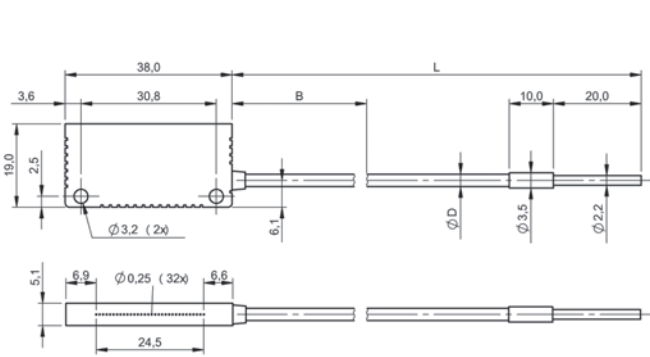
BF000AP



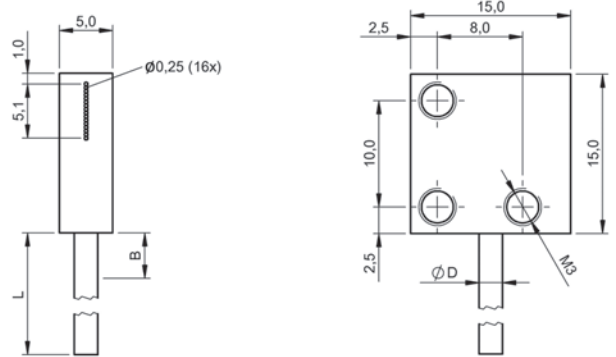
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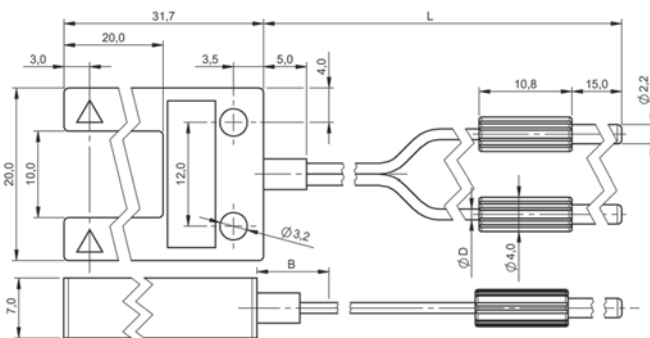
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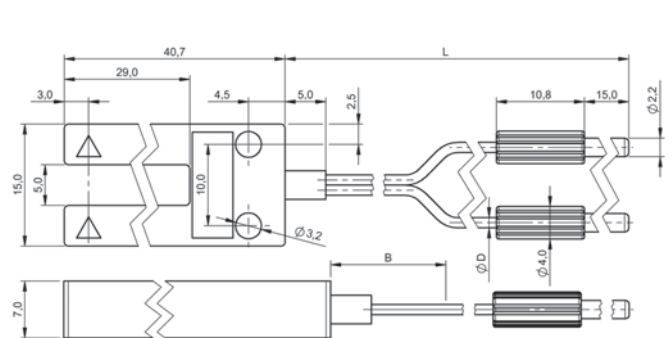
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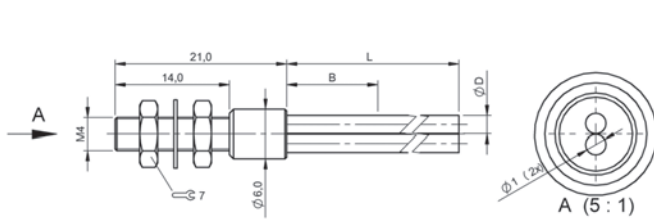
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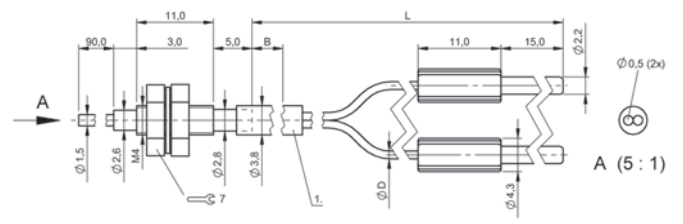
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BF00058

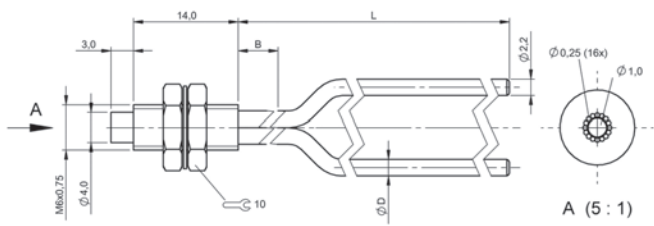


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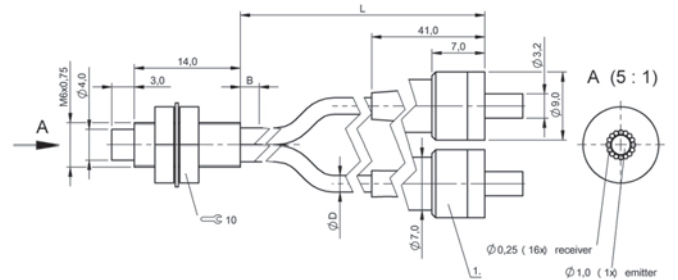


1) Protective tube

BF00053

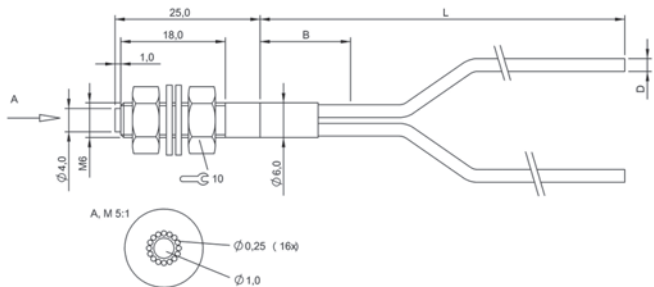


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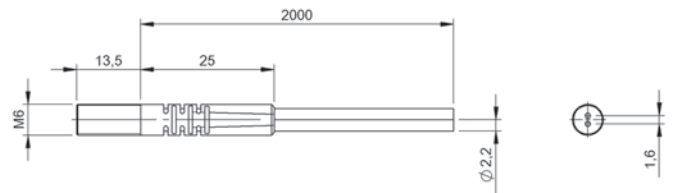


1) SMA 905

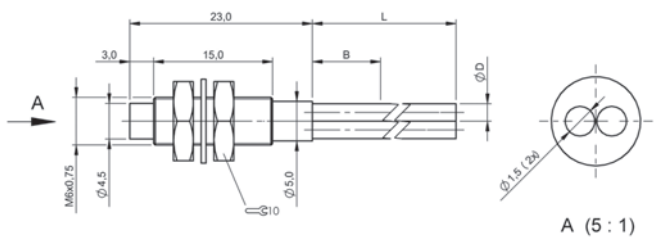
BF000H4, BF000FP, BF000C4, BF000FN



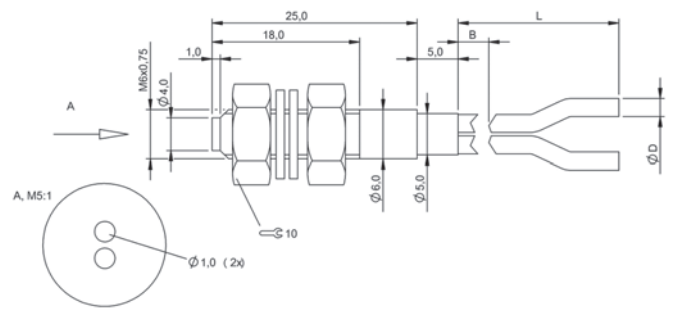
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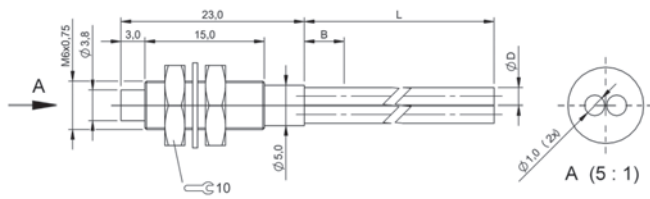
BF000H5



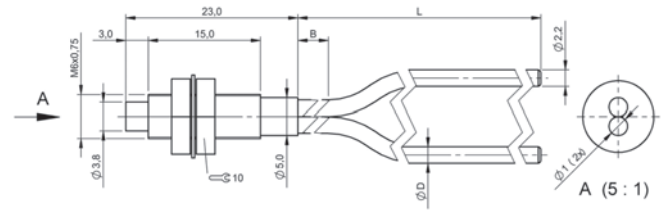
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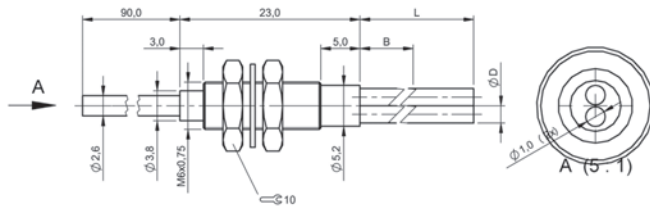
BF00003



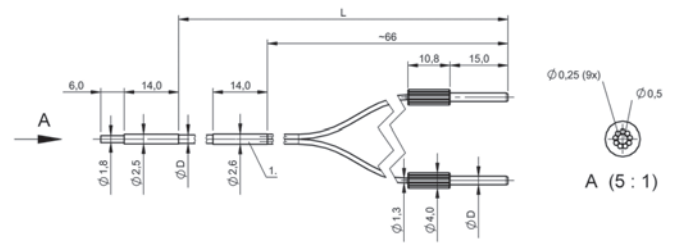
BF00063



BF00065

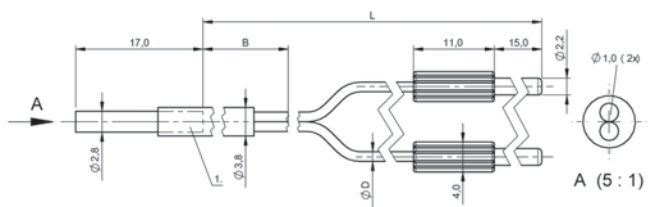


BF00004



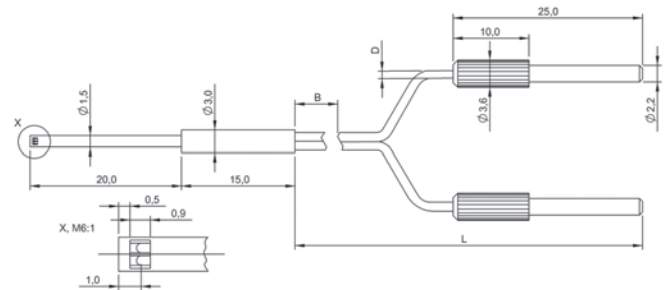
1) Protective tube

BF000AT

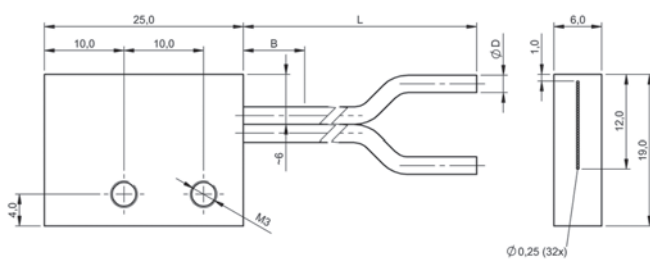


1) Protective tube

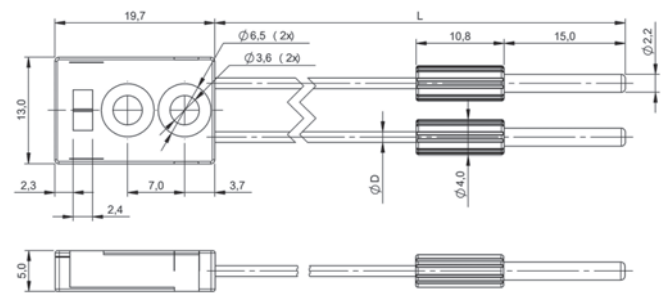
BF0005A



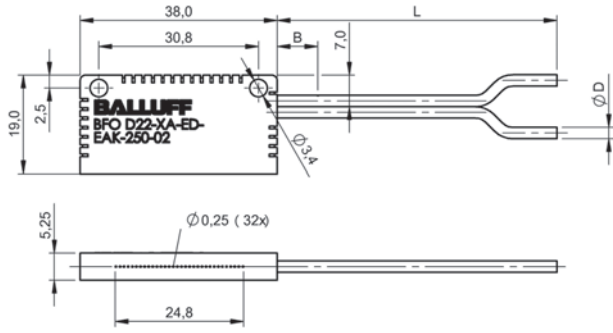
BF00062



BF0005Z



BF000AR



BF00060



| | BOH005J BOH TI-G02-001-01-S49F | BOH000C BOH TK-G02-001-01-S49F | BOH000A BOH TR-G02-001-01-S49F | |
|--------------------------------|---|---|---|--|
| Series | G02 | G02 | G02 | |
| Dimension | Ø 2 x 8 mm | Ø 2 x 8.6 mm | Ø 2 x 8.6 mm | |
| Interface | for switching amplifier | for switching amplifier | for switching amplifier | |
| Principle of operation | Optical sensor head | Optical sensor head | Optical sensor head | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | divergent, max. 3.5° | Divergent | |
| Light type | Infrared | microSPOT-LED red light | LED, red light | |
| Light spot size | — | Ø 10 mm at 100 mm | — | |
| Range | 0...300 mm | 0...500 mm | 0...300 mm | |
| Connection | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | |
| Housing material | Stainless steel | Stainless steel | Stainless steel | |
| Material sensing surface | Epoxy | Epoxy | Epoxy | |
| Approval/Conformity | CE | CE | CE | |
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| | BOH000J BOH TJ-G02-001-01-S49F | BOH000E BOH TK-M03-005-01-S49F | BOH0061 BOH TI-M03-001-01-S49F | BOH000U BOH TK-M03-001-01-S49F | BOH000T BOH TR-M03-001-01-S49F |
|--|---|---|---|---|---|
| | G02 | M03 | M03 | M03 | M03 |
| | Ø 2 x 8.6 mm | 6 x 5.5 x 7.6 mm | Ø 3 x 8 mm | Ø 3 x 8.7 mm | Ø 3 x 8.7 mm |
| | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier |
| | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | Light absorption with water | — | — | — | — |
| | Divergent | divergent, max. 3.5° | Divergent | divergent, max. 3.5° | Divergent |
| | Infrared for water detection | microSPOT-LED red light | Infrared | microSPOT-LED red light | LED, red light |
| | — | Ø 10 mm at 100 mm | — | Ø 10 mm at 100 mm | — |
| | 0...250 mm | 0...500 mm | 0...300 mm | 0...500 mm | 0...300 mm |
| | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | PMMA | Epoxy | Epoxy | Epoxy | Epoxy |
| | CE | CE | CE | CE | CE |
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| | BOH00E6 BOH TK-M04-020-01-S49F | BOH00E5 BOH TR-M04-020-01-S49F | BOH0010 BOH TR-G05-005-02-S49F | |
|--------------------------------|---|---|---|--|
| Series | M04 | M04 | G05 | |
| Dimension | Ø 4 x 12 mm | Ø 4 x 12 mm | Ø 5 x 13 mm | |
| Interface | for switching amplifier | for switching amplifier | for switching amplifier | |
| Principle of operation | Optical sensor head | Optical sensor head | Optical sensor head | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | divergent, max. 2.5° | Divergent | Divergent | |
| Light type | microSPOT-LED red light | LED, red light | LED, red light | |
| Light spot size | Ø 8.00 mm at 100 mm | 27 x 27 mm at 100 mm | — | |
| Range | 0...2000 mm | 0...2000 mm | 0...4 m | |
| Connection | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 2.00 m, PUR | |
| Housing material | Nickel-plated brass | Nickel-plated brass | Stainless steel | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Approval/Conformity | CE | — | CE | |
| Productview | Page 602 | Page 602 | Page 602 | |



| | BOH000F BOH TK-M05-006-01-S49F | BOH0065 BOH TI-M05-003-01-S49F | BOH0013 BOH TK-M05-003-01-S49F | BOH000Y BOH TR-M05-003-01-S49F | BOH006H BOH TI-M06-002-01-S49F |
|--|---|---|---|---|---|
| | M5 | M5 | M5 | M5 | M6 |
| | 8.8 x 8 x 8 mm | Ø 5 x 10 mm | Ø 5 x 12.5 mm | Ø 5 x 12.5 mm | Ø 6 x 12 mm |
| | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier |
| | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | — | — | — | — | — |
| | divergent, max. 2.5° | Divergent | divergent, max. 2.5° | Divergent | Divergent |
| | microSPOT-LED red light | Infrared | microSPOT-LED red light | LED, red light | Infrared |
| | Ø 8 mm at 100 mm | — | Ø 8 mm at 100 mm | — | — |
| | 0...2 m | 0...1 m | 0...2 m | 0...1 m | 0...4 m |
| | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR |
| | Brass | Brass | Brass | Brass | Brass |
| | Glass | PMMA | PMMA | PMMA | PMMA |
| | CE | CE | CE | CE | CE |
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| | BOH000K BOH TR-M06-002-02-S49F | BOH000H BOH TL-M06-007-02-S49F | BOH0012 BOH TK-M08-004-02-S49F | |
|--------------------------------|---|---|---|--|
| Series | M6 | M6 | M8 | |
| Dimension | Ø 6 x 13 mm | Ø 6 x 17 mm | Ø 8 x 20 mm | |
| Interface | for switching amplifier | for switching amplifier | for switching amplifier | |
| Principle of operation | Optical sensor head | Optical sensor head | Optical sensor head | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | Collimated | divergent, max. 1° | |
| Light type | LED, red light | Laser red light | microSPOT-LED red light | |
| Light spot size | — | Ø 4.5 mm at 2 m | Ø 18 mm at 1 m | |
| Range | 0...4 m | 0...4 m | 0...4 m | |
| Connection | Cable with connector, M8x1 connector, 2.00 m, PUR | Cable with connector, M8x1 connector, 2.00 m, PUR | Cable with connector, M8x1 connector, 2.00 m, PUR | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | PMMA | Glass | Glass | |
| Approval/Conformity | CE | CE | CE | |
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| | BOH006P BOH TI-Q06-001-01-S49F | BOH000P BOH TK-Q06-001-01-S49F | BOH000N BOH TR-Q06-001-01-S49F | BOH000R BOH TJ-Q06-001-01-S49F | BOH00EL BOH AI-R034-025-01-S49F |
|--|---|---|---|---|--|
| | Q06 | Q06 | Q06 | Q06 | — |
| | 12 x 6 x 6 mm | 12 x 6 x 6 mm | 12 x 6 x 6 mm | 12 x 6 x 6 mm | 8 x 28 x 12 mm |
| | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier |
| | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | — | — | — | Light absorption with water | Light array |
| | Divergent | divergent, max. 2.5° | Divergent | Divergent | Divergent |
| | Infrared | microSPOT-LED red light | LED, red light | Infrared for water detection | Infrared |
| | — | Ø 8 mm at 100 mm | — | — | — |
| | 0...1 m | 0...2 m | 0...1 m | 0 m...500 mm | 100 mm |
| | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1 m, PUR |
| | Brass | Brass | Brass | Brass | PA 6 |
| | PMMA | PMMA | PMMA | PMMA | PMMA |
| | CE | CE | CE | CE | CE |
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| | BOH001Z BOH TK-R003-007-01-S49F | BOH0020 BOH TR-R010-008-02-S49F | BOH007A BOH TJ-R010-008-01-S49F | |
|--------------------------------|---|---|---|--|
| Series | R003 | R010 | R010 | |
| Dimension | 5.5 x 3 x 5.2 mm | 12 x 6 x 8 mm | 12 x 6 x 8 mm | |
| Interface | for switching amplifier | for switching amplifier | for switching amplifier | |
| Principle of operation | Optical sensor head | Optical sensor head | Optical sensor head | |
| Principle of optical operation | Through-beam sensor | Through-beam sensor | Through-beam sensor | |
| Special optical feature | — | — | Light absorption with water | |
| Beam characteristic | divergent, max. 3.5° | Divergent | Divergent | |
| Light type | microSPOT-LED red light | LED, red light | Infrared | |
| Light spot size | Ø 10 mm at 100 mm | — | — | |
| Range | 0 m...500 mm | 0...4 m | 0 m...900 mm | |
| Connection | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 2.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | Epoxy | PMMA | PMMA | |
| Approval/Conformity | CE | CE | CE | |
| Productview | Page 603 | Page 603 | Page 603 | |



| | BOH002E BOH TK-R018-002-01-S49F | BOH002C BOH TK-R018-001-01-S49F | BOH002H BOH TK-R027-004-01-S49F | BOH002F BOH TK-R027-003-01-S49F | BOH0024 BOH AR-R113-010-01-S49F |
|--|---|---|---|---|---|
| | R018 | R018 | R027 | R027 | R113 |
| | 13.5 x 3 x 13 mm | 13 x 3 x 13.5 mm | 18 x 4.8 x 15 mm | 15 x 4.8 x 18 mm | 75 x 10 x 15 mm |
| | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier | for analog amplifier |
| | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head |
| | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor | Through-beam sensor |
| | — | — | — | — | Light array |
| | divergent, max. 3.5° | divergent, max. 3.5° | divergent, max. 2.5° | divergent, max. 2.5° | — |
| | microSPOT-LED red light | microSPOT-LED red light | microSPOT-LED red light | microSPOT-LED red light | LED, red light |
| | Ø 10 mm at 100 mm | Ø 10 mm at 100 mm | Ø 8 mm at 100 mm | Ø 8 mm at 100 mm | — |
| | 0 m...500 mm | 0 m...500 mm | 0...2 m | 0...2 m | 0...200 mm |
| | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR |
| | Aluminum | Aluminum | Aluminum | Aluminum | Aluminum |
| | Glass | Glass | Glass | Glass | PMMA |
| | CE | CE | CE | CE | CE |
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| | BOH002M BOH AI-R165-011-01-S49F | BOH0002 BOH DI-G02-001-01-S49F | BOH0003 BOH DR-G02-001-01-S49F | |
|--------------------------------|---|---|---|--|
| Series | R165 | G02 | G02 | |
| Dimension | 110 x 10 x 15 mm | Ø 2 x 8 mm | Ø 2 x 8 mm | |
| Interface | for analog amplifier | for switching amplifier | for switching amplifier | |
| Principle of operation | Optical sensor head | Optical sensor head | Optical sensor head | |
| Principle of optical operation | Through-beam sensor | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | Light array | — | — | |
| Beam characteristic | — | Divergent | Divergent | |
| Light type | Infrared | Infrared | LED, red light | |
| Light spot size | — | — | — | |
| Range | 0...500 mm | 0...12 mm | 0...12 mm | |
| Connection | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | |
| Housing material | Aluminum | Stainless steel | Stainless steel | |
| Material sensing surface | PMMA | Epoxy | Epoxy | |
| Approval/Conformity | CE | CE | CE | |
| Productview | Page 604 | Page 604 | Page 604 | |



| | BOH0004 BOH DI-M03-001-01-S49F | BOH0009 BOH DR-M03-001-01-S49F | BOH003C BOH DI-G05-002-01-S49F | BOH0006 BOH DK-G05-002-01-S49F | BOH0005 BOH DR-G05-002-01-S49F |
|--|---|---|---|---|---|
| | M03 | M03 | G05 | G05 | G05 |
| | Ø 3 x 8 mm | Ø 3 x 8 mm | Ø 5 x 12 mm | Ø 5 x 12 mm | Ø 5 x 12 mm |
| | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier |
| | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head |
| | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic |
| | — | — | — | — | — |
| | Divergent | Divergent | Divergent | divergent, max. 3.5° | Divergent |
| | Infrared | LED, red light | Infrared | microSPOT-LED red light | LED, red light |
| | — | — | — | Ø 5 mm at 50 mm | Ø 14 mm at 50 mm |
| | 0...12 mm | 0...12 mm | 0...60 mm | 0...60 mm | 0...60 mm |
| | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| | Epoxy | Epoxy | PMMA | PMMA | PMMA |
| | CE | CE | CE | CE | CE |
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| | BOH003M BOH DI-M06-002-01-S49F | BOH0008 BOH DK-M06-002-01-S49F | BOH0007 BOH DR-M06-002-01-S49F | |
|--------------------------------|---|---|---|--|
| Series | M6 | M6 | M6 | |
| Dimension | Ø 6 x 12 mm | Ø 6 x 12 mm | Ø 6 x 12 mm | |
| Interface | for switching amplifier | for switching amplifier | for switching amplifier | |
| Principle of operation | Optical sensor head | Optical sensor head | Optical sensor head | |
| Principle of optical operation | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | — | — | — | |
| Beam characteristic | Divergent | divergent, max. 3.5° | Divergent | |
| Light type | Infrared | microSPOT-LED red light | LED, red light | |
| Light spot size | — | Ø 5 mm at 50 mm | Ø 14 mm at 50 mm | |
| Range | 0...60 mm | 0...60 mm | 0...60 mm | |
| Connection | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | |
| Housing material | Brass | Brass | Brass | |
| Material sensing surface | PMMA | PMMA | PMMA | |
| Approval/Conformity | CE | CE | CE | |
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| | BOH003W BOH DI-Q06-001-01-S49F | BOH000M BOH DK-Q06-001-01-S49F | BOH000L BOH DR-Q06-001-01-S49F | BOH002K BOH DK-R002-006-01-S49F | BOH0028 BOH DK-R018-002-01-S49F |
|--|---|---|---|---|---|
| | Q06 | Q06 | Q06 | R002 | R018 |
| | 12 x 6 x 6 mm | 12 x 6 x 6 mm | 12 x 6 x 6 mm | 8 x 3 x 5.9 mm | 13.5 x 3 x 13 mm |
| | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier | for switching amplifier |
| | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head |
| | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic |
| | — | — | — | — | — |
| | Divergent | divergent, max. 3.5° | Divergent | divergent, max. 3.5° | divergent, max. 3.5° |
| | Infrared | microSPOT-LED red light | LED, red light | microSPOT-LED red light | microSPOT-LED red light |
| | — | Ø 4 mm at 50 mm | Ø 11 mm at 50 mm | Ø 5 mm at 50 mm | Ø 5 mm at 50 mm |
| | 0...60 mm | 0...60 mm | 0...60 mm | 0...70 mm | 3.5...60 mm |
| | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR |
| | Brass | Brass | Brass | Brass | Aluminum |
| | PMMA | PMMA | PMMA | Epoxy | Glass |
| | CE | CE | CE | CE | CE |
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| | BOH0027 BOH DK-R018-001-01-S49F | BOH002A BOH DK-R027-004-01-S49F | BOH0029 BOH DK-R027-003-01-S49F | |
|--------------------------------|---|---|---|--|
| Series | R018 | R027 | R027 | |
| Dimension | 13 x 3 x 13.5 mm | 18 x 4.8 x 15 mm | 15 x 4.8 x 18 mm | |
| Interface | for switching amplifier | for switching amplifier | for switching amplifier | |
| Principle of operation | Optical sensor head | Optical sensor head | Optical sensor head | |
| Principle of optical operation | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic | |
| Special optical feature | — | — | — | |
| Beam characteristic | divergent, max. 3.5° | divergent, max. 2.5° | divergent, max. 2.5° | |
| Light type | microSPOT-LED red light | microSPOT-LED red light | microSPOT-LED red light | |
| Light spot size | Ø 5 mm at 50 mm | Ø 8 mm at 100 mm | Ø 8 mm at 100 mm | |
| Range | 3.5...60 mm | 3.5...100 mm | 3.5...100 mm | |
| Connection | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | |
| Housing material | Aluminum | Aluminum | Aluminum | |
| Material sensing surface | Glass | Glass | Glass | |
| Approval/Conformity | CE | CE | CE | |
| Productview | Page 605 | Page 605 | Page 605 | |



| | BOH002L BOH FK-Z001-001-01-S49F | BOH001M BOH AR-F40-001-01-S49F | BOH001N BOH AR-F40-002-01-S49F | BOH001P BOH AR-F80-003-01-S49F | BOH001R BOH TR-T16-001-01-S49F |
|--|---|---|---|---|---|
| | Z001 | F40 | F40 | F80 | T16 |
| | 16 x 4 x 8.5 mm | 60 x 10 x 60 mm | 67 x 10 x 75 mm | 107 x 10 x 75 mm | 34 x 10 x 10 mm |
| | for switching amplifier | for analog amplifier | for analog amplifier | for analog amplifier | for switching amplifier |
| | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head | Optical sensor head |
| | Diffuse sensor, energetic | Fork sensor | Fork sensor | Fork sensor | Fork sensor |
| | Fixed background suppression | Light array | Light array | Light array | Diffraction caused by liquid |
| | divergent, max. 3.5° | — | — | — | — |
| | microSPOT-LED red light | LED, red light | LED, red light | LED, red light | LED, red light |
| | Ø 1.8 mm at 7.5 mm | — | — | — | — |
| | 3...15 mm | — | — | — | — |
| | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR |
| | Brass | Aluminum | Aluminum | Aluminum | Aluminum |
| | Epoxy | Epoxy | PMMA | PMMA | Epoxy |
| | CE | CE | CE | CE | CE |
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| | BOH001Y BOH TR-T32-001-01-S49F | BOH001U BOH TJ-T32-001-01-S49F | BOH0019 BOH TR-T48-001-01-S49F | |
|--------------------------------|---|--|---|--|
| Series | T32 | T32 | T48 | |
| Dimension | 34 x 10 x 10 mm | 34 x 10 x 10 mm | 34 x 10 x 10 mm | |
| Interface | for switching amplifier | for switching amplifier | for switching amplifier | |
| Principle of operation | Optical sensor head | Optical sensor head | Optical sensor head | |
| Principle of optical operation | Fork sensor | Fork sensor | Fork sensor | |
| Special optical feature | Diffraction caused by liquid | Light absorption with water | Diffraction caused by liquid | |
| Beam characteristic | — | — | — | |
| Light type | LED, red light | Infrared for water detection | LED, red light | |
| Light spot size | — | — | — | |
| Range | — | — | — | |
| Connection | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 1.0 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | |
| Housing material | Aluminum | Aluminum | Aluminum | |
| Material sensing surface | Epoxy | Epoxy | Epoxy | |
| Approval/Conformity | CE | CE | CE | |
| Productview | Page 606 | Page 606 | Page 606 | |



| BOH0015 BOH TJ-T48-001-01-S49F | BOH001A BOH TR-T64-001-01-S49F | BOH0016 BOH TJ-T64-001-01-S49F | | |
|---|---|---|--|--|
| T48 | T64 | T64 | | |
| 34 x 10 x 10 mm | 34 x 10 x 10 mm | 34 x 10 x 10 mm | | |
| for switching amplifier | for switching amplifier | for switching amplifier | | |
| Optical sensor head | Optical sensor head | Optical sensor head | | |
| Fork sensor | Fork sensor | Fork sensor | | |
| Light absorption with water | Diffraction caused by liquid | Light absorption with water | | |
| — | — | — | | |
| Infrared for water detection | LED, red light | Infrared for water detection | | |
| — | — | — | | |
| — | — | — | | |
| Cable with connector, M8x1 connector, 0.20 m, PUR | Cable with connector, M8x1 connector, 1.00 m, PUR | Cable with connector, M8x1 connector, 0.20 m, PUR | | |
| Aluminum | Aluminum | Aluminum | | |
| Epoxy | Epoxy | Epoxy | | |
| CE | CE | CE | | |
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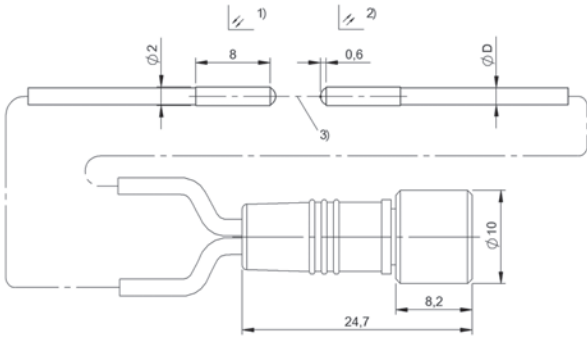
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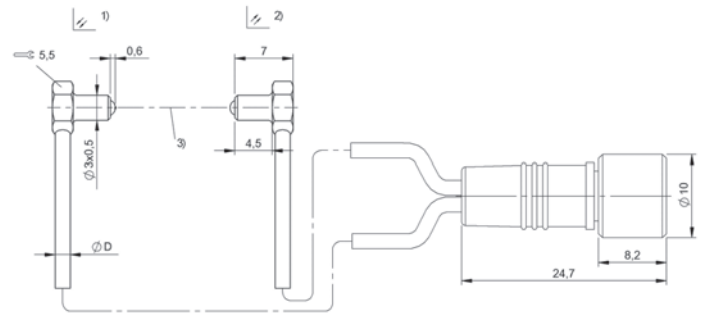
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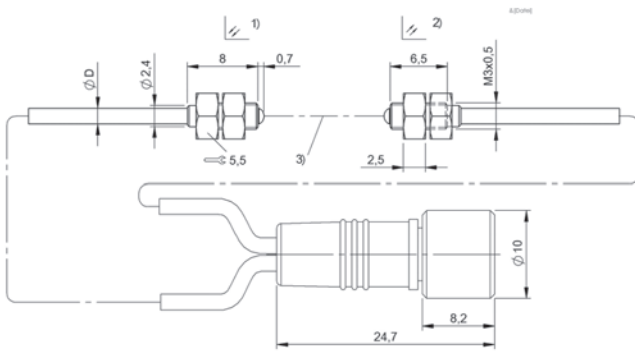
1) Emitter, 2) Receiver, 3) Optical axis

BOH005J, BOH000C, BOH000A, BOH000J



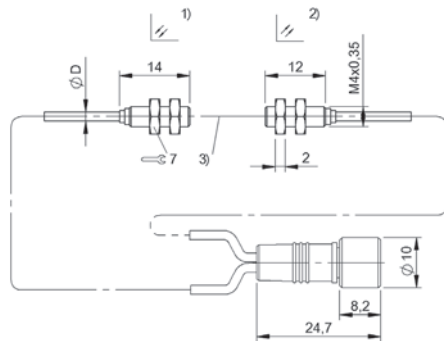
1) Emitter, 2) Receiver, 3) Optical axis

BOH000E



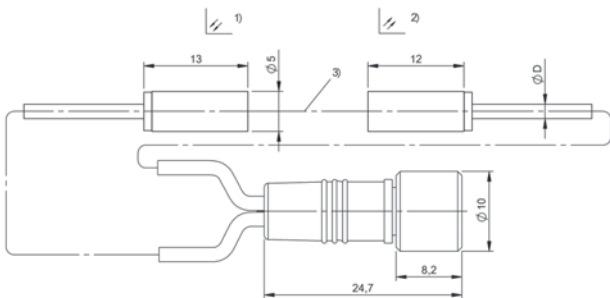
1) Emitter, 2) Receiver, 3) Optical axis

BOH0061, BOH000U, BOH000T



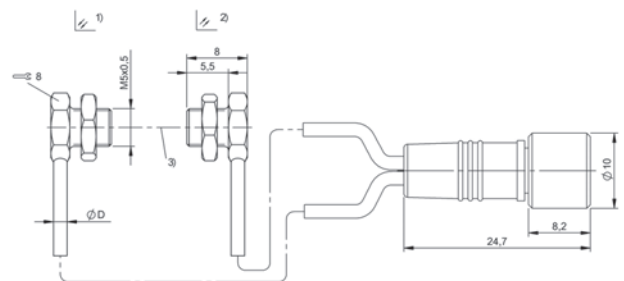
1) Emitter, 2) Receiver, 3) Optical axis

BOH00E6, BOH00E5



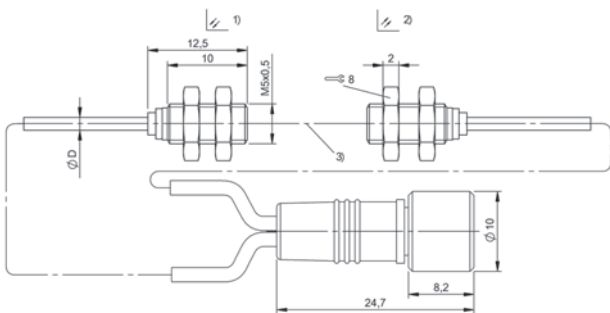
1) Emitter, 2) Receiver, 3) Optical axis

BOH0010



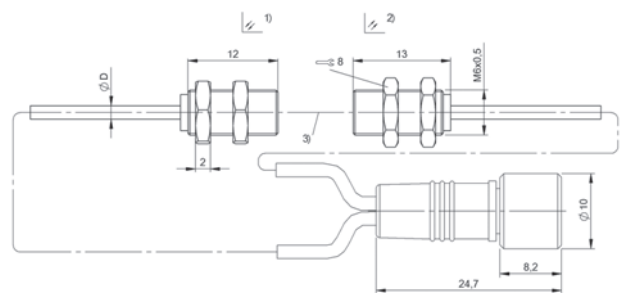
1) Emitter, 2) Receiver, 3) Optical axis

BOH000F



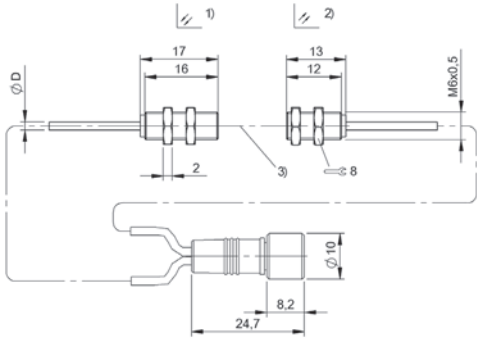
1) Emitter, 2) Receiver, 3) Optical axis

BOH0065, BOH0013, BOH000Y



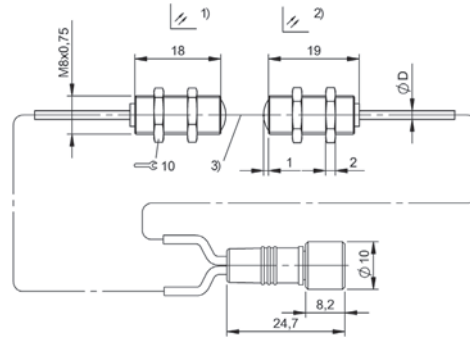
1) Emitter, 2) Receiver, 3) Optical axis

BOH006H, BOH000K



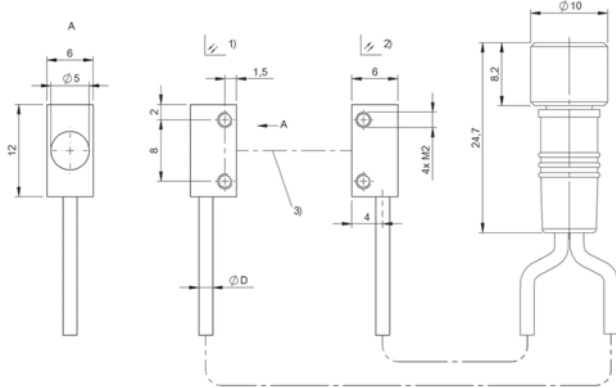
1) Emitter, 2) Receiver, 3) Optical axis

BOH000H



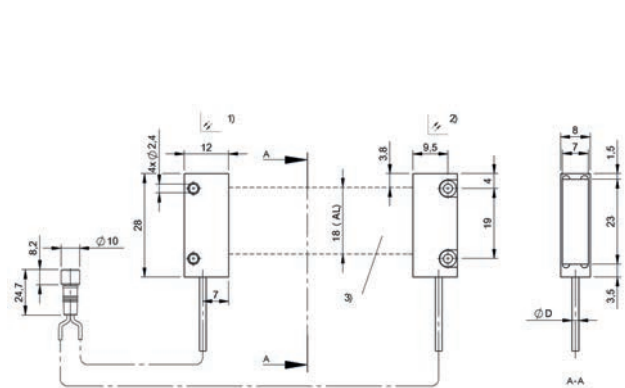
1) Emitter, 2) Receiver, 3) Optical axis

BOH0012



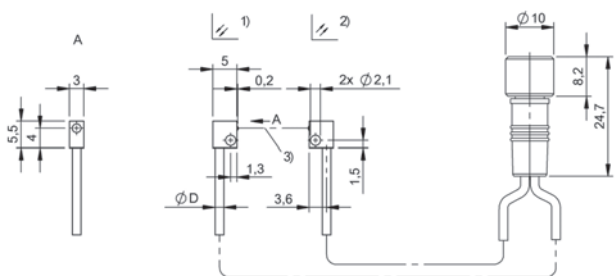
1) Emitter, 2) Receiver, 3) Optical axis

BOH006P, BOH000P, BOH000N, BOH000R



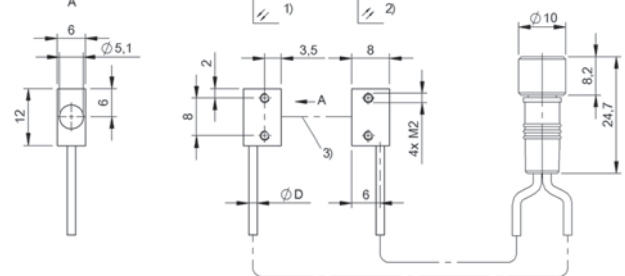
1) Emitter, 2) Receiver, 3) Light array

BOH00EL



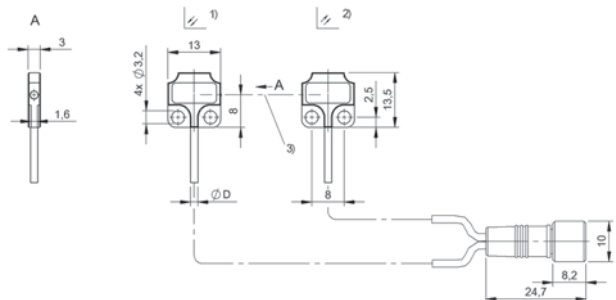
1) Emitter, 2) Receiver, 3) Optical axis

BOH001Z



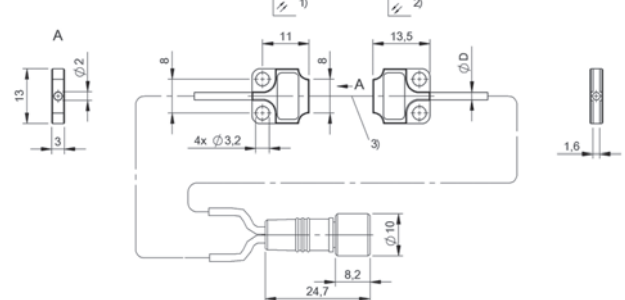
1) Emitter, 2) Receiver, 3) Optical axis

BOH0020, BOH007A



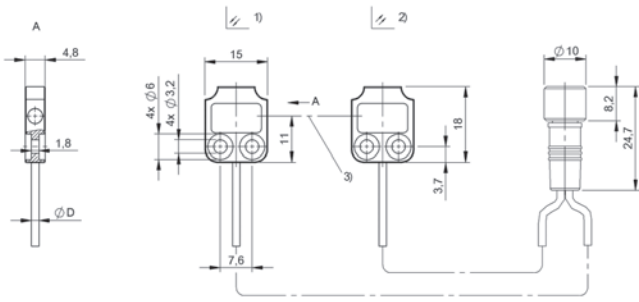
1) Emitter, 2) Receiver, 3) Optical axis

BOH002E



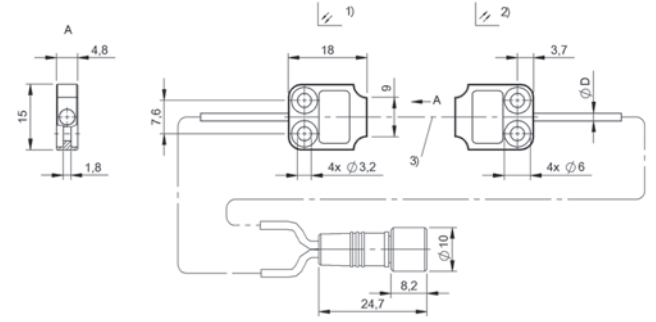
1) Emitter, 2) Receiver, 3) Optical axis

BOH002C



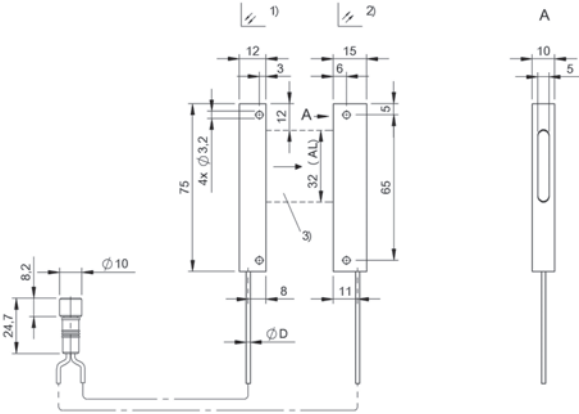
1) Emitter, 2) Receiver, 3) Optical axis

BOH002H



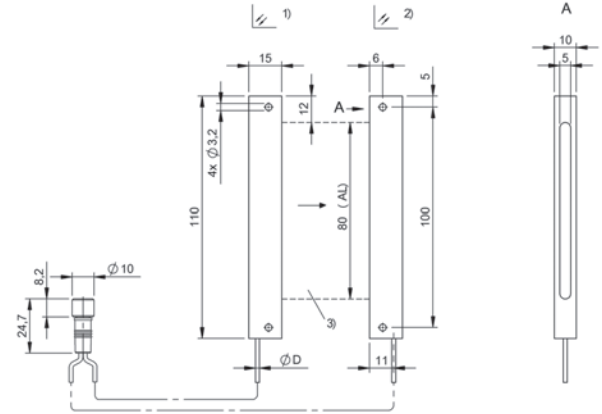
1) Emitter, 2) Receiver, 3) Optical axis

BOH002F



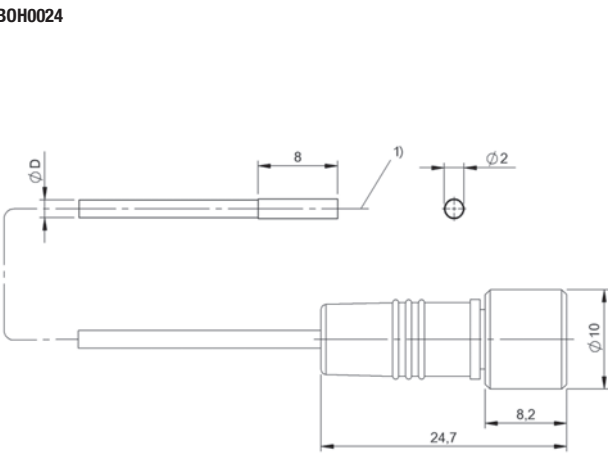
1) Emitter, 2) Receiver, 3) Light array

BOH002H



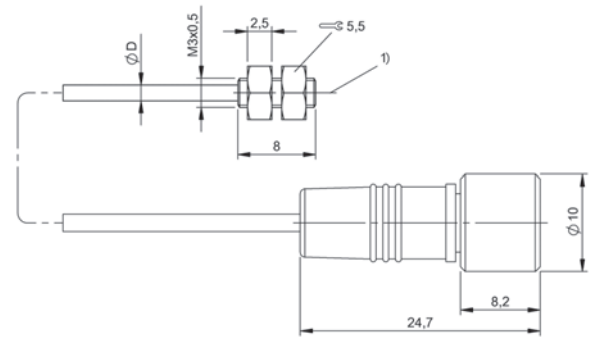
1) Emitter, 2) Receiver, 3) Light array

BOH002F



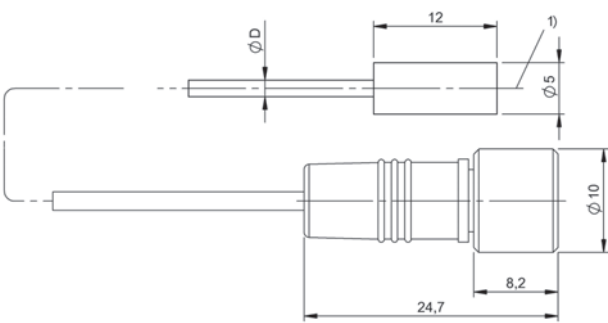
1) Optical axis

BOH0024



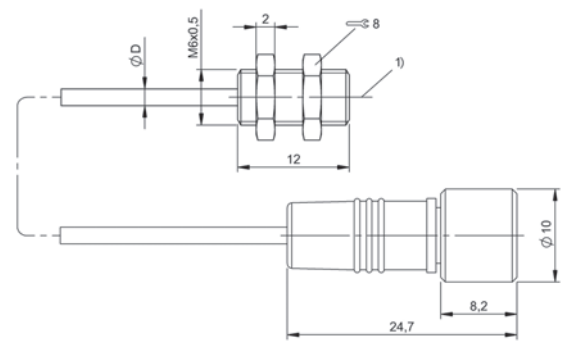
1) Optical axis

BOH002M



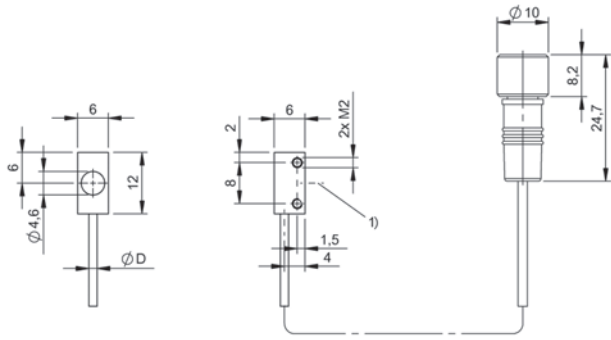
1) Optical axis

BOH0002, BOH0003



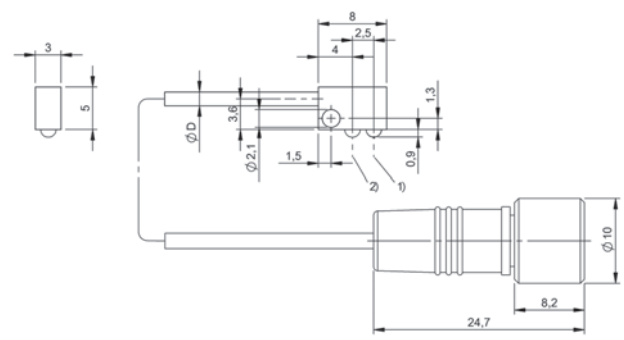
1) Optical axis

BOH0004, BOH0009



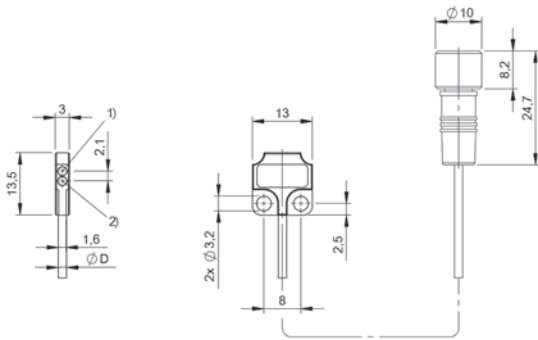
1) Optical axis

BOH003W, BOH000M, BOH000L



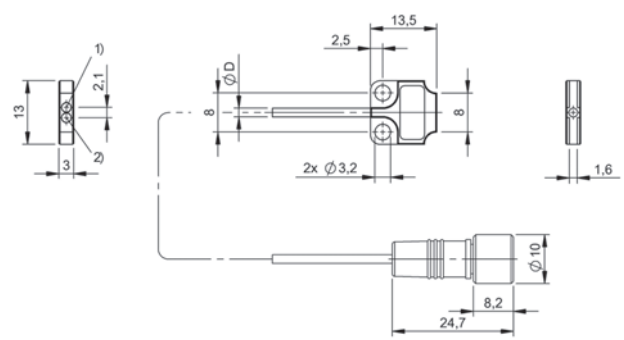
1) Optical axis emitter, 2) Optical axis receiver

BOH002K



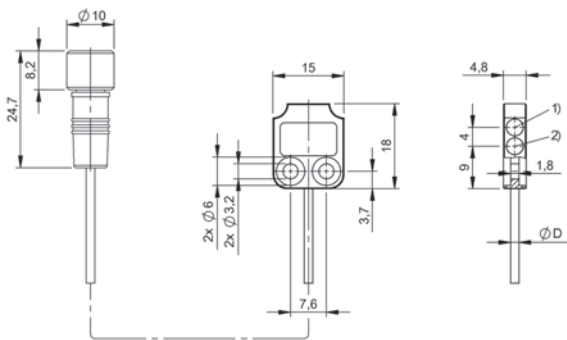
1) Optical axis emitter, 2) Optical axis receiver

BOH0028



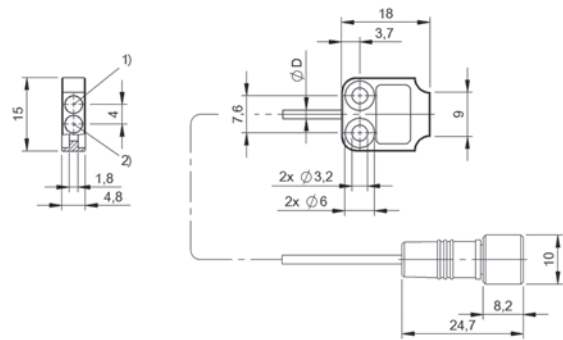
1) Optical axis emitter, 2) Optical axis receiver

BOH0027



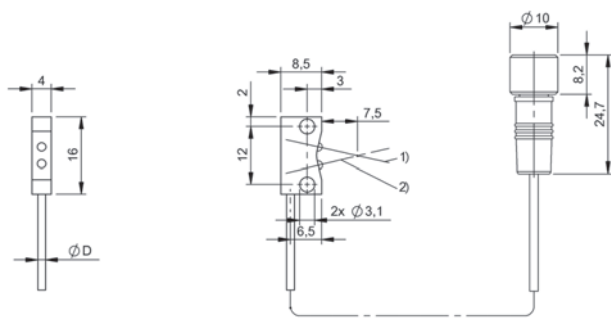
1) Optical axis emitter, 2) Optical axis receiver

BOH002A



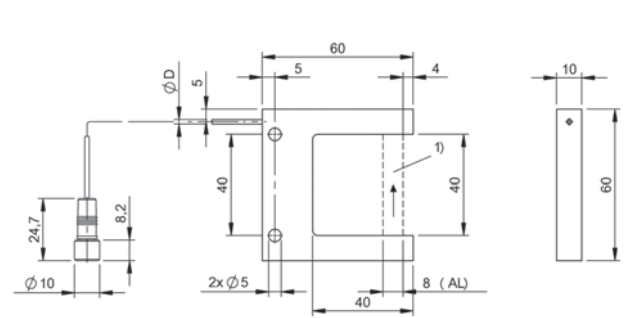
1) Optical axis emitter, 2) Optical axis receiver

BOH0029



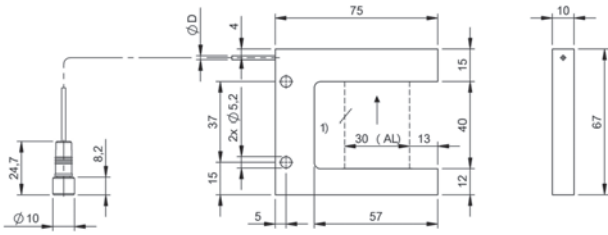
1) Optical axis emitter, 2) Optical axis receiver

BOH002L



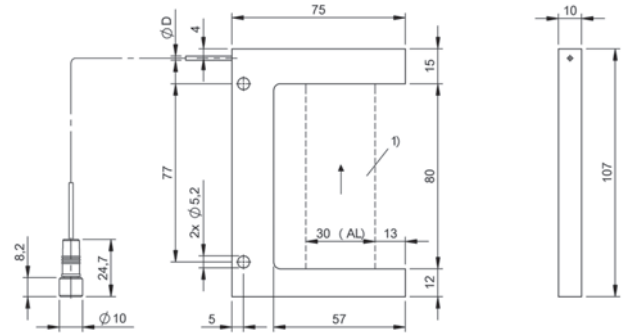
1) Light array

BOH001M



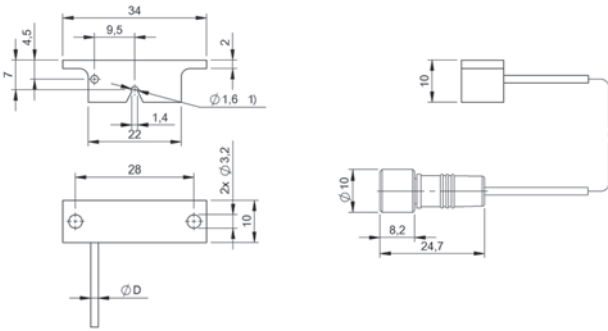
1) Light array

BOH001N



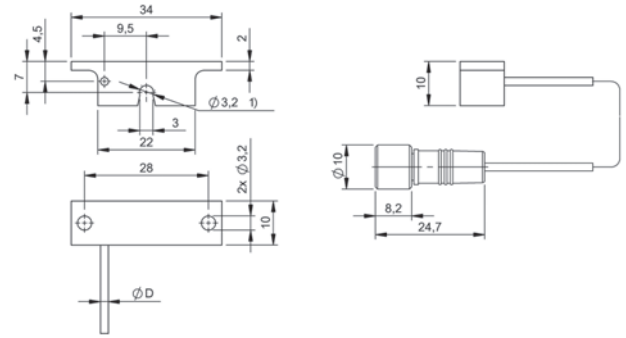
1) Light array

BOH001P



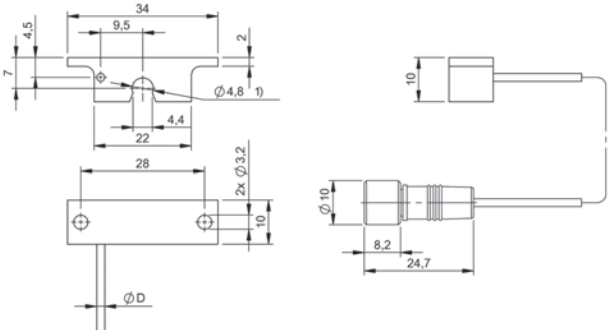
1) Hose fitting

BOH001R



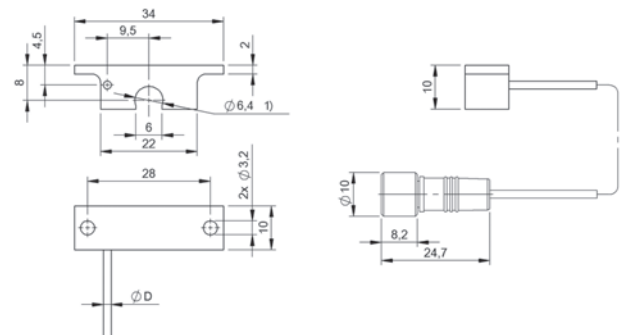
1) Hose fitting

BOH001Y, BOH001U



1) Hose fitting

BOH0019, BOH0015



1) Hose fitting

BOH001A, BOH0016



| | | | | |
|-----------------------------------|--|--|--|--|
| PNP normally open/normally closed | | | BAE00NE BAE SA-OH-035-PP-DV02 | |
| NPN normally open/normally closed | BAE00PR BAE SA-OH-035-NP-DV02 | BAE00PT BAE SA-OH-035-NP-S75G | | |
| Analog, voltage 0...10 V | | | | |
| Analog, current 4...20 mA | | | | |
| Series | SA-OH | SA-OH | SA-OH | |
| Dimension | 15 x 36 x 61 mm | 15 x 36 x 61 mm | 15 x 36 x 61 mm | |
| Display | LED green: Power, Digital display, Switching state - LED yellow | LED green: Power, Digital display, Switching state - LED yellow | Output function- LED yellow, LED green: Power, Error - LED green, flashing, Signal strength - segment display | |
| Setting | Light-on/dark-on, Time function on/off, Delay time, Teach mode Aut/Hys/Int/Pot | Light-on/dark-on, Time function on/off, Delay time, Teach mode Aut/Hys/Int/Pot | Sensitivity (Sn), Light-on/dark-on, Teach Sn, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset), Alarm threshold, Teach mode Aut/Fine/1-Pt/2-Pt, Hysteresis (4 levels), Integration time 4...128 ms, Upper and lower threshold, Delay time | |
| Adjuster | Slide switch 4 positions | Slide switch 4 positions | Slide switch 4 positions | |
| Connection | Cable, 2.00 m, PVC | M8x1 connector, 4-pin | Cable, 2.00 m, PVC | |
| Housing material | ABS PC | ABS PC | ABS PC | |
| Operating voltage Ub | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, EAC | CE, EAC | CE, EAC | |
| Productview | Page 612 | Page 612 | Page 612 | |



| | | | | | |
|--|--|---|---|---|---|
| | BAE00NF BAE SA-OH-035-PP-S75G | | | | |
| | | | | BAE00NH BAE SA-OH-038-UA-DV02 | BAE00NG BAE SA-OH-038-UA-S75G |
| | | BAE00N4 BAE SA-OH-038-IC-DV02 | BAE00N5 BAE SA-OH-038-IC-S75G | | |
| | SA-OH | SA-OH | SA-OH | SA-OH | SA-OH |
| | 15 x 36 x 61 mm | 15 x 36 x 61 mm | 15 x 36 x 61 mm | 15 x 36 x 61 mm | 15 x 36 x 61 mm |
| | Output function- LED yellow, LED green: Power, Error - LED green, flashing, Signal strength - segment display | LED green: Power, Signal strength - segment display | LED green: Power, Signal strength - segment display | LED green: Power, Signal strength - segment display | LED green: Power, Signal strength - segment display |
| | Sensitivity (Sn), Light-on/dark-on, Teach Sn, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset), Alarm threshold, Teach mode Aut/Fine/1-Pt/2-Pt, Hysteresis (4 levels), Integration time 4...128 ms, Upper and lower threshold, Delay time | Sensitivity (Sn), Teach Sn, Teach mode Aut/Pot, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset) | Sensitivity (Sn), Teach Sn, Teach mode Aut/Pot, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset) | Sensitivity (Sn), Teach Sn, Teach mode Aut/Pot, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset) | Sensitivity (Sn), Teach Sn, Teach mode Aut/Pot, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset) |
| | Slide switch 4 positions | Slide switch 4 positions | Slide switch 4 positions | Slide switch 4 positions | Slide switch 4 positions |
| | Connector, M8x1 connector, 4-pin | Cable, 2.00 m, PVC | Connector, M8x1 connector, 4-pin | Cable, 2.00 m, PVC | Connector, M8x1 connector, 4-pin |
| | ABS PC | ABS PC | ABS PC | ABS PC | ABS PC |
| | 10...30 VDC | 15...30 VDC | 15...30 VDC | 15...30 VDC | 15...30 VDC |
| | CE, EAC | CE, EAC | CE, EAC | CE, EAC | CE, EAC |
| | Page 612 | Page 612 | Page 612 | Page 612 | Page 612 |

Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

Accessories



| | | | | |
|---|---|---|--|--|
| PNP normally open/normally closed | | | BAE00YC BAE SA-0H-050-PP-DV02 | |
| PNP dynamic normally open/normally closed | BAE00NJ BAE SA-0H-040-PP-DV02 | BAE00N7 BAE SA-0H-040-PP-S75G | | |
| Series | SA-OH | SA-OH | SA-OH | |
| Dimension | 15 x 36 x 61 mm | 15 x 36 x 61 mm | 15 x 36 x 61 mm | |
| Display | Output function- LED yellow, LED green: Power, Error - LED green, flashing, Signal strength - segment display | Output function- LED yellow, LED green: Power, Error - LED green, flashing, Signal strength - segment display | Output function- LED yellow, LED green: Power, Error - LED green, flashing, Signal strength - segment display | |
| Setting | Sensitivity (Sn), Light-on/dark-on, Teach Sn, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset), Hysteresis (4 levels), Integration time 4...128 ms, Delay time, Teach mode Aut/Hys/Int/Pot | Sensitivity (Sn), Light-on/dark-on, Teach Sn, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset), Hysteresis (4 levels), Integration time 4...128 ms, Delay time, Teach mode Aut/Hys/Int/Pot | Sensitivity (Sn), Light-on/dark-on, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset), Alarm threshold, Teach mode Aut/Fine/1-Pt/2-Pt, Hysteresis (4 levels), Upper and lower threshold, Delay time, Window function/standard switching function | |
| Adjuster | Slide switch 4 positions | Slide switch 4 positions | Slide switch 4 positions | |
| Connection | Cable, 2.00 m, PVC | Connector, M8x1 connector, 4-pin | Cable, 2.00 m, PVC | |
| Housing material | ABS PC | ABS PC | ABS PC | |
| Operating voltage Ub | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Approval/Conformity | CE, EAC | CE, EAC | CE, EAC | |
| Productview | Page 612 | Page 612 | Page 612 | |



| | | | | |
|--|--|--|--|--|
| BAE00Y7 BAE SA-OH-050-PP-S75G | | | | |
| SA-OH | | | | |
| 15 x 36 x 61 mm | | | | |
| Output function- LED yellow, LED green: Power, Error - LED green, flashing, Signal strength - segment display | | | | |
| Sensitivity (Sn), Light-on/dark-on, Read direction for segment display, Segment display on/off, Key disable on/off, Factory setting (Reset), Alarm threshold, Teach mode Aut/Fine/1-Pt/2-Pt, Hysteresis (4 levels), Upper and lower threshold, Delay time, Window function/standard switching function | | | | |
| Slide switch 4 positions | | | | |
| Connector, M8x1 connector, 4-pin | | | | |
| ABS PC | | | | |
| 10...30 VDC | | | | |
| CE, EAC | | | | |
| Page 612 | | | | |

Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

Systems

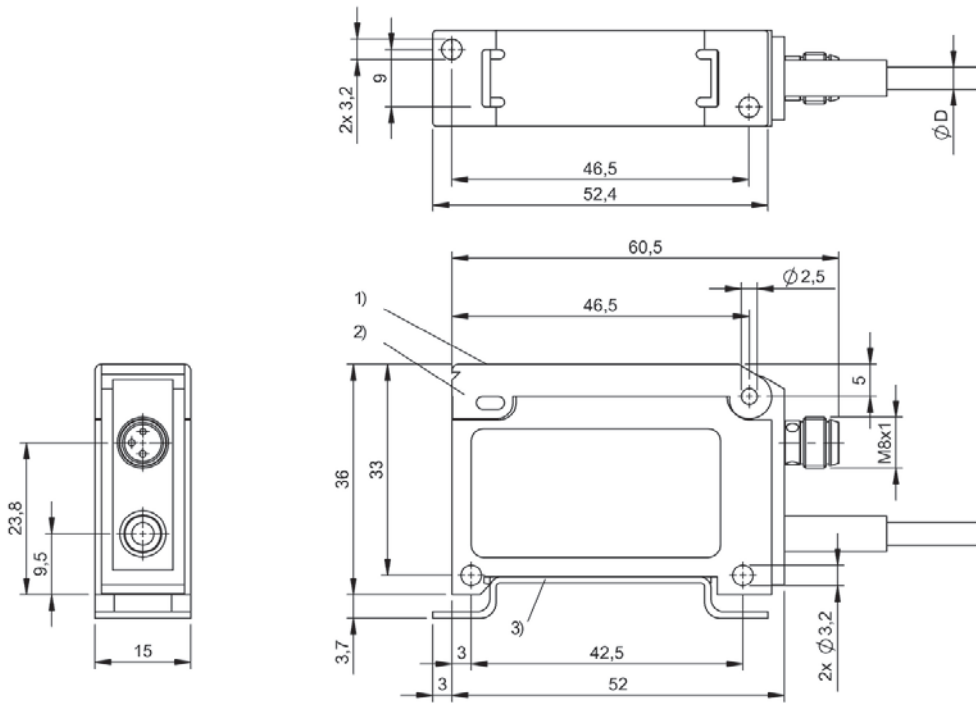
Safety

Industrial Networking

Power Supply

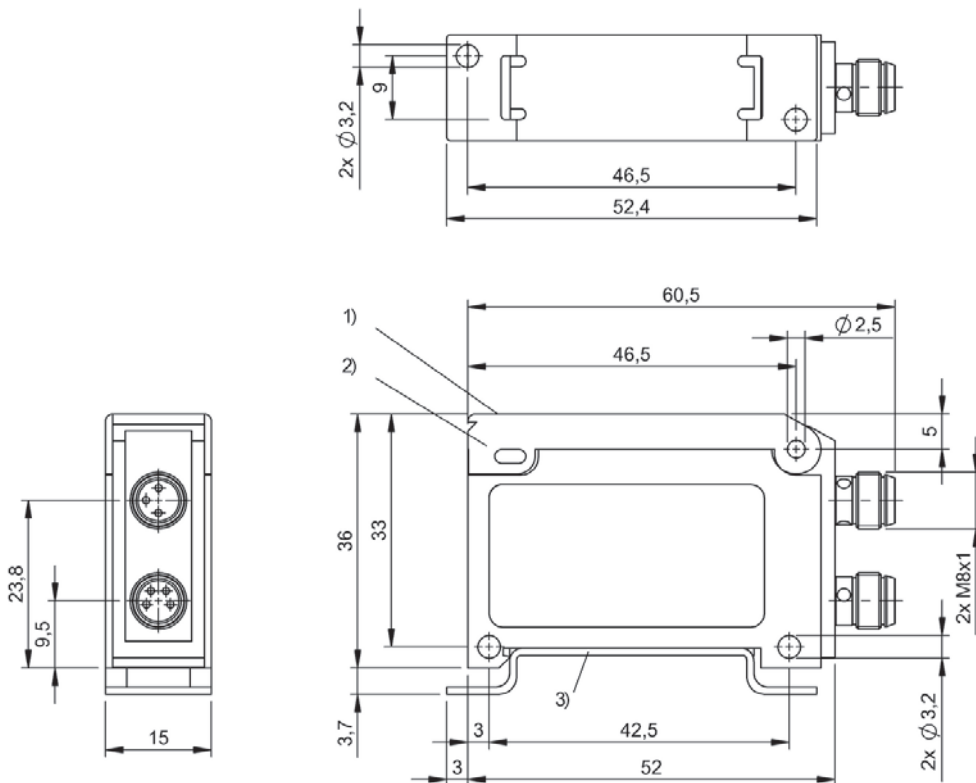
Connectivity

Accessories



1) Display and control panel

BAE00PR, BAE00NE, BAE00N4, BAE00NH, BAE00NJ, BAE00YC



1) Display and control panel, 2) Cover, 3) DIN rail

BAE00PT, BAE00NF, BAE00N5, BAE00N6, BAE00N7, BAE00Y7



| | BOD001L BOD 6K-RA02-S75 | BOD001R BOD 6K-RA03-S75 | BOD001Z BOD 6K-RA04-S75 | |
|--------------------------------|--|--|--|--|
| Series | 6K | 6K | 6K | |
| Dimension | 12 x 41.5 x 21.6 mm | 12 x 41.5 x 21.6 mm | 12 x 41.5 x 21.6 mm | |
| Interface | Analog, voltage 1...10 V linear rising/falling PNP NO/NC | Analog, voltage 1...10 V linear rising/falling PNP NO/NC | Analog, voltage 1...10 V linear rising/falling PNP NO/NC | |
| Principle of operation | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | |
| Principle of optical operation | Triangulation | Triangulation | Triangulation | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | LED, red light | LED, red light | LED, red light | |
| Light spot size | Ø 5 mm at 50 mm | Ø 9.5 mm at 100 mm | Ø 5 mm at 50 mm | |
| Range | 20...80 mm | 30...200 mm | 10...85 mm | |
| Repeat accuracy | 0.5 %FS | 0.5 %FS | 0.59 %FS | |
| Resolution | ≤ 120 µm | ≤ 0.68 mm | ≤ 0.15 mm | |
| Connection | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | Connector, M8x1 connector, 4-pin | |
| Housing material | ABS | ABS | ABS | |
| Operating voltage U_b | 13...30 VDC | 13...30 VDC | 13...30 VDC | |
| Approval/Conformity | CE, cULus, EAC, Ecolab | CE, cULus, EAC, Ecolab | CE, cULus, EAC, Ecolab | |
| Trademark | — | — | — | |
| Productview | Page 624 | Page 624 | Page 624 | |



| | BOD000L BOD 21M-LA01-S92 | BOD000M BOD 21M-LA02-S92 | BOD000N BOD 21M-LA04-S92 | BOD000P BOD 21M-LB01-S92 | BOD000R BOD 21M-LB02-S92 |
|--|---|---|---|--|--|
| | 21M | 21M | 21M | 21M | 21M |
| | 15 x 42.5 x 50 mm | 15 x 42.5 x 50 mm | 15 x 42.5 x 50 mm | 15 x 42.5 x 50 mm | 15 x 42.5 x 50 mm |
| | Analog, voltage 1...10 V linear increasing 2x PNP/NPN NO/NC | Analog, voltage 1...10 V linear increasing 2x PNP/NPN NO/NC | Analog, voltage 1...10 V linear increasing 2x PNP/NPN NO/NC | Analog, current 4...20 mA linear increasing 2x PNP/NPN NO/NC | Analog, current 4...20 mA linear increasing 2x PNP/NPN NO/NC |
| | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor |
| | Triangulation | Triangulation | Triangulation | Triangulation | Triangulation |
| | Collimated | Collimated | Collimated | Collimated | Collimated |
| | Laser red light | Laser red light | Laser red light | Laser red light | Laser red light |
| | Ø 1 mm at 45 mm | Ø 1 mm at 200 mm | 1 x 6 mm at 500 mm | Ø 1 mm at 45 mm | Ø 1 mm at 200 mm |
| | 25...45 mm, adjustable | 20...200 mm, adjustable | 20...500 mm, adjustable | 25...45 mm, adjustable | 20...200 mm, adjustable |
| | 0.1 %FS | 1 %FS | 1 %FS | 0.1 %FS | 1 %FS |
| | ≤ 30 µm | 100...200 µm | 100...500 µm | ≤ 30 µm | 100...200 µm |
| | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin |
| | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum | Zinc, die-cast Aluminum |
| | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
| | Page 625 | Page 625 | Page 625 | Page 625 | Page 625 |



| | BOD000T BOD 21M-LB04-S92 | BOD0020 BOD 23K-LI01-S4 | BOD001N BOD 23K-LA01-S92 | |
|--------------------------------|--|---|---|--|
| Series | 21M | 23K | 23K | |
| Dimension | 15 x 42.5 x 50 mm | 51 x 23 x 52.4 mm | 51 x 23 x 52.4 mm | |
| Interface | Analog, current 4...20 mA linear increasing 2x PNP/NPN NO/NC | IO-Link 1.1 PNP/NPN/Auto-Detect NO/NC | Analog, voltage 0...10 V linear rising/falling PNP/NPN/Auto-Detect NO/NC | |
| Principle of operation | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | |
| Principle of optical operation | Triangulation | Light time-of-flight | Light time-of-flight | |
| Beam characteristic | Collimated | Collimated | Collimated | |
| Light type | Laser red light | Laser red light | Laser red light | |
| Light spot size | 1 x 6 mm at 500 mm | 5.5 x 7 mm at 5 m | 5.5 x 7 mm at 5 m | |
| Range | 20...500 mm, adjustable | 100...5000 mm | 100...5000 mm | |
| Repeat accuracy | 1 %FS | 0.024 %FS | 0.024 %FS | |
| Resolution | 100...500 µm | ≤ 5 mm | ≤ 5.0 mm | |
| Connection | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 5-pin | |
| Housing material | Zinc, die-cast Aluminum | ABS | ABS | |
| Operating voltage U_b | 18...30 VDC | 18...30 VDC | 18...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC, Ecolab | CE, cULus, EAC, Ecolab | |
| Trademark | — | — | — | |
| Productview | Page 625 | Page 625 | Page 626 | |



| | BOD001P BOD 23K-LB01-S92 | BOD0023 BOD 24K-LI04-S92 | BOD0026 BOD 24K-LI05-S92 | BOD0021 BOD 24K-LA02-S92 | BOD0024 BOD 24K-LA03-S92 |
|--|--|--------------------------------------|--------------------------------------|--|--|
| | 23K | 24K | 24K | 24K | 24K |
| | 51 x 23 x 52.4 mm | 50 x 21 x 50 mm | 50 x 21 x 50 mm | 50 x 21 x 50 mm | 50 x 21 x 50 mm |
| | Analog, current 4...20 mA linear rising/falling PNP/NPN/Auto-Detect NO/NC | IO-Link 1.0 | IO-Link 1.0 | 2x PNP/NPN normally open/normally closed (NO/NC) Analog, voltage 0...10 V/1...10 V/0...5 V/1...5 V | 2x PNP/NPN normally open/normally closed (NO/NC) Analog, voltage 0...10 V/1...10 V/0...5 V/1...5 V |
| | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor |
| | Light time-of-flight | Triangulation | Triangulation | Triangulation | Triangulation |
| | Collimated | Divergent | Divergent | Divergent | Divergent |
| | Laser red light | Laser red light | Laser red light | Laser red light | Laser red light |
| | 5.5 x 7 mm at 5 m | 1 x 1 mm at 100 mm | 1 x 1 mm at 450 mm | 1 x 1 mm at 100 mm | 1 x 1 mm at 450 mm |
| | 100...5000 mm | 50...100 mm | 50...650 mm | 50...100 mm | 50...650 mm |
| | 0.024 %FS | ± 0.25 % | ± 0.5 % | ± 0.25 % | ± 0.5 % |
| | ≤ 5.0 mm | ≤ 10 µm | ≤ 100 µm | ≤ 10 µm | ≤ 100 µm |
| | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin |
| | ABS | Plastic | Plastic | Plastic | Plastic |
| | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC |
| | CE, cULus, EAC, Ecolab | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
| | Page 626 | Page 626 | Page 626 | Page 626 | Page 626 |

Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

Accessories



| | BOD0022 BOD 24K-LB02-S92 | BOD0025 BOD 24K-LB03-S92 | BOD0002 BOD 26K-LA01-S4-C | |
|--------------------------------|---|---|--|--|
| Series | 24K | 24K | 26K | |
| Dimension | 50 x 21 x 50 mm | 50 x 21 x 50 mm | 17 x 50 x 50 mm | |
| Interface | 2x PNP/NPN normally open/normally closed (NO/NC) Analog, current 4...20 mA | 2x PNP/NPN normally open/normally closed (NO/NC) Analog, current 4...20 mA | Analog, voltage 0...10 V linear increasing | |
| Principle of operation | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | |
| Principle of optical operation | Triangulation | Triangulation | Triangulation | |
| Beam characteristic | Divergent | Divergent | Divergent | |
| Light type | Laser red light | Laser red light | Laser red light | |
| Light spot size | 1 x 1 mm at 100 mm | 1 x 1 mm at 450 mm | Ø 0.8 mm at 65 mm | |
| Range | 50...100 mm | 50...650 mm | 45...85 mm | |
| Repeat accuracy | ± 0.25 % | ± 0.5 % | — | |
| Resolution | ≤ 10 µm | ≤ 100 µm | ≤ 80 µm | |
| Connection | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 4-pin | |
| Housing material | Plastic | Plastic | ABS | |
| Operating voltage U_b | 18...30 VDC | 18...30 VDC | 18...28 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
| Productview | Page 626 | Page 626 | Page 627 | |



| | BOD0004 BOD 26K-LA02-S4-C | BOD0005 BOD 26K-LB04-S115-C | BOD0006 BOD 26K-LB05-S115-C | BOD0007 BOD 26K-LB06-S92-C | BOD0008 BOD 26K-LB07-S92-C |
|--|--|--|--|---|---|
| | 26K | 26K | 26K | 26K | 26K |
| | 17 x 50 x 50 mm | 17 x 50 x 50 mm | 17 x 50 x 50 mm | 17 x 50 x 50 mm | 17 x 50 x 50 mm |
| | Analog, voltage 0...10 V linear increasing | Analog, current 4...20 mA linear rising/falling 2x PNP NO/NC | Analog, current 4...20 mA linear rising/falling 2x PNP NO/NC | Analog, current 4...20 mA linear rising/falling PNP NO/NC | Analog, current 4...20 mA linear rising/falling PNP NO/NC |
| | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor |
| | Triangulation | Triangulation | Triangulation | Triangulation | Triangulation |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | Laser red light | Laser red light | Laser red light | Laser red light | Laser red light |
| | Ø 0.8 mm at 65 mm | 1.5 x 3.25 mm at 100 mm | 2 x 4.5 mm at 300 mm | 1.5 x 3.25 mm at 100 mm | 2 x 4.5 mm at 300 mm |
| | 45...85 mm | 30...100 mm, adjustable | 80...300 mm, adjustable | 30...100 mm, adjustable | 80...300 mm, adjustable |
| | — | 0.25 %FS | 0.25 %FS | — | — |
| | ≤ 20 µm | 0.1 %FS | 0.1 %FS | 0.1 %FS | 0.1 %FS |
| | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 8-pin | Connector, M12x1 connector, 8-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin |
| | ABS | ABS | ABS | ABS | ABS |
| | 18...28 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
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| | BOD000C BOD 26K-LBR04-S115-C | BOD000E BOD 26K-LBR05-S115-C | BOD001Y BOD 37M-LPR02-S115 | |
|--------------------------------|---|---|---|--|
| Series | 26K | 26K | 37M | |
| Dimension | 17 x 50 x 50 mm | 17 x 50 x 50 mm | 60 x 37 x 72.3 mm | |
| Interface | RS485 Analog, current 4...20 mA linear rising/falling 3x PNP NO/NC | RS485 Analog, current 4...20 mA linear rising/falling 3x PNP NO/NC | RS485 Analog, voltage/analog, current 0.2...10 V/4...20 mA linear rising/falling 2x PNP/NPN/push-pull NO/NC | |
| Principle of operation | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | |
| Principle of optical operation | Triangulation | Triangulation | Light time-of-flight | |
| Beam characteristic | Divergent | Divergent | Collimated | |
| Light type | Laser red light | Laser red light | Laser red light | |
| Light spot size | 1.5 x 3.25 mm at 100 mm | 2 x 4.5 mm at 300 mm | Ø 15 mm at 10 m | |
| Range | 30...100 mm, adjustable | 80...300 mm, adjustable | 200...20000 mm | |
| Repeat accuracy | 0.25 %FS | 0.25 %FS | 0.01 %FS | |
| Resolution | 0.1 %FS | 0.1 %FS | ≤ 1.0 mm | |
| Connection | Connector, M12x1 connector, 8-pin | Connector, M12x1 connector, 8-pin | Connector, M12x1 connector, 8-pin | |
| Housing material | ABS | ABS | Zinc, die-cast | |
| Operating voltage U_b | 18...30 VDC | 18...30 VDC | 19.2...28.8 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | |
| Trademark | — | — | — | |
| Productview | Page 627 | Page 628 | Page 628 | |



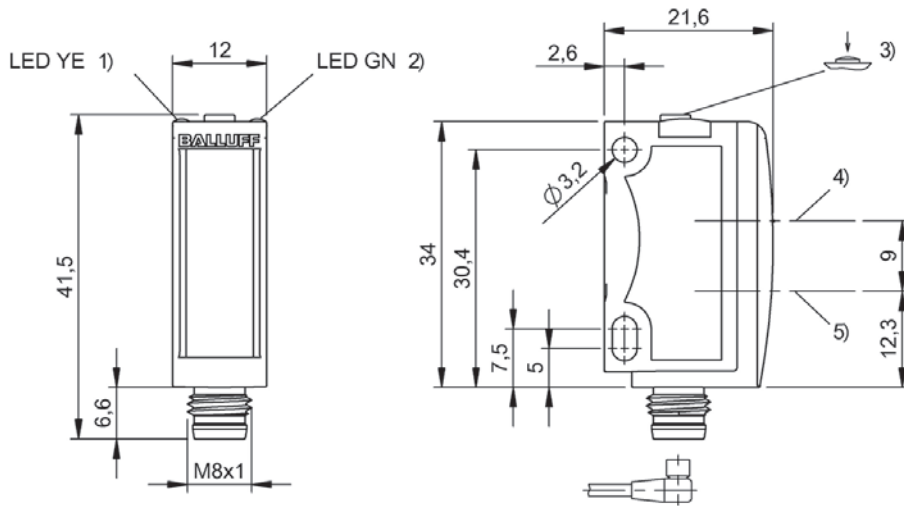
| | BOD001U BOD 37M-LA01-S92 | BOD001W BOD 37M-LB01-S92 | BOD0012 BOD 63M-LI06-S4 | BOD000U BOD 63M-LA02-S115 | BOD000W BOD 63M-LA04-S115 |
|--|--|---|--|---|---|
| | 37M | 37M | 63M | 63M | 63M |
| | 60 x 37 x 72.3 mm | 60 x 37 x 72.3 mm | 35 x 70 x 90 mm | 35 x 70 x 90 mm | 35 x 70 x 90 mm |
| | Analog, voltage 0.2...10 V linear rising/falling 2x PNP/NPN/push-pull NO/NC | Analog, current 4...20 mA linear rising/falling 2x PNP/NPN/push-pull NO/NC | IO-Link 1.0 linear increasing 2x PNP Normally open (NO) | Analog, voltage 0...10 V linear increasing 2x PNP Normally open (NO) | Analog, voltage 0...10 V linear increasing 2x PNP Normally open (NO) |
| | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor |
| | Light time-of-flight | Light time-of-flight | Light time-of-flight | Light time-of-flight | Light time-of-flight |
| | Collimated | Collimated | Collimated | Collimated | Collimated |
| | Laser red light | Laser red light | Laser red light | Laser red light | Laser red light |
| | Ø 15 mm at 8 m | Ø 15 mm at 8 m | Ø 10 mm at 6 m | Ø 9 mm at 2 m | Ø 10 mm at 6 m |
| | 200...10000 mm | 200...10000 mm | 200...6000 mm | 200...2000 mm | 200...6000 mm |
| | 0.01 %FS | 0.01 %FS | 0.067 %FS | 0.075 %FS | 0.033 %FS |
| | ≤ 1.0 mm | ≤ 1.0 mm | ≤ 1.0 mm | ≤ 1.0 mm | ≤ 1.0 mm |
| | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 8-pin | Connector, M12x1 connector, 8-pin |
| | Zinc, die-cast | Zinc, die-cast | Aluminum, die-cast | Aluminum, die-cast | Aluminum, die-cast |
| | 19.2...28.8 VDC | 19.2...28.8 VDC | 18...30 VDC | 15...30 VDC | 15...30 VDC |
| | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC | CE, cULus, EAC |
| | — | — | — | — | — |
| | Page 629 | Page 629 | Page 629 | Page 629 | Page 629 |



| | BOD0010 BOD 63M-LB02-S115 | BOD0011 BOD 63M-LB04-S115 | BOD001J BOD 66M-LA12-S92 | |
|--------------------------------|--|--|--|--|
| Series | 63M | 63M | 66M | |
| Dimension | 35 x 70 x 90 mm | 35 x 70 x 90 mm | 30 x 100.5 x 73.2 mm | |
| Interface | Analog, current 4...20 mA linear increasing 2x PNP Normally open (NO) | Analog, current 4...20 mA linear increasing 2x PNP Normally open (NO) | Analog, voltage 1...10 V linear rising/falling PNP/NPN NO/NC | |
| Principle of operation | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | |
| Principle of optical operation | Light time-of-flight | Light time-of-flight | Triangulation | |
| Beam characteristic | Collimated | Collimated | Divergent | |
| Light type | Laser red light | Laser red light | Laser red light | |
| Light spot size | Ø 9 mm at 2 m | Ø 10 mm at 6 m | Ø 1 mm at 800 mm | |
| Range | 200...2000 mm | 200...6000 mm | 150...800 mm | |
| Repeat accuracy | 0.075 %FS | 0.033 %FS | 0.5 %FS | |
| Resolution | ≤ 1.0 mm | ≤ 1.0 mm | 100...800 µm | |
| Connection | Connector, M12x1 connector, 8-pin | Connector, M12x1 connector, 8-pin | Connector, M12x1 connector, 5-pin | |
| Housing material | Aluminum, die-cast | Aluminum, die-cast | Zinc, die-cast | |
| Operating voltage U_b | 15...30 VDC | 15...30 VDC | 18...30 VDC | |
| Approval/Conformity | CE, cULus, EAC | CE, cULus, EAC | CE, EAC | |
| Trademark | — | — | — | |
| Productview | Page 629 | Page 629 | Page 630 | |

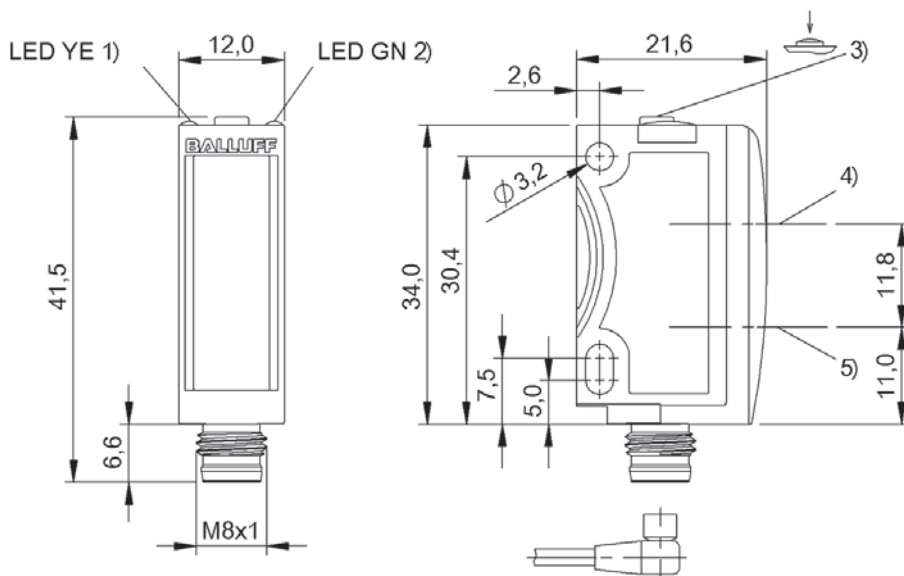


| | BOD001E BOD 66M-LA14-S92 | BOD001H BOD 66M-RA11-S92 | BOD001K BOD 66M-LB12-S92 | BOD001F BOD 66M-LB14-S92 | BOD001C BOD 66M-RB11-S92 |
|--|--|--|---|---|---|
| | 66M | 66M | 66M | 66M | 66M |
| | 30 x 100.5 x 73.2 mm | 30 x 100.5 x 73.2 mm | 30 x 100.5 x 73.2 mm | 30 x 100.5 x 73.2 mm | 30 x 100.5 x 73.2 mm |
| | Analog, voltage 1...10 V linear rising/falling PNP/NPN NO/NC | Analog, voltage 1...10 V linear rising/falling PNP/NPN NO/NC | Analog, current 4...20 mA linear rising/falling PNP/NPN NO/NC | Analog, current 4...20 mA linear rising/falling PNP/NPN NO/NC | Analog, current 4...20 mA linear rising/falling PNP/NPN NO/NC |
| | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor | Photoelectric distance sensor |
| | Triangulation | Triangulation | Triangulation | Triangulation | Triangulation |
| | Divergent | Divergent | Divergent | Divergent | Divergent |
| | Laser red light | LED, red light | Laser red light | Laser red light | LED, red light |
| | 2 x 6 mm at 2 m | Ø 15 mm at 600 mm | Ø 1 mm at 800 mm | 2 x 6 mm at 2 m | Ø 15 mm at 600 mm |
| | 150...2000 mm | 100...600 mm | 150...800 mm | 150...2000 mm | 100...600 mm |
| | 0.5 %FS | 0.5 %FS | 0.5 %FS | 0.5 %FS | 0.5 %FS |
| | 1...3 mm | 100...500 µm | 100...800 µm | 1...3 mm | 100...500 µm |
| | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin | Connector, M12x1 connector, 5-pin |
| | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast | Zinc, die-cast |
| | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC | 18...30 VDC |
| | CE, EAC | CE, EAC | CE, EAC | CE, EAC | CE, EAC |
| | — | — | — | — | — |
| | Page 630 | Page 630 | Page 630 | Page 630 | Page 630 |



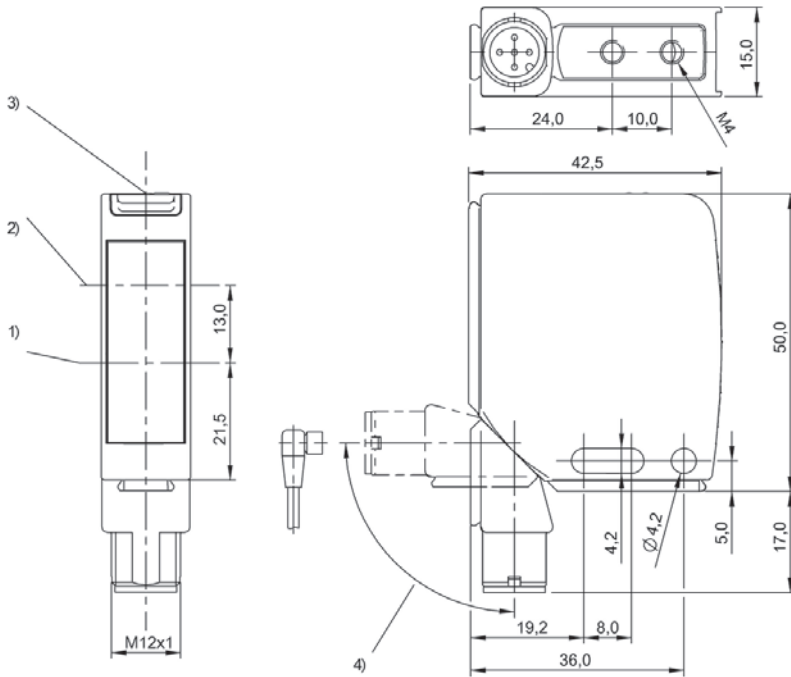
1) Output function, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter

BOD001L, BOD001Z



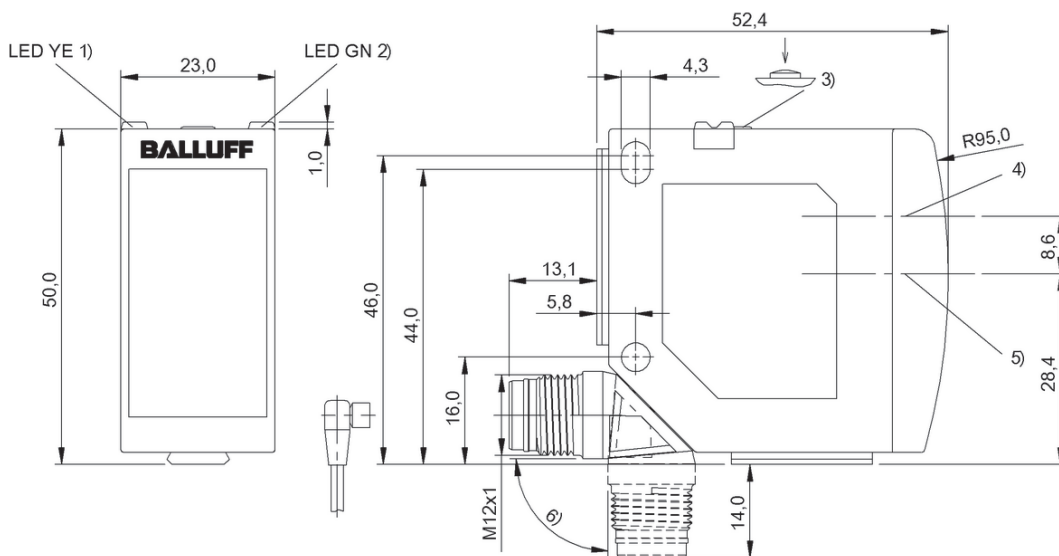
1) Output function, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter

BOD001R



1) Optical axis receiver, 2) Optical axis emitter, 3) Display and control panel, 4) rotatable 270°

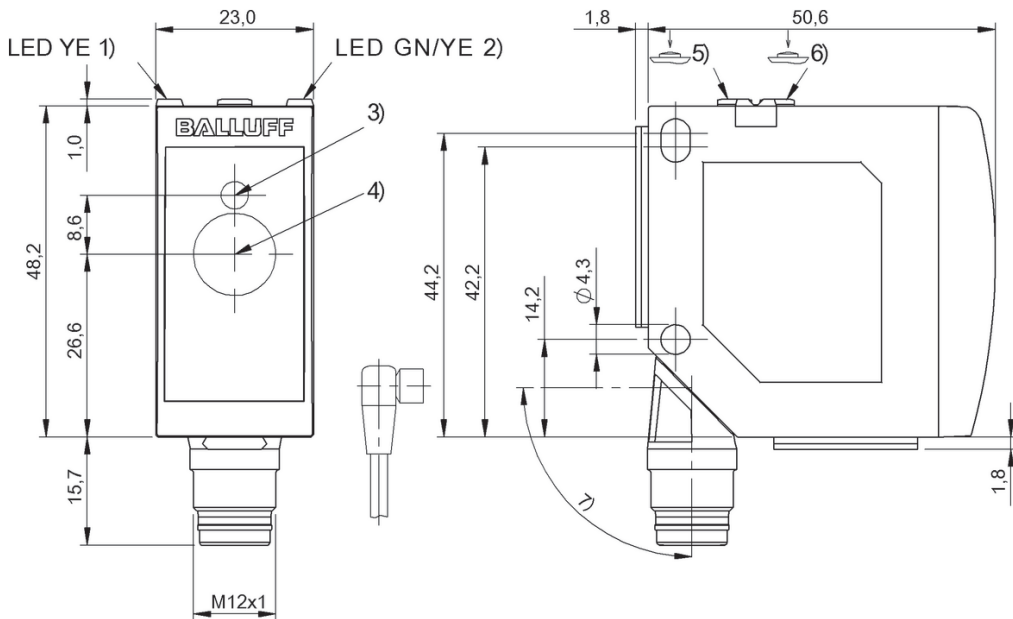
BOD000L, BOD000M, BOD000N, BOD000P, BOD000R, BOD000T



1) Output function, 2) Operating voltage, 3) Teach-In button, 4) Optical axis emitter, 5) Optical axis receiver, 6) rotatable 270°

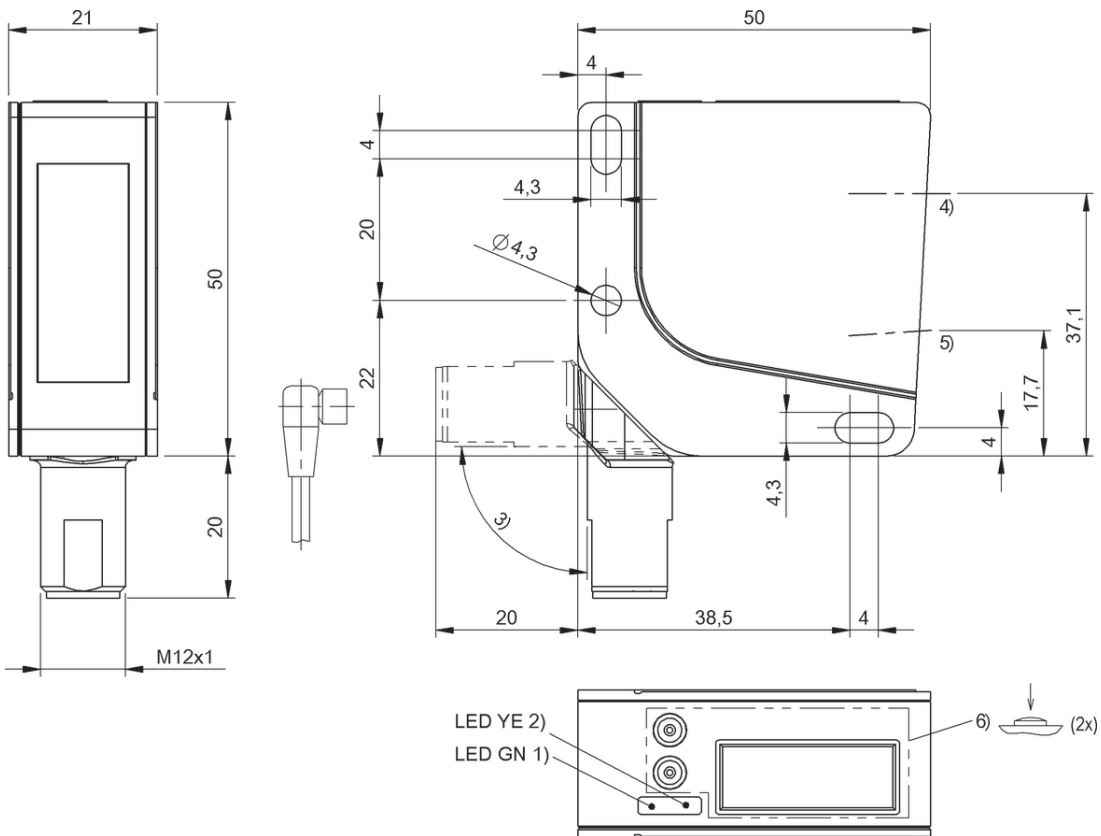
BOD0020

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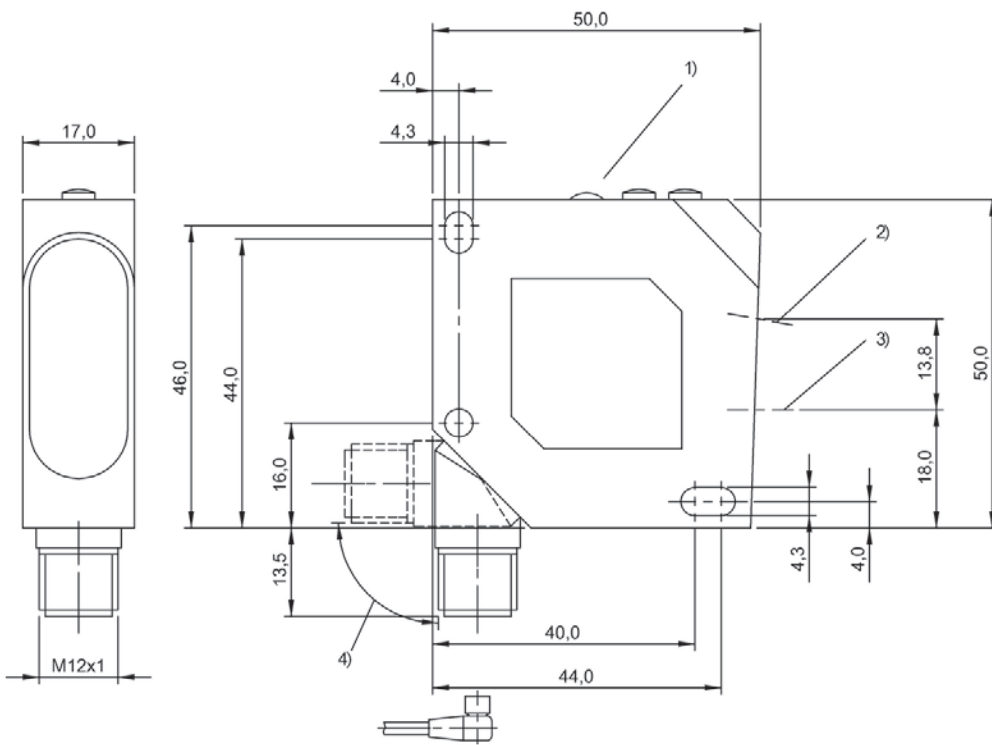
1) Output function, 2) Power/Analog output, 3) Optical axis emitter, 4) Optical axis receiver, 5) Teach-In switching output, 6) Teach-in Analog output, 7) rotatable 270°

BOD001N, BOD001P



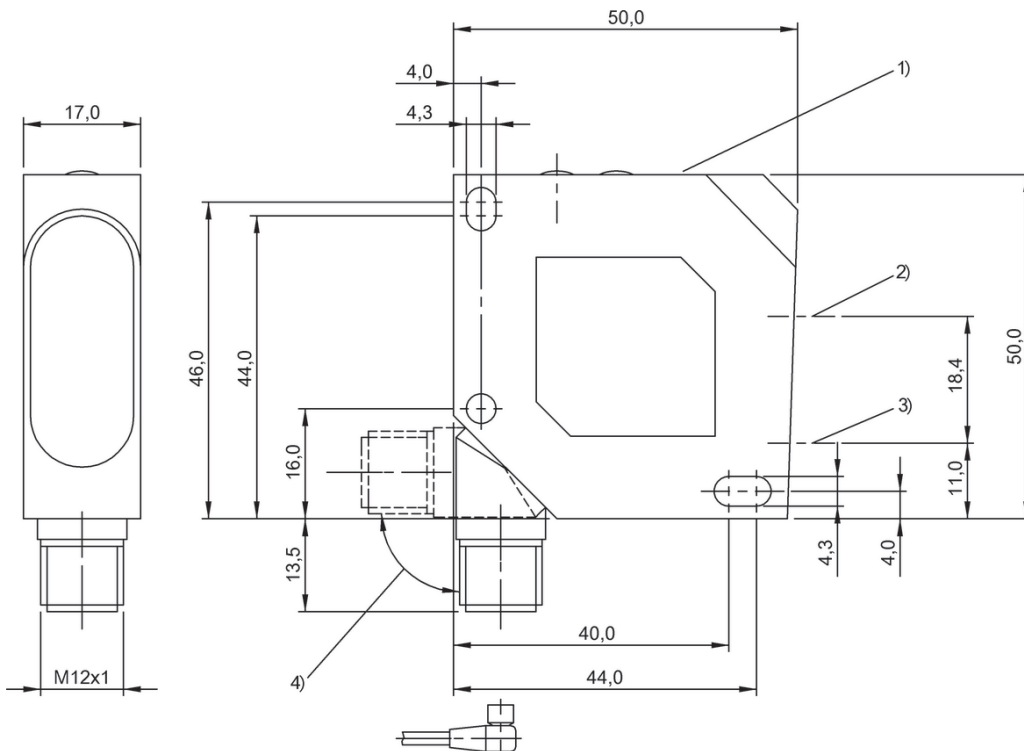
1) Operating voltage, 2) Output function, 3) rotatable 180°, 4) Optical axis emitter, 5) Optical axis receiver, 6) Display and keypad

BOD0023, BOD0026, BOD0021, BOD0024, BOD0022, BOD0025



1) Display and control panel, 2) Optical axis receiver, 3) Optical axis emitter, 4) rotatable 270°

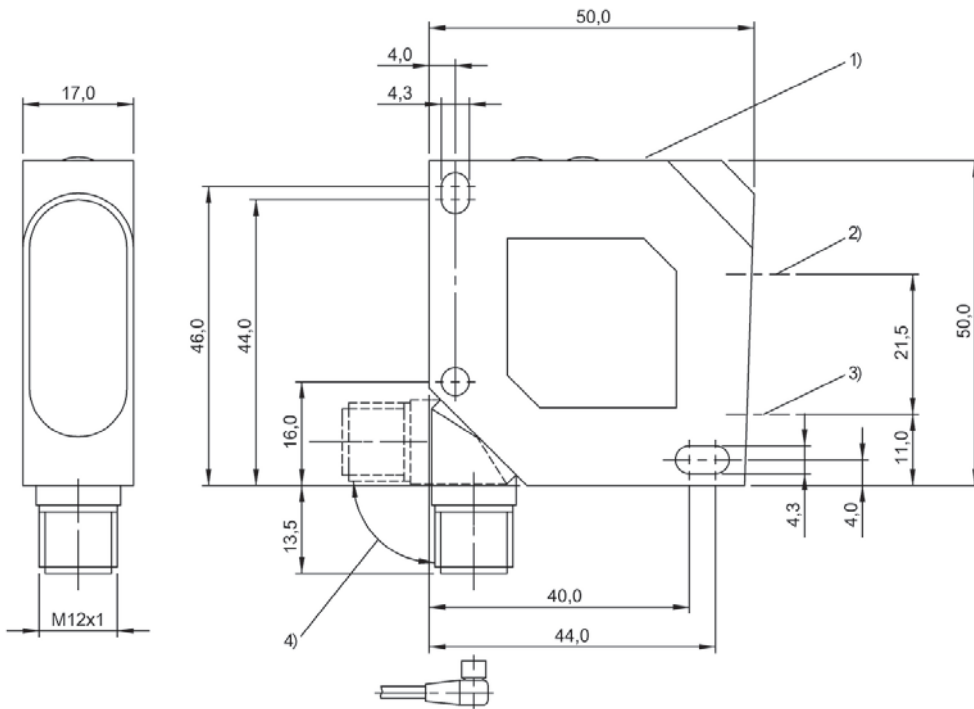
BOD0002, BOD0004



1) Display and control panel, 2) Optical axis emitter, 3) Optical axis receiver, 4) rotatable 270°

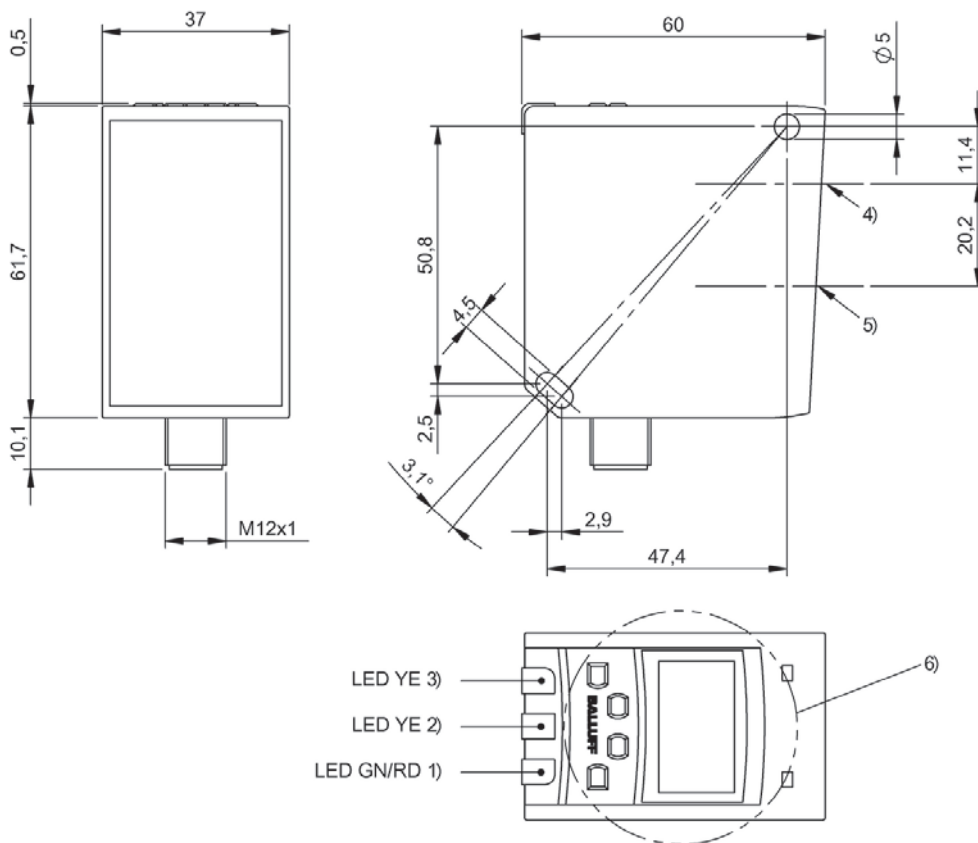
BOD0005, BOD0007, BOD000C

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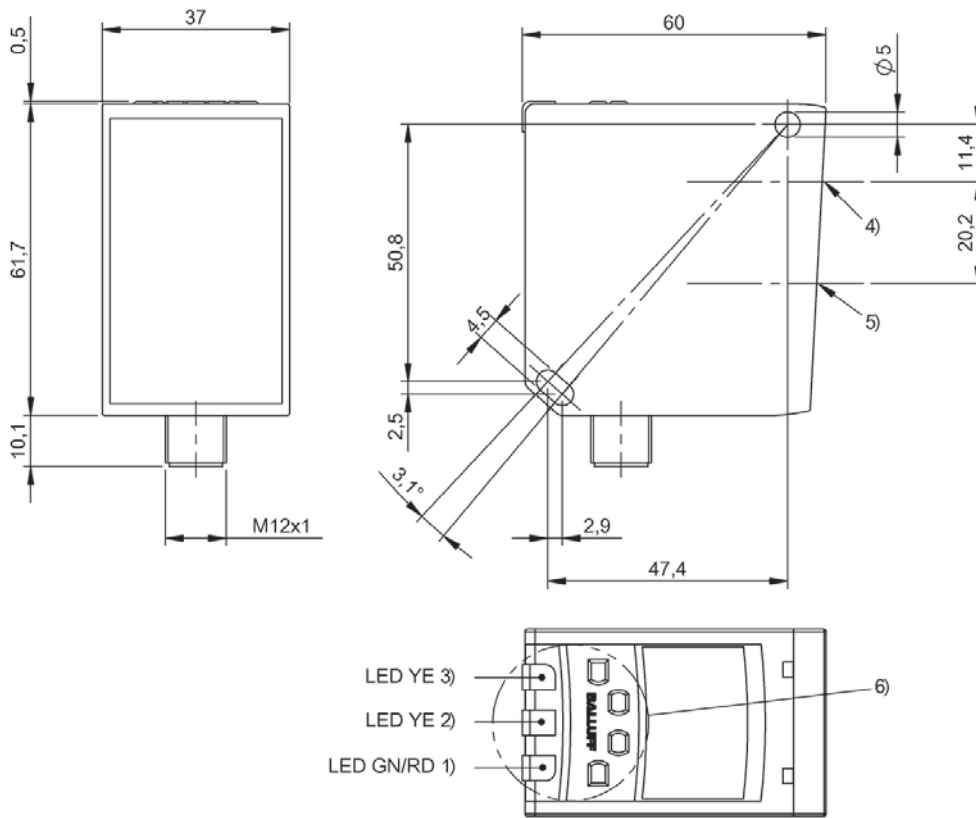
1) Display and control panel, 2) Optical axis emitter, 3) Optical axis receiver, 4) rotatable 270°

BOD0006, BOD0008, BOD000E



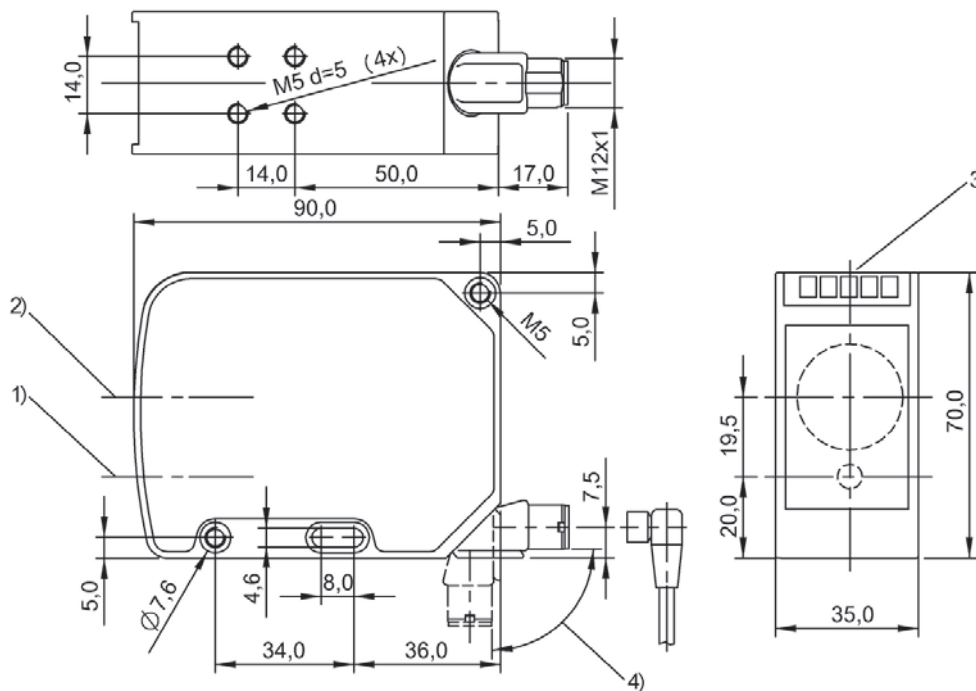
1) Operating voltage/Error, 2) Switchpoint Q2, 3) Switchpoint Q1, 4) Optical axis emitter, 5) Optical axis receiver, 6) Display and keypad

BOD0001Y



1) Operating voltage/Error, 2) Switchpoint Q2, 3) Switchpoint Q1, 4) Optical axis emitter, 5) Optical axis receiver, 6) Display and control panel

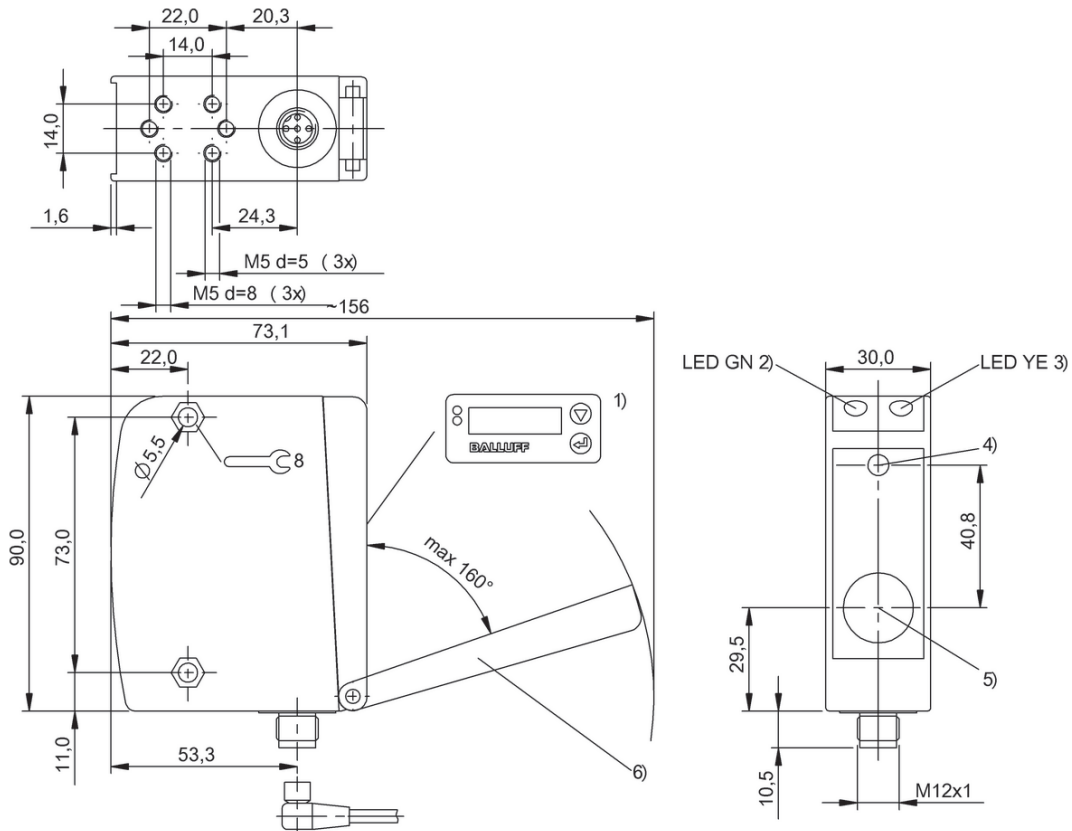
BOD001U, BOD001W



1) Optical axis emitter, 2) Optical axis receiver, 3) Display and control panel, 4) rotatable 270°

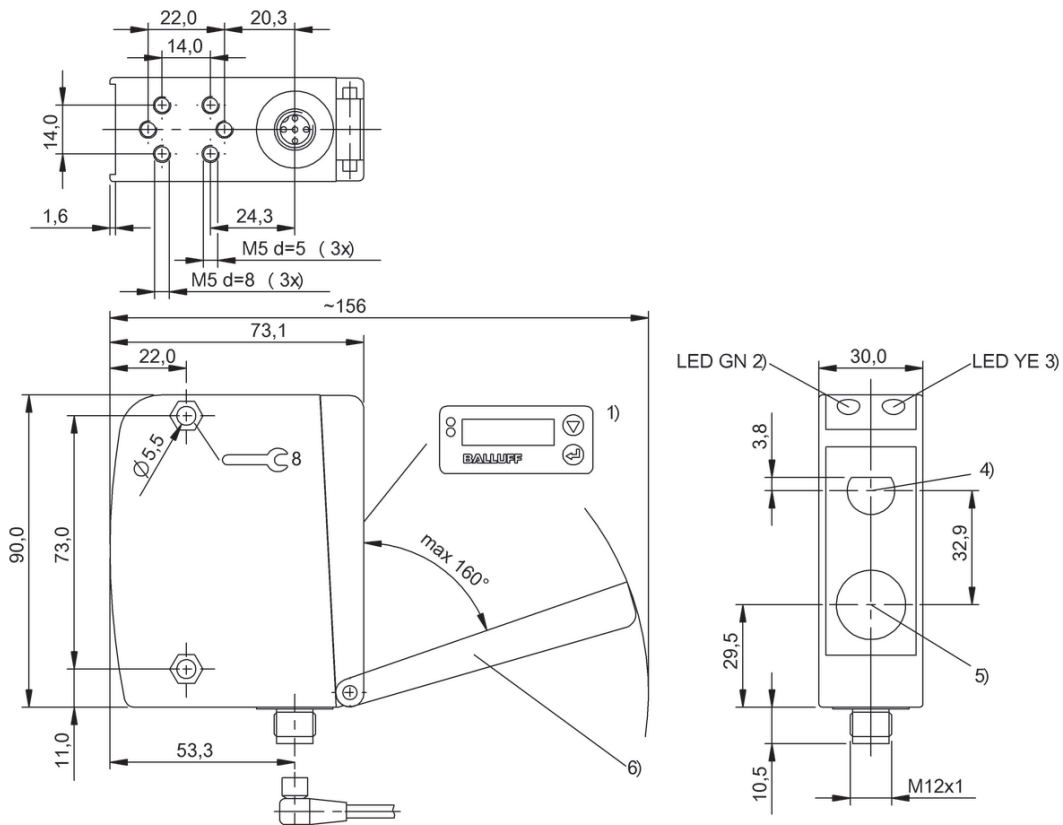
BOD0012, BOD000U, BOD000W, BOD0010, BOD0011

Do you need more details? Our Product Finder at www.balluff.com provides you with product-specific information, including technical drawings, data sheets, user guides and more for each individual product. All items are available for download.



1) Display and keypad, 2) Operating voltage, 3) Output function, 4) Optical axis emitter, 5) Optical axis receiver, 6) Removable cover

BOD001J, BOD001E, BOD001K, BOD001F



1) Display and keypad, 2) Operating voltage, 3) Output function, 4) Optical axis emitter, 5) Optical axis receiver, 6) Removable cover

BOD001H, BOD001C



Sure position detection even at high speeds

MAGNETIC FIELD SENSORS



Our magnetic field sensors are used chiefly on cylinders and grippers for monitoring the piston position. The sensor thus recognizes the field of the magnet integrated into the piston through the actuator wall even at high travel speeds.

With their non-contact position detection the magnetic field sensors from Balluff work absolutely reliably and wear-free: no contact burn, no bouncing, just clean switching points.

The most important benefits

- Contact-free and therefore wear-free
- No double switching points
- Reliable even at high travel speeds



| | | | |
|-------------------------|--|--|--|
| PNP normally open | BMF00LC BMF 235K-H-PI-C-A8-S4-00,3 | BMF00L6 BMF 235K-H-PS-C-A2-S75-00,3 | |
| PNP normally closed | | | |
| NPN normally open | | | |
| Dimension | 23.5 x 6.2 x 5 mm | 23.5 x 6.2 x 5 mm | |
| Connection | M12x1-Male, 4-pole, A-coded | M8x1 connector, 4-pin | |
| Cable | PUR, 0.30 m | PUR, 0.30 m | |
| Application | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | |
| Mounting | can be installed in T-slot from above | can be installed in T-slot from above | |
| Housing material | PA 12 | PA 12 | |
| Interface | IO-Link 1.1 | — | |
| Switching frequency | — | — | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...80 °C | -25...80 °C | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, IO-Link, cULus, DC, Code 81U2, EAC | cULus, DC, Code 81U2, EAC, CE | |
| Ex category | — | — | |
| Productview | Page 642 | Page 642 | |



| | BMF00C4 BMF 235K-PS-C-2A-SA2-S49-00,3 | BMF00C5 BMF 235K-PS-C-2A-SA2-S4-00,3 | BMF00FY BMF 235K-PS-C-2A-SA4-S4-00,3 | BMF00H5 BMF 235K-PS-C-2A-SA93-S4-00,3 |
|--|--|--|--|--|
| | BMF00C6 BMF 235K-PO-C-2A-SA2-S49-00,3 | | | |
| | BMF00C2 BMF 235K-NS-C-2A-SA2-S49-00,3 | | | |
| | 23.5 x 5 x 5.5 mm | 23.5 x 5 x 5.5 mm | 23.5 x 5 x 5.5 mm | 23.5 x 5 x 5.5 mm |
| | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | M12x1-Male, 4-pole, A-coded | M12x1-Male, 4-pole, A-coded |
| | PUR, 0.30 m | PUR, 0.30 m | PUR with cable labeling grommet, 0.30 m | PUR with silicone tube, 0.30 m |
| | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. |
| | can be installed in T-slot from above | can be installed in T-slot from above | can be installed in T-slot from above | can be installed in T-slot from above |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | — | — | — | — |
| | 3000 Hz | 3000 Hz | 3000 Hz | 3000 Hz |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C |
| | — | — | — | — |
| | IP67 | IP67 | IP67 | IP67 |
| | cULus, CE | CE, cULus | CE, cULus | cULus, CE |
| | — | — | — | — |
| | Page 642 | Page 642 | Page 642 | Page 642 |



| | | | |
|-------------------------|--|--|--|
| PNP normally open | BMF00H3 BMF 235K-PS-C-2A-SA93-S49-00,3 | BMF00CF BMF 235K-PS-C-2A-SA2-S49-00,5 | |
| NPN normally open | | | |
| Dimension | 23.5 x 5 x 5.5 mm | 23.5 x 5 x 5.5 mm | |
| Connection | M8x1 connector, 3-pin | M8x1 connector, 3-pin | |
| Cable | PUR with silicone tube, 0.30 m | PUR, 0.50 m | |
| Application | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | |
| Mounting | can be installed in T-slot from above | can be installed in T-slot from above | |
| Housing material | PA 12 | PA 12 | |
| Interface | — | — | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | cULus, CE | cULus, CE | |
| Ex category | — | — | |
| Productview | Page 642 | Page 642 | |



| BMF00F5 BMF 235K-PS-C-2A-SA2-S49-01 | BMF00KH BMF 235K-H-PS-C-A2-PU-02 | BMF00AU BMF 235K-NS-C-2A-PU-02 | BMF00AR BMF 235K-PS-C-2A-PU-02 |
|--|--|--|--|
| 23.5 x 5 x 5.5 mm | 23.5 x 6.2 x 5 mm | 23.5 x 5 x 5.5 mm | 23.5 x 5 x 5.5 mm |
| M8x1 connector, 3-pin | — | — | — |
| PUR, 1.00 m | PUR, 2.00 m | PUR, 2.00 m | PUR, 2.00 m |
| Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. |
| can be installed in T-slot from above | can be installed in T-slot from above | can be installed in T-slot from above | can be installed in T-slot from above |
| PA 12 | PA 12 | PA 12 | PA 12 |
| — | — | — | — |
| 3000 Hz | — | 3000 Hz | 3000 Hz |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...85 °C | -25...80 °C | -25...85 °C | -25...85 °C |
| — | — | — | — |
| IP67 | IP67 | IP67 | IP67 |
| cULus, CE | cULus, DC, Code 81U2, EAC, CE | CE, cULus | cULus, CE |
| — | — | — | — |
| Page 642 | Page 642 | Page 642 | Page 642 |



| PNP normally open | BMF00J6 BMF 235K-PS-C-2A-SA5-02 | BMF00CH BMF 235K-PS-C-2A-PU-05 | |
|-------------------------|---|---|--|
| Dimension | 23.5 x 5 x 5.5 mm | 23.5 x 5 x 5.5 mm | |
| Connection | — | — | |
| Cable | TPE welding spark resistant, 2.00 m | PUR, 5.00 m | |
| Application | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | |
| Mounting | can be installed in T-slot from above | can be installed in T-slot from above | |
| Housing material | PA 12 | PA 12 | |
| Interface | — | — | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus | cULus, CE | |
| Ex category | — | — | |
| Productview | Page 642 | Page 642 | |



| | BMF007Y BMF 315M-PS-D-2-SA3-S49-00,3 | BMF0081 BMF 315M-PS-W-2-S4-00,3 | BMF0082 BMF 315M-PS-W-2-S49-00,3 | BMF00C1 BMF 315M-PS-W-2-SA4-S4-00,3 |
|--|--|--|--|--|
| | 33 x 5.1 x 7.2 mm | 33 x 5.1 x 7.2 mm | 33 x 5.1 x 7.2 mm | 33 x 5.1 x 7.2 mm |
| | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded |
| | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.30 m |
| | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. |
| | can be installed in T-slot from above | can be installed in T-slot from above | can be installed in T-slot from above | can be installed in T-slot from above |
| | Aluminum | Aluminum | Aluminum | Aluminum |
| | — | — | — | — |
| | 10000 Hz | 10 Hz | 10 Hz | 10 Hz |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...105 °C, high temperature rated | -25...70 °C | -25...70 °C | -25...70 °C |
| | — | weld-immune (AC) | weld-immune (AC) | weld-immune (AC) |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus | cULus, CE | cULus, CE | cULus, CE |
| | — | — | — | — |
| | Page 643 | Page 643 | Page 643 | Page 643 |



| PNP normally open | BMF007U BMF 315M-PS-D-2-SA3-PU-02 | BMF007W BMF 315M-PS-D-2-SA3-PU-05 | |
|-------------------------|--|--|--|
| NAMUR | | | |
| Dimension | 33 x 5.1 x 7.2 mm | 33 x 5.1 x 7.2 mm | |
| Connection | — | — | |
| Cable | PUR, 2.00 m | PUR, 5.00 m | |
| Application | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | |
| Mounting | can be installed in T-slot from above | can be installed in T-slot from above | |
| Housing material | Aluminum | Aluminum | |
| Interface | — | — | |
| Switching frequency | 10000 Hz | 10000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...105 °C, high temperature rated | -25...105 °C, high temperature rated | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Ex category | — | — | |
| Productview | Page 643 | Page 643 | |



| | | | | |
|--|---|--|--|--|
| | | | | |
| | BMF00E4 BMF 255K-N-06-EEEX | | | |
| | 25 x 5 x 5.1 mm | | | |
| | — | | | |
| | PVC, 6.00 m | | | |
| | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | | | |
| | can be installed in T-slot from above | | | |
| | PA | | | |
| | NAMUR | | | |
| | 2000 Hz | | | |
| | — | | | |
| | -25...70 °C | | | |
| | — | | | |
| | IP67 | | | |
| | CE, EAC | | | |
| | ATEX: 1G (EPL Ga) ATEX: 1D (EPL Da) | | | |
| | Page 643 | | | |

Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

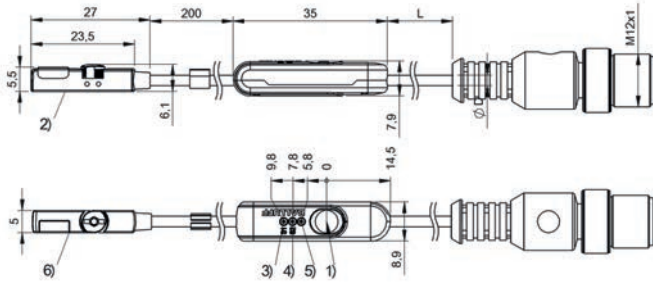
Safety

Industrial Networking

Power Supply

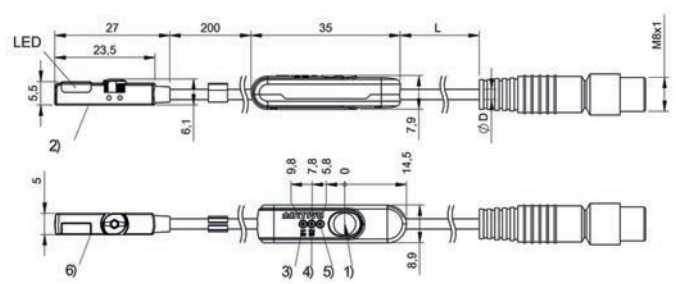
Connectivity

Accessories



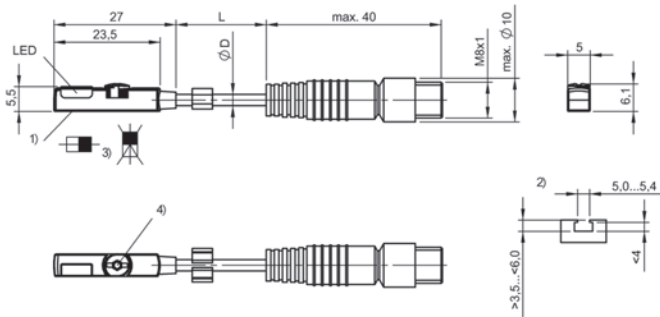
1) Teach-In button, 2) Sensing surface, 3) Output 1 active, 4) Output 2 active, 5) LED Power, 6) Null point

BMF00LC



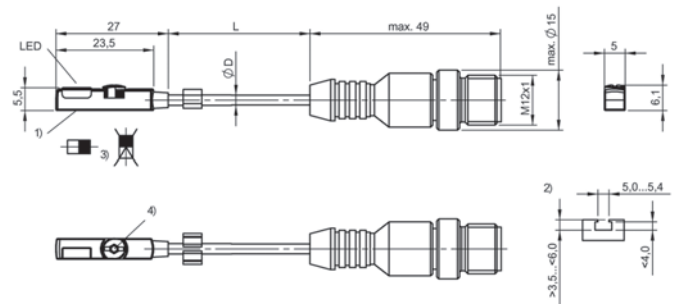
1) Teach-In button, 2) Sensing surface, 3) Output 1 active, 4) Output 2 active, 5) LED Power, 6) Null point

BMF00L6



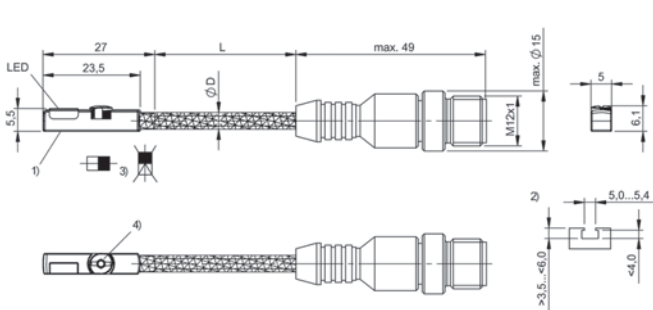
1) Sensing surface, 2) see remarks, 3) see remarks, 4) see remarks

BMF00C2, BMF00C6, BMF00C4, BMF00CF, BMF00F5



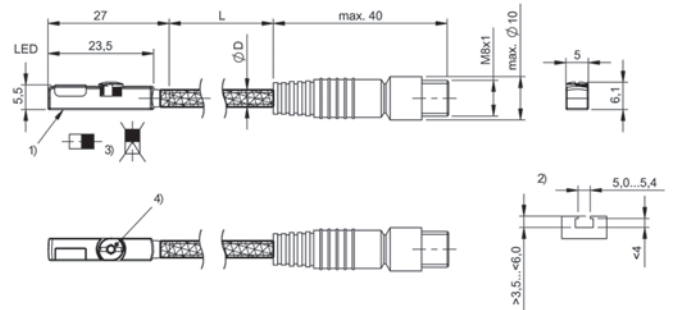
1) Sensing surface, 2) see remarks, 3) see remarks, 4) see remarks

BMF00C5, BMF00FY



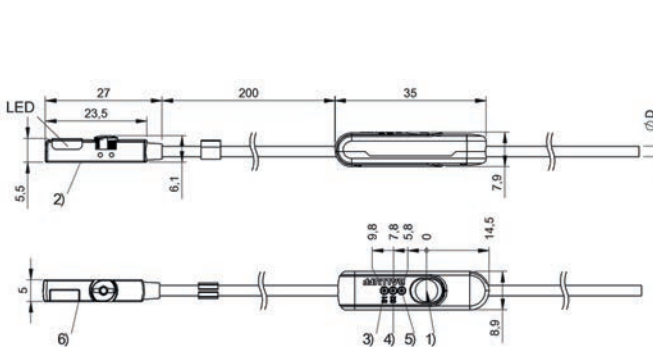
1) Sensing surface, 2) see remarks, 3) see remarks, 4) see remarks

BMF00H5



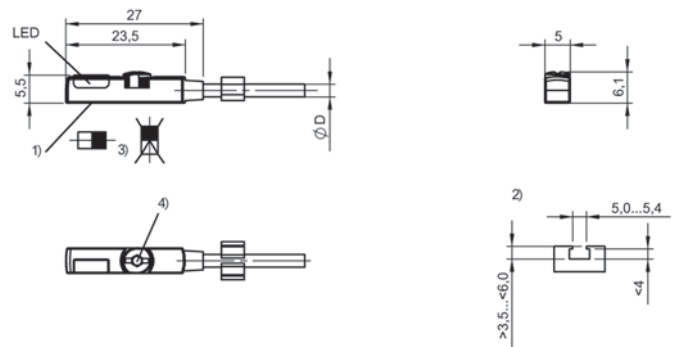
1) Sensing surface, 2) see remarks, 3) see remarks, 4) see remarks

BMF00H3



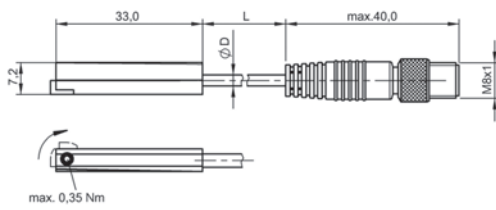
1) Teach-In button, 2) Sensing surface, 3) Output 1 active, 3) Output 2 active, 5) LED Power, 6) Null point

BMF00KH



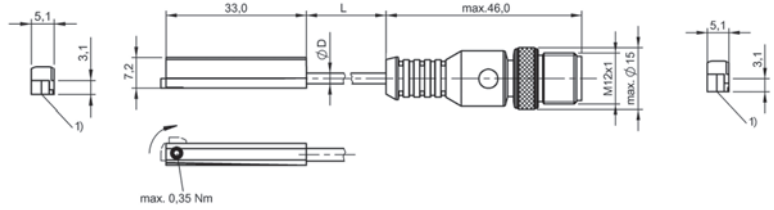
1) Sensing surface, 2) see remarks, 3) see remarks, 4) see remarks

BMF00AU, BMF00AR, BMF00J6, BMF00CH



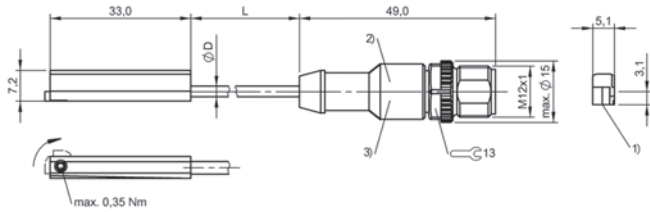
1) Sensing surface

BMF007Y, BMF0082



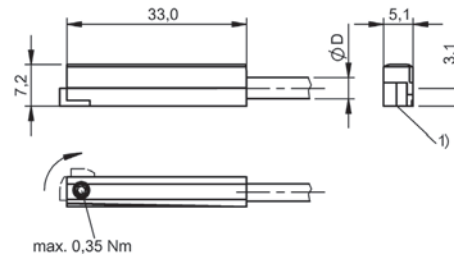
1) Sensing surface

BMF0081



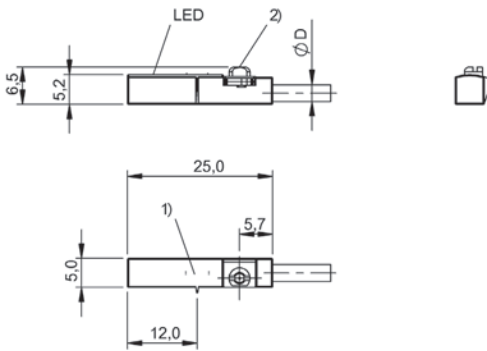
1) Sensing surface, 2) Power indicator green, 3) Function indicator yellow

BMF00C1



1) Sensing surface

BMF007U, BMF007W



1) Sensing surface, 2) Mounting clamp

BMF00E4



| PNP normally open | BMF00K9 BMF 203K-H-PI-C-A8-S75-00,3 | BMF00JH BMF 203K-H-PS-C-A2-S75-00,3 | |
|-------------------------|--|--|--|
| Dimension | 20 x 2.9 x 3.6 mm | 20 x 2.9 x 3.6 mm | |
| Connection | M8x1 connector, 4-pin | M8x1 connector, 4-pin | |
| Cable | PUR, 0.30 m | PUR, 0.30 m | |
| Application | Pneumatic cylinder with C-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with C-slot. For dimensions, see sketch in product view. | |
| Mounting | can be installed in C-slot from above | can be installed in C-slot from above | |
| Housing material | PA 12 | PA 12 | |
| Interface | IO-Link 1.1 | — | |
| Switching frequency | 15 Hz | 15 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...80 °C | -25...80 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, IO-Link, cULus, DC, Code 81U2 | CE, cULus, DC, Code 81U2 | |
| Productview | Page 652 | Page 652 | |



| | BMF00JF BMF 203K-H-PS-C-A2-PU-02 | BMF00A6 BMF 204K-PS-C-2A-SA2-S4-00,3 | BMF0002 BMF 204K-PS-C-2A-SA2-S49-00,3 | BMF0003 BMF 204K-PS-C-2A-SA2-S49-00,5 |
|--|---|---|---|---|
| | 20 x 2.9 x 3.6 mm | 16.8 x 2.9 x 4.5 mm | 16.8 x 2.9 x 4.5 mm | 16.8 x 2.9 x 4.5 mm |
| | — | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | M8x1 connector, 3-pin |
| | PUR, 2.00 m | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.50 m |
| | Pneumatic cylinder with C-slot. For dimensions, see sketch in product view. | Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. |
| | can be installed in C-slot from above | C-slot, Sommer, Festo slot 10 | C-slot, Sommer, Festo slot 10 | C-slot, Sommer, Festo slot 10 |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | — | — | — | — |
| | 15 Hz | 7000 Hz | 7000 Hz | 7000 Hz |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...80 °C | -25...85 °C | -25...85 °C | -25...85 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus, DC, Code 81U2 | cULus, CE | CE, cULus | CE, cULus |
| | Page 652 | Page 652 | Page 652 | Page 652 |



| PNP normally open | BMF0001 BMF 204K-PS-C-2A-PU-02 | BMF00FC BMF 214K-PS-C-2A-SA2-S4-00,3 | |
|-------------------------|---|---|--|
| Dimension | 16.8 x 2.9 x 4.5 mm | 16.8 x 2.9 x 4.5 mm | |
| Connection | — | M12x1-Male, 4-pole, A-coded | |
| Cable | PUR, 2.00 m | PUR, 0.30 m | |
| Application | Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. | |
| Mounting | C-slot, Sommer, Festo slot 10 | C-slot, SMC, Bimba, Schunk | |
| Housing material | PA 12 | PA 12 | |
| Interface | — | — | |
| Switching frequency | 7000 Hz | 7000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | cULus, CE | cULus, CE | |
| Productview | Page 652 | Page 652 | |



| | BMF00A2 BMF 214K-PS-C-2A-SA2-S49-00,3 | BMF00A3 BMF 214K-PS-C-2A-SA2-S49-00,5 | BMF00A1 BMF 214K-PS-C-2A-PU-02 | BMF00E5 BMF 214K-PS-C-2A-S4-03 |
|--|---|---|---|---|
| | 16.8 x 2.9 x 4.5 mm | 16.8 x 2.9 x 4.5 mm | 16.8 x 2.9 x 4.5 mm | 16.8 x 2.9 x 4.5 mm |
| | M8x1 connector, 3-pin | M8x1 connector, 3-pin | — | M12x1-Male, 4-pole, A-coded |
| | PUR, 0.30 m | PUR, 0.50 m | PUR, 2.00 m | PUR, 3.00 m |
| | Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. |
| | C-slot, SMC, Bimba, Schunk | C-slot, SMC, Bimba, Schunk | C-slot, SMC, Bimba, Schunk | C-slot, SMC, Bimba, Schunk |
| | PA 12 | PA 12 | PA 12 | PA 12 |
| | — | — | — | — |
| | 7000 Hz | 7000 Hz | 7000 Hz | 7000 Hz |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus | CE, cULus | CE, cULus | cULus, CE |
| | Page 652 | Page 652 | Page 652 | Page 653 |



| | | | |
|-------------------------|---|--|--|
| PNP normally open | BMF00E3 BMF 214K-PS-C-2A-PU-05 | BMF00HF BMF 233K-PS-C-2A-SA2-S49-00,3 | |
| NPN normally open | | | |
| Dimension | 16.8 x 2.9 x 4.5 mm | 24 x 2.9 x 3.6 mm | |
| Connection | — | M8x1 connector, 3-pin | |
| Cable | PUR, 5.00 m | PUR, 0.30 m | |
| Application | Optimized response path especially suited for short-stroke cylinders. | Pneumatic cylinder with C-slot, e.g. Festo, Sommer, etc. | |
| Mounting | C-slot, SMC, Bimba, Schunk | can be installed in C-slot from above | |
| Housing material | PA 12 | PA 12 | |
| Interface | — | — | |
| Switching frequency | 7000 Hz | 3000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus | cULus, CE | |
| Productview | Page 652 | Page 653 | |



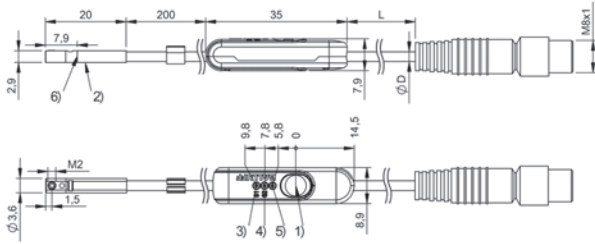
| BMF00HA BMF 233K-PS-C-2A-PU-02 | BMF00EN BMF 243K-NS-C-2A-SA2-S49-00,3 | BMF00ER BMF 243K-PS-C-2A-SA2-S4-00,3 | BMF00EL BMF 243K-PS-C-2A-SA2-S49-00,3 |
|--|--|--|--|
| 24 x 2.9 x 3.6 mm | 24 x 3 x 3.75 mm | 24 x 3 x 3.75 mm | 24 x 3 x 3.75 mm |
| — | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin |
| PUR, 2.00 m | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.30 m |
| Pneumatic cylinder with C-slot, e.g. Festo, Sommer, etc. | Pneumatic cylinder with C-slot, e.g. SMC, Festo*, Schunk, Sommer, Gimatic (*not suitable for Festo Series ADVC and AEVC) | Pneumatic cylinder with C-slot, e.g. SMC, Festo*, Schunk, Sommer, Gimatic (*not suitable for Festo Series ADVC and AEVC) | Pneumatic cylinder with C-slot, e.g. SMC, Festo*, Schunk, Sommer, Gimatic (*not suitable for Festo Series ADVC and AEVC) |
| can be installed in C-slot from above | can be installed in C-slot from above | can be installed in C-slot from above | can be installed in C-slot from above |
| PA 12 | PA 12 | PA 12 | PA 12 |
| — | — | — | — |
| 3000 Hz | 3000 Hz | 3000 Hz | 3000 Hz |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C |
| IP67 | IP67 | IP67 | IP67 |
| cULus, CE | cULus, CE | cULus, CE | cULus, CE |
| Page 653 | Page 653 | Page 653 | Page 653 |



| PNP normally open | BMF00H6 BMF 243K-PS-C-2A-SA93-S4-00,3 | BMF00H7 BMF 243K-PS-C-2A-SA93-S49-00,3 | |
|-------------------------|--|--|--|
| Dimension | 24 x 3 x 3.75 mm | 24 x 3 x 3.75 mm | |
| Connection | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | |
| Cable | PUR with silicone tube, 0.30 m | PUR with silicone tube, 0.30 m | |
| Application | Pneumatic cylinder with C-slot, e.g. SMC, Festo*, Schunk, Sommer, Gimatic (*not suitable for Festo Series ADVC and AEVC) | Pneumatic cylinder with C-slot, e.g. SMC, Festo*, Schunk, Sommer, Gimatic (*not suitable for Festo Series ADVC and AEVC) | |
| Mounting | can be installed in C-slot from above | can be installed in C-slot from above | |
| Housing material | PA 12 | PA 12 | |
| Interface | — | — | |
| Switching frequency | 3000 Hz | 3000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | cULus, CE | CE, cULus | |
| Productview | Page 653 | Page 653 | |

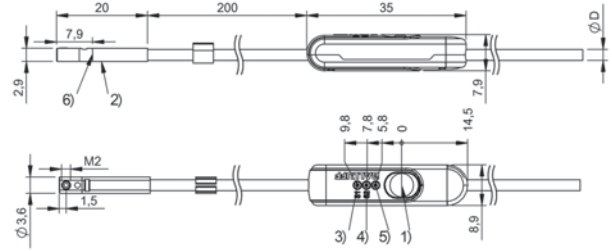


| | | | |
|---|--|--|--|
| BMF00EF BMF 243K-PS-C-2A-PU-02 | | | |
| 24 x 3 x 3.75 mm | | | |
| — | | | |
| PUR, 2.00 m | | | |
| Pneumatic cylinder with C-slot, e.g. SMC, Festo*, Schunk, Som- mer, Gimatic (*not suitable for Festo Series ADVC and AEVC) | | | |
| can be installed in C-slot from above | | | |
| PA 12 | | | |
| — | | | |
| 3000 Hz | | | |
| 10...30 VDC | | | |
| -25...85 °C | | | |
| IP67 | | | |
| cULus, CE | | | |
| Page 653 | | | |



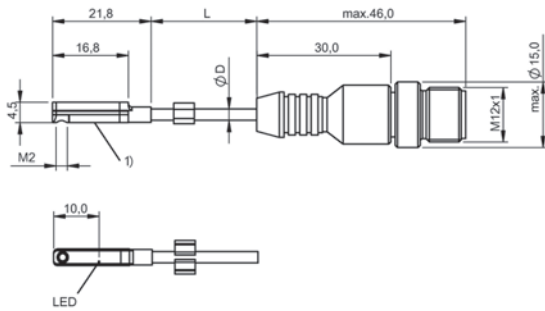
1) Teach-In button, 2) Sensing surface, 3) Output 1 active, 4) Output 2 active, 5) LED Power, 6) Null point

BMF00K9, BMF00JH



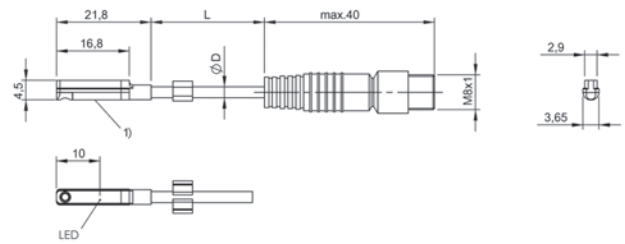
1) Teach-In button, 2) Sensing surface, 3) Output 1 active, 4) Output 2 active, 5) LED Power, 6) Null point

BMF00JF



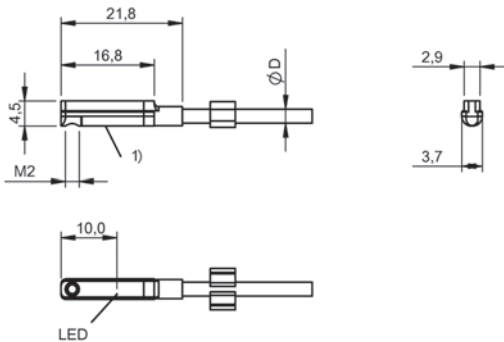
1) Sensing surface

BMF00A6



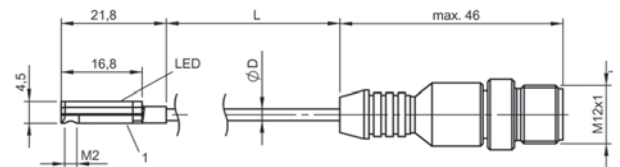
1) Sensing surface

BMF0002, BMF0003

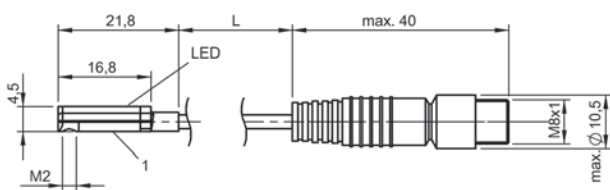


1) Sensing surface

BMF0001

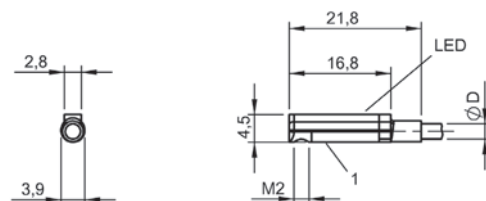


BMF00FC



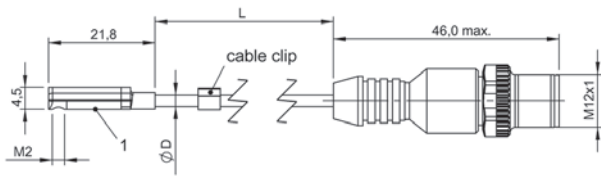
1) Sensing surface

BMF00A2, BMF00A3



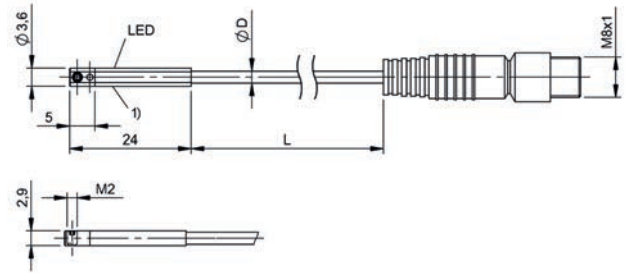
1) Sensing surface

BMF00A1, BMF00E3



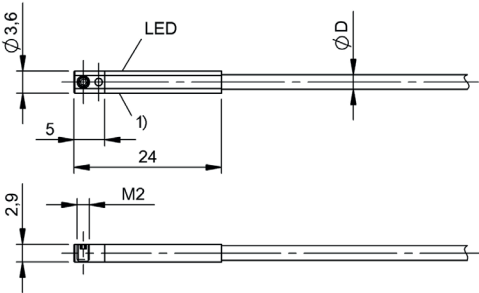
1) Sensing surface

BMF00E5



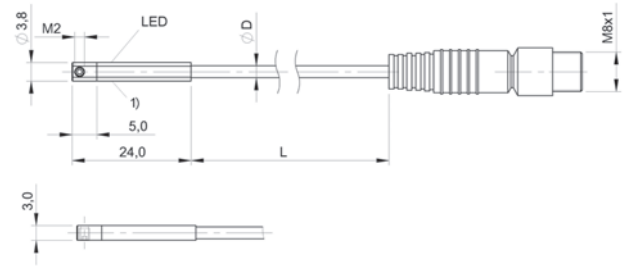
1) Sensing surface

BMF00HF



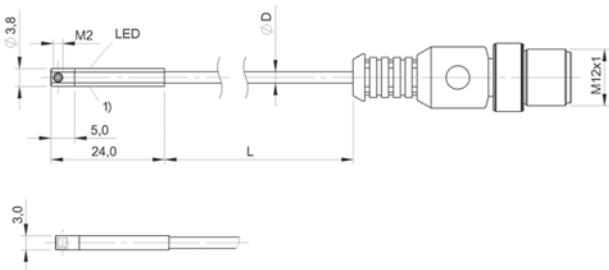
1) Sensing surface

BMF00HA



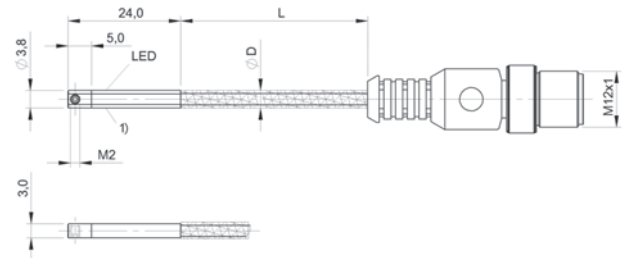
1) Sensing surface

BMF00EN, BMF00EL



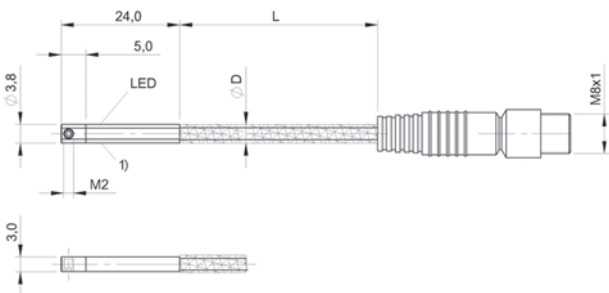
1) Sensing surface

BMF00ER



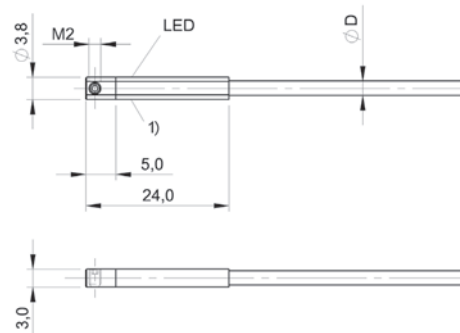
1) Sensing surface

BMF00H6



1) Sensing surface

BMF00H7



1) Sensing surface

BMF00EF



| PNP normally open | BMF001L BMF 103K-PS-C-2A-SA2-S49-00,3 | BMF001P BMF 103K-PS-C-2A-SA7-S49-00,3 | BMF001K BMF 103K-PS-C-2A-S4-00,5 | |
|-------------------------|---|---|---|--|
| Dimension | 9 x 4.8 x 16 mm | 9 x 4.8 x 16 mm | 9 x 4.8 x 16 mm | |
| Connection | M8x1 connector, 3-pin | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | |
| Cable | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.50 m | |
| Application | Optimized response path especially suited for short-stroke cylinders. | radially magnetized magnets (Schunk) | Optimized response path especially suited for short-stroke cylinders. | |
| Mounting | Mounting bracket BMF 103-HW* | Mounting bracket BMF 103-HW* | Mounting bracket BMF 103-HW* | |
| Housing material | PBT | LCP | PBT | |
| Interface | — | — | — | |
| Switching frequency | 30000 Hz | 7000 Hz | 30000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -25...85 °C | |
| Magnetic field immune | — | — | — | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | cULus, CE | CE, cULus | CE, cULus | |
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| BMF001M BMF 103K-PS-C-2A-SA2-S49-00,5 | BMF001E BMF 103K-PS-C-2A-PU-02 | BMF001F BMF 103K-PS-C-2A-PU-03 | BMF0041 BMF 303K-PS-C-2A-S49-00,2 | |
|---|---|---|--------------------------------------|--|
| 9 x 4.8 x 16 mm | 9 x 4.8 x 16 mm | 9 x 4.8 x 16 mm | 25.5 x 3 x 4.5 mm | |
| M8x1 connector, 3-pin | — | — | M8x1 connector, 3-pin | |
| PUR, 0.50 m | PUR, 2.00 m | PUR, 3.00 m | PUR, 0.20 m | |
| Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. | miniaturized actuators | |
| Mounting bracket BMF 103-HW* | Mounting bracket BMF 103-HW* | Mounting bracket BMF 103-HW* | Mounting bracket BMF 303-HW* | |
| PBT | PBT | PBT | LCP | |
| — | — | — | — | |
| 30000 Hz | 30000 Hz | 30000 Hz | 30000 Hz | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C | |
| — | — | — | — | |
| IP67 | IP67 | IP67 | IP67 | |
| cULus, CE | cULus, CE | cULus, CE | cULus, CE | |
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| | | | | |
|-------------------------|---|---|---|--|
| PNP normally open | BMF0042 BMF 303K-PS-C-2A-SA2-S49-00,2 | BMF0043 BMF 303K-PS-C-2A-SA2-S49-00,3 | BMF0049 BMF 303K-PS-C-2A-SA6-S49-00,3 | |
| PNP normally closed | | BMF0039 BMF 303K-PO-C-2A-SA2-S49-00,3 | | |
| Dimension | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 4.5 mm | |
| Connection | M8x1 connector, 3-pin | M8x1 connector, 3-pin | M8x1 connector, 3-pin | |
| Cable | PUR, 0.20 m | PUR, 0.30 m | PUR, 0.30 m | |
| Application | miniaturized actuators | miniaturized actuators | Optimized response path especially suited for short-stroke cylinders. | |
| Mounting | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | |
| Housing material | LCP | LCP | LCP | |
| Interface | — | — | — | |
| Switching frequency | 30000 Hz | 30000 Hz | 30000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -25...85 °C | |
| Magnetic field immune | — | — | — | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | cULus, CE | cULus, CE | cULus, CE | |
| Productview | Page 668 | Page 668 | Page 668 | |



| | BMF004C BMF 303K-PS-C-2A-SA7-S49-00,3 | BMF0040 BMF 303K-PS-C-2A-S4-00,5 | BMF0044 BMF 303K-PS-C-2A-SA2-S49-00,5 | BMF004A BMF 303K-PS-C-2A-SA6-S49-00,5 | |
|--|---|--|---|---|--|
| | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 4.5 mm | |
| | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | M8x1 connector, 3-pin | |
| | PUR, 0.30 m | PUR, 0.50 m | PUR, 0.50 m | PUR, 0.50 m | |
| | radially magnetized magnets (Schunk) | miniaturized actuators | miniaturized actuators | Optimized response path especially suited for short-stroke cylinders. | |
| | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | |
| | LCP | LCP | LCP | LCP | |
| | — | — | — | — | |
| | 7000 Hz | 30000 Hz | 30000 Hz | 30000 Hz | |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C | |
| | — | — | — | — | |
| | IP67 | IP67 | IP67 | IP67 | |
| | CE, cULus | cULus, CE | cULus, CE | cULus, CE | |
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| PNP normally open | BMF0045 BMF 303K-PS-C-2A-SA2-S49-00,7 | BMF0046 BMF 303K-PS-C-2A-SA2-S49-01 | BMF0047 BMF 303K-PS-C-2A-SA2-S49-01,5 | |
|----------------------------------|---|---|---|--|
| Dimension | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 4.5 mm | |
| Connection | M8x1 connector, 3-pin | M8x1 connector, 3-pin | M8x1 connector, 3-pin | |
| Cable | PUR, 0.70 m | PUR, 1.00 m | PUR, 1.50 m | |
| Application | miniaturized actuators | miniaturized actuators | miniaturized actuators | |
| Mounting | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | |
| Housing material | LCP | LCP | LCP | |
| Interface | — | — | — | |
| Switching frequency | 30000 Hz | 30000 Hz | 30000 Hz | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -25...85 °C | |
| Magnetic field immune | — | — | — | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | cULus, CE | cULus, CE | cULus, CE | |
| Productview | Page 668 | Page 668 | Page 668 | |



| | BMF003U BMF 303K-PS-C-2A-PU-02 | BMF003W BMF 303K-PS-C-2A-PU-03 | BMF0048 BMF 303K-PS-C-2A-SA6-PU-03 | BMF003Y BMF 303K-PS-C-2A-PU-05 | |
|--|--|--|---|--|--|
| | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 4.5 mm | 25.5 x 3 x 6 mm | 25.5 x 3 x 4.5 mm | |
| | — | — | — | — | |
| | PUR, 2.00 m | PUR, 3.00 m | PUR, 3.00 m | PUR, 5.00 m | |
| | miniaturized actuators | miniaturized actuators | Optimized response path especially suited for short-stroke cylinders. | miniaturized actuators | |
| | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | Mounting bracket BMF 303-HW* | |
| | LCP | LCP | LCP | LCP | |
| | — | — | — | — | |
| | 30000 Hz | 30000 Hz | 30000 Hz | 30000 Hz | |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C | |
| | — | — | — | — | |
| | IP67 | IP67 | IP67 | IP67 | |
| | cULus, CE | cULus, CE | CE, cULus | cULus, CE | |
| | Page 668 | Page 668 | Page 669 | Page 668 | |



| | BMF008E BMF 305M-PS-C-2-S4 | BMF008F BMF 305M-PS-C-2-S49 | BMF0066 BMF 305M-PS-C-2-SA4-S49 | |
|----------------------------------|--------------------------------------|---------------------------------------|---|--|
| PNP normally open | | | | |
| Dimension | 33.5 x 12.8 x 33.5 mm | 33.5 x 9 x 26.2 mm | 33.5 x 9 x 26.2 mm | |
| Connection | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | M8x1 connector, 3-pin | |
| Cable | — | — | — | |
| Application | larger actuators | larger actuators | larger actuators | |
| Mounting | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | |
| Housing material | Aluminum | Aluminum | Aluminum | |
| Interface | — | — | — | |
| Switching frequency | 10000 Hz | 10000 Hz | 10000 Hz | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -25...105 °C, high temperature rated | |
| Magnetic field immune | — | — | — | |
| Protection degree | IP67 | IP67 | IP65 | |
| Approval/Conformity | CE, cULus | CE, cULus | CE | |
| Productview | Page 669 | Page 669 | Page 669 | |



| | BMF0067 BMF 305M-PS-W-2-S4 | BMF005F BMF 305K-PS-C-2-S49-00,1 | BMF0058 BMF 305K-PS-C-2-S4-00,2 | BMF005H BMF 305K-PS-C-2-S49-00,2 | |
|--|--------------------------------------|--|---|--|--|
| | 33.5 x 5 x 33.5 mm | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | |
| | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | |
| | — | PUR, 0.10 m | PUR, 0.20 m | PUR, 0.20 m | |
| | larger actuators, Welding area | larger actuators | larger actuators | larger actuators | |
| | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | |
| | Aluminum | LCP | LCP | LCP | |
| | — | — | — | — | |
| | 10 Hz | 10000 Hz | 10000 Hz | 10000 Hz | |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| | -25...70 °C | -25...85 °C | -25...85 °C | -25...85 °C | |
| | weld-immune (AC) | — | — | — | |
| | IP67 | IP67 | IP67 | IP67 | |
| | cULus, CE | CE, cULus | CE, cULus | CE, cULus | |
| | Page 669 | Page 669 | Page 669 | Page 669 | |



| | | | | |
|-------------------------|--|--|--|--|
| PNP normally open | BMF005K BMF 305K-PS-C-2-SA2-S49-00,2 | BMF005W BMF 305K-PS-C-2-SA5-S49-00,2 | | |
| PNP normally closed | | | | |
| Polarized normally open | | | BMF0063 BMF 305K-R-PS-F-3-S49-00,2 | |
| Dimension | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | |
| Connection | M8x1 connector, 3-pin | M8x1 connector, 3-pin | M8x1 connector, 3-pin | |
| Cable | PUR, 0.20 m | 0.20 m | PUR, 0.20 m | |
| Application | larger actuators | — | larger actuators | |
| Mounting | Mounting bracket BMF 305-HW* | — | Mounting bracket BMF 305-HW* | |
| Housing material | LCP | LCP | LCP | |
| Interface | — | — | — | |
| Switching frequency | 10000 Hz | 10000 Hz | 1000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -20...70 °C | |
| Magnetic field immune | — | — | — | |
| Protection degree | IP67 | IP67 | IP65 | |
| Approval/Conformity | CE, cULus | cULus, CE | CE | |
| Productview | Page 669 | Page 669 | Page 669 | |



| | BMF005L BMF 305K-PS-C-2-SA2-S49-00,3 | BMF005M BMF 305K-PS-C-2-SA2-S49-00,4 | BMF0059 BMF 305K-PS-C-2-S4-00,5 | BMF005J BMF 305K-PS-C-2-S49-00,5 | |
|--|--|--|---|--|--|
| | BMF0055 BMF 305K-PO-C-2-SA2-S49-00,3 | | | | |
| | | | | | |
| | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | |
| | M8x1 connector, 3-pin | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | |
| | PUR, 0.30 m | PUR, 0.40 m | PUR, 0.50 m | PUR, 0.50 m | |
| | larger actuators | larger actuators | larger actuators | larger actuators | |
| | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | |
| | LCP | LCP | LCP | LCP | |
| | — | — | — | — | |
| | 10000 Hz | 10000 Hz | 10000 Hz | 10000 Hz | |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C | |
| | — | — | — | — | |
| | IP67 | IP67 | IP67 | IP67 | |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus | |
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Sensors

RFID

Machine Vision and Optical Identification

Human Machine Interfaces

Systems

Safety

Industrial Networking

Power Supply

Connectivity

Accessories



| | | | | |
|-------------------------|--|--|---|--|
| PNP normally open | BMF005N BMF 305K-PS-C-2-SA2-S49-00,5 | BMF005P BMF 305K-PS-C-2-SA2-S49-00,6 | BMF005A BMF 305K-PS-C-2-S4-00,8 | |
| Dimension | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | |
| Connection | M8x1 connector, 3-pin | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | |
| Cable | PUR, 0.50 m | PUR, 0.60 m | PUR, 0.80 m | |
| Application | larger actuators | larger actuators | larger actuators | |
| Mounting | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | |
| Housing material | LCP | LCP | LCP | |
| Interface | — | — | — | |
| Switching frequency | 10000 Hz | 10000 Hz | 10000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -25...85 °C | |
| Magnetic field immune | — | — | — | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | CE, cULus | CE, cULus | CE, cULus | |
| Productview | Page 669 | Page 669 | Page 669 | |



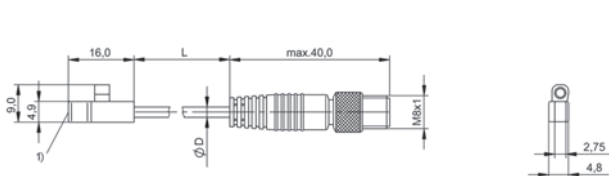
| BMF0061 BMF 305K-PS-W-2-SA3-S4-00,8 | BMF005R BMF 305K-PS-C-2-SA2-S49-01 | BMF005C BMF 305K-PS-C-2-S4-01,5 | | |
|---|--|---|--|--|
| 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | | |
| M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | | |
| PUR, 0.80 m | PUR, 1.00 m | PUR, 1.50 m | | |
| larger actuators, Welding area | larger actuators | larger actuators | | |
| Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | | |
| LCP | LCP | LCP | | |
| — | — | — | | |
| 10 Hz | 10000 Hz | 10000 Hz | | |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | | |
| -25...70 °C | -25...85 °C | -25...85 °C | | |
| weld-immune (AC) | — | — | | |
| IP67 | IP67 | IP67 | | |
| cULus, CE | CE, cULus | CE, cULus | | |
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| | | | | |
|-------------------------|---|--|--|--|
| PNP normally open | BMF0056 BMF 305K-PS-C-2-PU-02 | | | |
| Polarized normally open | | BMF0062 BMF 305K-R-PS-F-3-03 | BMF0064 BMF 305K-R-US-L-3-03 | |
| Dimension | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | 33.5 x 5 x 10.5 mm | |
| Connection | — | — | — | |
| Cable | PUR, 2.00 m | PVC, 3.00 m | PVC, 3.00 m | |
| Application | larger actuators | larger actuators | larger actuators | |
| Mounting | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | Mounting bracket BMF 305-HW* | |
| Housing material | LCP | LCP | LCP | |
| Interface | — | — | — | |
| Switching frequency | 10000 Hz | 1000 Hz | 1000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 6...240 VDC/6...240 VAC | |
| Ambient temperature | -25...85 °C | -20...70 °C | -20...70 °C | |
| Magnetic field immune | — | — | — | |
| Protection degree | IP67 | IP65 | IP65 | |
| Approval/Conformity | cULus, CE | CE | CE | |
| Productview | Page 670 | Page 670 | Page 670 | |

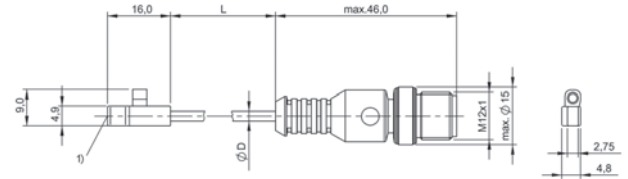


| | BMF0057 BMF 305K-PS-C-2-PU-05 | BMF0087 BMF 32M-PS-C-2-S4 | BMF0088 BMF 32M-PS-C-2-S49 | BMF0089 BMF 32M-PS-C-2-SA1-S49 | BMF008A BMF 32M-PS-W-2-S4 |
|--|---|--|--|--|--|
| | 33.5 x 5 x 10.5 mm | 25 x 11.9 x 26 mm | 25 x 11.9 x 26 mm | 25 x 11.9 x 26 mm | 25 x 11.9 x 26 mm |
| | — | M12x1-Male, 4-pole, A-coded | M8x1 connector, 3-pin | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded |
| | PUR, 5.00 m | — | — | — | — |
| | larger actuators | Round cylinder, Pneumatic cylinder with trapezoidal slot | Round cylinder, Pneumatic cylinder with trapezoidal slot | Round cylinder, Pneumatic cylinder with trapezoidal slot | Round cylinder, Pneumatic cylinder with trapezoidal slot |
| | — | with tube cuff | with tube cuff | with tube cuff | with tube cuff |
| | LCP | Aluminum | Aluminum | Aluminum | Aluminum |
| | — | — | — | — | — |
| | 10000 Hz | 10000 Hz | 10000 Hz | 10000 Hz | 10 Hz |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C | -25...70 °C |
| | — | — | — | — | weld-immune (AC) |
| | IP67 | IP67 | IP67 | IP67 | IP67 |
| | cULus, CE | CE, cULus | CE, cULus | cULus, CE | cULus, CE |
| | Page 670 | Page 670 | Page 670 | Page 670 | Page 670 |



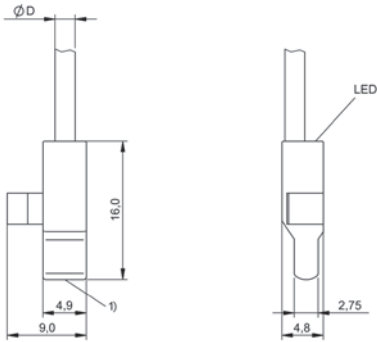
1) Sensing surface

BMF001L, BMF001P, BMF001M



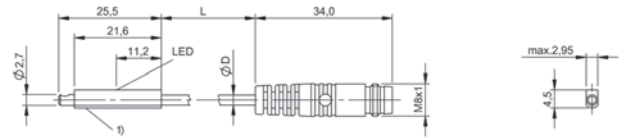
1) Sensing surface

BMF001K



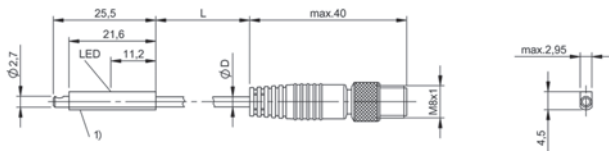
1) Sensing surface

BMF001E, BMF001F



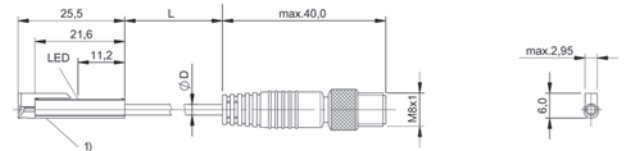
1) Sensing surface

BMF0041



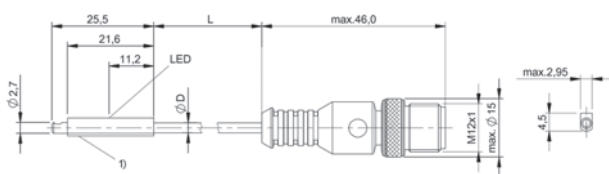
1) Sensing surface

BMF0042, BMF0039, BMF0043, BMF004C, BMF0044, BMF0045, BMF0046, BMF0047



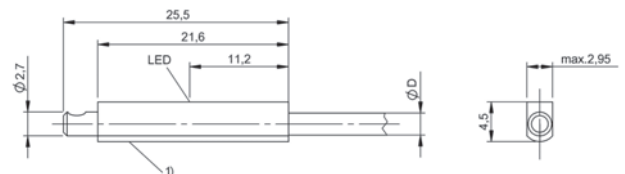
1) Sensing surface

BMF0049, BMF004A



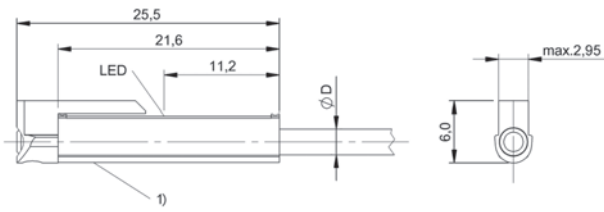
1) Sensing surface

BMF0040



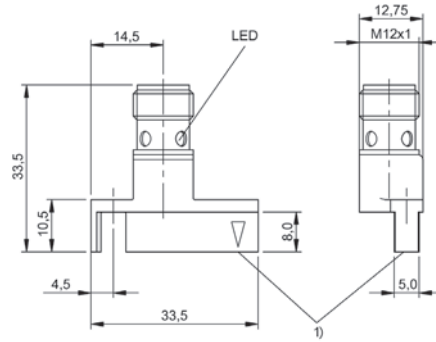
1) Sensing surface

BMF003U, BMF003W, BMF003Y



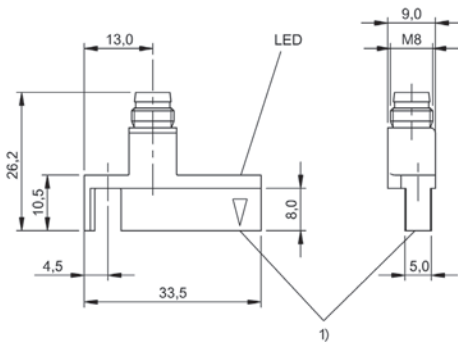
1) Sensing surface

BMF0048



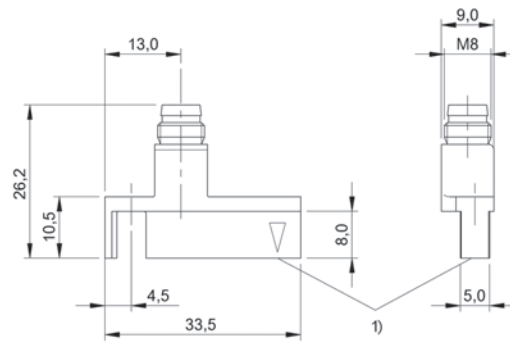
1) Sensing surface

BMF008E, BMF0067



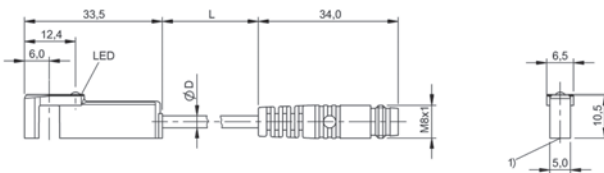
1) Sensing surface

BMF008F



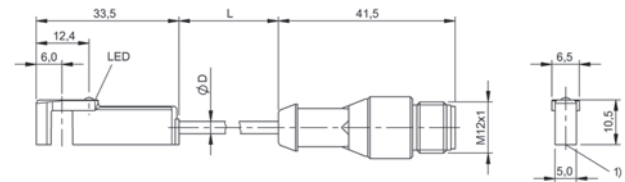
1) Sensing surface

BMF0066



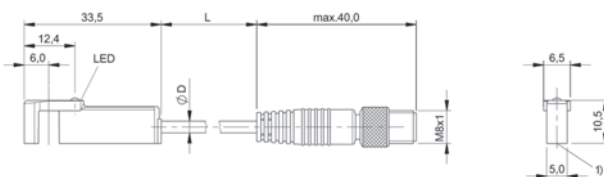
1) Sensing surface

BMF005F, BMF005H, BMF005W, BMF0063, BMF005J



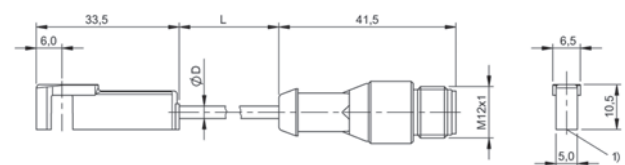
1) Sensing surface

BMF0058, BMF0059, BMF005A, BMF005C



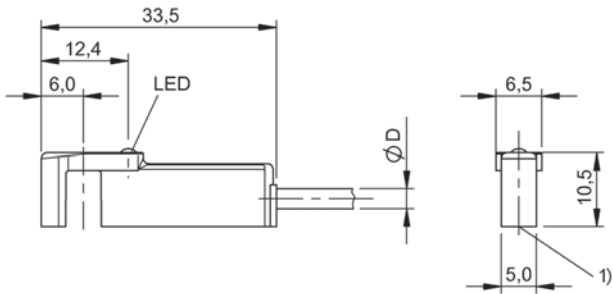
1) Sensing surface

BMF005K, BMF0055, BMF005L, BMF005M, BMF005N, BMF005P, BMF005R



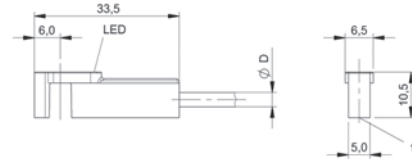
1) Sensing surface

BMF0061



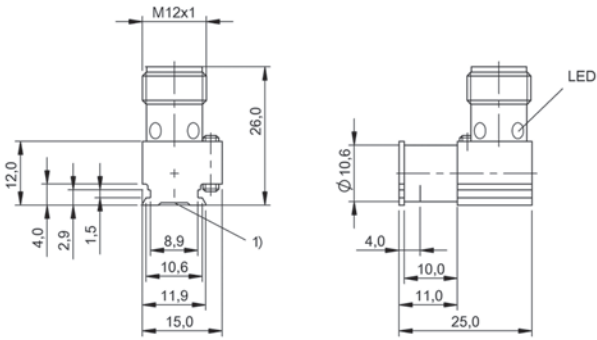
1) Sensing surface

BMF0056, BMF0062, BMF0057



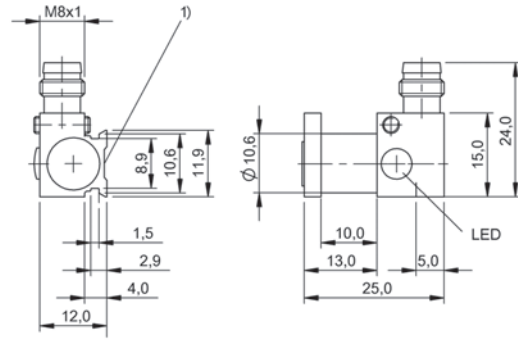
1) Sensing surface

BMF0064



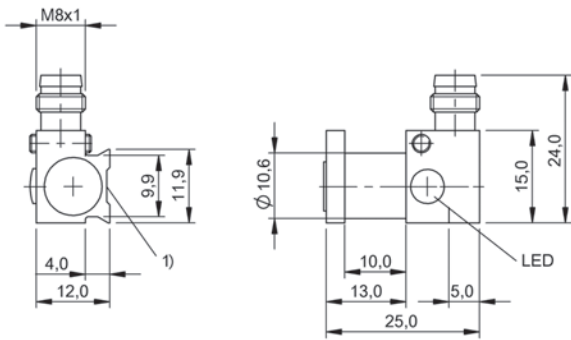
1) Sensing surface

BMF0087



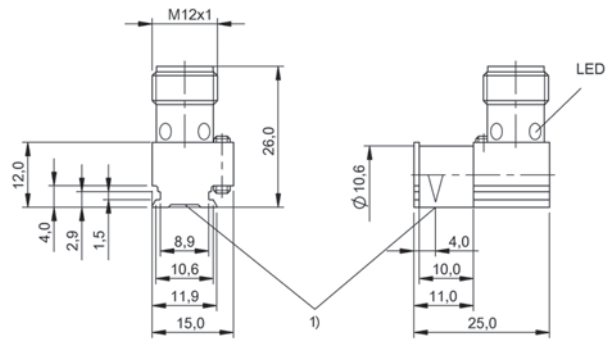
1) Sensing surface

BMF0088



1) Sensing surface

BMF0089



1) Sensing surface

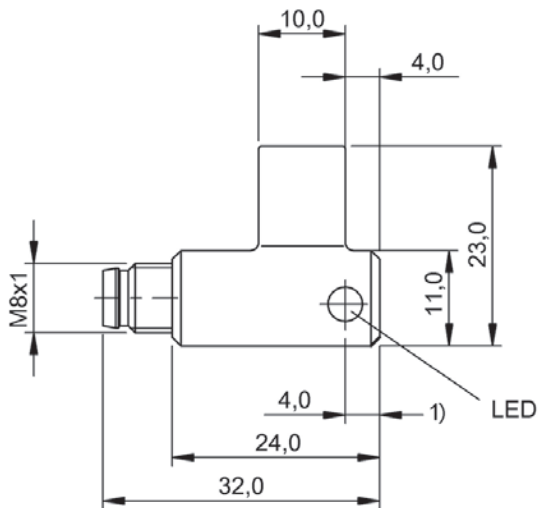
BMF008A



| | | |
|-------------------------|--|--|
| PNP normally open | | |
| NPN normally open | BMF0025 BMF 21K-NS-C-2-S49 | |
| Dimension | 11 x 11 x 32 mm | |
| Connection | M8x1 connector, 3-pin | |
| Cable | — | |
| Application | Pneumatic cylinder with tie rods, Pneumatic cylinder with DUO rail, Round cylinder, Profile cylinder | |
| Housing material | PBT | |
| Switching frequency | 10000 Hz | |
| Operating voltage U_b | 10...30 VDC | |
| Ambient temperature | -25...85 °C | |
| Magnetic field immune | — | |
| Protection degree | IP67 | |
| Approval/Conformity | CE, cULus | |
| Ex category | — | |
| Productview | Page 674 | |

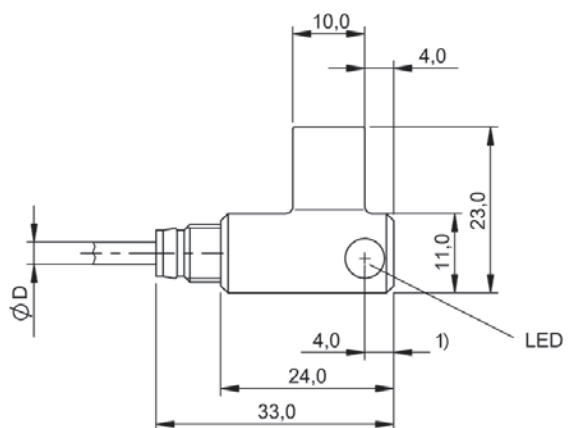


| BMF0029 BMF 21K-PS-C-2-S49 | BMF0027 BMF 21K-PS-C-2-PU-03 | BMF0028 BMF 21K-PS-C-2-PU-05 |
|--|--|--|
| 11 x 11 x 32 mm | 33 x 23 x 11 mm | 33 x 23 x 11 mm |
| M8x1 connector, 3-pin | — | — |
| — | PUR, 3.00 m | PUR, 5.00 m |
| Pneumatic cylinder with tie rods, Pneumatic cylinder with DUO rail, Round cylinder, Profile cylinder | Pneumatic cylinder with tie rods, Pneumatic cylinder with DUO rail, Round cylinder, Profile cylinder | Pneumatic cylinder with tie rods, Pneumatic cylinder with DUO rail, Round cylinder, Profile cylinder |
| PBT | PBT | PBT |
| 10000 Hz | 10000 Hz | 10000 Hz |
| 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...85 °C | -25...85 °C | -25...85 °C |
| — | — | — |
| IP67 | IP67 | IP67 |
| cULus, CE | CE, cULus | CE, cULus |
| — | — | — |
| Page 674 | Page 674 | Page 674 |



1) Measuring point, 2) Sensing surface

BMF0025, BMF0029



1) Measuring point, 2) Sensing surface

BMF0027, BMF0028



| | | | |
|-------------------------|---|---|--|
| PNP normally open | BMF001R BMF 103K-PS-C-2A-SA95-S75-00,3 | BMF004E BMF 303K-PS-C-2A-SA95-S4-00,3 | |
| Dimension | 9 x 4.8 x 16 mm | 25.5 x 3 x 4.5 mm | |
| Connection | M8x1 connector, 4-pin | M12x1-Male, 4-pole, A-coded | |
| Cable | PUR, 0.30 m | PUR, 0.30 m | |
| Application | Optimized response path especially suited for short-stroke cylinders. | miniaturized actuators | |
| Mounting | Mounting bracket BMF 103-HW* | Mounting bracket BMF 303-HW* | |
| Housing material | PBT | LCP | |
| Switching frequency | 30000 Hz | 30000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Productview | Page 680 | Page 680 | |



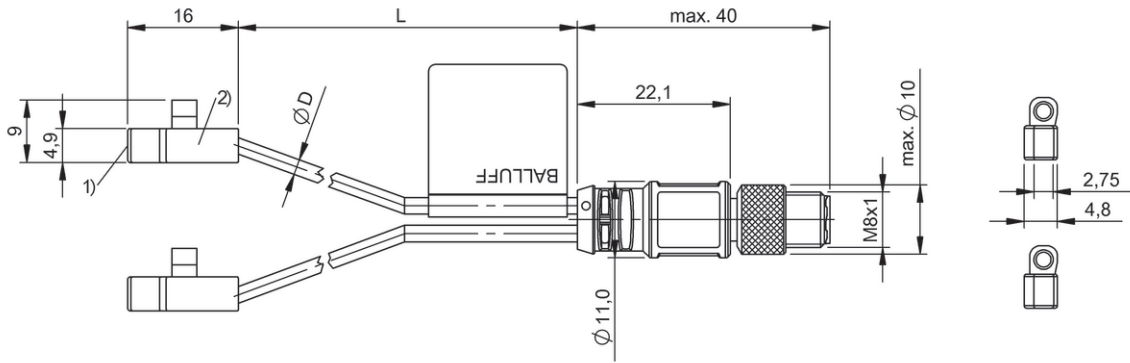
| | BMF004F BMF 303K-PS-C-2A-SA95-S75-00,3 | BMF0005 BMF 204K-PS-C-2A-SA95-S4-00,3 | BMF0006 BMF 204K-PS-C-2A-SA95-S75-00,3 | BMF00A4 BMF 214K-PS-C-2A-SA95-S4-00,3 |
|--|--|---|---|---|
| | 25.5 x 3 x 4.5 mm | 16.8 x 2.9 x 4.5 mm | 16.8 x 2.9 x 4.5 mm | 33 x 5.1 x 7.2 mm |
| | M8x1 connector, 4-pin | M12x1-Male, 4-pole, A-coded | M8x1 connector, 4-pin | M12x1-Male, 4-pole, A-coded |
| | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.30 m |
| | miniaturized actuators | Optimized response path especially suited for short-stroke cylinders. | Optimized response path especially suited for short-stroke cylinders. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. |
| | Mounting bracket BMF 303-HW* | C-slot, Sommer, Festo slot 10 | C-slot, Sommer, Festo slot 10 | can be installed in T-slot from above |
| | LCP | PA 12 | PA 12 | Aluminum |
| | 30000 Hz | 7000 Hz | 7000 Hz | 10 Hz |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...70 °C |
| | — | — | — | weld-immune (AC) |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | Page 681 | Page 681 | Page 682 | Page 685Page 682 |



| PNP normally open | BMF00A5 BMF 214K-PS-C-2A-SA95-S75-00,3 | BMF00F9 BMF 243K-PS-C-2A-SA95-S4-00,3 | |
|----------------------------------|---|--|--|
| Dimension | 16.8 x 2.9 x 4.5 mm | 24 x 3 x 3.75 mm | |
| Connection | M8x1 connector, 4-pin | M12x1-Male, 4-pole, A-coded | |
| Cable | PUR, 0.30 m | PUR, 0.30 m | |
| Application | Optimized response path especially suited for short-stroke cylinders. | Pneumatic cylinder with C-slot, e.g. SMC, Festo*, Schunk, Sommer, Gimatic (*not suitable for Festo Series ADVC and AEVC) | |
| Mounting | C-slot, SMC, Bimba, Schunk | can be installed in C-slot from above | |
| Housing material | PA 12 | PA 12 | |
| Switching frequency | 7000 Hz | 3000 Hz | |
| Operating voltage U _b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | |
| Magnetic field immune | — | — | |
| Protection degree | IP67 | IP67 | |
| Approval/Conformity | CE, cULus | CE, cULus | |
| Productview | Page 683 | Page 683 | |

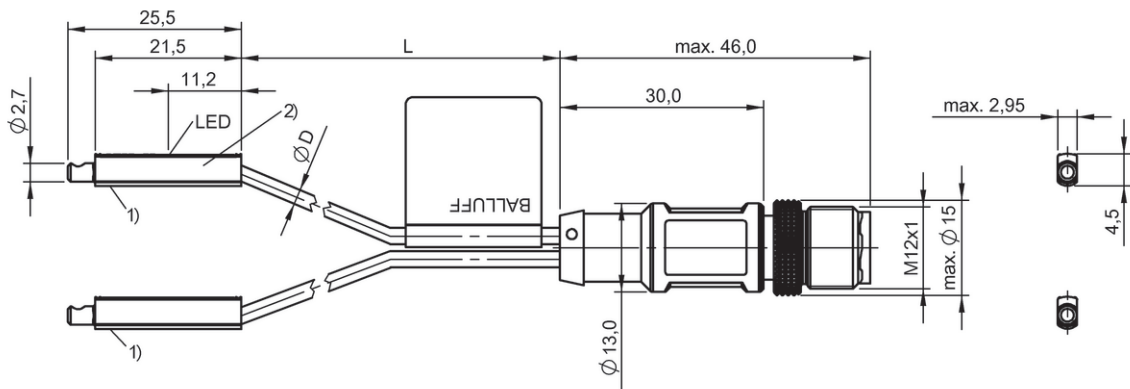


| | BMF00ET BMF 243K-PS-C-2A-SA95-S75-00,3 | BMF00C9 BMF 235K-PS-C-2A-SA95-S4-00,3 | BMF00CA BMF 235K-PS-C-2A-SA95-S75-00,3 | BMF0084 BMF 315M-PS-W-2-SA95-S4-00,3 |
|--|--|---|---|---|
| | 24 x 3 x 3.75 mm | 23.5 x 5 x 5.5 mm | 23.5 x 5 x 5.5 mm | 33 x 5.1 x 7.2 mm |
| | M8x1 connector, 4-pin | M12x1-Male, 4-pole, A-coded | M8x1 connector, 4-pin | M12x1-Male, 4-pole, A-coded |
| | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.30 m |
| | Pneumatic cylinder with C-slot, e.g. SMC, Festo*, Schunk, Sommer, Gimatic (*not suitable for Festo Series ADVc and AEVC) | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. | Pneumatic cylinder with T-slot. For dimensions, see sketch in product view. |
| | can be installed in C-slot from above | can be installed in T-slot from above | can be installed in T-slot from above | can be installed in T-slot from above |
| | PA 12 | PA 12 | PA 12 | Aluminum |
| | 3000 Hz | 3000 Hz | 3000 Hz | 10 Hz |
| | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| | -25...85 °C | -25...85 °C | -25...85 °C | -25...70 °C |
| | — | — | — | weld-immune (AC) |
| | IP67 | IP67 | IP67 | IP67 |
| | CE, cULus | CE, cULus | CE, cULus | CE, cULus |
| | Page 684 | Page 684 | Page 685 | Page 685 |



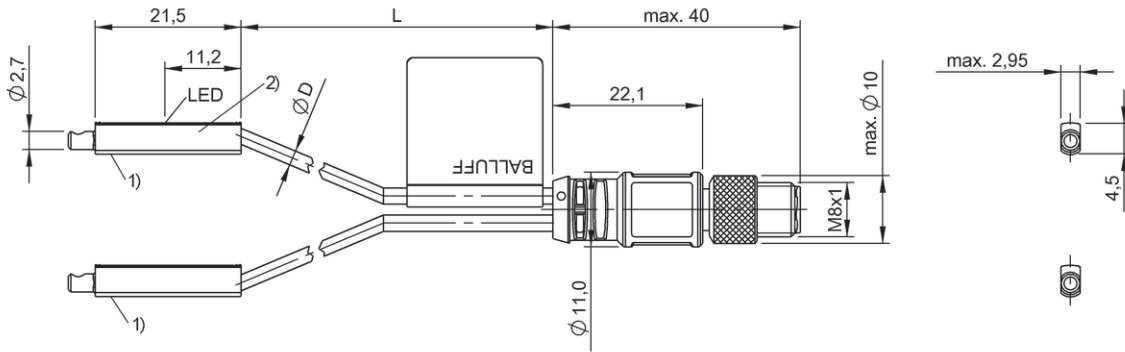
1) Sensing surface, 2) Sensor 1

BMF001R



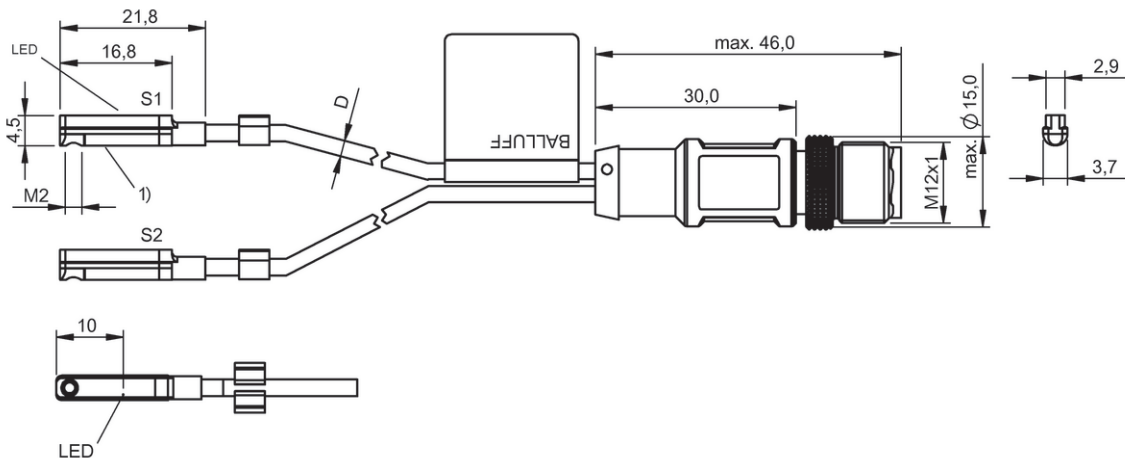
1) Sensing surface, 2) Sensor 1

BMF004E



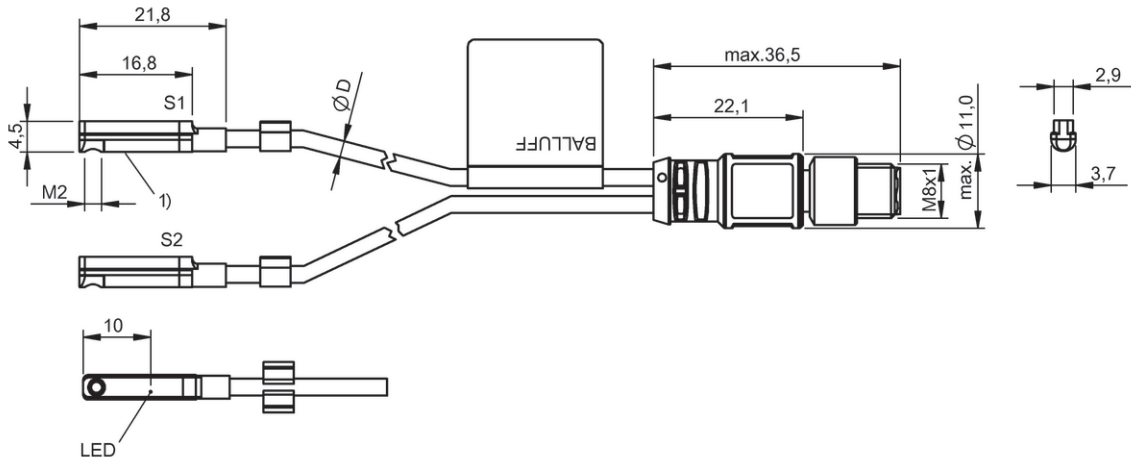
1) Sensing surface, 2) Sensor 1

BMF004F



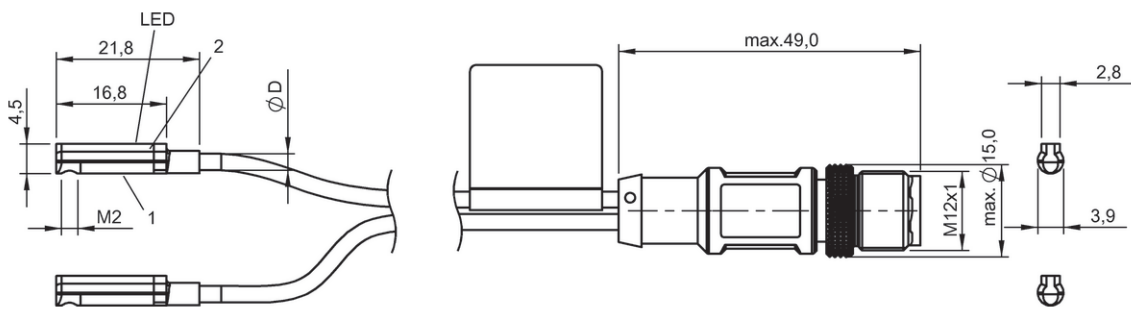
1) Sensing surface

BMF0005



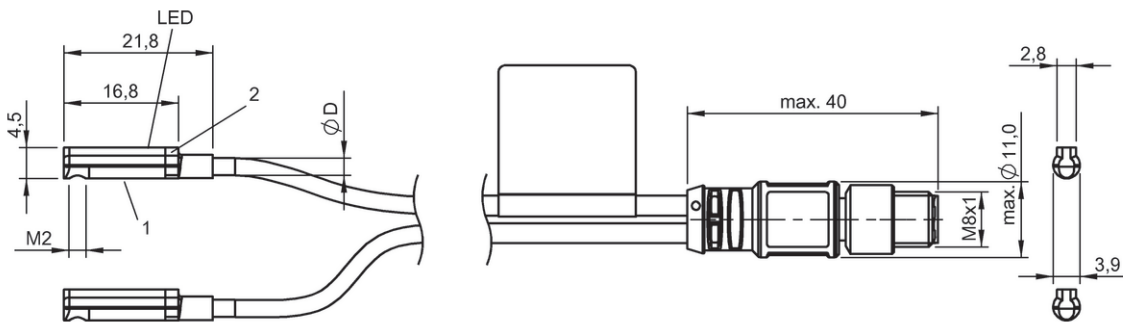
1) Sensing surface

BMF0006



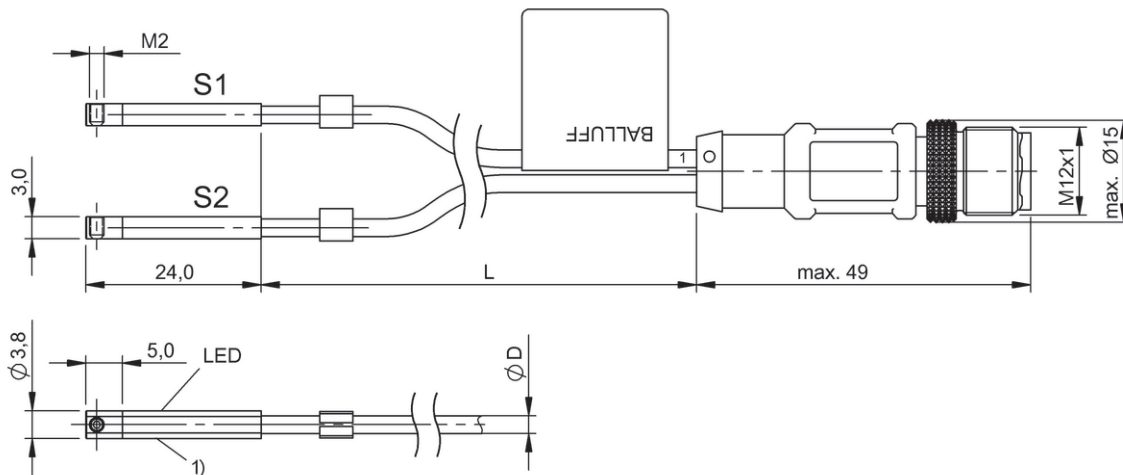
1) Sensing surface, 2) Sensor 1

BMF00A4



1) Sensing surface, 2) Sensor 1

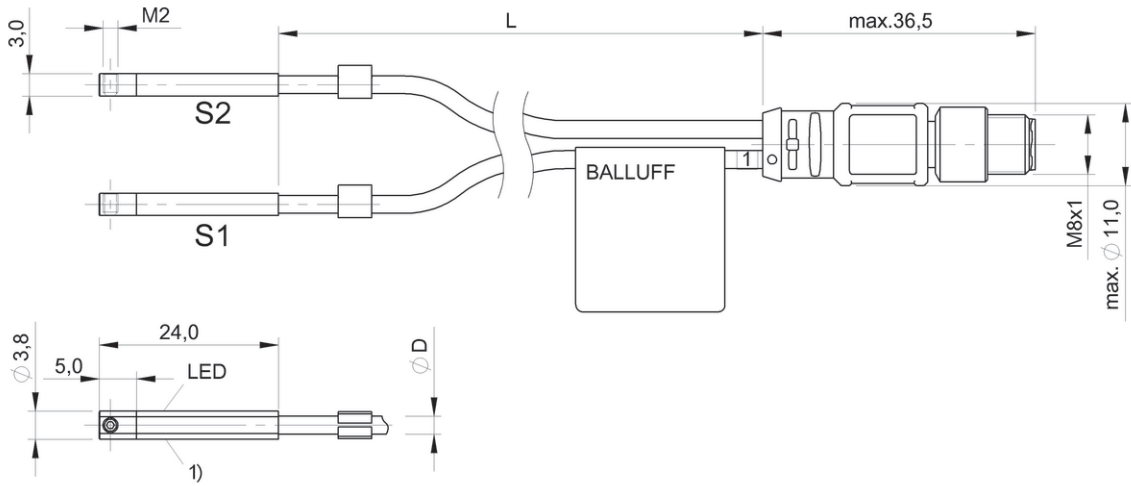
BMF00A5



1) Sensing surface

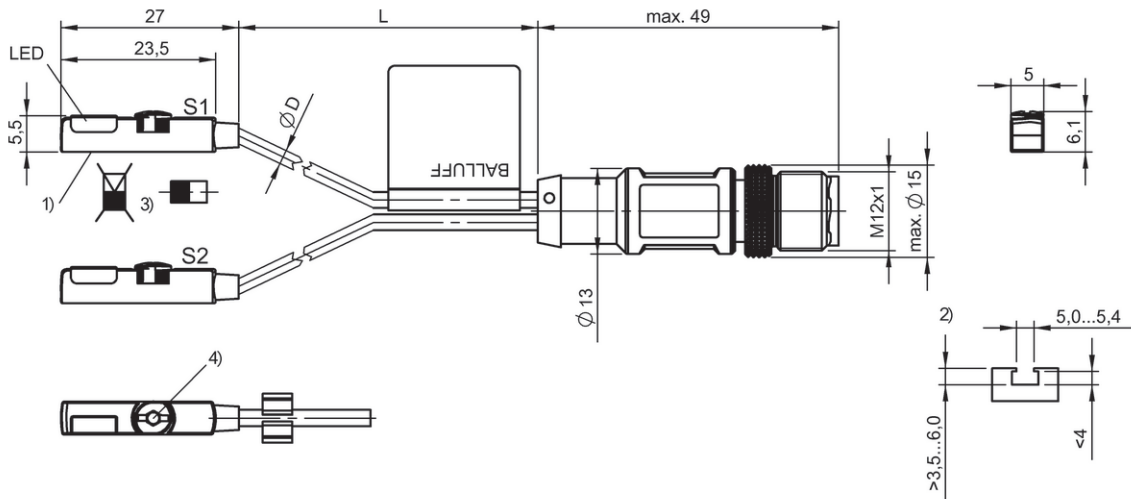
BMF00F9

Do you need more details? Our Product Finder at www.balluff.com provides you with product-specific information, including technical drawings, data sheets, user guides and more for each individual product. All items are available for download.



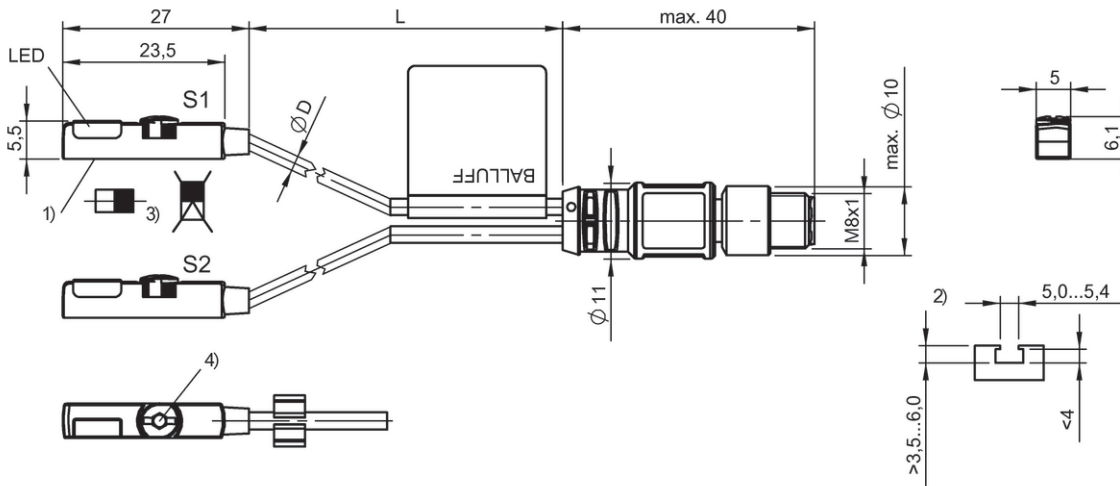
1) Sensing surface

BMF00ET



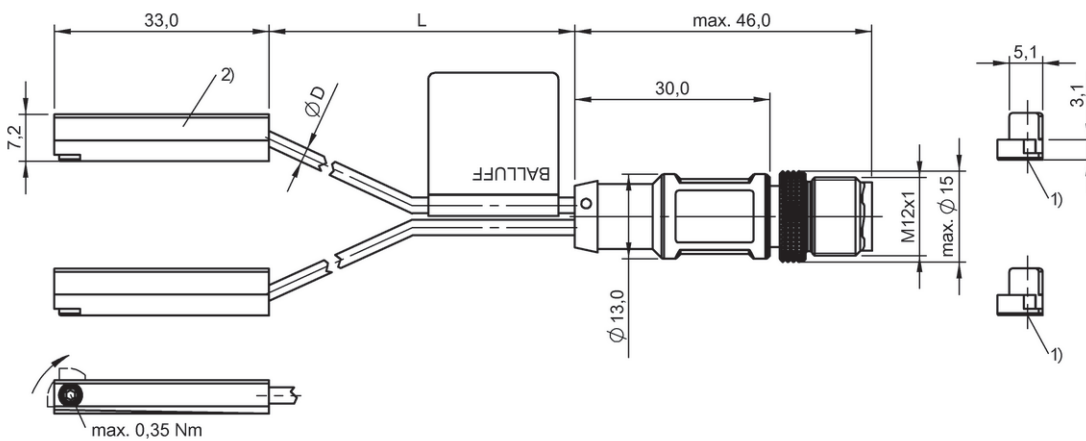
1) Sensing surface, 2) see remarks, 3) see remarks, 4) see remarks

BMF00C9



1) Sensing surface, 2) see remarks, 3) see remarks, 4) see remarks

BMF00CA



1) Sensing surface, 2) Sensor 1

BMF0084

Do you need more details? Our Product Finder at www.balluff.com provides you with product-specific information, including technical drawings, data sheets, user guides and more for each individual product. All items are available for download.



| | | | | |
|-------------------------|---|---|---|--|
| PNP normally open | BMF000K BMF 07M-PS-D-2-S49-00,3 | BMF000L BMF 07M-PS-D-2-SA2-S49-00,3 | BMF000J BMF 07M-PS-D-2-S4-00,6 | |
| NPN normally open | | | | |
| Dimension | Ø 6.5 x 30 mm | Ø 6.5 x 30 mm | Ø 6.5 x 30 mm | |
| Connection | M8x1 connector, 3-pin | M8x1 connector, 3-pin | M12x1-Male, 4-pole, A-coded | |
| Cable | PUR, 0.30 m | PUR, 0.30 m | PUR, 0.60 m | |
| Application | Flexible mounting, Switching distances > 20 mm possible | Flexible mounting, Switching distances > 20 mm possible | Flexible mounting, Switching distances > 20 mm possible | |
| Mounting | Clamps | Clamps | Clamps | |
| Housing material | Brass | Brass | Brass | |
| Switching frequency | 10000 Hz | 10000 Hz | 10000 Hz | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...85 °C | -25...85 °C | -25...85 °C | |
| Protection degree | IP67 | IP67 | IP67 | |
| Approval/Conformity | cULus, CE | cULus, CE | CE, cULus | |
| Productview | Page 688 | Page 688 | Page 688 | |



| BMF000F BMF 07M-PS-C-2-KPU-03 | BMF000P BMF 08M-PS-C-2-KPU-02 | BMF000N BMF 08M-NS-C-2-KPU-03 | BMF000R BMF 08M-PS-C-2-KPU-03 | BMF000T BMF 08M-PS-C-2-KPU-05 |
|---|---|---|---|---|
| Ø 6.5 x 30.5 mm | Ø 8 x 30.5 mm | Ø 8 x 30.5 mm | Ø 8 x 30.5 mm | Ø 8 x 30.5 mm |
| — | — | — | — | — |
| PUR, 3.00 m | PUR, 2.00 m | PUR, 3.00 m | PUR, 3.00 m | PUR, 5.00 m |
| Flexible mounting, Switching distances > 20 mm possible | Flexible mounting, Switching distances > 20 mm possible | Flexible mounting, Switching distances > 20 mm possible | Flexible mounting, Switching distances > 20 mm possible | Flexible mounting, Switching distances > 20 mm possible |
| Clamps | Clamps | Clamps | Clamps | Clamps |
| Brass | Brass | Brass | Brass | Brass |
| 10000 Hz | 10000 Hz | 10000 Hz | 10000 Hz | 10000 Hz |
| 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC | 10...30 VDC |
| -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C | -25...85 °C |
| IP67 | IP67 | IP67 | IP67 | IP67 |
| cULus, CE | cULus, CE | cULus, CE | cULus, CE | CE, cULus |
| Page 688 | Page 688 | Page 688 | Page 688 | Page 688 |

Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

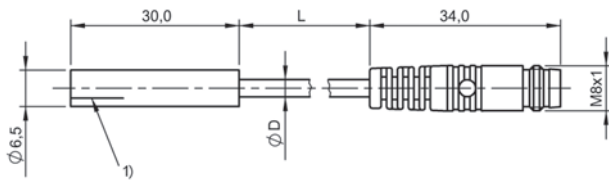
Safety

Industrial Networking

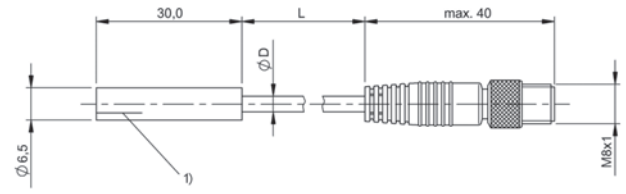
Power Supply

Connectivity

Accessories

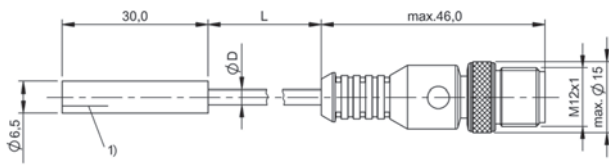


BMF000K



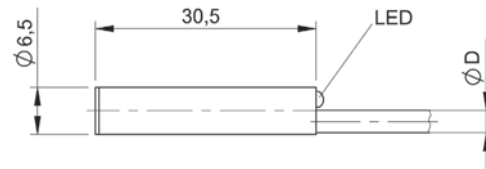
1) see remarks

BMF000L

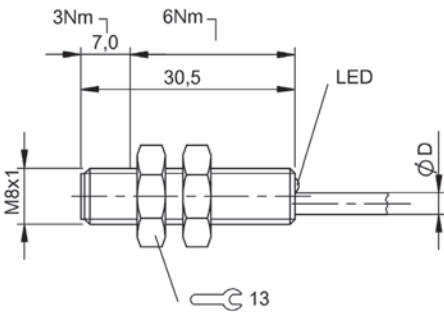


1) see remarks

BMF000J



BMF000F



BMF000P, BMF000N, BMF000R, BMF000T



Many series and form factors for the greatest flexibility.
The classics for metalworking and automotive

MECHANICAL CAM SWITCHES

The cam switches from Balluff are used on machine tools, presses, in flexible manufacturing centers, robots, assembly and conveying devices, and in machine and equipment construction. They serve as command transmitters for automatic controls, for positioning and for end-of-travel switching.

The design principle of the devices, their variety of possible switching actions, as well as consistent quality inspection, guarantee consistently high quality and reliability.

At Balluff you can choose from nine different series and five plunger types each: Chisel, ball, roller, roller bearing and chisel with wiper plate. A large number of connection varieties is also available.

The most important benefits

- Reliable and rugged, even in harsh environments
- Flawless functionality in the event of vibrations, shock loads, temperature swings, aggressive cooling lubricants and heavy chip accumulation
- Maintenance-free, self-lubricating ram guide with plain bearing bush
- High-quality Viton seals
- Protection class IP67
- Also available with inductive switching points



| | |
|---------------------------------------|--|
| Single position switch | SERIES F 60 COMPLIANT WITH DIN 43693 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 724 |

Ordering example:

BNS 819-F **-60-101-** **-** **-** **-**

Plunger style

- D Chisel
- K Ball
- R Roller
- L Roller bearing
- E Chisel with wiper plate

Optional Function indicator

- FD 6...60 V AC/DC
- FE 90...250 V AC/DC

Optional Male

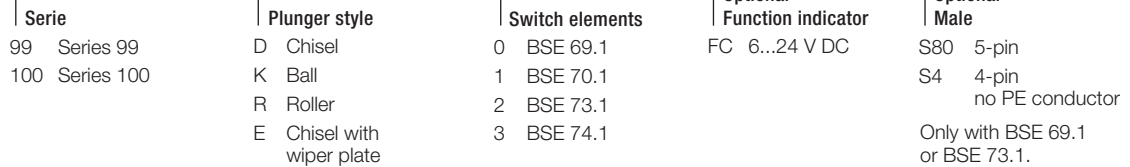
- S80R 5-pin, right
- S80L 5-pin, left



| | |
|---------------------------------------|--|
| Single position switch | SERIES 99 AND 100 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | Cable gland (M12 x 1.5 Series 99, M16 x 1.5 Series 100) or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP 67 |
| Approval/Conformity | CE |
| Productview and installation | Page 724 |

Ordering example:

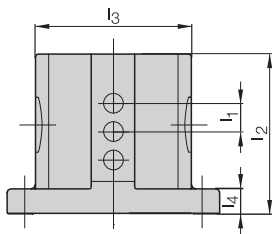
BNS 819- [] - [] - **1** - [] - []





| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 100 COMPLIANT WITH DIN 43697 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 725 |

Available sizes

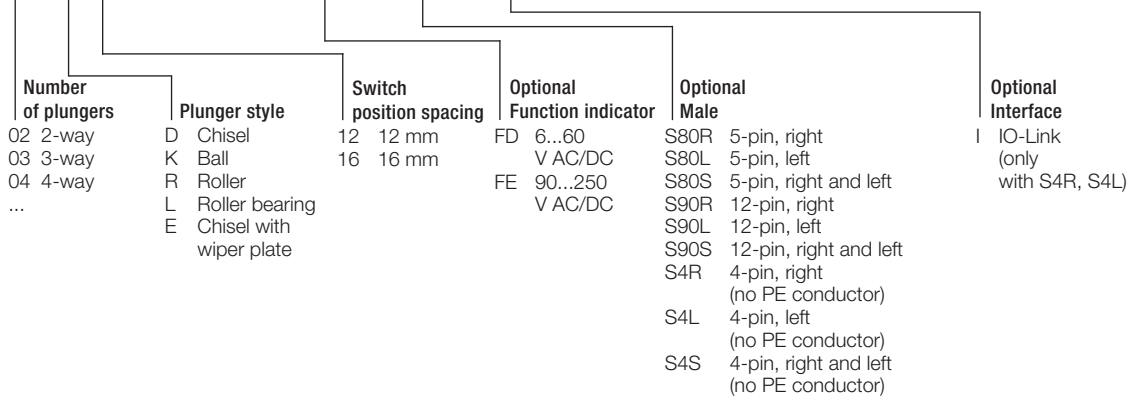


| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|---|----------------------------------|----|----|-----|-----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 70 | 80 | 90 | 105 | 120 | 140 | 170 | 200 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| | Dimension l ₁ = 16 mm | 70 | 90 | 105 | 120 | 140 | 170 | 200 | 240 |
| Number of connectors required for standard wiring | Dimension l ₃ | 88 | 88 | 88 | 88 | 80 | 80 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 20 | 20 | 20 | 20 |
| | S80 or S4 without FD/FE | 1 | 1 | 2 | 2 | 2 | | | |
| | S80 or S4 with FD/FE | 1 | 2 | 2 | 3 | 3 | | | |
| S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

Dimensions in mm

Ordering example:

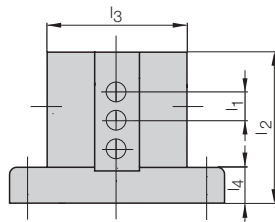
BNS 819-D [] - [] - 100 - 10 - [] - [] - []





| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 62 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 725 |

Available sizes

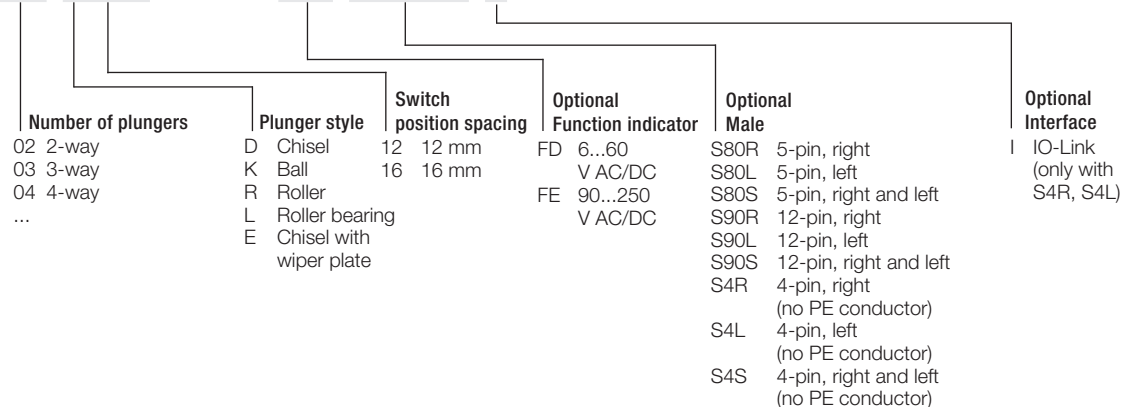


| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------------|----------------------------------|----|----|----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 64 | 72 | 84 | 96 | 112 | 130 | 160 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 88 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 14 | 20 | 20 |
| | Dimension l ₁ = 16 mm | 64 | 84 | 96 | 112 | 130 | 160 | 192 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| Number of connectors | S80 or S4 without FD/FE | 1 | 1 | 2 | 2 | 2 | | |
| | S80 or S4 with FD/FE | 1 | 2 | 2 | 3 | 3 | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 |

Dimensions in mm

Ordering example:

BNS 819-D - - - - **-62-10-** - - - -

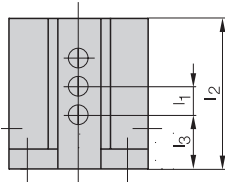




| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 61 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 726 |

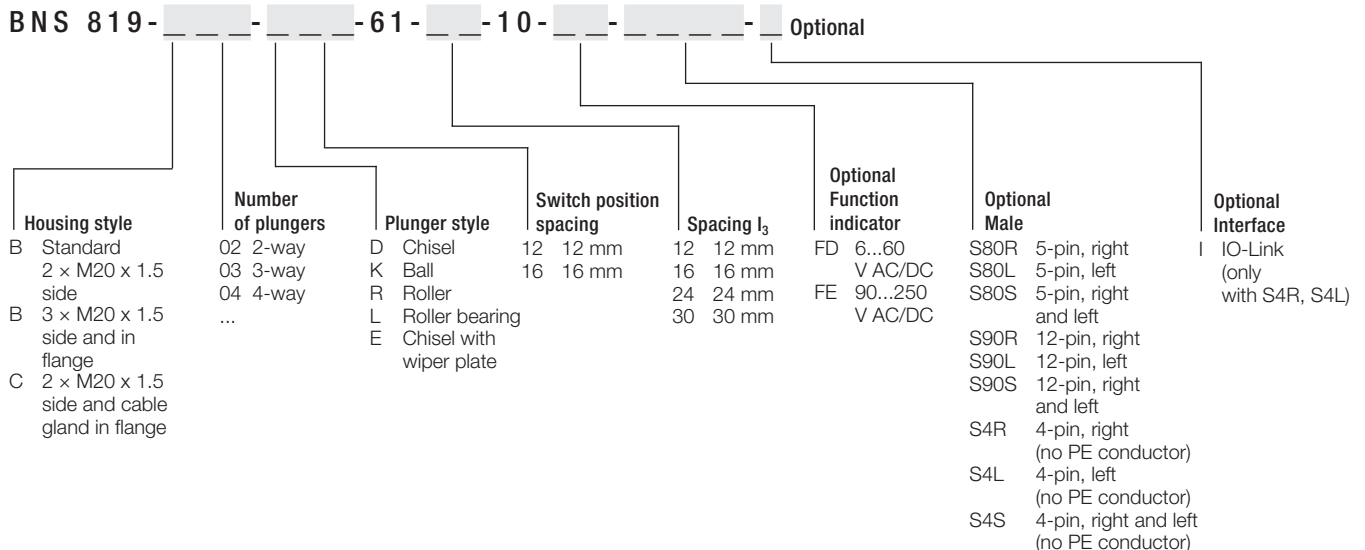
Available sizes

| Number of plungers | Plunger-spacing Dimension | Housing B Standard | | Housing B | | Housing C | | Number of connectors S80 or S4 without FD/FE | No. of connectors S80 or S4 with FD/FE | No. of connectors S90 without FD/FE | Number of connectors S90 with FD/FE |
|--------------------|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|--|--|-------------------------------------|-------------------------------------|
| | | Dimension | Dimension | Dimension | Dimension | Dimension | Dimension | | | | |
| 2 | l ₁ 12 | l ₂ 36 | l ₃ 12 | l ₂ 60 | l ₃ 30 | l ₂ 48 | l ₃ 24 | 1 | 1 | 1 | 1 |
| 3 | 12 | 48 | 12 | 60 | 24 | 60 | 24 | 1 | 2 | 1 | 1 |
| 4 | 12 | 60 | 12 | | | | | 2 | 2 | 1 | 1 |
| 5 | 12 | 72 | 12 | | | | | 2 | 3 | 1 | 1 |
| 6 | 12 | 84 | 12 | | | | | 2 | 3 | 1 | 1 |
| 2 | 16 | 48 | 16 | 60 | 30 | 60 | 30 | 1 | 1 | 1 | 1 |
| 3 | 16 | 72 | 16 | | | | | 1 | 2 | 1 | 1 |
| 4 | 16 | 84 | 16 | | | | | 2 | 2 | 1 | 1 |



Dimensions in mm

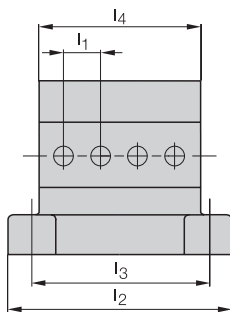
Ordering example:





| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 72 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 726 |

Available sizes

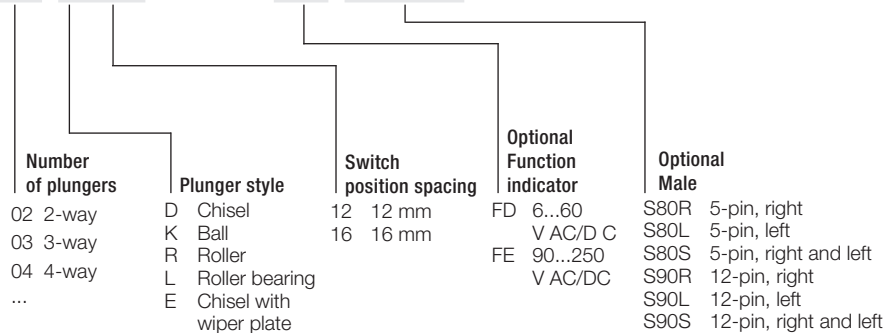


| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|--|-------------------|----|-----|-----|-----|-----|-----|-----|
| Dimension I ₂ with Dimension I ₁ = 12 mm | | 84 | 84 | 100 | 116 | 132 | 164 | 180 |
| Dimension I ₃ with Dimension I ₁ = 12 mm | | 66 | 66 | 82 | 98 | 114 | 146 | 162 |
| Dimension I ₄ with Dimension I ₁ = 12 mm | | 54 | 54 | 68 | 84 | 100 | 132 | 148 |
| Dimension I ₂ with Dimension I ₁ = 16 mm | | 84 | 100 | 116 | 132 | 148 | 180 | 212 |
| Dimension I ₃ with Dimension I ₁ = 16 mm | | 66 | 82 | 98 | 114 | 130 | 162 | 194 |
| Dimension I ₄ with Dimension I ₁ = 16 mm | | 54 | 68 | 84 | 100 | 116 | 148 | 180 |
| Number of connectors | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 | | |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

Dimensions in mm

Ordering example:

BNS 819-B - - - - **-72-10-** - - - -

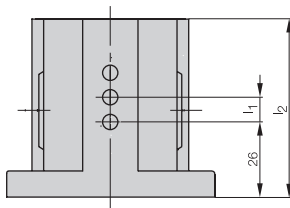




| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 46 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 727 |

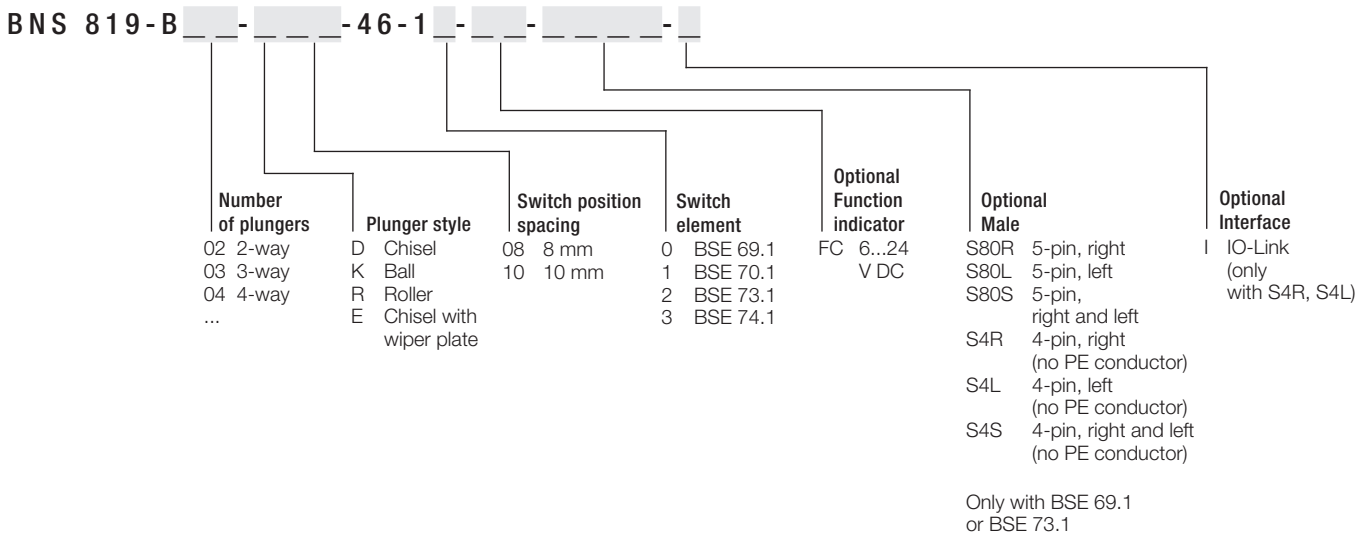
Available sizes

| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|----------------------------------|----------------------------------|----|----|----|----|----|-----|-----|
| Dimension I ₂ with | Dimension I ₁ = 8 mm | 49 | 59 | 64 | 72 | 80 | 96 | 112 |
| | Dimension I ₃ | 54 | 54 | 54 | 54 | 54 | 50 | 50 |
| | Dimension I ₁ = 10 mm | 49 | 59 | 72 | 80 | 89 | 112 | 129 |
| | Dimension I ₃ | 54 | 54 | 54 | 54 | 50 | 50 | 50 |
| Number of connectors | S80 without FC or S4 | 1 | 1 | 2 | 2 | 2 | | |
| | S80 with FC or S4 | 1 | 2 | 2 | 3 | 3 | | |
| | S4 without FC (IO-Link) | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | S4 with FC (IO-Link) | 1 | 1 | 1 | 1 | 1 | 1 | 1 |



Dimensions in mm

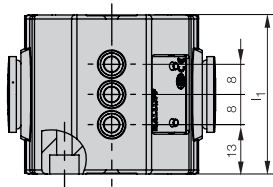
Ordering example:





| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 40 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 727 |

Available sizes

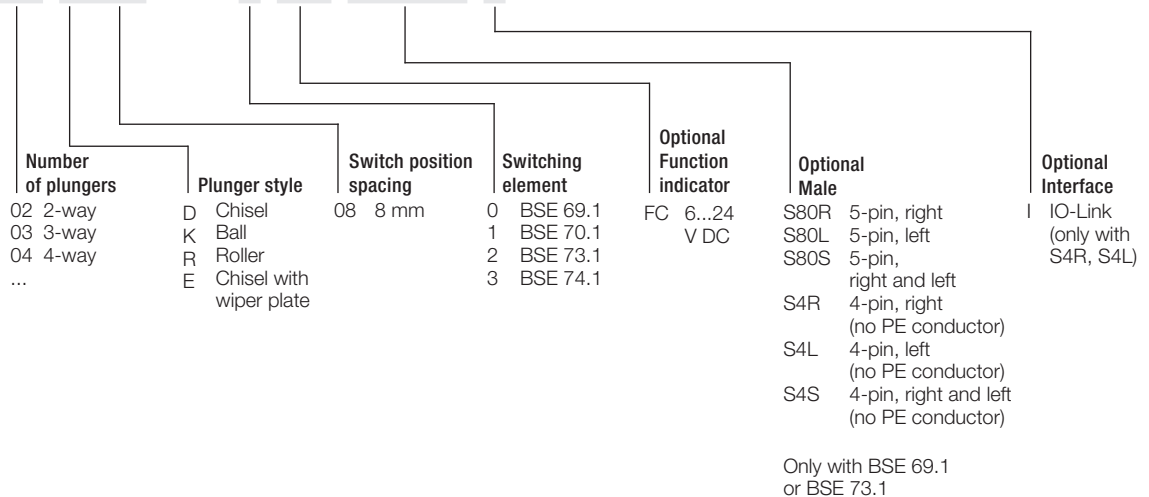


| Number of plungers | | 2 | 3 | 4 | 5 | 6 |
|--------------------------|-------------------------|----|----|----|----|----|
| Dimension L ₁ | | 34 | 42 | 50 | 58 | 66 |
| Number of connectors | S80 without FC or S4 | 1 | 1 | 2 | 2 | 2 |
| | S80 with FC or S4 | 1 | 2 | 2 | | |
| | S4 without FC (IO-Link) | 1 | 1 | 1 | 1 | 1 |
| | S4 with FC (IO-Link) | 1 | 1 | 1 | 1 | 1 |

Dimensions in mm

Ordering example:

BNS 819-B - - - - **-40-1** - - - -



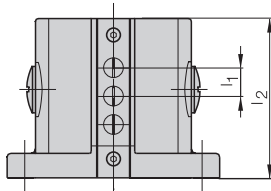


| | |
|--|--|
| Multiple position switches with quick-change plunger block | SERIES 100 COMPLIANT WITH DIN 43697 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 728 |

Available sizes

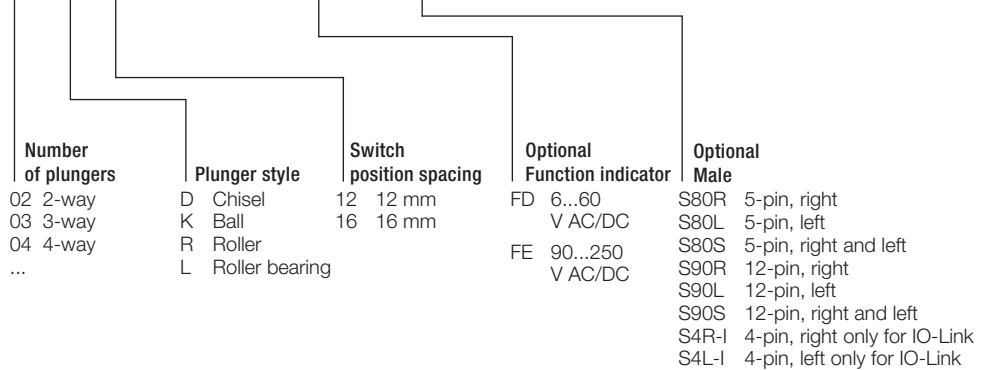
| Number of plungers | | 2 | 3 | 4 | 5 | 6 |
|----------------------|-------------------------|----|----|-----|-----|-----|
| Dimension l_2 with | $l_1 = 12 \text{ mm}$ | 70 | 80 | 90 | 105 | 120 |
| | $l_1 = 16 \text{ mm}$ | 70 | 90 | 105 | 120 | |
| Number of connectors | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 |
| | S4 without FD (IO-Link) | 1 | 1 | 1 | 1 | 1 |
| | S4 with FD (IO-Link) | 1 | 1 | 1 | 1 | 1 |

Dimensions in mm



Ordering example:

BNS 829-D [] - [] - **100-10** - [] - []

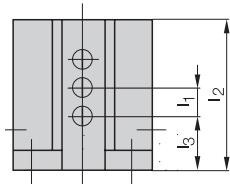




| Multiple position switches with quick-change plunger block | SERIES 61 |
|--|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 728 |

Available sizes

| Number of Plunger | Plunger-spacing Dimension | | Housing B Standard Dimension | | Housing B Dimension | | Housing C Dimension | | Number of connectors S80 without FD/FE | No. of connectors S80 with FD/FE | No. of connectors S90 with or without FD/FE | No. of connectors S4 with or without FD (IO-Link) |
|-------------------|---------------------------|----------------|------------------------------|----------------|---------------------|----------------|---------------------|----|--|----------------------------------|---|---|
| | l ₁ | l ₂ | l ₃ | l ₂ | l ₃ | l ₂ | l ₃ | | | | | |
| 2 | 12 | 36 | 12 | 60 | 30 | 48 | 24 | 60 | 30 | 1 | 1 | 1 |
| 3 | 12 | 48 | 12 | 60 | 24 | 60 | 24 | | | 1 | 2 | 1 |
| 4 | 12 | 60 | 12 | | | | | | | 2 | 2 | 1 |
| 5 | 12 | 72 | 12 | | | | | | | 2 | 3 | 1 |
| 6 | 12 | 84 | 12 | | | | | | | 2 | 3 | 1 |
| 2 | 16 | 48 | 16 | 60 | 30 | 60 | 30 | | | 1 | 1 | 1 |
| 3 | 16 | 72 | 16 | | | | | | | 1 | 2 | 1 |
| 4 | 16 | 84 | 16 | | | | | | | 2 | 2 | 1 |



Dimensions in mm

Ordering example:

BNS 829- - - - -61- - - -10- - - - -

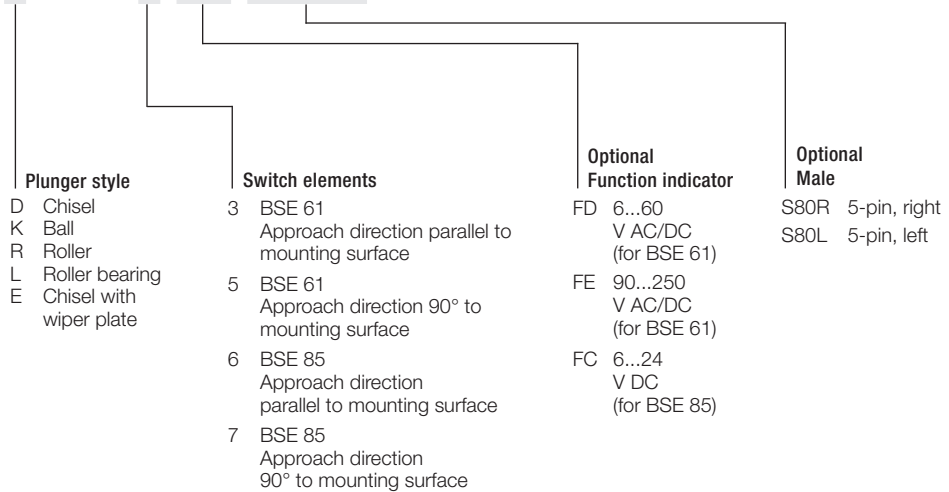
| Housing style | Number of plungers | Plunger style | Switch position spacing | Spacing l ₃ | Optional Function indicator | Optional Male |
|--|--------------------|------------------|-------------------------|------------------------|-----------------------------|-------------------------------------|
| B Standard 2 × M20 x 1.5 side | 02 2-way | D Chisel | 12 12 mm | 12 12 mm | FD 6...60 V AC/DC | S80R 5-pin, right |
| B 3 × M20 x 1.5 side and in flange | 03 3-way | K Ball | 16 16 mm | 16 16 mm | FE 90...250 V AC/DC | S80L 5-pin, left |
| C 2 × M20 x 1.5 side and cable gland in flange | 04 4-way | R Roller | | 24 24 mm | | S80S 5-pin, right and left |
| | ... | L Roller bearing | | 30 30 mm | | S90R 12-pin, right |
| | | | | | | S90L 12-pin, left |
| | | | | | | S90S 12-pin, right and left |
| | | | | | | S4R-I 4-pin, right only for IO-Link |
| | | | | | | S4L-I 4-pin, left only for IO-Link |



| | |
|--|--|
| Position switches with safety switch positions | SERIES F 60 COMPLIANT WITH DIN 43693 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 732 |

Ordering example:

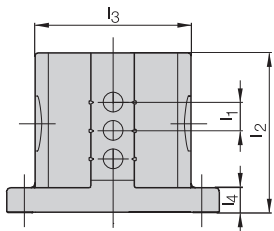
BNS 813-F **-60-18**





| | |
|---|--|
| Multiple position limit switches with safety switch positions | SERIES 100 COMPLIANT WITH DIN 43697 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 729 |

Available sizes



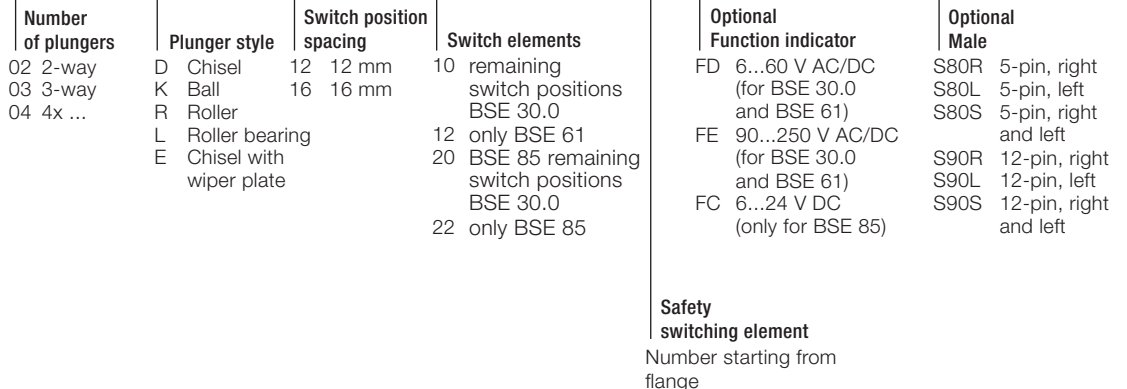
| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|-------------------------------|----------------------------------|----|----|-----|-----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 70 | 80 | 90 | 105 | 120 | 140 | 170 | 200 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| | Dimension l ₁ = 16 mm | 70 | 90 | 105 | 120 | 140 | 170 | 200 | 240 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 80 | 80 | 80 | 80 |
| No. of connectors * | Dimension l ₄ | 14 | 14 | 14 | 14 | 20 | 20 | 20 | 20 |
| | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 | | | |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 | | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

BNS 813-D [] - [] - **100** - [] - [] - [] - []

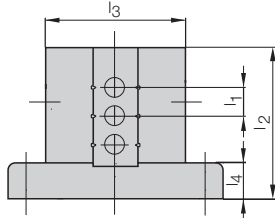




| Multiple position limit switches with safety switch positions | SERIES 62 |
|---|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 730 |

Available sizes

| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------------|----------------------------------|----|----|----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 64 | 72 | 84 | 96 | 112 | 130 | 160 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 88 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 14 | 20 | 20 |
| | Dimension l ₁ = 16 mm | 64 | 84 | 96 | 112 | 130 | 160 | 192 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| No. of connectors * | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 | | |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

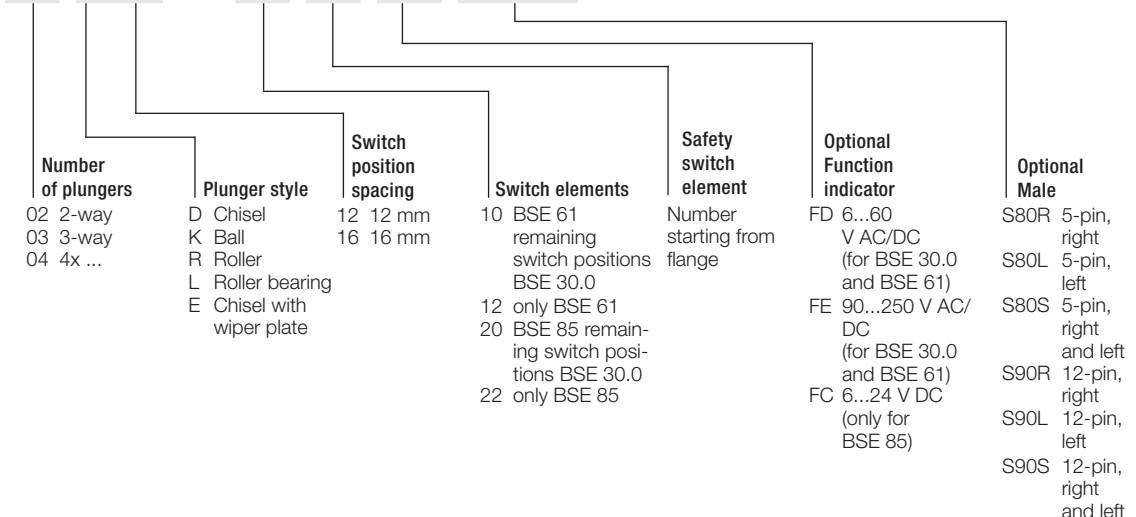


Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

BNS 813-D - - - - 62 - - - - -

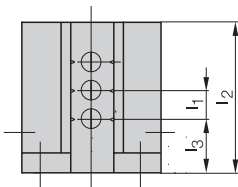




| Multiple position limit switches with safety switch positions | SERIES 61 |
|---|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 730 |

Available sizes

| Number of Plunger | Plunger-spacing Dimension | Housing B Standard Dimension | | Housing B Dimension | | Housing C Dimension | | No. of connectors * S80 without FD/FE | No. of connectors * S80 with FD/FE | No. of connectors * S90 without FD/FE | No. of connectors * S90 with FD/FE |
|-------------------|---------------------------|------------------------------|----------------|---------------------|----------------|---------------------|----------------|---------------------------------------|------------------------------------|---------------------------------------|------------------------------------|
| | | l ₂ | l ₃ | l ₂ | l ₃ | l ₂ | l ₃ | | | | |
| 2 | 12 | 36 | 12 | 60 | 30 | 48 | 24 | 1 | 1 | 1 | 1 |
| 3 | 12 | 48 | 12 | 60 | 24 | 60 | 24 | 1 | 2 | 1 | 1 |
| 4 | 12 | 60 | 12 | | | | | 2 | 2 | 1 | 1 |
| 5 | 12 | 72 | 12 | | | | | 2 | 3 | 1 | 1 |
| 6 | 12 | 84 | 12 | | | | | 2 | 3 | 1 | 1 |
| 2 | 16 | 48 | 16 | 60 | 30 | 60 | 30 | 1 | 1 | 1 | 1 |
| 3 | 16 | 72 | 16 | | | | | 1 | 2 | 1 | 1 |
| 4 | 16 | 84 | 16 | | | | | 2 | 2 | 1 | 1 |

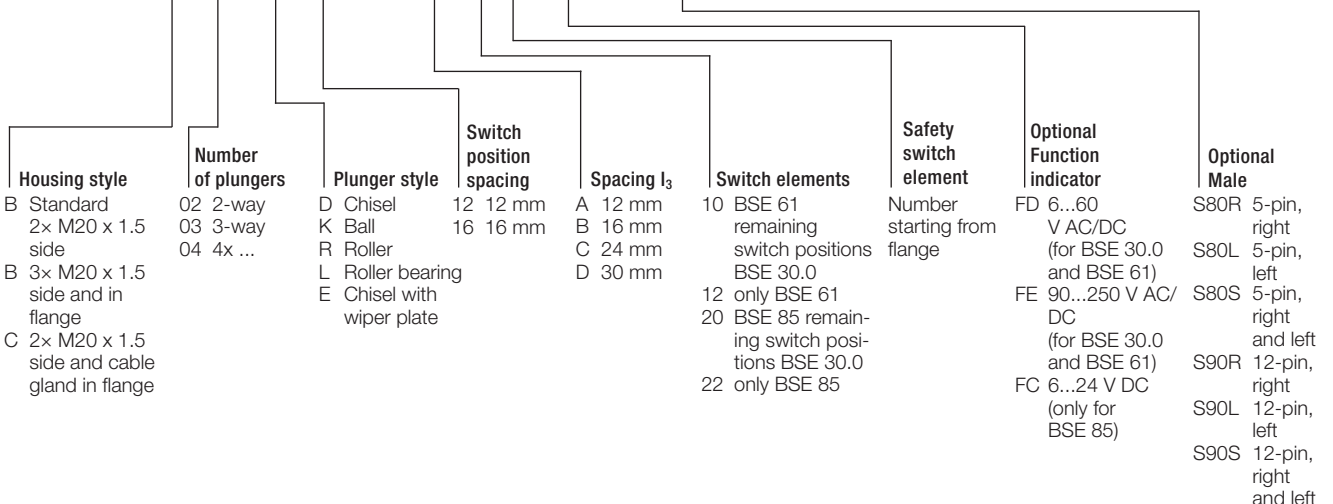


Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

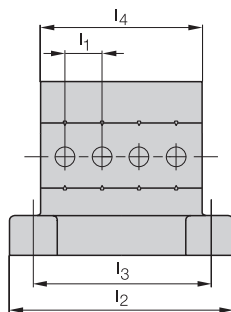
BNS 813 - [] - [] - **61** - [] - [] - [] - []





| Multiple position limit switches with safety switch positions | SERIES 72 |
|---|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 731 |

Available sizes



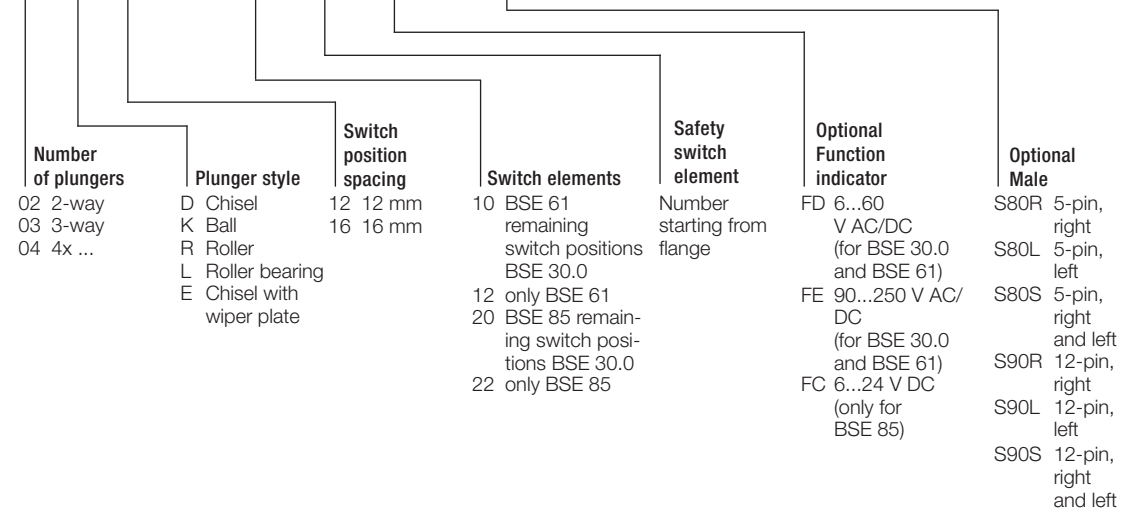
| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|--|-------------------|----|-----|-----|-----|-----|-----|-----|
| Dimension I ₂ with I ₁ = 12 mm | | 84 | 84 | 100 | 116 | 132 | 164 | 180 |
| Dimension I ₃ with I ₁ = 12 mm | | 66 | 66 | 82 | 98 | 114 | 146 | 162 |
| Dimension I ₄ with I ₁ = 12 mm | | 54 | 54 | 68 | 84 | 100 | 132 | 148 |
| Dimension I ₂ with I ₁ = 16 mm | | 84 | 100 | 116 | 132 | 148 | 180 | 212 |
| Dimension I ₃ with I ₁ = 16 mm | | 66 | 82 | 98 | 114 | 130 | 162 | 194 |
| Dimension I ₄ with I ₁ = 16 mm | | 54 | 68 | 84 | 100 | 116 | 148 | 180 |
| No. of connectors * | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 | | |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 |

Dimensions in mm

* No. of connectors with BSE 85 on request.

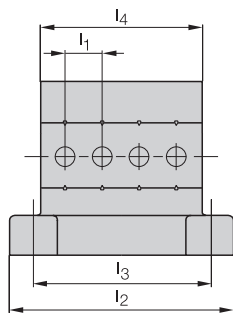
Ordering example:

BNS 813-B - - - - 72 - - - - -





| | |
|--|--|
| Multiple position limit switches with safety switch positions and quick-change plunger block | SERIES 100 COMPLIANT WITH DIN 43697 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 731 |



Available sizes

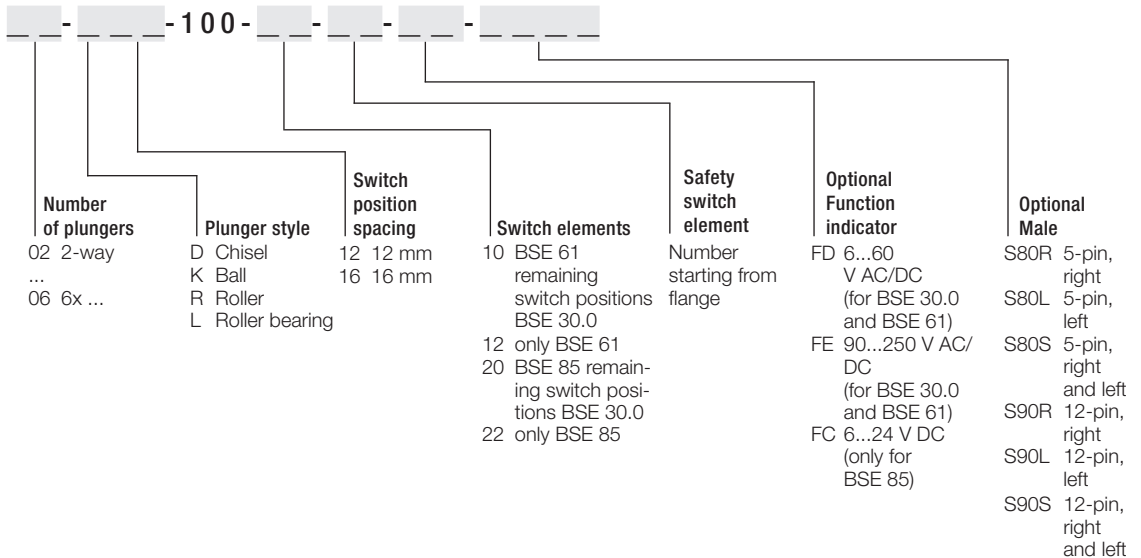
| Number of plungers | | 2 | 3 | 4 | 5 | 6 |
|----------------------|-------------------|----|----|-----|-----|-----|
| Dimension l_2 with | $l_1 = 12$ mm | 70 | 80 | 90 | 105 | 120 |
| | $l_1 = 16$ mm | 70 | 90 | 105 | 120 | |
| No. of connectors * | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 |

Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

BNS 823-D

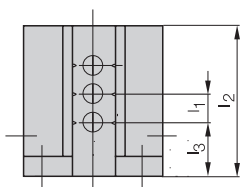




| Multiple position limit switches with safety switch positions | SERIES 61 |
|---|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 732 |

Available sizes

| Number of Plunger | Plunger-spacing Dimension | Housing B Standard | | Housing B | | Housing C | | No. of connectors * S80 without FD/FE | No. of connectors * S80 with FD/FE | No. of connectors * S90 without FD/FE | No. of connectors * S90 with FD/FE |
|-------------------|------------------------------|--------------------|-----------|-----------|-----------|-----------|-----------|--|---------------------------------------|--|---------------------------------------|
| | | Dimension | Dimension | Dimension | Dimension | Dimension | Dimension | | | | |
| 2 | 12 | 36 | 12 | 60 | 30 | 48 | 24 | 1 | 1 | 1 | 1 |
| 3 | 12 | 48 | 12 | 60 | 24 | 60 | 24 | 1 | 2 | 1 | 1 |
| 4 | 12 | 60 | 12 | | | | | 2 | 2 | 1 | 1 |
| 5 | 12 | 72 | 12 | | | | | 2 | 3 | 1 | 1 |
| 6 | 12 | 84 | 12 | | | | | 2 | 3 | 1 | 1 |
| 2 | 16 | 48 | 16 | 60 | 30 | 60 | 30 | 1 | 1 | 1 | 1 |
| 3 | 16 | 72 | 16 | | | | | 1 | 2 | 1 | 1 |
| 4 | 16 | 84 | 16 | | | | | 2 | 2 | 1 | 1 |

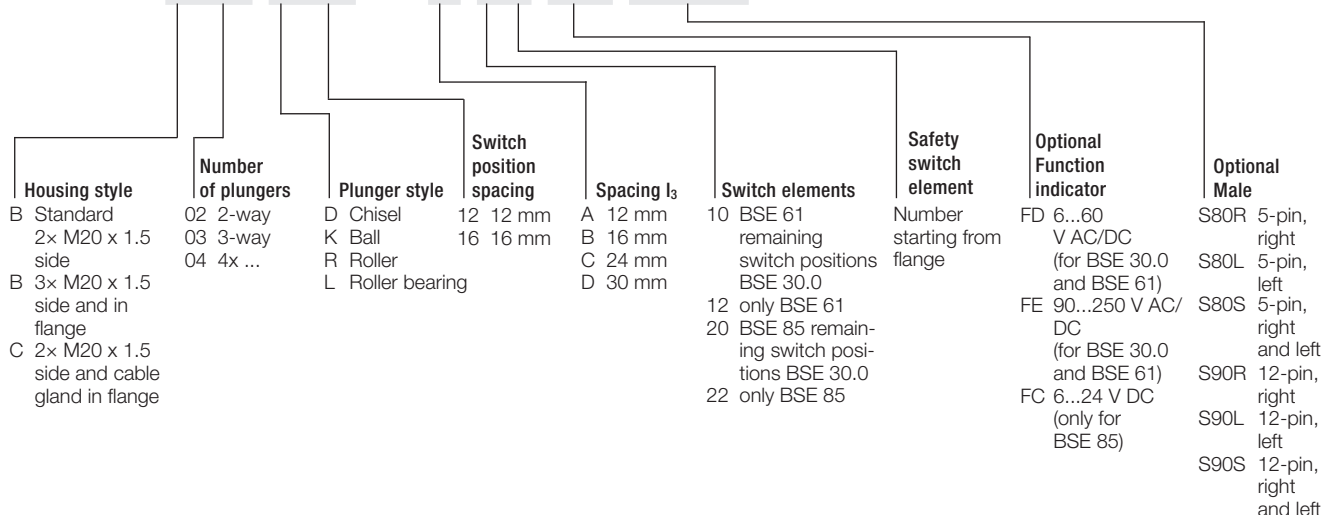


Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

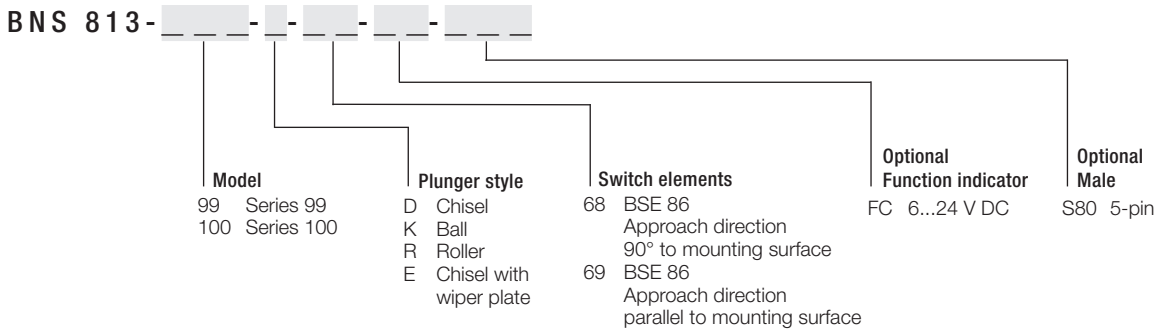
BNS 823 - [] - [] - 61 - [] - [] - []





| | |
|---|--|
| Position switches with positive opening | SERIES 99 AND 100 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | Cable gland (M12 x 1.5 Series 99, M16 x 1.5 Series 100) or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 732 |

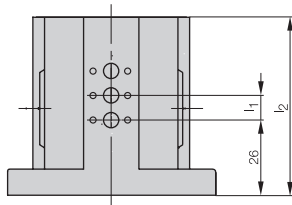
Ordering example:





| | |
|--|--|
| Multiple position limit switches with positive opening | SERIES 46 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 733 |

Available sizes

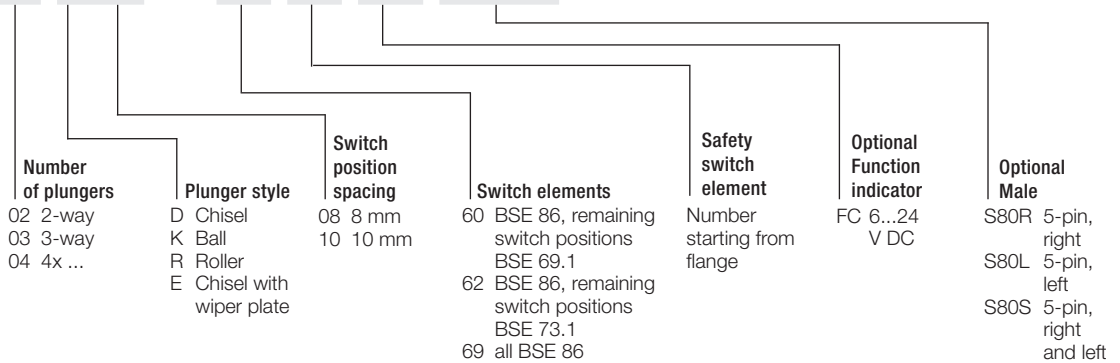


| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------------|----------------------------------|----|----|----|----|----|-----|-----|
| Dimension I ₂ with | Dimension I ₁ = 8 mm | 49 | 59 | 64 | 72 | 80 | 96 | 112 |
| | Dimension I ₃ | 54 | 54 | 54 | 54 | 54 | 50 | 50 |
| | Dimension I ₁ = 10 mm | 49 | 59 | 72 | 80 | 89 | 112 | 129 |
| | Dimension I ₃ | 54 | 54 | 54 | 54 | 50 | 50 | 50 |
| Number of connectors | S80 without FC | 1 | 1 | 2 | 2 | 2 | 3 | 3 |
| | S80 with FC | 1 | 2 | 2 | 3 | 3 | | |

Dimensions in mm
Size 12-x with 8 mm spacing on request.

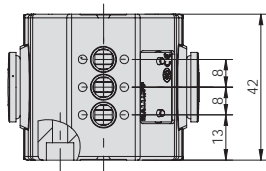
Ordering example:

BNS 813-B [] - [] - **46** - [] - [] - [] - []





| Position switch with positive opening | SERIES 40 |
|---------------------------------------|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 733 |



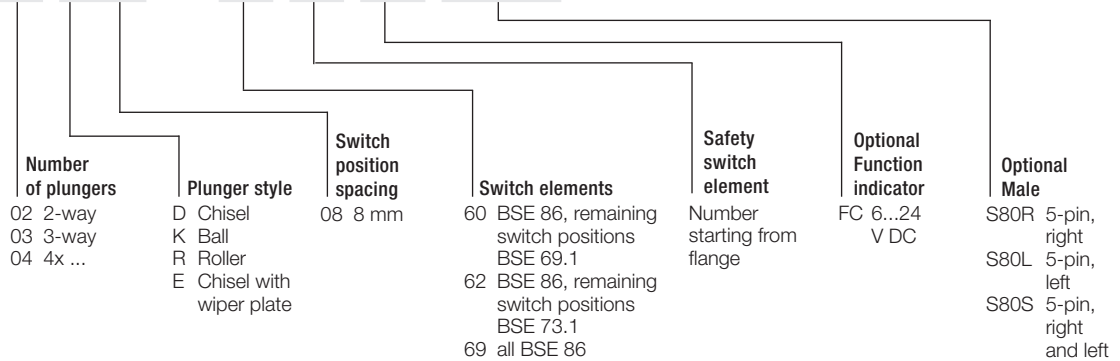
Available sizes

| Number of plungers | 2 | 3 | 4 | 5 | 6 |
|--------------------------|----|----|----|----|----|
| Dimension I ₁ | 34 | 42 | 50 | 58 | 66 |
| S80 without FC | 1 | 1 | 2 | 2 | 2 |
| S80 with FC | 1 | 2 | 2 | | |

Dimensions in mm

Ordering example:

BNS 813-B - - - - **40** - - - - -

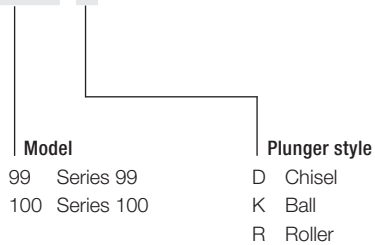




| | |
|---------------------------------------|--|
| High-temperature position switches | SERIES 99 AND 100 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M12 x 1.5 or M16 x 1.5 for cable gland |
| Ambient temperature | -5...+150 °C (-5...+180 °C 10 h/day) |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 734 |

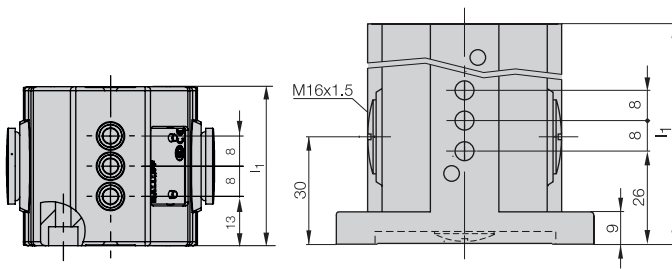
Ordering example:

BNS 819- - -15





| High-temperature position switches | SERIES 46 AND 40 |
|---------------------------------------|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M12 x 1.5 or M16 x 1.5 for cable gland |
| Ambient temperature | -5...+150 °C (-5...+180 °C 10 h/day) |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 734 |



Available sizes

| Number of plungers | 2 | 3 |
|--------------------------|----|----|
| Dimension I ₁ | 49 | 59 |

Dimensions in mm

Ordering example:

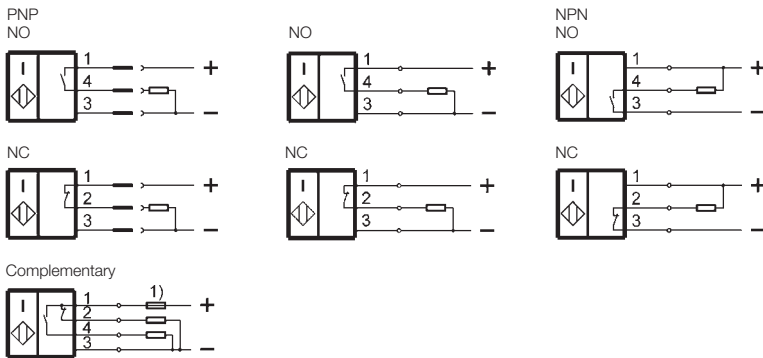
BNS 819-B - **08** - **15**

| Number of plungers | Plunger style | Model |
|--------------------|---------------|-------|
| 02 2-way | D Chisel | 40 |
| 03 3-way | K Ball | 46 |
| | R Roller | |



| | | | |
|------------------------------|---------------------------------------|--|--|
| PNP NO | BES01FE BES 516-346-H2-Y-S4 | BES01FF BES 516-346-H2-Y-S49 | |
| PNP NC | BES01EW BES 516-341-H2-Y-S4 | | |
| PNP changeover | | | |
| NPN NO | | | |
| NPN NC | | | |
| Dimension | 54 x 22 x 48 mm | 54 x 22 x 48 mm | |
| Design | block style | block style | |
| Installation | Flush | Flush | |
| Range | 5 mm | 5 mm | |
| Switching frequency | 500 Hz | 500 Hz | |
| Housing material | Aluminum | Aluminum | |
| Sensing surface, material | PA 12 | PA 12 | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...+70 °C | -25...+70 °C | |
| Degree of protection | IP67 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
| Productview and installation | Page 735 | Page 735 | |

Wiring diagrams





| | | |
|------------------------------------|------------------------------------|--|
| BES01FC BES 516-346-H2-Y | | |
| BES01EU BES 516-341-H2-Y | | |
| | BES017M BES 516-161-H3-L | |
| BES01ZK BES 516-344-H2-Y | | |
| BES01ET BES 516-340-H2-Y | | |
| 54 x 22 x 48 mm | 74 x 28 x 60.5 mm | |
| block style | block style | |
| Flush | Flush | |
| 5 mm | 7 mm | |
| 500 Hz | 300 Hz | |
| Aluminum | Aluminum | |
| PA 12 | PA 12 | |
| Screw terminal | Screw terminal | |
| 10...30 VDC | 10...30 VDC | |
| -25...+70 °C | -25...+70 °C | |
| IP67 | IP67 | |
| CE, EAC | CE, EAC | |
| Page 735 | Page 735 | |

Sensors

RFID

Machine Vision and
Optical Identification

Human Machine
Interfaces

Systems

Safety

Industrial Networking

Power Supplies

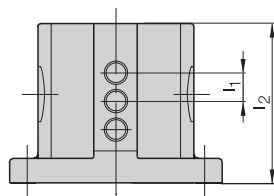
Connectivity

Accessories



| | |
|---------------------------------------|---|
| Inductive multiple position switches | SERIES 602-11 COMPLIANT WITH DIN 43697 |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 735 |

Available sizes



| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|-------------------------------|--|------------|----|-----|-----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 70 | 80 | 90 | 105 | 120 | 140 | 170 | 200 |
| | Dimension l ₄ | 88 | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| | Dimension l ₅ | 14 | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| | Dimension l ₁ = 16 mm | 70 | 90 | 105 | 120 | 140 | 170 | 200 | 240 |
| | Dimension l ₄ | 88 | 88 | 88 | 88 | 80 | 80 | 80 | 80 |
| | Dimension l ₅ ! | 14 | 14 | 14 | 14 | 20 | 20 | 20 | 20 |
| Number of connectors | S80 | on request | | | | | | | |
| | S90 | on request | | | | | | | |
| Dimension l ₃ | 4 mm for inductive switch elements with sensing head 10 mm | | | | | | | | |
| | 2 mm for inductive switch elements with sensing head 15.5 mm | | | | | | | | |

Dimensions in mm

Ordering example:

BNS 816-B [] - [] - [] - **602-11** - []

Number of plungers
02 2-way
03 3-way
04 4x ...

Code for switch elements
(see table Seite 35)

Switch position spacing
12 12 mm
16 16 mm

Optional Male
S80R 5-pin, right
S80L 5-pin, left
S80S 5-pin, right and left
S90R 12-pin, right
S90L 12-pin, left
S90S 12-pin, right and left



| | |
|---------------------------------------|---|
| Inductive multiple position switches | BNS 816-B - - - - -610/611/612/613-11- - - - |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 736 |

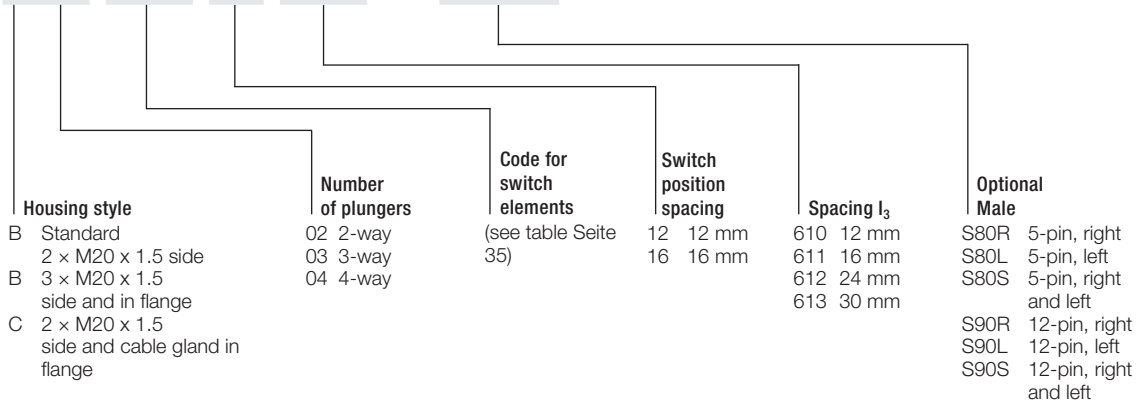
Available sizes

| Number of switch-positions | Number of Male S80/S90 | Switch-position-spacing Dimension | Series 610 Housing B Standard Dimension | | Series 611 Housing B Standard Dimension | | Series 612 Housing B Dimension | | Series 612 Housing C Dimension | | Series 613 Housing B Dimension | | Series 613 Housing C Dimension | |
|----------------------------|------------------------|-----------------------------------|---|-------|---|-------|--------------------------------|-------|--------------------------------|-------|--------------------------------|-------|--------------------------------|-------|
| | | | l_2 | l_3 | l_2 | l_3 | l_2 | l_3 | l_2 | l_3 | l_2 | l_3 | l_2 | l_3 |
| 2 | on request | l_1 | 36 | 12 | | | | | 48 | 24 | | | 60 | 30 |
| 3 | | 12 | 48 | 12 | | | 60 | 24 | 60 | 24 | | | | |
| 4 | | 12 | 60 | 12 | | | | | | | | | | |
| 5 | | 12 | 72 | 12 | | | | | | | | | | |
| 6 | | 12 | 84 | 12 | | | | | | | | | | |
| 2 | | | 16 | | | 48 | 16 | | | | | 60 | 30 | |
| 3 | | 16 | | | 72 | 16 | | | | | | | | |
| 4 | | 16 | | | 84 | 16 | | | | | | | | |

Dimensions in mm
 Dimension $l_4 = 4$ mm for inductive switch elements with sensing head $\varnothing 10$ mm
 Dimension $l_4 = 2$ mm for inductive switch elements with sensing head $\varnothing 15.5$ mm

Ordering example:

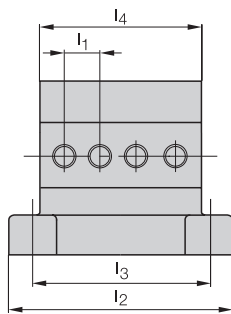
BNS 816- - - - -11- - - -





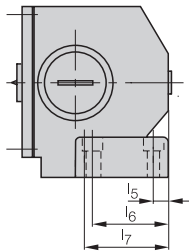
| | |
|---------------------------------------|---|
| Inductive multiple position switches | SERIES 605-11 |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 736 |

Available sizes



| Number of switching positions | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 |
|-------------------------------|----------------------------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 84 | 84 | 100 | 116 | 132 | 148 | 164 | 180 | |
| Dimension l ₃ with | Dimension l ₁ = 12 mm | 66 | 66 | 82 | 98 | 114 | 130 | 146 | 162 | |
| Dimension l ₄ with | Dimension l ₁ = 12 mm | 54 | 54 | 68 | 84 | 100 | 164 | 132 | 148 | |
| Dimension l ₂ with | Dimension l ₁ = 16 mm | 84 | 100 | 116 | 132 | 148 | 146 | 180 | 212 | 224 |
| Dimension l ₃ with | Dimension l ₁ = 16 mm | 66 | 82 | 98 | 114 | 130 | 132 | 162 | 194 | 226 |
| Dimension l ₄ with | Dimension l ₁ = 16 mm | 54 | 68 | 84 | 100 | 116 | | 148 | 180 | 212 |
| Number of connectors | S80 | on request | | | | | | | | |
| | S90 | on request | | | | | | | | |

Dimensions in mm



| Dimensions when using inductive switch elements with sensing head Ø 10 mm | | Dimensions when using inductive switch elements with sensing head Ø 15.5 mm | |
|---|---------|---|---------|
| Dimension l ₂ | 10 mm | Dimension l ₂ | 8 mm |
| Dimension l ₃ | 40 mm | Dimension l ₃ | 38 mm |
| Dimension l ₄ | 43.5 mm | Dimension l ₄ | 41.5 mm |

Dimensions in mm

Ordering example:

BNS 816-B - - - - **605-11** - - - -

Number of plungers
 02 2-way
 03 3-way
 04 4x ...

Code for switch elements
 (see table 7315)

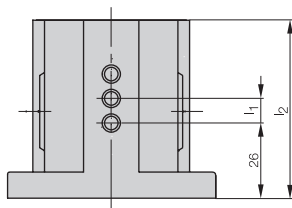
Switch position spacing
 12 12 mm
 16 16 mm

Optional Male
 S80R 5-pin, right
 S80L 5-pin, left
 S80S 5-pin, right and left
 S90R 12-pin, right
 S90L 12-pin, left
 S90S 12-pin, right and left



| Inductive multiple position switches | SERIES 603-11 |
|---------------------------------------|---|
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 737 |

Available sizes

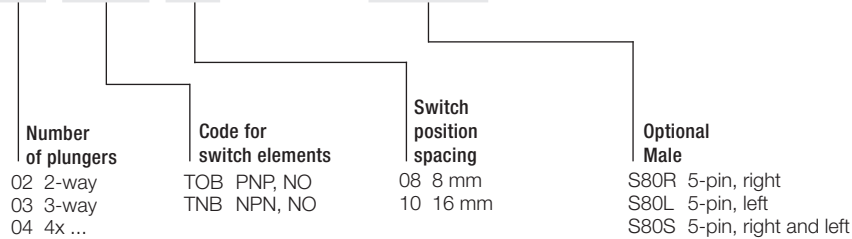


| Number of switching positions | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------------|-------------------------|----|----|----|----|----|-----|-----|
| Dimension l_2 with | Dimension $l_1 = 8$ mm | 49 | 59 | 64 | 72 | 80 | 96 | 112 |
| | Dimension $l_3 =$ | 54 | 54 | 54 | 54 | 54 | 50 | 50 |
| | Dimension $l_1 = 10$ mm | 49 | 59 | 72 | 80 | 89 | 112 | 129 |
| | Dimension $l_3 =$ | 54 | 54 | 54 | 54 | 50 | 50 | 50 |
| Number of connectors | S80 on request | | | | | | | |

Dimensions in mm
Size 12-x with 8 mm spacing on request.

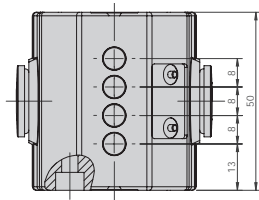
Ordering example:

BNS 816-B - - - - **-603-11-** - - - -





| | |
|---------------------------------------|---|
| Inductive multiple position switches | SERIES 650-11 |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 737 |



Available sizes

| | | | | | |
|----------------------------------|----|----|----|----|----|
| Number of switching positions | 2 | 3 | 4 | 5 | 6 |
| Dimension I ₁ | 34 | 42 | 50 | 58 | 66 |
| No. of connectors S80 on request | | | | | |

Dimensions in mm

Ordering example:

BNS 816-B - - - - - **-650-11-** - - - - -

Number of plungers
02 2-way
03 3-way
04 4x ...

Code for switch elements
TOB PNP, NO
TNB NPN, NO

Switch position spacing
08 8 mm

Optional Male
S80R 5-pin, right
S80L 5-pin, left
S80S 5-pin, right and left

Inductive switch elements with sensing head Ø 10 mm, for use with switch position spacing 12 and 16 mm

| Code | Order code for spare switch elements | Electrical version | Rated-switching distance s_n | Assured switching distance s_a |
|------|--------------------------------------|--|--------------------------------|----------------------------------|
| PA | BES 517-110 | PNP, changeover, 10...60 V DC, short-circuit protected | 2 mm | 0...1.6 mm |
| NA | BES 517-108 | NPN, changeover, 10...60 V DC, short-circuit protected | 2 mm | 0...1.6 mm |
| WS | BES 517-410 | NO, up to 250 V AC | 2 mm | 0...1.6 mm |
| WO | BES 517-421 | NC, up to 250 V AC | 2 mm | 0...1.6 mm |
| KHG | BES 517-560-H | 2-wire, NO, 10...55 V DC, short-circuit protected | 2 mm | 0...1.6 mm |
| KHH | BES 517-561-H | 2-wire, NC, 10...55 V DC, short-circuit protected | 2 mm | 0...1.6 mm |
| NG | BES 516-314-N | 2-wire, NAMUR, 7.7...9 V DC | 2 mm | 0...1.6 mm |

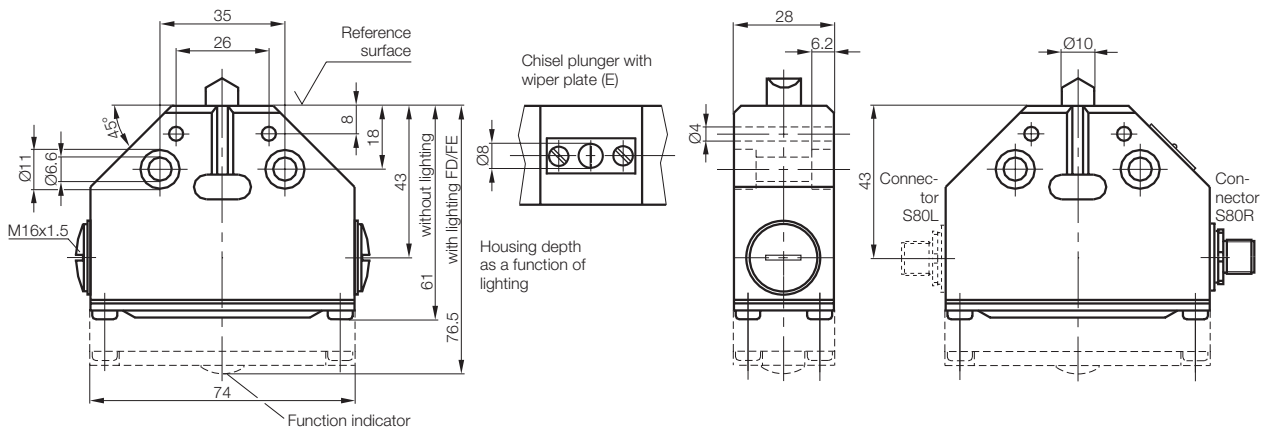
Inductive switch elements with sensing head Ø 15.5 mm, for use with switch position spacing 16 mm

| Code | Order code for spare switch elements | Electrical version | Rated-switching distance s_n | Assured switching distance s_a |
|------|--------------------------------------|--|--------------------------------|----------------------------------|
| THA | BES 517-142-Y | PNP, changeover, 10...30 V DC, short-circuit protected | 5 mm | 0...4 mm |
| EJA | BES 517-463 | NO, up to 250 V AC | 5 mm | 0...4 mm |
| AAA | BES 517-464 | NC, up to 250 V AC | 5 mm | 0...4 mm |

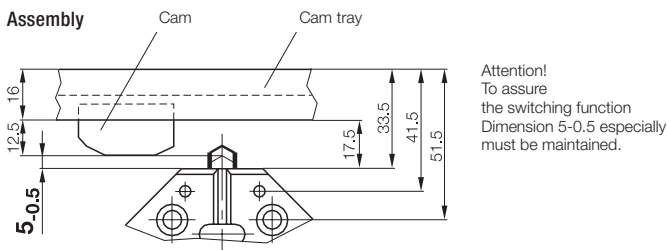
Hybrid switch element with mechanical plunger and inductive processing

| Code | Order code for spare switch elements | Electrical version | Rated-switching distance s_n | Assured switching distance s_a |
|------|--------------------------------------|-------------------------------|--------------------------------|----------------------------------|
| DH | BES 516-110-D | PNP, changeover, 10...30 V DC | More information on request! | |

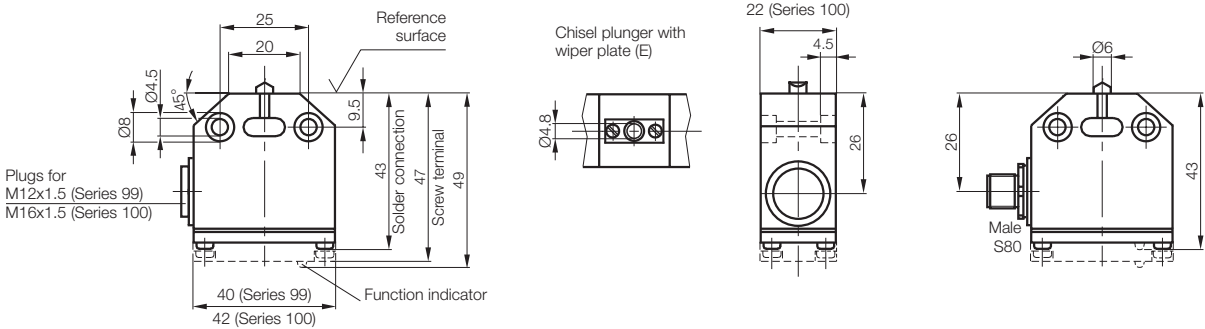
Position switch Series F60 compliant with DIN 43693



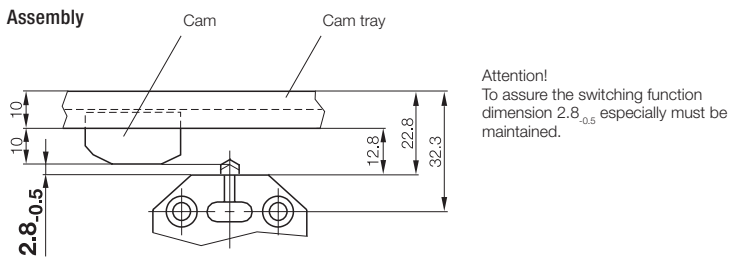
Assembly



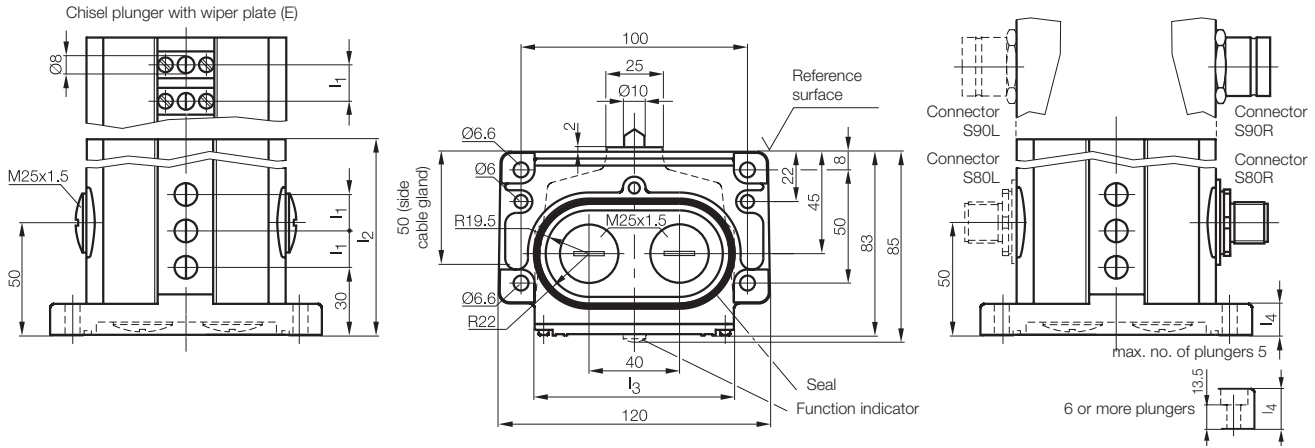
Position switch Series 99 and 100



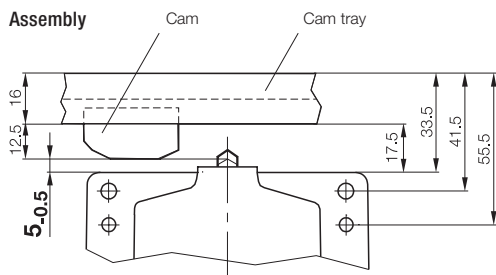
Assembly



Multiple position switches 100 compliant with DIN 43697

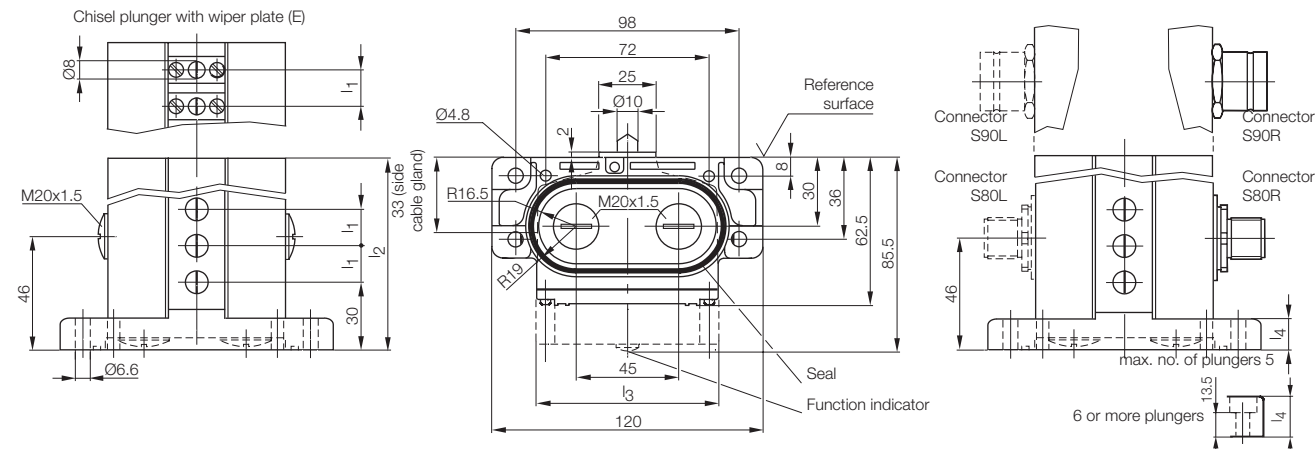


Assembly

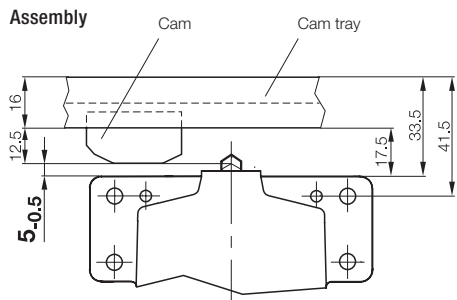


Attention!
To assure the switching function dimension 5_{-0.5} especially must be maintained.

Series 62 multiple position switch

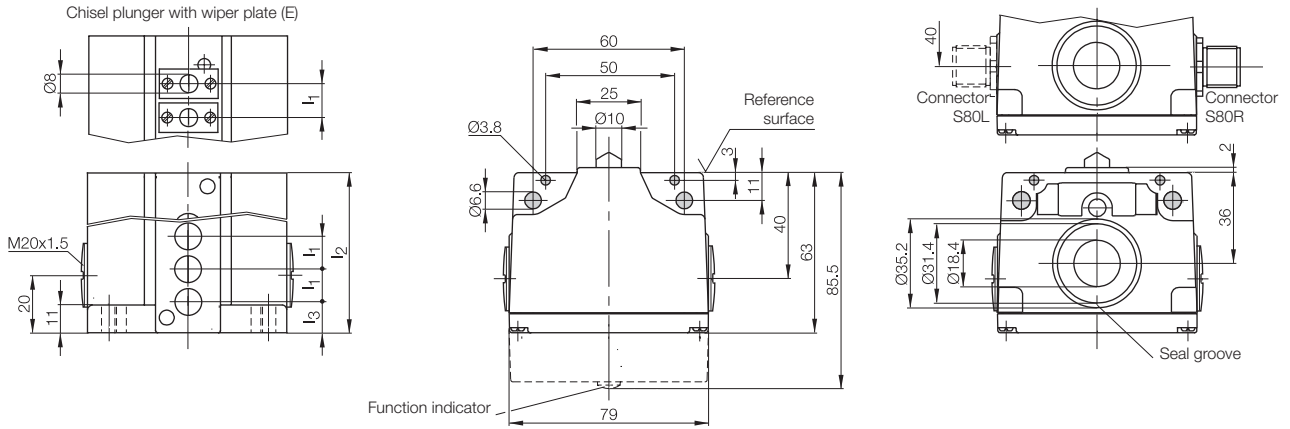


Assembly

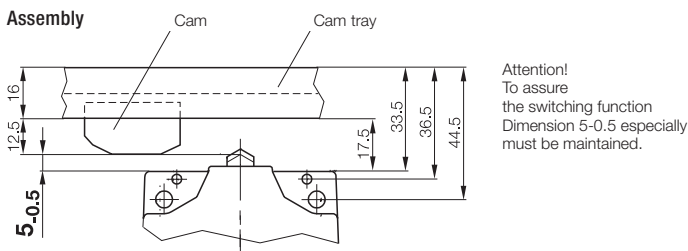


Attention!
To assure the switching function Dimension 5-0.5 especially must be maintained.

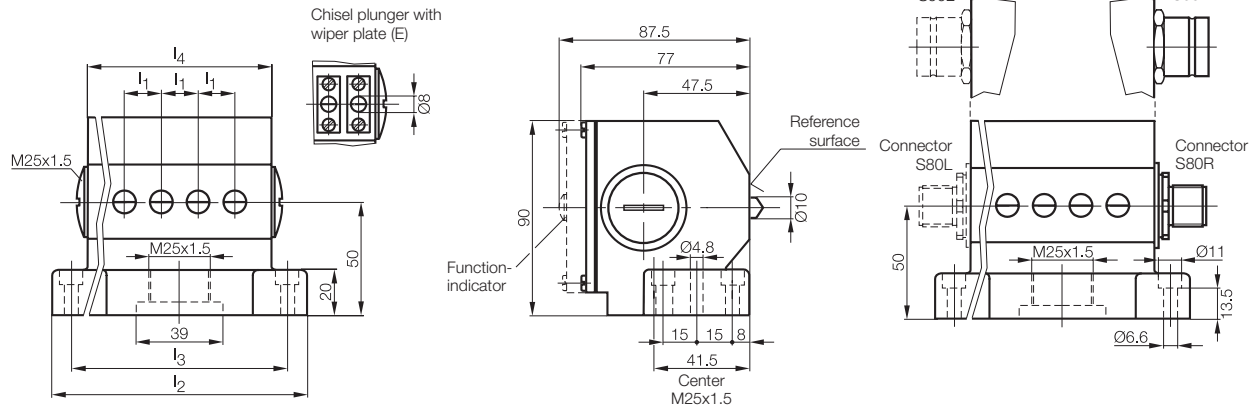
Series 61 multiple position switch



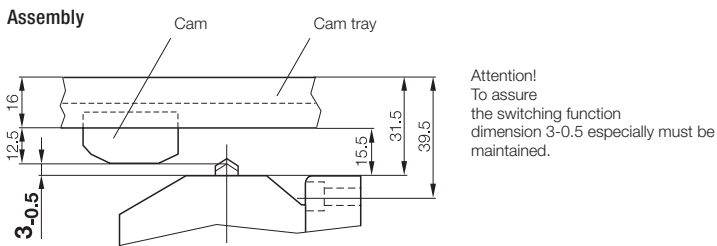
Assembly



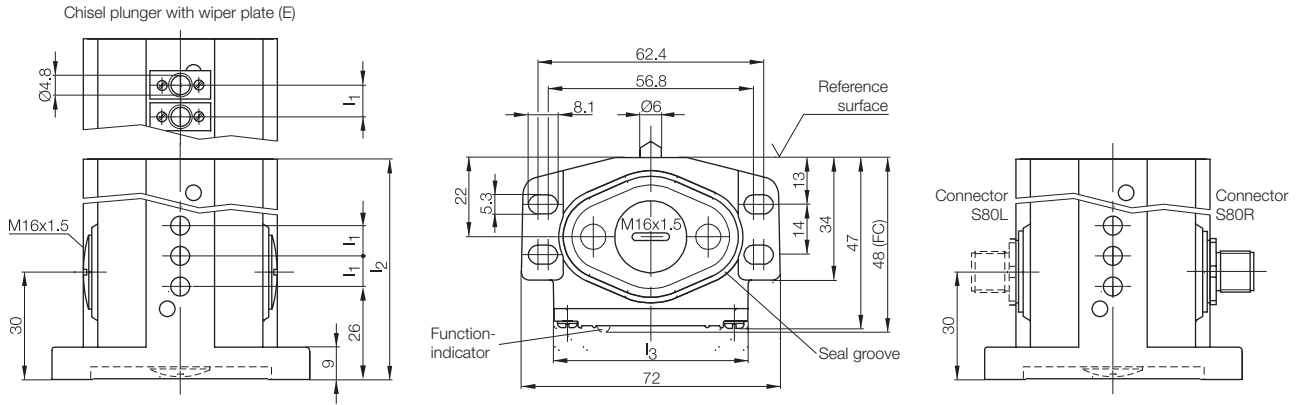
Series 72 multiple position switch



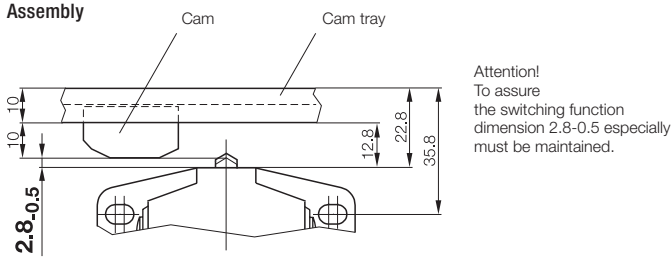
Assembly



Series 46 multiple position switch

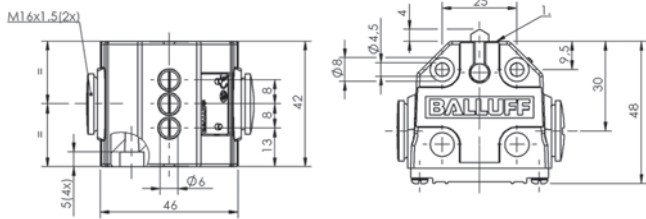


Assembly



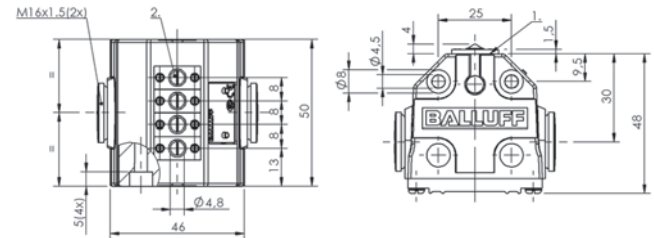
Series 40 multiple position switch

Standard:



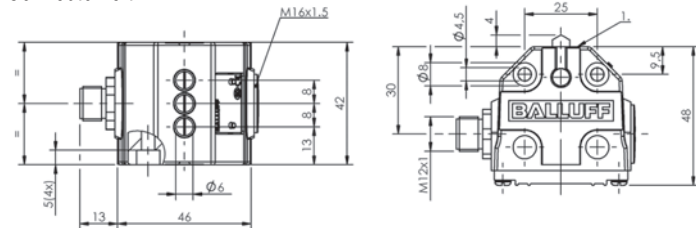
1) Reference edge

Chisel plunger with wiper plate:



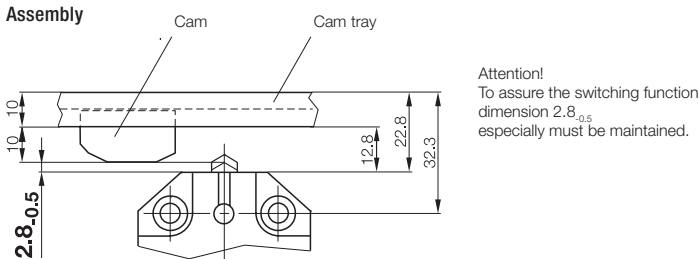
1) Reference edge
2) Anti-crystallization plunger

Connector left:

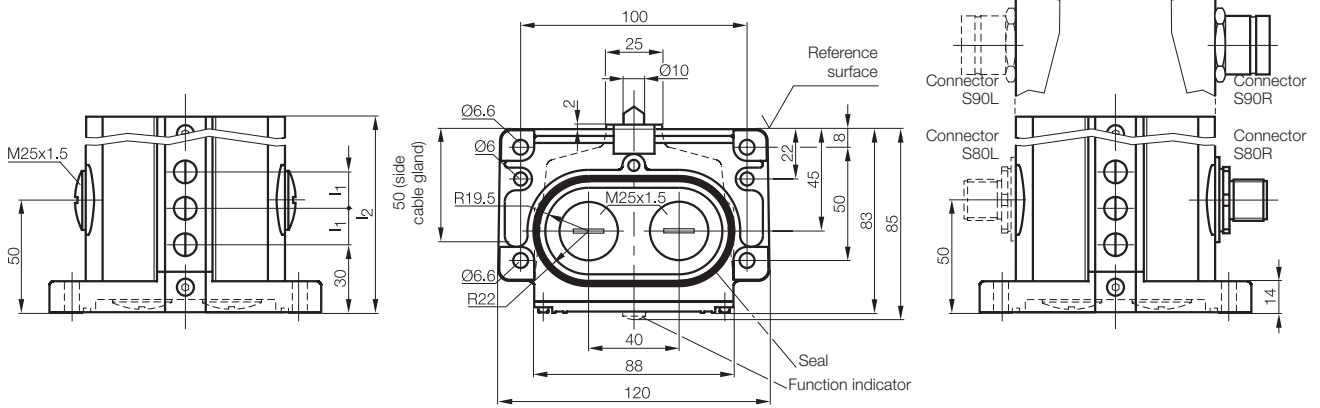


1) Reference edge

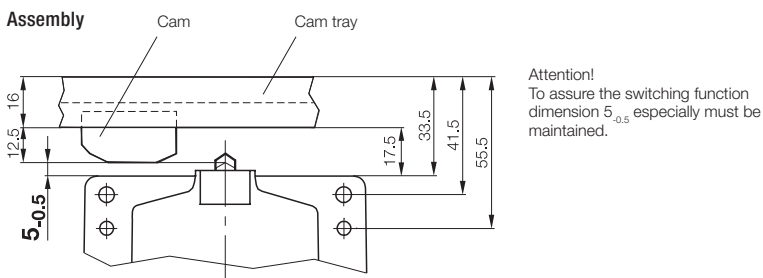
Assembly



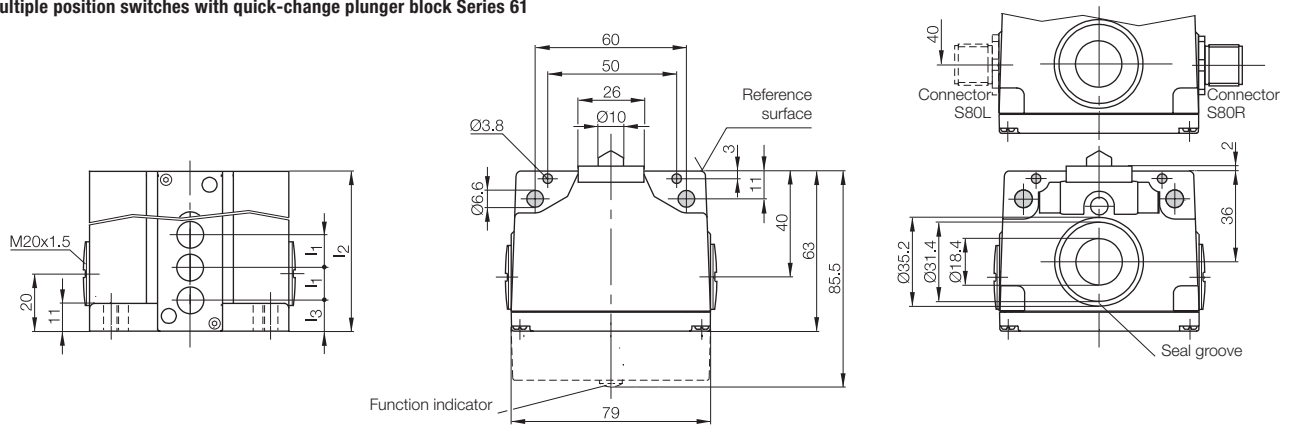
Multiple position switches with quick-change plunger block Series 100 compliant with DIN 43697



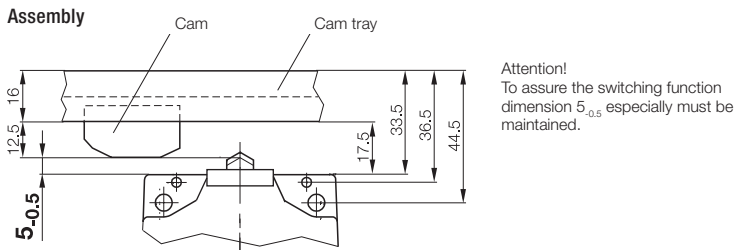
Assembly



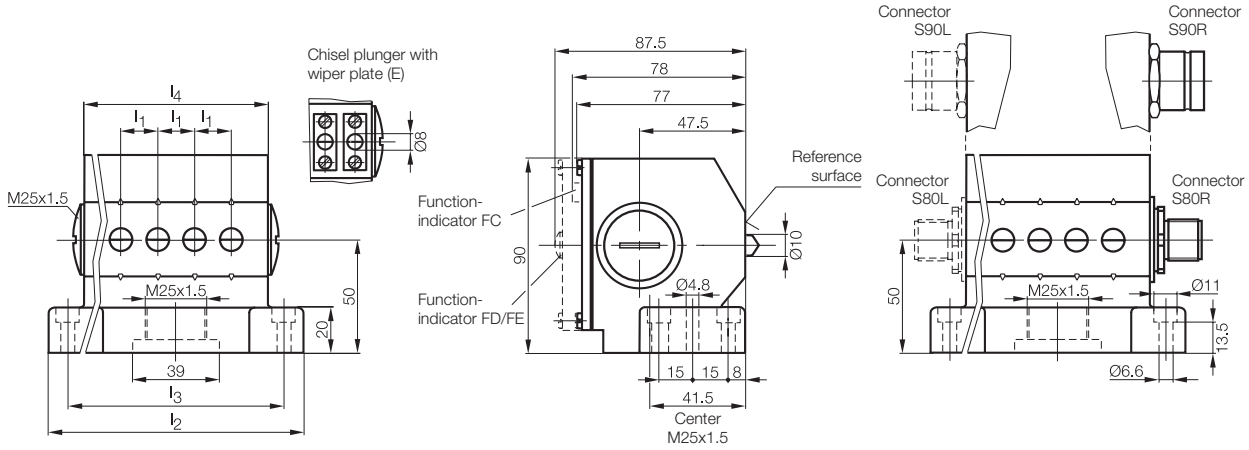
Multiple position switches with quick-change plunger block Series 61



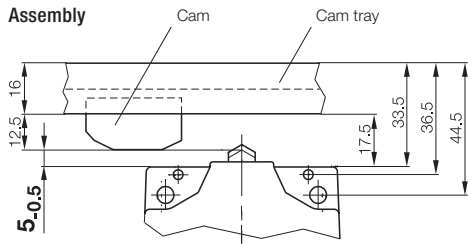
Assembly



Multiple position limit switches with safety switch positions Series 72

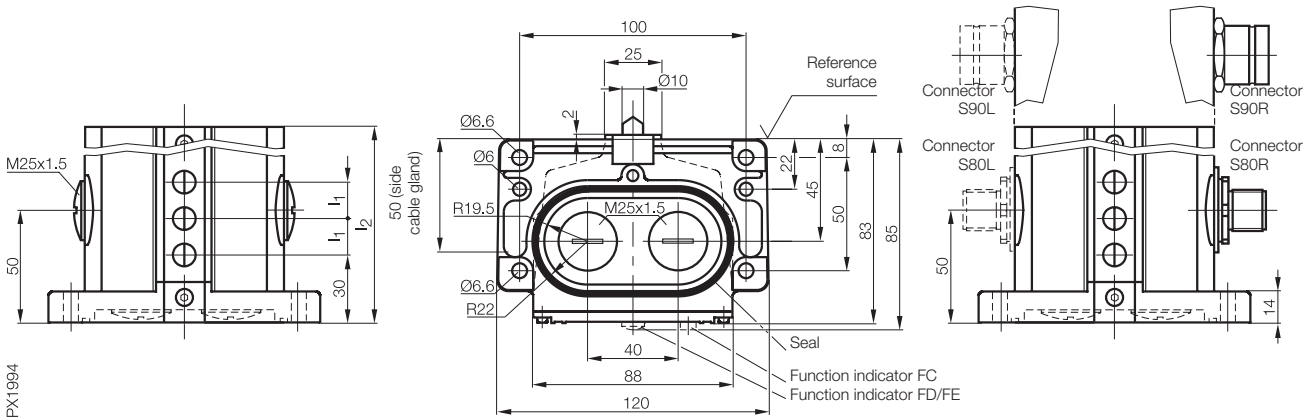


Assembly



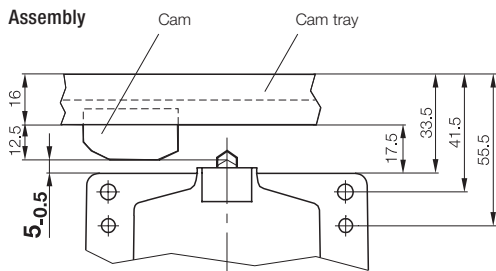
Attention!
To assure the switching function dimension 5_{0.5} especially must be maintained.

Multiple position limit switches with safety switch positions and quick-change plunger block Series 100



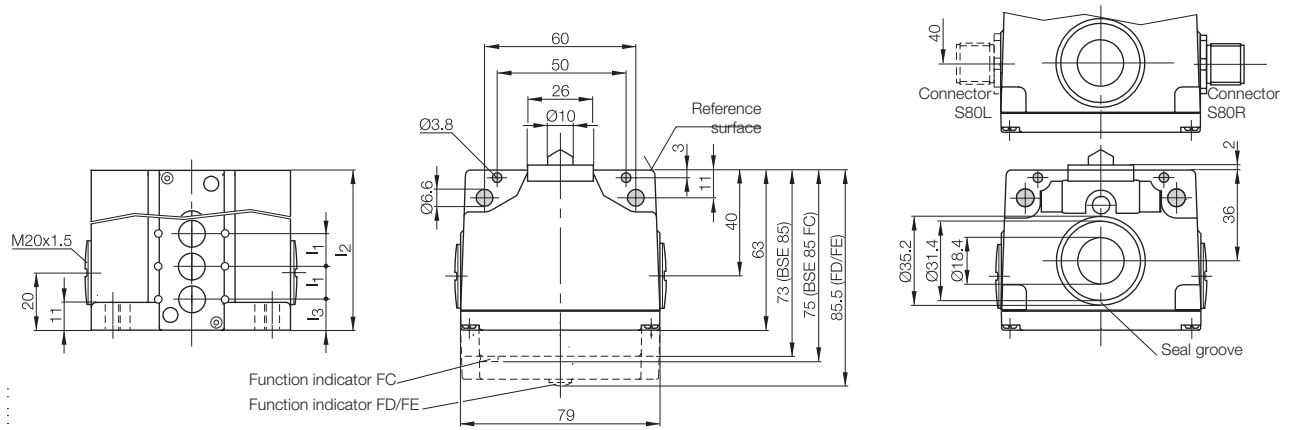
PX1994

Assembly

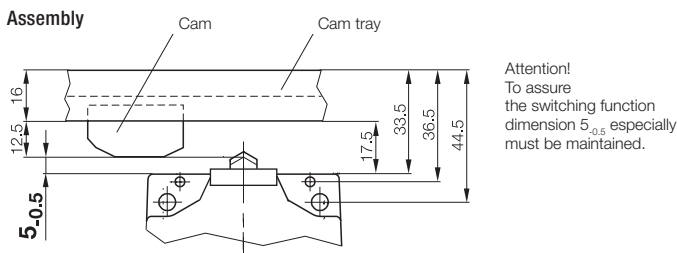


Attention!
To assure the switching function dimension 5_{0.5} especially must be maintained.

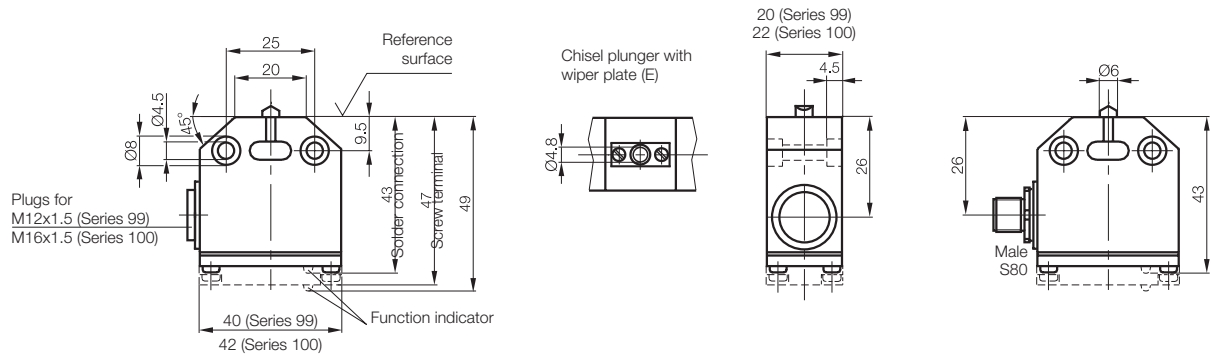
Multiple position limit switches with safety switch positions and quick-change plunger block Series 61



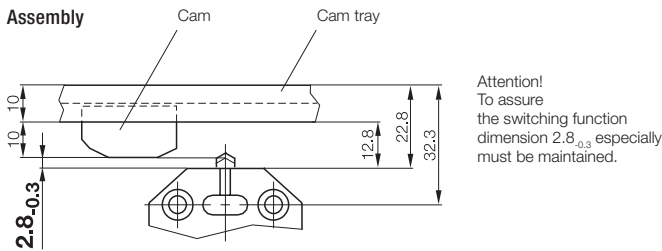
Assembly



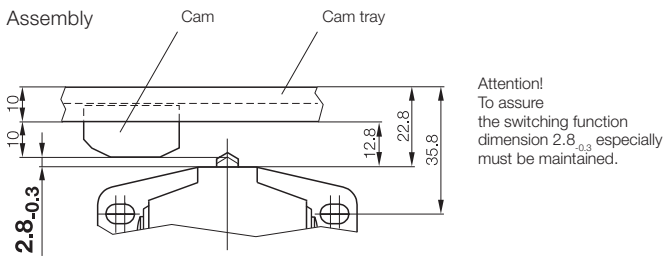
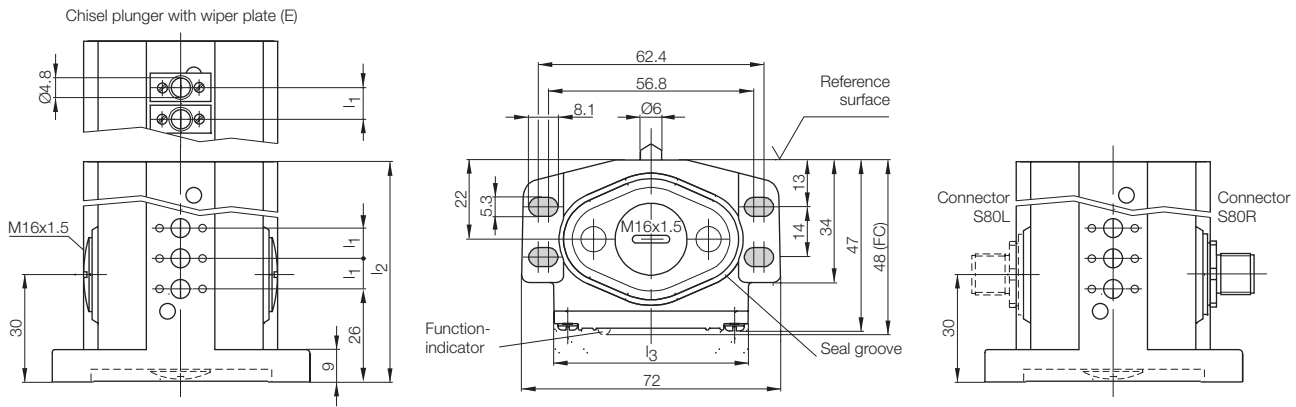
Position switch with positive opening Series 99 and 100



Assembly



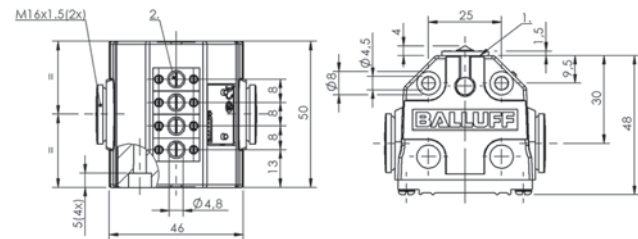
Multiple position limit switches with positive opening Series 46



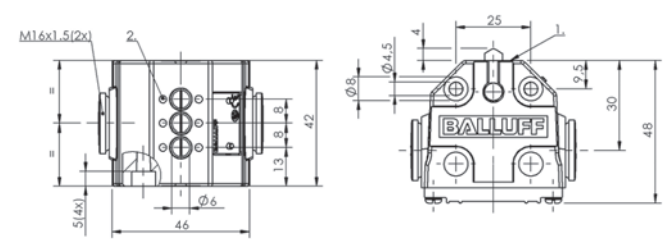
Multiple position limit switches with positive opening Series 40

Chisel plunger with wiper plate:

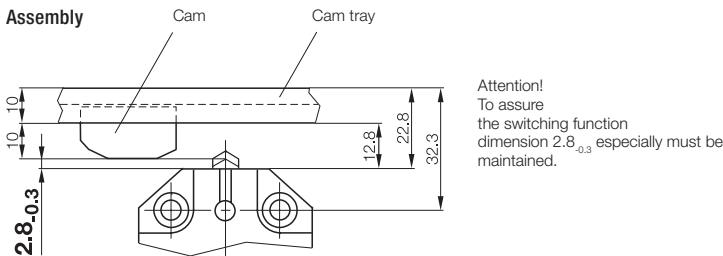
Standard:



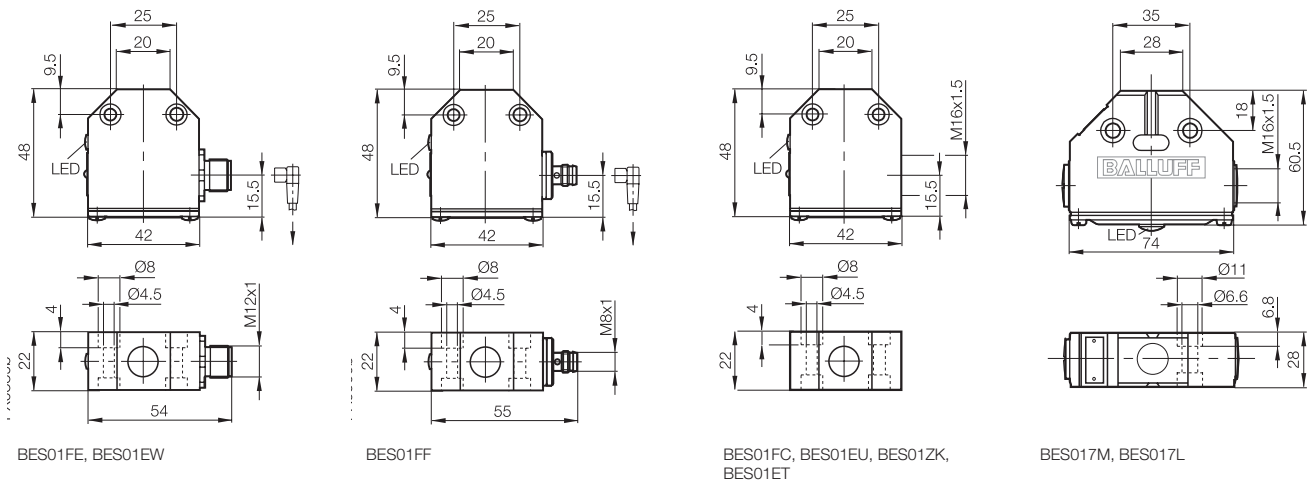
- 1) Reference edge
- 2) Anti-crystallization plunger



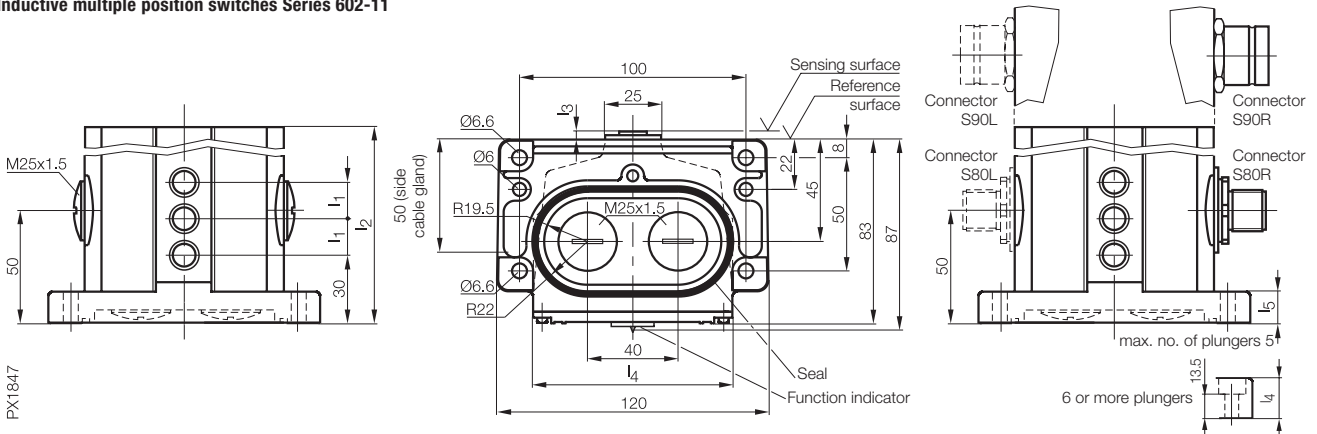
- 1) Reference edge
- 2) Mark. Safety switch position



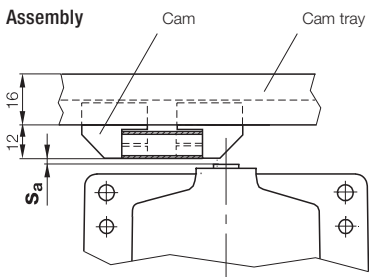
Inductive Position Switches Series H2 and H3



Inductive multiple position switches Series 602-11

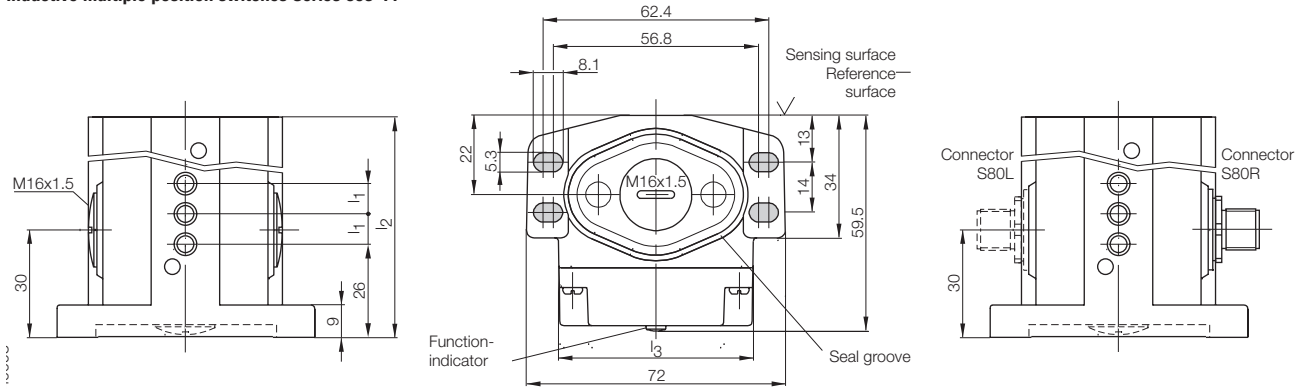


Assembly

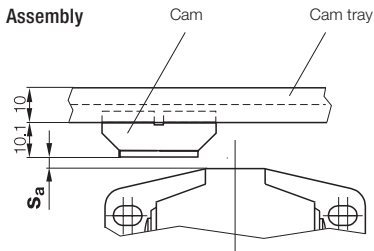


Attention!
To assure the switching function s_a must lie within 0 < s_a ≤ 0.81 s₁.

Inductive multiple position switches Series 603-11



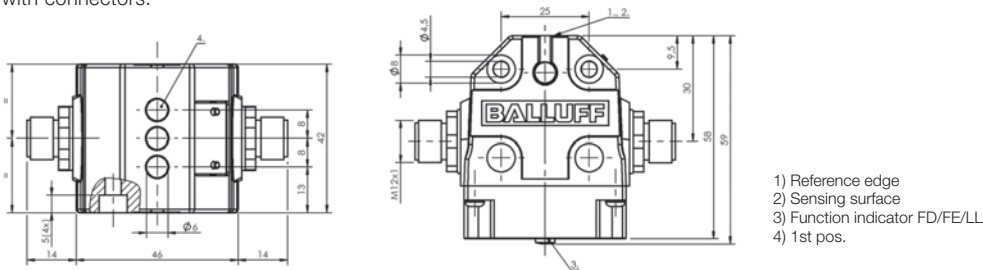
Assembly



Attention!
To assure
the switching function
 s_a must lie within
 $0 < s_a \leq 0.81 s_{p1}$

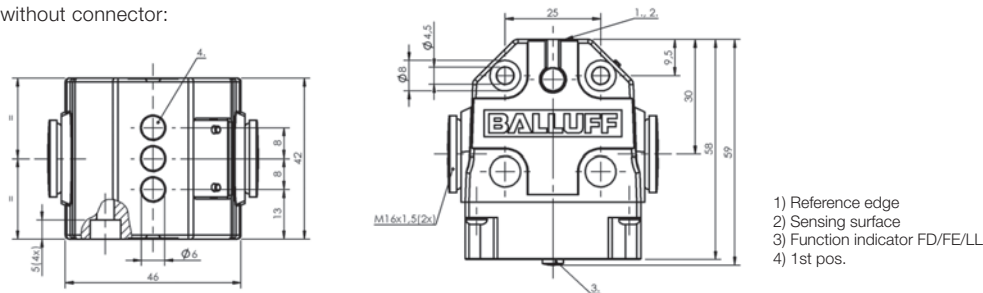
Inductive multiple position switches Series 650-11

with connectors:



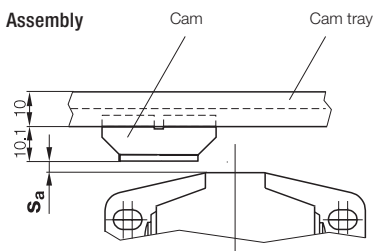
- 1) Reference edge
- 2) Sensing surface
- 3) Function indicator FD/FE/LL
- 4) 1st pos.

without connector:



- 1) Reference edge
- 2) Sensing surface
- 3) Function indicator FD/FE/LL
- 4) 1st pos.

Assembly



Attention!
To assure
the switching function
 s_b must lie within
 $0 < s_b \leq 0.81 s_{p1}$

Sensors 1

BASICS AND GLOSSARY





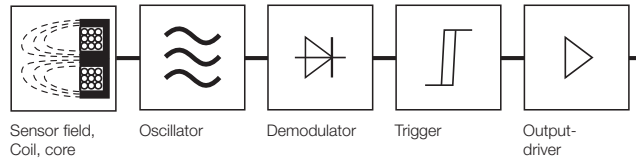
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INDUCTIVE SENSORS

Principle

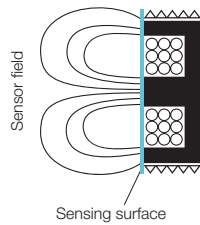
Inductive sensors are based on the interaction of metallic targets with the electromagnetic alternating field of the sensor. Eddy currents are induced in the metallic damping material, which removes energy from the field and reduces the height of the oscillation amplitude. This change is processed in the inductive sensor.

The functional groups of Balluff sensors are:



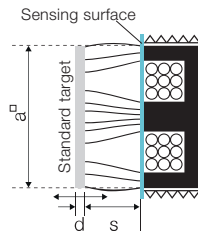
Sensing surface

Actively measuring area and thereby the externally sensitive electrode/plate of the electrode system. It is generally somewhat smaller than the surface of the cover.



Standard target

A square plate made of Fe 360 (ISO 630), used to define sensing distances per EN 60947-5-2. Thickness is 1 mm; the side length "a" corresponds to the diameter of the inscribed circle of the active surface or 3 s_n, if the value is larger than the named diameter.



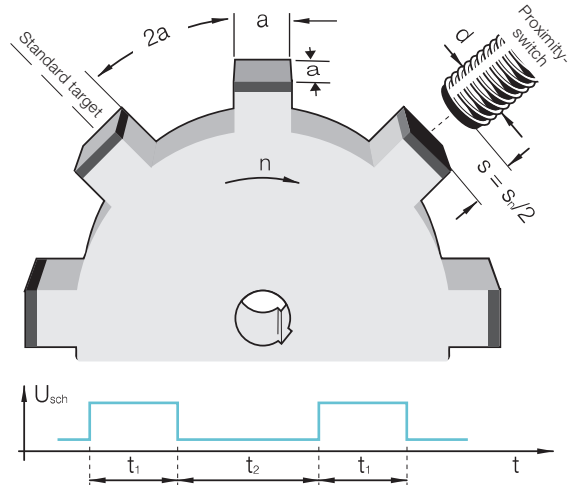
Correction factor

Reduction in the switching distance for damping materials that are not Fe 360.

| Material | Factor |
|-----------------|-------------|
| Steel | 1.0 |
| Copper | 0.25...0.45 |
| Brass | 0.35...0.50 |
| Aluminum | 0.30...0.45 |
| Stainless steel | 0.60...1.00 |
| Nickel | 0.65...0.75 |
| Cast iron | 0.93...1.05 |

Switching frequency

The maximum speed at which the sensor can reliably detect an object under standardized conditions. This corresponds to the maximum number of switching operations (ON/OFF) per second. The value is dependent on the size and speed of the object and its distance from the sensing face.



Delay times

Time delay before availability

Duration between the application of power and the availability of a sensor.

Temperature effects and limits

Temperature drift

The temperature drift is the deviation of the real switching distance within the temperature range of $-25\text{ °C} \leq T_a \leq +70\text{ °C}$. In accordance with EN 60947-5-2: $\Delta s_r/s_r \leq 10\%$

Ambient temperature T_a

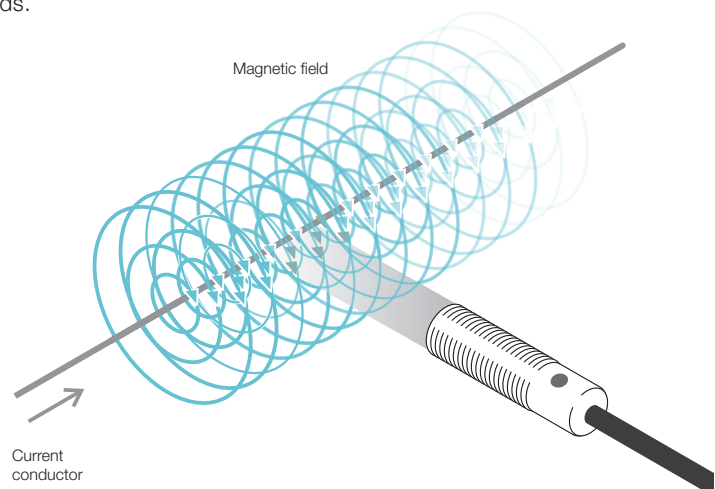
The maximum permissible temperature range at which a sensor may be operated while ensuring reliable functioning of the sensor.

Magnetic field immunity

Operating principle

Error-free function depends on the magnitude of the welding current and the distance between the sensor and the current-carrying line.

Construction and circuitry design measures ensure that magnetic field immune sensors are not influenced by magnetic fields.



| | |
|--|---|
| Operating voltage U_B | Voltage range (V) in which flawless functioning of the sensor is assured. It includes all voltage tolerances and ripple. |
| Rated operating voltage | The maximum voltage at which the sensor can be used in normal use. Indicated by U_e . DC switches: $U_e = 24$ V DC; AC and AC/DC switches: $U_e = 110$ V AC. |
| Voltage drop U_d | The maximum voltage loss of the switching final stage between switching output and $+U_B$ (PNP) or $-U_B$ (NPN) at the maximum specified load current. |
| Rated isolation voltage | The voltage to which the insulation checks and the air and creepage distances refer. For sensors, the highest rated operating voltage is considered the rated insulation voltage. |
| Rated supply frequency | Frequency of the operating voltage when using alternating current |
| Ripple | <p>The maximum permissible AC voltage (peak-to-peak of U_e which may be superimposed on the operating voltage U_S without affecting the function of the sensor.</p>  <p>U_e = Rated operating voltage U_{SS} = Oscillation width</p> <p>Ripple $\sigma = \frac{U_{pp}}{U_e} \times 100$ [%]</p> |
| Rated operating current | The permissible output current which flows through the load R_L . |
| Off-state current | The current which flows in the load circuit when a sensor is not conducting (open). |
| Short-term current carrying capacity I_k | For an AC device the short-term permissible current I_k (A_{eff}) during a specified turn-on duration t_k (ms) and repetition rate f (Hz). |
| Limited rated short-circuit current | Value of the unaffected short circuit current which the short circuit protected circuit can withstand during the entire turn-off time (duration of current flow) of the device under specified conditions. This current is prescribed in the standard in order to test the short-circuit protection of sensors. |

No-load current The maximum internal current consumption with no load connected to the switching output (in general at $U_{B\ max.}$ and actuated).

Minimum operating current Minimum current (mA) required when energizing the output to maintain operation.

Output resistance Resistance (R_a) at the output of a circuit or component. The output resistance is generally a frequency-dependent, complex resistance with amount and phase and is referred to as output resistance.

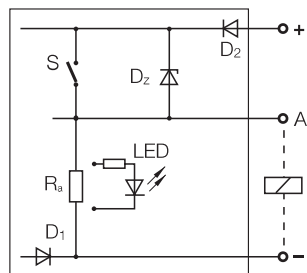
Load capacitance The load capacitance is the permitted total capacitance at the sensor output, including cable capacitance.

Output circuits

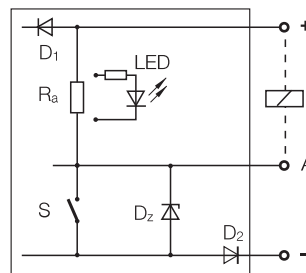
Driver stages

3-wire DC-switch

PNP, positive switching (current source)



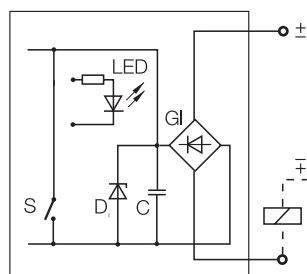
NPN, negative switching (current sink)



- S = Semiconductor switch
- R_a = output resistance
- LED = Light diode
- D_z = Z-diode, delimiter
- D_1 = Polarity reversal-protected diode
- D_2 = Polarity reversal-protected diode in the load circuit (only with short-circuit protected version)

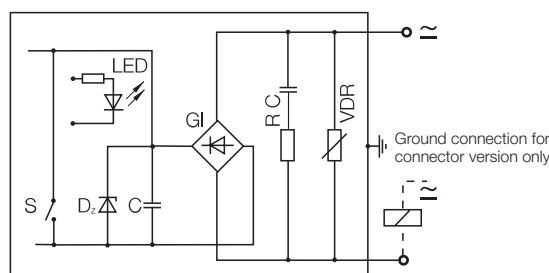
2-wire DC-switch

Non-polarized

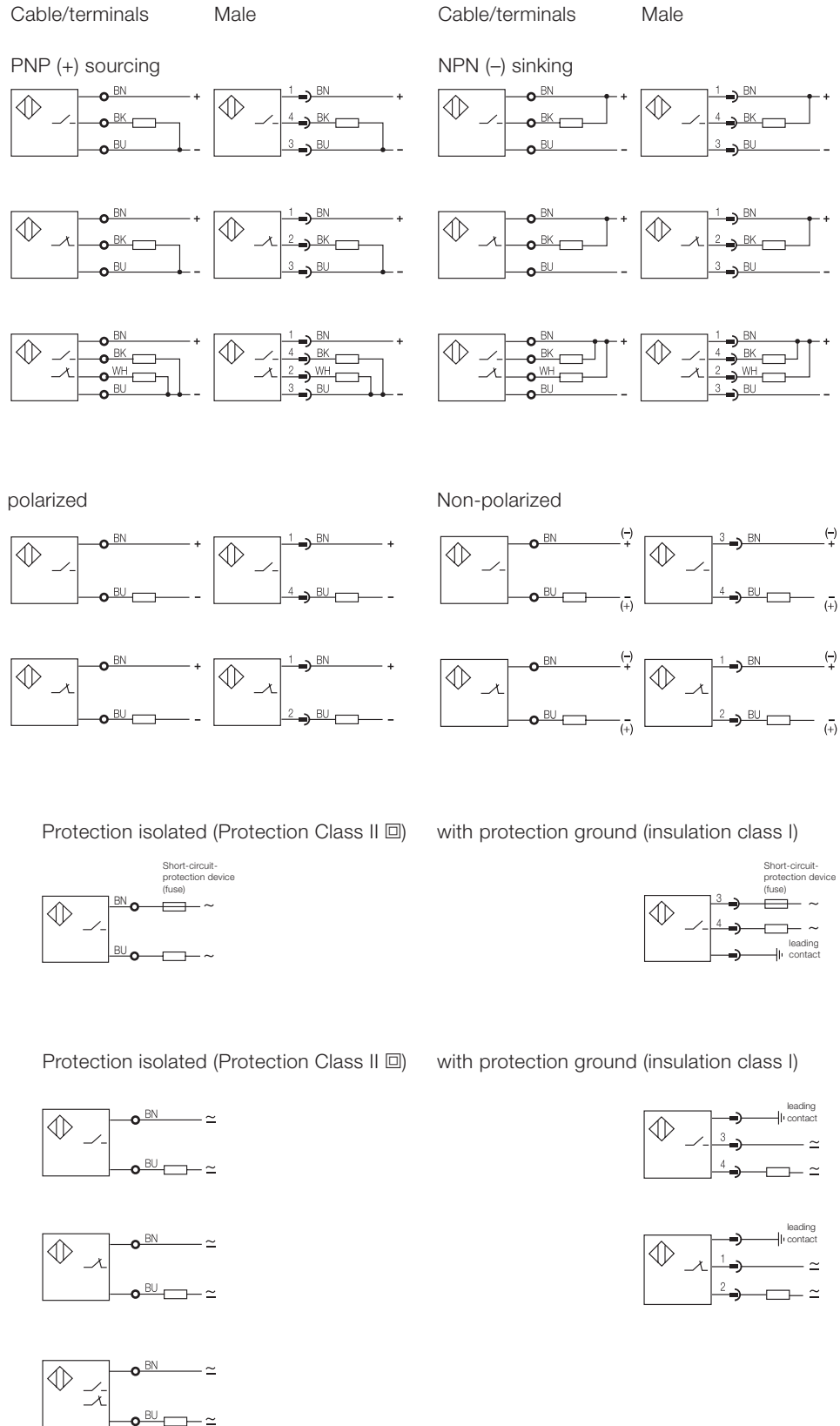


- S = Semiconductor switch
- D_z = Z-diode, delimiter
- C = capacitor
- Gl = bridge rectifier
- LED = light emitting diode

2-wire AC- and AC/DC-switch (all current switch)



- S = Semiconductor switch
- D_z = Z-diode, delimiter
- C = Sieve condenser
- RC = HF-points-limit
- Gl = bridge rectifier
- LED = Light diode
- VDR = Voltage point limiter

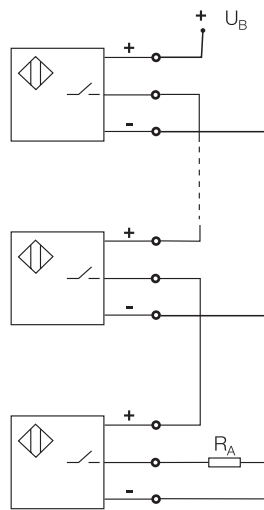


Wire colors (labeling according to DIN IEC 60757)

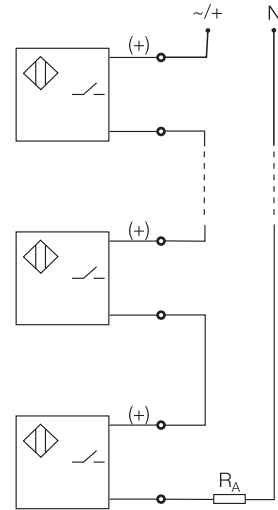
Series connection

Electrical circuit type in which the components are connected to each other in a string so that they form a single current path.

3-wire DC-switch



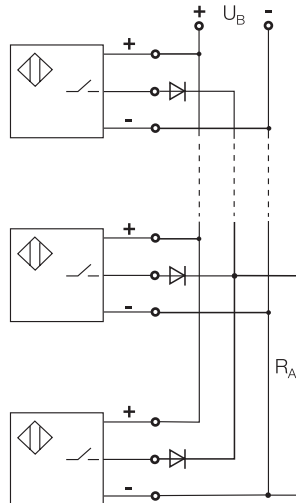
2-wire DC-switch (AC/DC)



Parallel circuit

Electrical circuit type in which all the switching elements and their same named poles are connected in common to each other, so that multiple current paths result.

3-wire DC-switch



2-wire DC-switch

Parallel wiring of 2-wire-sensors is not recommended, since missed pulses can be caused by the ready delay as the oscillator begins to oscillate.

Utilization categories in accordance with EN 60947-5-2/IEC 60947-5-2

| Category | | Typical load applications |
|----------|-----------|---|
| AC 12 | AC-switch | Resistance- and semiconductor loads, optocouplers |
| AC 140 | AC-switch | Small electromagnetic load $I_a \leq 0.2$ A; e.g. contactor relay |
| DC12 | DC-switch | Resistance- and semiconductor loads, optocouplers |
| DC 13 | DC-switch | Electromagnets |

Reverse polarity protection

Also called polarity reversal protection. This sensor technology protects against reversal of the supply voltage (plus and minus) and reversal of the connection wires (brown and blue).

Cable break protection

Characteristic of 3-wire switches which prevent malfunction when there is a cable break. A built-in diode prevents the current from flowing via the output line A.

Short-circuit rating

Characteristic of components or assemblies which indicates the short-circuit current which the component or assembly can withstand.

Short-circuit protection (sensors with a maximum voltage of 60 V DC)

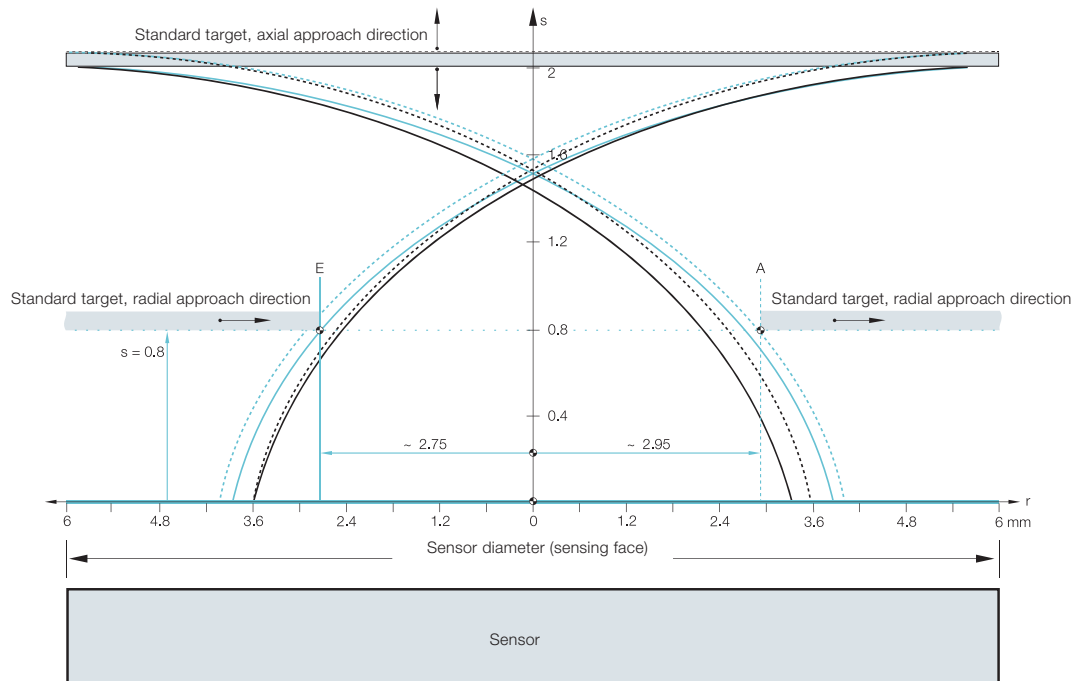
The short-circuit protection is achieved in Balluff sensors with clocked or thermal short-circuit protection circuitry. The output stage is thereby protected against overload and short circuit. The release current of the short-circuit protection is above the rated operating current I_e . Currents from switching and load capacitances are specified in the sensor data and do not trigger this function, but rather are masked by a short delay time.

Short-circuit protected/overload protected (sensors for operation optional with AC or DC power supply)

Short-circuit protected/overload protected sensors are often operated with relays or contactors as load. At switch-on, alternating current switching amplifiers (protection contactor/relay) for the sensor are briefly a substantially higher load ($6...10 \times$ rated current) than later in the later static operation, because their core is still open. The static value of the load (current) is only reached after several milliseconds. Not until the magnetic field is closed does the max. permissible rated operating current I_e listed in the data sheet flow through the sensor. The release value for a short-circuit in these sensors therefore has to be significantly greater. If for example the contactor can no longer be entirely closed due to mechanical or electrical reasons, this could lead to an overload of the sensors. This is where the overload protection comes into play. It is designed as slow-acting (time-delayed). Its trigger threshold lies only slightly above the maximum permissible I_e . A reaction (in other words, shutoff) occurs, depending on the height of the overload, only after more than 20 ms. This ensures that properly working relays and contactors can be switched normally, while defective devices will not destroy the Balluff sensors. The short-circuit/overload protection usual has a bistable design and has to be reset after triggering by switching the operating voltage.

Approach direction

Direction of an object as it enters the detection range/active range of a sensor.



Axial and radial damping

When damping in an axial direction, the standard target is moved concentric to the system axis. The switchpoint is thereby determined only by the distance "s" from the sensing surface of the sensor. When damping in the radial direction, the location of the switching point is additionally affected by the radial distance "r" of the target from the system axis. The diagram shows the response curves, which indicate the dependency of the switching point on "s" and "r". The primary purpose of this drawing is to show the possibility of damping using a lateral approach and the difference compared with axial approach.

Application

Due in part to manufacturing tolerances within a production run, the exact switchpoint must in any case be established on site. The solid curves indicate the respective turn-on point, the dashed curves the turn-off point A. The red curves apply to switches with a clear zone, and the black ones for flush-mountable switches. Since the switching operation can be induced from either direction, the curves are shown mirrored from the system axis.

Examples

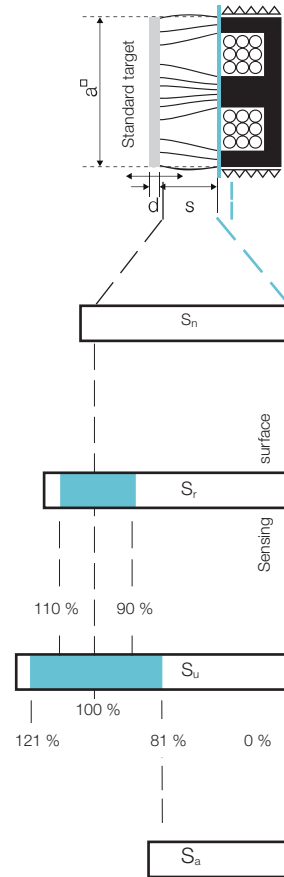
Passing objects on conveyor lines generate a signal change when their front edge crosses the turn-on curve on the entry side. The signal reverses again when the back edge of the passing object crosses the (mirrored) turn-off curve on the opposite side. In the case of reversing parts (e. g. end of travel), the signal reversal occurs at the turn-off curve on the same side.

The vertical axis in the diagram shows the distance of the switching point from the sensing surface. It is based on the rated switching distance s_n . At a distance of 0.8 mm, a laterally approaching target reaches the solid line turn-on curve at point "E" and leaves the turn-off curve at point "A". The horizontal axis in the graph is referenced to the radius of the sensing surface. The zero point of this axis lies in the center of the shell core cap. In our example for the M12 switch, the radius is $r = 6$ mm.

Switching distances

Switching distance

The distance between the standard target and the sensing surface of the sensor at which a signal change is triggered as per EN 60947-5-2. For a normally open switch this means from OFF to ON and for normally closed from ON to OFF.



Rated operating distance S_n

Maximum achievable switching distance from the standard target under device specification (generally with s_n as shipped from the factory).

Effective operating distance s_r

The switching distance of a single proximity switch measured under specified conditions, e.g. flush mountable, rated operating voltage U_e , temperature T_a .

Usable operating distance

The permissible operating distance is the permitted switching distance within fixed voltage and temperature limits ($0.81 s_n \leq s_u \leq 1.21 s_n$).

Assured switching distance S_a

Switching distance within which assured operation of the sensor at a specified voltage and temperature range is given ($0 \leq s_a \leq 0.81 s_n$).

Switching distance labeling

| Switching distance | Size | Switching distance |
|---|----------------|----------------------|
| Standard-switching distance according to EN 60947-5-2 | | |
| 2x switching distance compared to standard | Ø 3 mm* | 1 mm flush |
| | Ø 4 mm/M5* | 1.5 mm flush |
| | Ø 6.5 mm...M30 | 1.5...2-x |
| 3x switching distance compared to standard | Ø 3 mm* | 3 mm non-flush |
| | Ø 4 mm/M5* | 5 mm non-flush |
| | Ø 6.5 mm...M12 | 2.2...3-x |
| | M18...M30 | depending on version |
| 4x switching distance compared to standard | | |

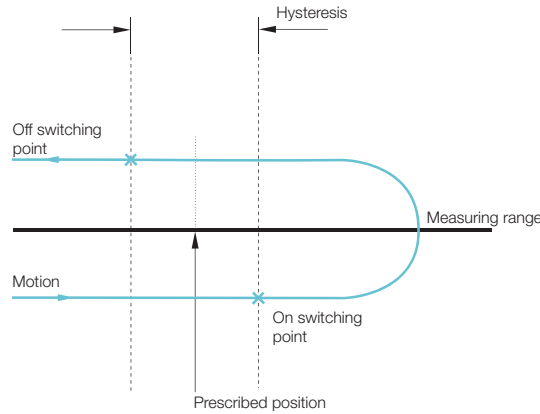
*Information for switching distance in mm. The switching distances of these sensors are not standardized.

Repeat accuracy

Variance in the output values when approaching a mechanically prescribed position repeatedly from the same direction.

Hysteresis

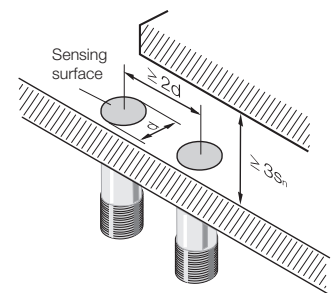
Signal difference resulting for measurement sensors when a mechanically prescribed position is approached from one side, then crosses this point and afterwards approaches this same position from the other direction. Position difference between switching point (object approaches) and switch-back point (object travels away) for switching sensors.



Installation in metal: Sensors with standard switching distance

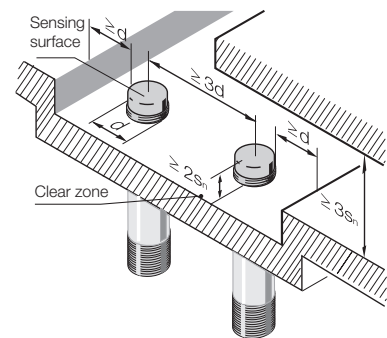
Flush mountable sensors

Flush mountable sensors can be installed with their sensing surfaces flush to the metal. The distance to the opposite metal surfaces has to be $\geq 3 s_n$, and the distance between two sensors (with row mounting) has to be $\geq 2d$.



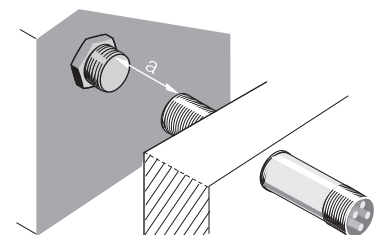
Non-flush mountable sensors

Non-flush mountable sensors can be identified by their "caps", since they have no metal housing surrounding the area of the sensing face. The sensing surface must extend $\geq 2 s_n$ from the metallic installation medium. The distance to the opposite metal surfaces has to be $\geq 3 s_n$, and the distance between two sensors (with row mounting) has to be $\geq 3 d$.



Opposing installation of two sensors

The opposing (facing) installation of two sensors requires a minimum distance of $a \geq 3d$ between the sensing faces.



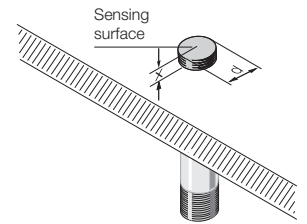
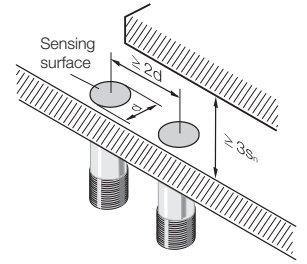
Installation medium

| Materials | Description |
|-------------------------|---|
| Ferromagnetic materials | Iron, steel or other magnetizable materials |
| Non-ferrous metal | Brass, aluminum or other non-magnetizable materials |
| Other materials | Plastics, electrical non-conductive materials |

Installation in metal: Sensors with 2x switching distance

Flush mountable sensors

Flush mountable sensors can be embedded flush up to their sensing surfaces in non-ferrous materials. Installation in non-ferrous metal may result in a reduction of the switching distance. The distance to the opposite metal surfaces has to be $\geq 3 s_n$, and the distance between two sensors (with row mounting) has to be $\geq 2d$. In order to install the sensor in ferromagnetic materials, the following guidelines are used for dimension "x".



| Size d | Dimension x |
|----------|-------------|
| Ø 3 mm | 1 mm |
| Ø 4 mm | 1.5 mm |
| M5 | 1.5 mm |
| Ø 6.5 mm | 0 mm |
| M8 | 0 mm |
| M12 | 1.5 mm |
| M18 | 2.5 mm |
| M30 | 3.5 mm |

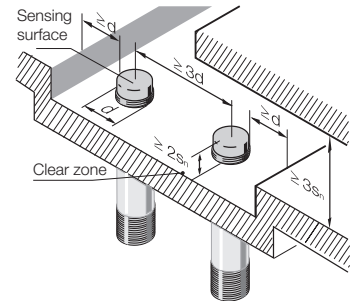
For DC 2-wire sensors, the following apply:

| Size d | Dimension x |
|--------|-------------|
| M8 | 0 mm |
| M12 | 0 mm |
| M18 | 0.7 mm |
| M30 | 3.5 mm |

In the Factor 1 and ATEX NAMUR sensor family, dimension x is not needed when installing in metal.

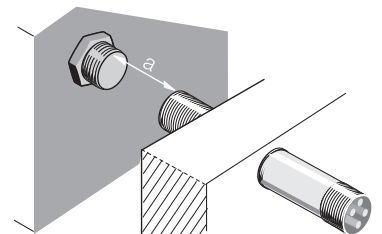
Non-flush mountable sensors

Non-flush mountable sensors can be identified by their "caps", since they have no metal housing surrounding the area of the sensing face. The sensing face must extend $\geq 2 s_n$ from the metallic installation medium. The distance to the opposite metal surfaces must be $\geq 3 s_n$, and the distance between two sensors (with row mounting) has to be $\geq 3 d$.



Opposing installation of two sensors

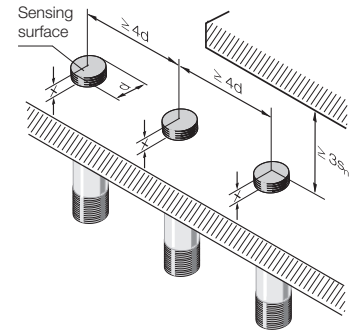
The opposing installation of two sensors requires a minimum distance of $a \geq 4d$ between the sensing surfaces.



Installation in metal: Sensors with 3- and 4x switching distance

Quasi-flush mountable sensors

Quasi-flush mountable sensors require space behind the sensing surface which is free of conductive materials. Under this condition the specified switching distance is available without limitation. Dimension "x" (see fig.) indicates the shortest distance between the sensing face and the conductive material behind it.

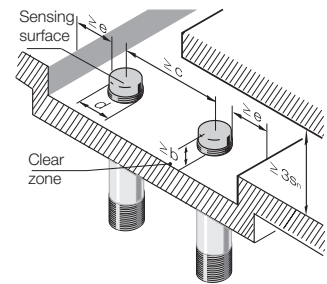


| Size d | 3x switching distance: Dimension x for installation in | | 4x switching distance: Dimension x for installation in | |
|----------|---|--------------|---|--------------|
| | Ferromagnetic material | Other metals | Ferromagnetic material | Other metals |
| Ø 6.5 mm | 2 mm | 1 mm | 3 mm | 2 mm |
| M8 | 2 mm | 1 mm | 3 mm | 2 mm |
| M12 | 2.5 mm | 2 mm | 4 mm | 3 mm |
| M18 | 4 mm | 2.5 mm | | |
| M30 | 8 mm | 4 mm | | |

Non-flush mountable sensors

Non-flush mountable sensors can be identified by their "caps", since they have no metal housing surrounding the area of the sensing face. The distance to opposing metal surfaces must be $\geq 3 s_n$.

Installation conditions:



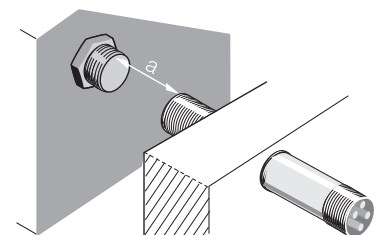
| Size d | Dimension x | Dimension x | Dimension x |
|----------|---|---------------|--------------|
| Size d | Dimension b | Dimension c | Dimension e |
| Ø 3 mm | ≥ 10 mm | ≥ 30 mm | ≥ 10 mm |
| Ø 4 mm | ≥ 15 mm | ≥ 40 mm | ≥ 20 mm |
| M5 | ≥ 15 mm | ≥ 40 mm | ≥ 20 mm |
| Ø 6.5 mm | ≥ 8 mm | ≥ 32 mm | ≥ 8 mm |
| M8 | ≥ 8 mm | ≥ 32 mm | ≥ 8 mm |
| M12 | ≥ 10 mm | ≥ 48 mm | ≥ 12 mm |
| M18 | ≥ 20 mm | ≥ 72 mm | ≥ 18 mm |
| M30 | ≥ 35 mm in steel ≥ 25 mm in non-ferrous metal ≥ 20 mm in stainless steel | ≥ 120 mm | ≥ 30 mm |

Opposing installation of two sensors

The opposing installation of two sensors requires a minimum distance of a $\geq 5d$ between the sensing surfaces.

For exceptions see table:

| Size d | Dimension a |
|--------|-------------|
| Ø 3 mm | 20 mm |
| Ø 4 mm | 45 mm |
| M5 | 45 mm |



INDUCTIVE DISTANCE SENSORS WITH ANALOG OUTPUT

Distance sensor with analog output

A sensor which generates a continuously varying output signal which is a function of the distance between the sensing surface and the actuation element.

Effective distance s_e

Point in the middle of a sensor's range of linearity s_l . Serves as a reference point for further specifications.

Linearity range

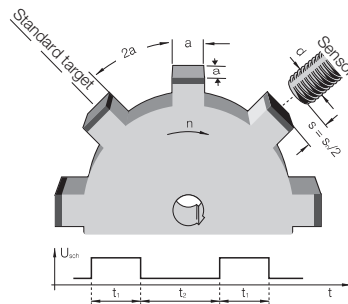
Working range in which the sensor has defined linearity.

Linearity error

Maximum deviation from the straight line that connects the zero point of the measuring range to the end point or full extension. There is a linear relationship between the position or path to be measured and the output signal for a voltage, current or digitized output information. This feature may be restricted to a defined linearity range.

Limit frequency

Maximum possible number of switching operations per second. Damping is done according to EN 60947 -5-2 with standard targets on a rotating, non-conductive disc. The area ratio of iron to non-conductor is 1:2. The rated value of the limit frequency (-3 dB limit) is reached when the output signal has dropped to approx. 70% of the original signal level.

**Measurement speed**

Speed with which changes to the active surface of a sensor are registered, processed and outputted. Up to the specified measuring speed the distance to a linear moving object can be reliably detected. The direction of movement of the object is parallel to the sensing face of the sensor.

Response time

The time which a sensor requires in order to reliably and steadily change the output signal. The specified time, which was determined at the maximum measuring speed, includes both the electrical response time of the sensor and the time for the mechanical change of the damping state.

Slope

The slope is a measure of the sensitivity of the sensor with respect to a distance change. This physical relationship can be calculated for travel sensors as follows:

$$\text{Slope } S \text{ [V/mm]} = \frac{U_a \text{ max} - U_a \text{ min}}{s_a \text{ max} - s_a \text{ min}}$$

or

$$\text{Slope } S \text{ [mA/mm]} = \frac{I_a \text{ max} - I_a \text{ min}}{s_a \text{ max} - s_a \text{ min}}$$

Temperature drift

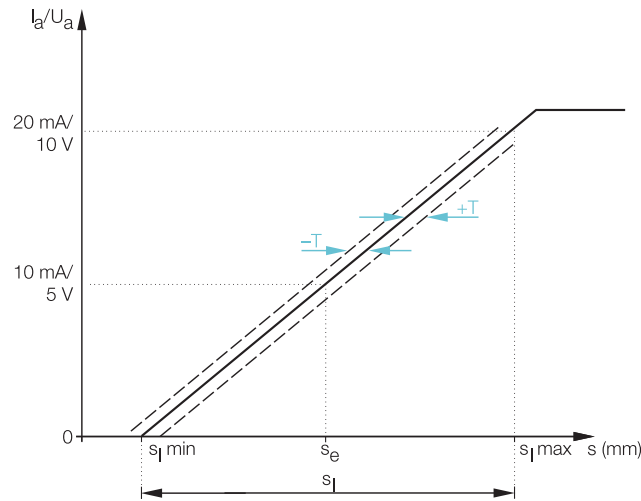
The temperature drift is the shift a point experiences on the actual output curve at different temperatures. The temperature drift is described by the temperature coefficient.

Temperature coefficient

Describes the deviation of the sensor output signal under the effect of a temperature change, and thus represents a quality criterion for the sensor also.

Tolerance T

A variable which defines the manufacturing tolerance band of the output curve, thereby determining the maximum sample deviation.



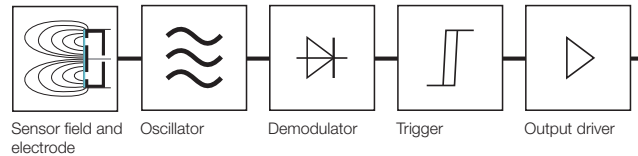
Repeat accuracy

Variance in the output values when approaching a mechanically prescribed position repeatedly from the same direction.

CAPACITIVE SENSORS

Principle of operation

The non-contacting capacitive sensor converts a variable of interest in technical production terms (e.g. object or level detection) into a signal which can be processed further. The function is based on the alteration in the electrical field around its active zone. The sensor consists essentially of an electrode system, oscillator, demodulator, trigger stage, output driver/switching amplifier. The electrode systems together with an active measuring electrode (sensing face) form an open plate capacitor. This is part of an RC oscillator.



When metallic or non-metallic objects approach the sensing surface of the capacitive sensor, the capacitance of the open plate capacitor changes and the oscillator begins to oscillate. This causes the trigger stage downstream of the oscillator to trip, and the switching amplifier to change its output state. The function of the capacitive sensor can be explained using the equation for capacitance of a plate capacitor:

$$C = \epsilon_0 \times \epsilon_r \times F \times (1/S)$$

ϵ_r : As a relative dielectric constant (property of the target medium)

ϵ_0 : As an absolute dielectric constant (natural constant)

F: As electrode surface

S: As distance

From the above formula it follows that objects which have a sufficiently large relative dielectric constant (ϵ_r) as well as area (as a ratio with the sensing surface) and sufficiently close distance are detected by the capacitive sensor. In addition to the described universal technology in which the sensor is a component of an oscillator circuit, there are also more modern technologies which satisfy the special application requirements.

Sensor for object detection (flush)

Sensors with a straight line electrical field (no side sensitivity). These detect solid bodies, e.g. cartons, paper stacks, plastic blocks and plates as well as glass. They also detect media levels through a wall made of plastic or glass. The wall thickness may not exceed 4 mm.

Sensor for level detection (non-flush)

Sensors with a spherical electrical field. These units are designed to detect the product, bulk goods or liquids (e.g. granulate, sugar, flour, corn, sand, or oil and water) with their sensing surface, preferably by contacting the medium or through a glass or plastic wall.

Smart Level technology

Patented technology which enables optimal detection of levels of electrically conductive (polar) media (water, lyes, acids...). This is accomplished with direct contact (immersion probes) and through a maximum 10 mm thick wall of plastic, glass or ceramic. The sensors which are based on this technology compensate for the dielectric effect of the container wall and enable reliable distinguishing between the target medium and its build-up, films and foaming.

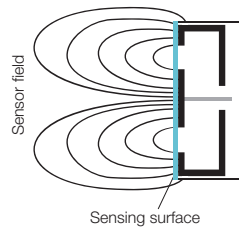
Setting the sensitivity on capacitive sensors

In most cases adjusting the sensor sensitivity (capacitance value which when exceeded causes the sensor to switch) to the environment is required (pre-loading by other objects in the capture area, e.g. a container wall). The setting is done depending on the device generation using a potentiometer, a key, a separate line or IO-Link.

Definitions and Characteristic Values

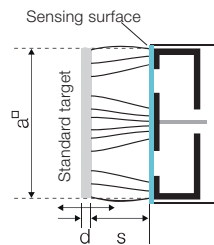
Sensing surface

Actively measuring area and thereby the externally sensitive electrode/plate of the electrode system. It is generally somewhat smaller than the surface of the cover.



Standard target

A square plate made of Fe 360 (ISO 630), used to define sensing distances per EN 60947-5-2. Thickness is 1 mm; the side length "a" corresponds to the diameter of the inscribed circle of the active surface or $3 s_n$, if the value is larger than the named diameter.



Rated operating distance S_n

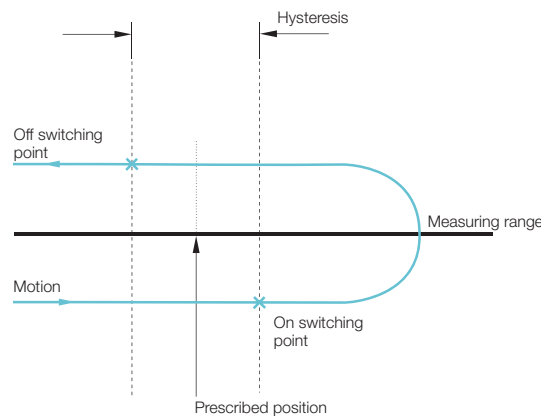
Maximum achievable switching distance from the standard target under device specification (generally with s_n as shipped from the factory).

Effective operating distance S_r

The switching distance of a single proximity switch measured under specified conditions, e.g. flush mountable, rated operating voltage U_e , temperature T_a .

Hysteresis

The hysteresis is the difference in distance between the switch-on point (for an object that is approaching) and the switch-off point (for an object that is receding).



Repeat accuracy Variance in the output values when approaching a mechanically prescribed position repeatedly from the same direction.

Switching frequency The maximum speed at which the sensor can reliably detect an object under standardized conditions. This corresponds to the maximum number of switching operations (ON/OFF) per second. The value is dependent on the size and speed of the object and its distance from the sensing face.

Temperature drift The temperature drift indicates by what percentage amount of S_r the switching distance may change (maximum) within a defined temperature range.

Ambient temperature T_a The maximum permissible temperature range at which a sensor may be operated while ensuring reliable functioning of the sensor.

Degree of protection Indicates the suitability of electrical components for various ambient conditions and protection of persons from potential hazard in their use. The degrees of protection are specified according to IEC 60529. Code letters IP (International Protection Marking) designate protection against shock hazard, ingress of solid foreign bodies, and water, for electrical equipment. Example IP69K: Protection against ingress of water at high pressure and steam cleaning per DIN 40050 Part 9.

Output functions, connections and electr. characteristic values

Normally closed (NC) Also "Normally closed" – sensor principle/output function in which the switching output is inactive (not energized) when the sensor detects an object. The switching output is energized when no object is present.



Normally open (NO) Also "Normally open" – sensor principle/output function in which the switching output is active (energized) when the sensor detects an object. The switching output is not energized when no object is present. This principle is the most commonly used in automation technology.



PNP The output switches to $+U_B$

NPN The output switches to $+U_B$

PNP/NPN (push/pull) Output switches between $+U_B$ and $+U_B$.
(The outputs from multiple devices cannot be wired in parallel)

PNP/NPN NO/NC codable Output switches between $+U_B$ and $-U_B$. By reversing the supply voltage (brown to minus, blue to $+$) the switching function can be set from NO to NC.

IO-Link

The capacitive sensor can with an appropriate counterpart (master) enter into data communication (com2, 30Kbit) through its switching output. On one hand it can transmit much data (e.g. the continuous degree of damping by an object or fill medium as a numerical value), and on the other hand be configured remotely from the counterpart. If there is no master the sensor automatically goes into its normal switching mode (SIO): e.g. PNP/NC

Analog output

Output switches between + U_B and - U_B . By reversing the supply voltage (brown to minus, blue to +) the switching function can be set from NO to NC.

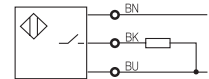
Connection diagrams

DC 3-/4-wire

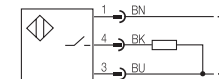
NO

PNP (+) sourcing

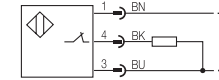
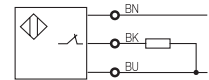
Cable/terminals



Male



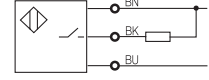
NC



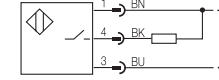
NO

NPN (-) sinking

Cable/terminals



Male

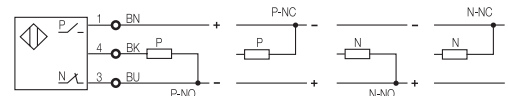


NC



NO/NC user selectable

PNP/NPN selectable

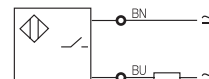


AC/DC 2-wire

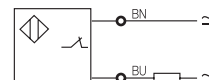
Protection isolated (Protection Class II)

Cable/terminals

NO



NC

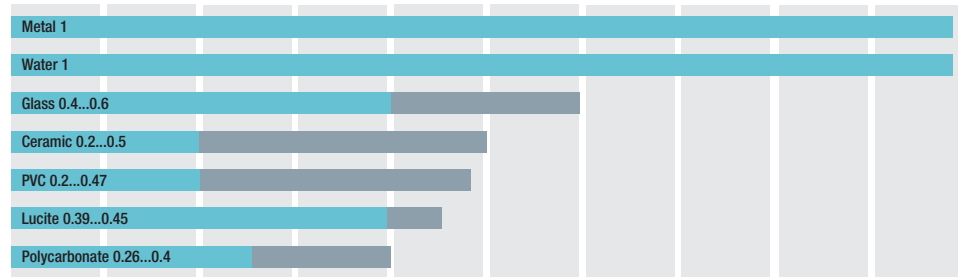


| | |
|---|--|
| Operating voltage U_B | Voltage range (V) in which flawless functioning of the sensor is assured. It includes all voltage tolerances and ripple. |
| Voltage drop U_d | The maximum voltage loss of the switching final stage between switching output and $+U_B$ (PNP) or $-U_B$ (NPN) at the maximum specified load current. |
| Ripple | The maximum permissible AC voltage (peak-to-peak of U_e) which may be superimposed on the operating voltage U_S without affecting the function of the sensor. |
| Output current I_e | The maximum current with which the output of the sensor may be loaded in continuous operation. Also referred to as operating current. |
| No-load current | The maximum internal current consumption with no load connected to the switching output (in general at $U_{B \max.}$ and actuated). |
| Short-circuit protection | Protective device for overload and short-circuit. Present in all our DC sensors. In the event of overload or short-circuit at the output, the output transistor is automatically switched off. As soon as the malfunction has been corrected, the output stage is reset to normal functioning. |
| Reverse polarity protection | Also called polarity reversal protection. This sensor technology protects against reversal of the supply voltage (plus and minus) and reversal of the connection wires (brown and blue). |
| Reverse protected | The sensor electronics is protected against any possible reversal combination of all the leads. |

Correction factors and guide values for SmartLevel technology

Conditions of operation and correction factors

If an electrically non-conducting actuation element (target) enters the sensor field, the capacitance changes proportionally to ϵ_r and to the immersion depth or to the distance to the sensing surface. Since the rated switching distance s_n is based on a grounded standard target made of Fe, the switching distances must be corrected when using other materials:



These data depend among other things on the sensor type and the object dimensions and should be used for reference only.

Application area for SmartLevel technology with guide values

The media and conductivity values given here are only guide values and are for general orientation only. Basically all the media listed can be reliably detected. The differences are in the compensation ability for buildup, foaming and films when the level is falling. When in doubt, testing should be carried out, since factors such as temperature and media concentration can affect the conductivity values. Please contact us. Conductivity values for other media on request.

| Industrial waste water (select the sensor according to conductivity of the medium) | | | |
|--|---|----------|-----------------------------|
| | Disinfectants (media containing chlorine) | | |
| | Table salt solution | | |
| Alcohol | Rinsing agents | | |
| Marmalade | Milk/buttermilk/yogurt | | |
| Demineralized water | Fruit juice | | |
| Mineral oils | Coolant/lubricants | | Ketchup/ mayonnaise/mustard |
| Plant oils | Formic acid (30 %) | | Phosphoric acid (10 %) |
| Ammonia (30 %) | Vinegar | | Sulfuric acid (10 %) |
| Drinking water | Cola | | Calcium chloride (30 %) |
| Sugar solution, diluted | Honey/glue | Blood | Hydrochloric acid (40 %) |
| Toothpaste | Beer | Seawater | Nitric acid (12 %) |

BCS Standard up to approx. 0.7 mS

SmartLevel technology 15 approx. 0.7...15 mS

SmartLevel technology 50 approx. 15...50 mS

SmartLevel technology 500+ approx. 50...500 mS and greater

Application and setting examples for basic sensor types

Flush sensors

Normally, the rectilinear field of flush-mounted sensors scans objects from a distance. To ensure flawless switching of the sensor, the maximum switching distance must be checked before using the device. The following example applications show how you can do this.



Detecting solid bodies made of different materials

A flush mountable capacitive sensor will be used to detect a ceramic plate. The sensor is set to the maximum rated switching distance s_n of, for example, 4mm from metal or by approximation from your hand. With this preset distance of 4 mm, move the sensor towards the ceramic plate. The rated switching distance s_n to the ceramic plate has been reduced to approx. 2mm. The distance of 2 mm is now the maximum permissible switching distance for the ceramic plate. Only adjustment for smaller sensing distances than 2mm is permitted.

Attention! To ensure that our sensors work reliably within their technical specifications, they have a greater sensing distance than the maximum rated switching distance s_n indicated in the catalog. If the user now adjusts the switching distance for the above described ceramic plate to 4 mm, the sensor will operate outside the permitted range. This entails a risk that temperature and other environmental factors, plus electrical interference in the mains, may lead to faulty switching by the sensor.

Sensing levels through container walls

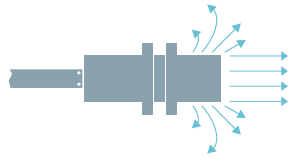
A flush mountable capacitive sensor will be used to detect a liquid, e.g. water, through the container wall. The dividing wall must be made of a non-conductive material, e.g. glass or plastic. The max. permissible wall thickness increases with the diameter of the sensing face: max. 4 mm (except SmartLevel technology).

The sensor's face (sensing surface) is now attached to the glass or plastic wall as tightly as possible. The tank is then filled with water until approx. 30 to 50% of the sensor's sensing surface is covered.

Particularly when small and ultra-small quantities of liquid are being scanned, and if the sensor has not been mounted in a form-fitting configuration (flat sensor surface on a tank wall with a small radius), 30 % should be chosen as a coverage area. Now turn the sensor's potentiometer counter-clockwise (less sensitivity) until it turns off (NO). Now turn the potentiometer clockwise again (greater sensitivity) until the LED and sensor turn on again. For modern versions with a teach function at 30-50 % coverage of the sensing face through the fill material hold down the key or placed a defined potential on the Teach line until the LED flashes (full teach).

Non-flush sensors

These capacitive sensors with their spherical electrical field are especially suited as level detectors for liquids, granulates or powders.



Sensing levels directly in the container

A non-flush mountable capacitive sensor will be used to detect a granulate in a tank. The sensor is now installed in the tank with its sensing surface (clear zone at the head as described in the catalog), in a configuration ensuring that the head is completely covered by the product.

Now turn the sensor's potentiometer counter-clockwise (lower sensitivity) until the LED, and thus the output signal, switch off. Now turn the potentiometer clockwise again (higher sensitivity) just enough until the LED, and thus the output signal, switch on again. Then turn the potentiometer another ½-turn (180°-rotation) clockwise. This compensates for possible temperature fluctuations or humidity changes in the product you are detecting. If a medium has a high ϵ_r , especially water, the sensor will react much more sensitively. Therefore the adjustment should be for around 50 % coverage or a sensor resp. immersion probe in the SmartLevel technology series should be used.

Detecting levels of conductive liquids directly in the container or through a container wall

Ideal the level sensors using SmartLevel technology detect liquid, conductive and even sticking liquids directly or indirectly through container walls. And they do it without adjustment using the factory default setting as long as the wall thickness does not exceed 6mm. For thicker walls or extremely conductive and adhering media the SmartLevel technology sensor can be adjusted.

Adjustment:

First install the sensor flush against the container wall. Bring level to 30-50 % coverage of the sensing face. Set the switching point on the potentiometer so that the sensor is just switching. For the new device generation with Teach key hold down or place a defined potential on the Teach line until the LED flashes.

Adjustment can also be made with a totally filled or empty container:

Full compensation: turn the potentiometer slowly counter-clockwise until the sensor turns off. Now slowly turn the potentiometer (with the sensor switched off) clockwise until the sensor turns on again. At the turn-on point then turn the potentiometer another half-turn (approx. 180°) clockwise and the SmartLevel sensor is adjusted.

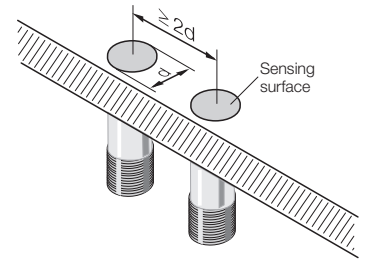
Empty compensation: Now slowly turn the potentiometer (with the sensor switched off) clockwise until the sensor turns on again. At the turn-on point the potentiometer only needs to be turned 3 times by approx. 360° counter-clockwise and the SmartLevel sensor is adjusted.

In essence the switching point for a SmartLevel sensor should be at 30-50 % coverage of the sensing face with the medium.

Installation guidelines

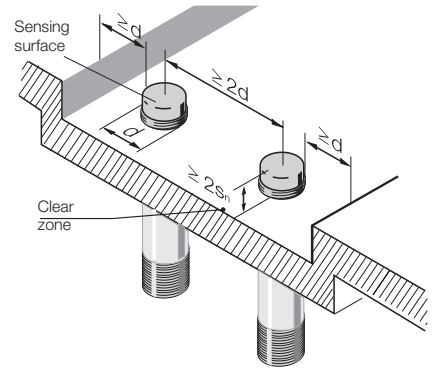
**Flush-mount
Proximity switches**

Flush mountable sensors can be installed with their sensing surface flush to the metal.
The distance between two proximity switches (in row mounting) must be $\geq 2d$.



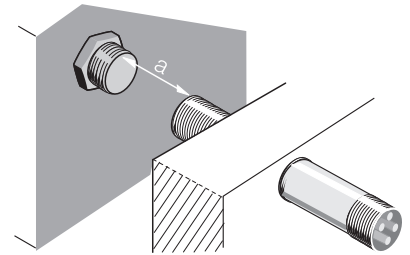
**Non-flush mountable
proximity switches**

The sensing surface must extend $\geq 2s_n$ from the metallic installation medium. The distance between two proximity switches must be $\geq 2d$.



**Opposing
Installation of two sensors**

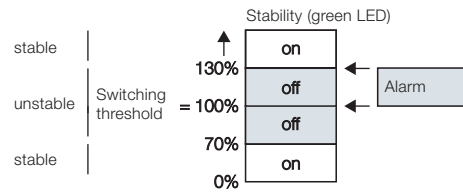
The opposing installation of two sensors requires a minimum distance of $a \geq 4d$ between the sensing surfaces.



PHOTOELECTRIC SENSORS

Alarm output

Device/function on the receiver which generates a warning signal when there is a malfunction. This can be caused by contamination or mechanical maladjustment. The alarm output is activated if the received signal lies in the alarm range for a defined amount of time.

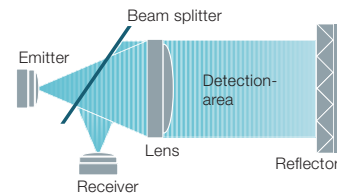


Turn-off time

The time a sensor requires to respond when the target leaves the detection range at a factor of 0.5 of the radiant power.

Autocollimation

Principle of reflection in which the light beam striking a reflector is reflected back to itself in parallel. The emitter and receiver use the same optical lens, so that the emitted light and the light beam reflected back from the reflector lie on the same optical axis. The advantage compared with the dual lens principle is that there is no dead zone in front of the sensor and that the switching response does not depend on the approach direction.



Blind zone

Area between the active surface and minimum switching distance within which a target cannot be detected.

Distance sensor with analog output

A sensor which generates a continuously varying output signal which is a function of the distance between the sensing surface and the target point. It generates a linear output signal within a certain range (measuring range).

Dark switching

Type of photoelectric sensor in which the output becomes active when there is no light at the receiver.

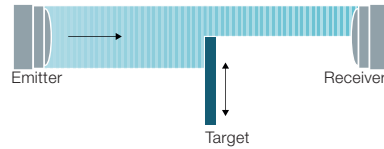
| Light receiver | Amplifier | Consumer |
|-----------------|---------------------|--------------|
| Non-illuminated | Fully modulated | Switched on |
| Illuminated | Not fully modulated | switched off |

On delay

Time a sensor requires to be ready when an object enters the capture range.

Through-beam sensor

A photoelectric sensor consisting of separate emitter and receiver units which must be aligned on opposite sides of the sensing path. Long ranges of up to 50 m. When an object interrupts the light beam, the receiver switches, i.e. the output signal changes - regardless of the surface composition of the target. In unfavorable conditions (e.g. dust, moisture, oil), you achieve the best results with through-beam sensors.



Detection range

Range in which the switching distance of a sensor from the standard target can be adjusted.

Color sensor

Photoelectric sensor for detecting and evaluating colors.

Fiber optics

Optical fiber made of glass or plastic with a diameter of down to 50 μm, consisting of several hundred individual fibers. Extremely flexible. The optical properties are not affected by moisture or aggressive media.

Ambient light

The portion of light which is picked up by the receiver, but does not originate from the emitter.

Fork sensors

U-shaped housing style of through-beam sensors with the emitter and receiver facing each other. Advantage: Ease of installation, alignment and simple electrical connection.

Gray value shift

The switching distance difference when calibrating using different object reflectivities. The sensor is calibrated for a distance using a Kodak gray card with 90 % reflection. A Kodak gray card having 18 % Reflexion is used and the resulting distance measured. The difference between these two switchpoints in % is referred to as the gray value shift. The smaller the gray value shift, the more color-independently the sensor operates.

Light-on switching

Type of photoelectric sensor in which the output becomes active when there is light at the receiver.

| Light receiver | Amplifier | Consumer |
|-----------------|---------------------|--------------|
| Non-illuminated | Fully modulated | Switched on |
| Illuminated | Not fully modulated | switched off |

Background suppression (BGA)

Procedure for reliably distinguishing an object against its background. Can be done nearly regardless of the color and surface of the object. A reflecting background has no effect. Sensors with background suppression consist of a light emitter and several light receivers. By means of triangulation the position of an object can be determined. Depending on this position the switching distance can be set and the object thereby distinguished from the background.

Hysteresis

Signal difference resulting for measurement sensors when a mechanically prescribed position is approached from one side, then crosses this point and afterwards approaches this same position from the other direction. Position difference between switching point (object approaches) and switch-back point (object travels away) for switching sensors.

Correction factors (for diffuse sensors)

Values for determining the range of a sensor which is dependent on the differing reflection properties of an object. For example the range of the sensor is reduced with darker objects due to the greater light absorption.

For objects with different reflective properties the following correction factors can be applied (see table).

| Correction factor | Object, surface |
|-------------------|--|
| 1 | Paper, white, matte 200 g/m ² |
| 1.2...1.6 | Metal, shiny |
| 1 | Styrofoam, white |
| 0.6 | Cotton fabric, white |
| 0.5 | PVC, gray |
| 0.4 | Wood, rough |
| 0.3 | Cardboard, black, shiny |
| 0.1 | Cardboard, black, matte |

Short-circuit protection

Protective device for overload and short-circuit. Present in all our DC sensors. In the event of overload or short-circuit at the output, the output transistor is automatically switched off. As soon as the malfunction has been corrected, the output stage is reset to normal functioning.

Lasers, laser class

Designation both for a physical effect as well as a device used to generate laser beams. Laser stands for "light amplification by stimulated emission of radiation". Laser beams are electromagnetic waves.

The purpose of laser protection classes is to protect persons from laser radiation by specifying limit values. Based on this, the lasers used are classified according to a scale reflecting the degree of hazard. The calculations and associated limit values relevant for the classification are described in the standard EN 60825-1:2001-11. The grouping is based on a combination of output power and wavelength, taking into account emission duration, number of pulses and angle extension.

Balluff sensors have the following laser protection classes:

Class 1: Non-hazardous, no special caution.

Class 2: Low power, eyelid closing reflex is sufficient.

Light

The medium with which photoelectric sensors operate. In the sensor there is a change in the light intensity on an optical path (between emitter and receiver) caused by a target object. This change is evaluated by the sensor. Depending on the properties of this object and the characteristics of the optical beam, the light beam is either interrupted, reflected or scattered.

The emitter usually consists of high-power red light LEDs and laser LEDs, with photodiodes or CCD (charge coupled devices) used as the receiver. Red light LEDs are used because the light beam and the detection point can be measured visually and can be adjusted more easily. In the case of laser sensors the light spot is usually more sharply delineated and is highly visible. Even over great distances.

Light type

Photoelectric sensors make use of the differing wavelengths of light, with some using visible light in different colors and others using light invisible to the human eye. Photoelectric sensors use mainly the following light types:

Red light: Visible, easy to align, universal for many applications

Infrared light (IR): Invisible, essentially color-independent, ideal in dirty environments

Laser red light: Visible, physical properties of the laser make it ideal for small parts detection and for long ranges, high switching accuracy

White light: Visible, for special applications, e.g. contrast and color sensors

Ultraviolet light (UV): Hardly visible, ideal for luminescent marks

Light band sensor**LED light band sensor**

Photoelectric sensor with LEDs consisting of multiple emitters and receivers in a row in separate housings. The close arrangement of the optical components means the emitter generates a light band is generated and the entire light intensity measured at the facing receiver side.

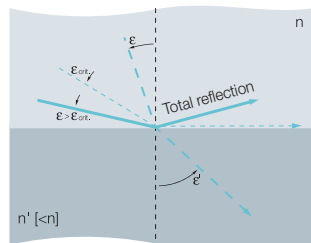
Laser light band sensor

Photoelectric laser sensor in which a laser beam is refracted on the emitter side over a prism at a sharp angle for generating a homogeneous light band. The receiver contains a CCD (charge coupled device) used for precisely detecting edges, even at up to 2 m of distance. A CCD consists of very precisely arranged light-sensitive cells whose charge is measured and processed by the electronics.

Light refraction

A change in direction of light rays at the interface between two optical media having different optical density (e.g. glass/air). The degree of refraction depends on the quotients of the optical densities of both media and on the angle of incidence ϵ to the optical axis.

If a light beam travels from a dense medium, n , into a thinner one, n' , its course there will show a greater angle ϵ' . Above $\epsilon_{crit.}$ (critical angle at which the refracted ray travels parallel to the interface). If however it again enters the medium having density n , the result is total reflection.

**Light grids**

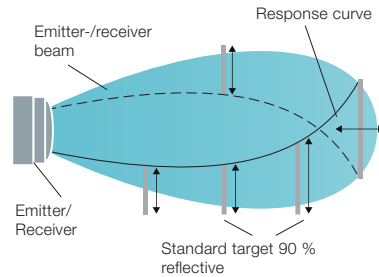
Photoelectric sensor in which the emitter and the receiver are located in separate housings. By placing individual emitter and receiver elements in a row a large area can be monitored. As soon as an object enters this area, a switching signal is triggered. Light grids with analog output also tell you the object location or its size.

Time-of-flight sensor

Photoelectric sensor in which the light time-of-flight between emitter, the object and the receiver is measured. The duration of this time-of-flight allows the distance to the object to be determined.

Diffuse sensors

Photoelectric sensor in which the emitter and the receiver are in one housing. The alignment to a detection object is largely uncritical. A target object (e. g. a standard target which is 90 % reflective) bounces a part of the light from its surface back to the receiver. If the standard target reaches the response curve, the output signal will change. The sensing distance depends on the size, shape, color and properties of the reflective object surface. Using a Kodak gray card with 90 % reflectivity (like white paper), distances of up to 2 m can be obtained.



Relative humidity

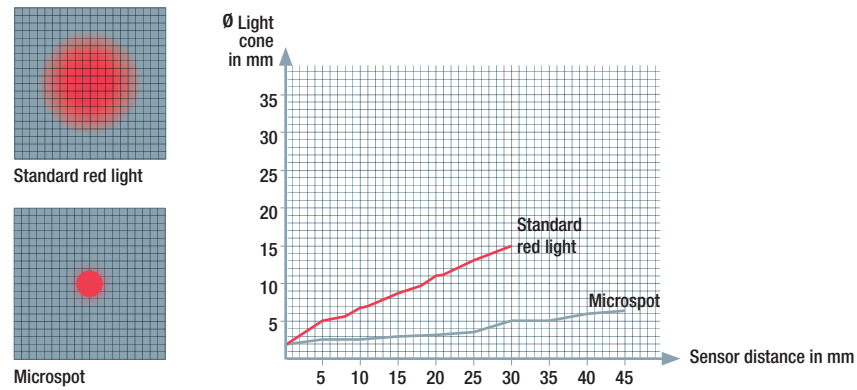
Ambient condition which can affect the sensor function. For example if the lens is subjected to high relative humidity.

MICROmote

Photoelectric sensor system which combines an external processor unit (amplifier) with exceptionally small photoelectric sensor heads. This allows miniaturized sensor heads to be realized.

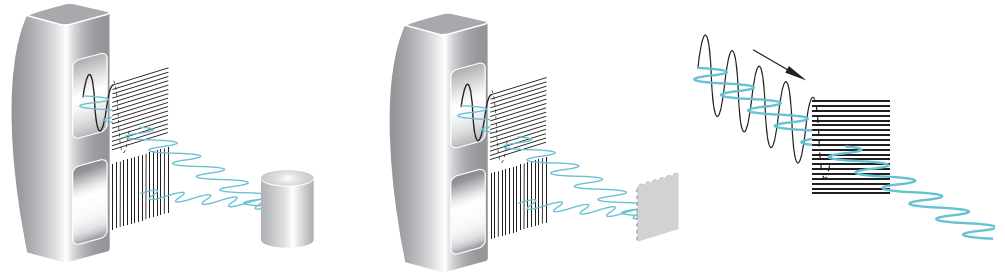
Microspot/Pin Point

LEDs with opening angles of $\leq 3^\circ$. These are used where small, extremely sharp light spots are required.



Polarizing filter

Light filters which allow only a certain oscillation plane to pass and thereby effectively filters out scattered light: the light is polarized. Reduces reflections from metallic surfaces and reduces spurious switching. Also referred to as a polarizing filter.



Reflector

Light beams extend to a straight line in free space. Upon striking an object, they are reflected. Depending on the surface properties of the object, we distinguish between the following reflection types: total reflection, retroreflection, and diffuse reflection.

In optical object detection and image processing retro-reflectors are often used. The retroreflection is caused by two mirrors aligned vertically to each other. A light beam is again projected back through double reflection in the same direction. The angle of incidence can thus be altered in a relatively wide range. The two-dimensional principle of retroreflection can be carried over to a spatial system with three mirrors which are oriented at right angles to each other (one corner of a cube standing on its point). A light beam entering this system is totally reflected by all three surfaces and exits parallel to the incident beam.

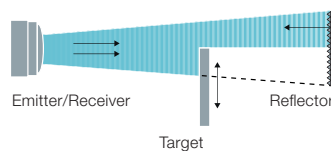
Retroreflection

A light beam which is again projected back through double reflection in the same direction. The angle of incidence can thus be altered in a relatively wide range. Is caused by two mirrors at vertical angles to each other.

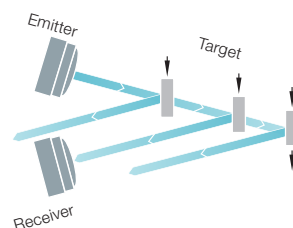


Retroreflective sensor

Photoelectric sensor in which the emitter and the receiver are in one housing. A reflector on the opposite side of the beam bounces the emitter's light back to the receiver. A target object interrupts the reflected light beam and causes a change in the output signal. With reflective surfaces it is recommended that the light reflected from the object be filtered out using a polarizing filter in front of the receiver, in order to prevent any possible fault signals.



| | |
|----------------------|--|
| Sensor heads | Sensor heads consist of an emitter and receiver element. In through-beam sensors the emitter and receiver elements are housed in separate enclosures. |
| Beam shape | <p>Focused With a focused light beam the emitter light is bundled at a certain distance into a minimum diameter. This location is referred to as the point of focus. At this point small parts detection and switching accuracy are at their greatest.</p> <p>Collimated With a collimated light beam the light emitted is radiated out in parallel. This means the size of the light spot remains virtually unchanged over the entire working range of the sensor. This allows distance-independent yet precise object detection.</p> <p>Divergent In a divergent light beam the light spot created by the emitter becomes larger with increasing object distance. In the case of through-beam sensors a divergent light beam makes possible simple alignment with the reflector or receiver.</p> |
| Teach-in | Method for setting sensors by pressing a button. No potentiometers or slide switches are used. Because there are defined setting increments, the advantage is that the sensor cannot be set in an unreliable range. The microcontroller also assumes control of the contamination indicator and the contamination output. |
| Test input | Input on a photoelectric sensor which enables function checking of the emitter and receiver by interrupting its light pulses. Contamination or maladjustment of the optical axis causes the emitter signal to reach the receiver only weakly, if at all. Therefore, the output will not switch, even though the test input is activated. The test function corresponds to a remote monitoring of the photoelectric sensor and enables a preventive system control. |
| Transmission | Measure for the transparency of a medium. It is defined as the ratio of: – passed to – entering light (in %). Diffuse transmission is the term which is used when the light is partially or completely diffused. |
| Triangulation | Procedure whereby the light cones of the emitter and receiver lobe of a through-beam system intersect each other at a narrow angle. A target object is detected where the lobes overlap. The emitter light which is reflected or diffused from objects outside this limited zone cannot be registered by the photo-receiver. Benefit: With triangulation, relatively small changes in distance can be recognized (e.g. slots, offsets on shafts). Color and shape of the object have very little effect. |



Ambient temperature T_a

The maximum permissible temperature range at which a sensor may be operated while ensuring reliable functioning of the sensor.

Reverse polarity protection

Also called polarity reversal protection. This sensor technology protects against reversal of the supply voltage (plus and minus) and reversal of the connection wires (brown and blue).

Contamination

Dirt and dust particles which collect on a sensor and reduce the range of photoelectric sensors and fiber objects compared with pure air. Deposits on the lens reduce its light transmission. The light is absorbed and scattered in the beam path. An oil-free source of compressed air can be used to prevent the effects of dirt and contamination due to impure air.

Amplifier

Amplifiers prepare signals from sensor heads or fiber optics and convert them into a switching or analog signal.

Alphanumeric Index

SORTED BY
ORDERING CODE

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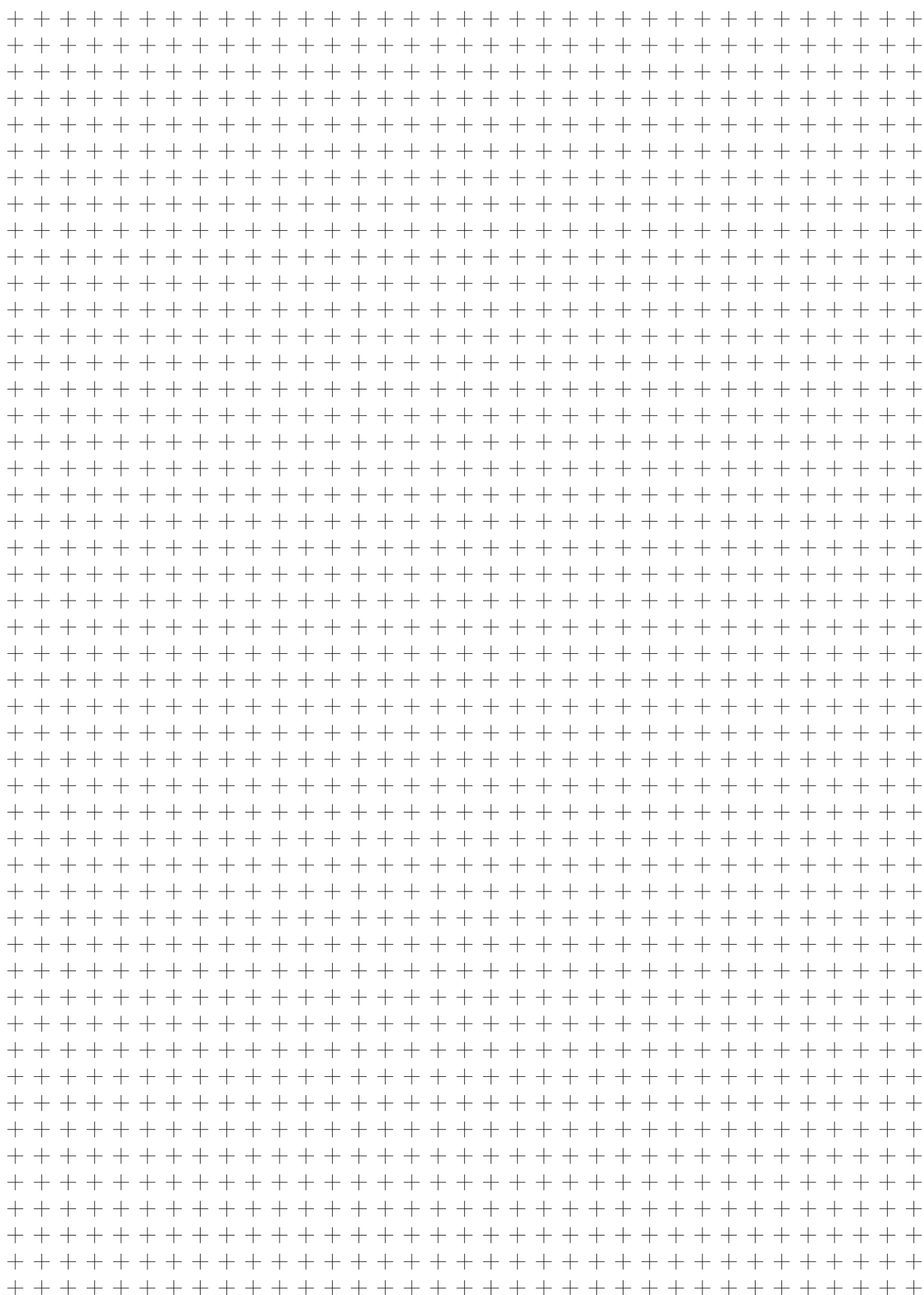
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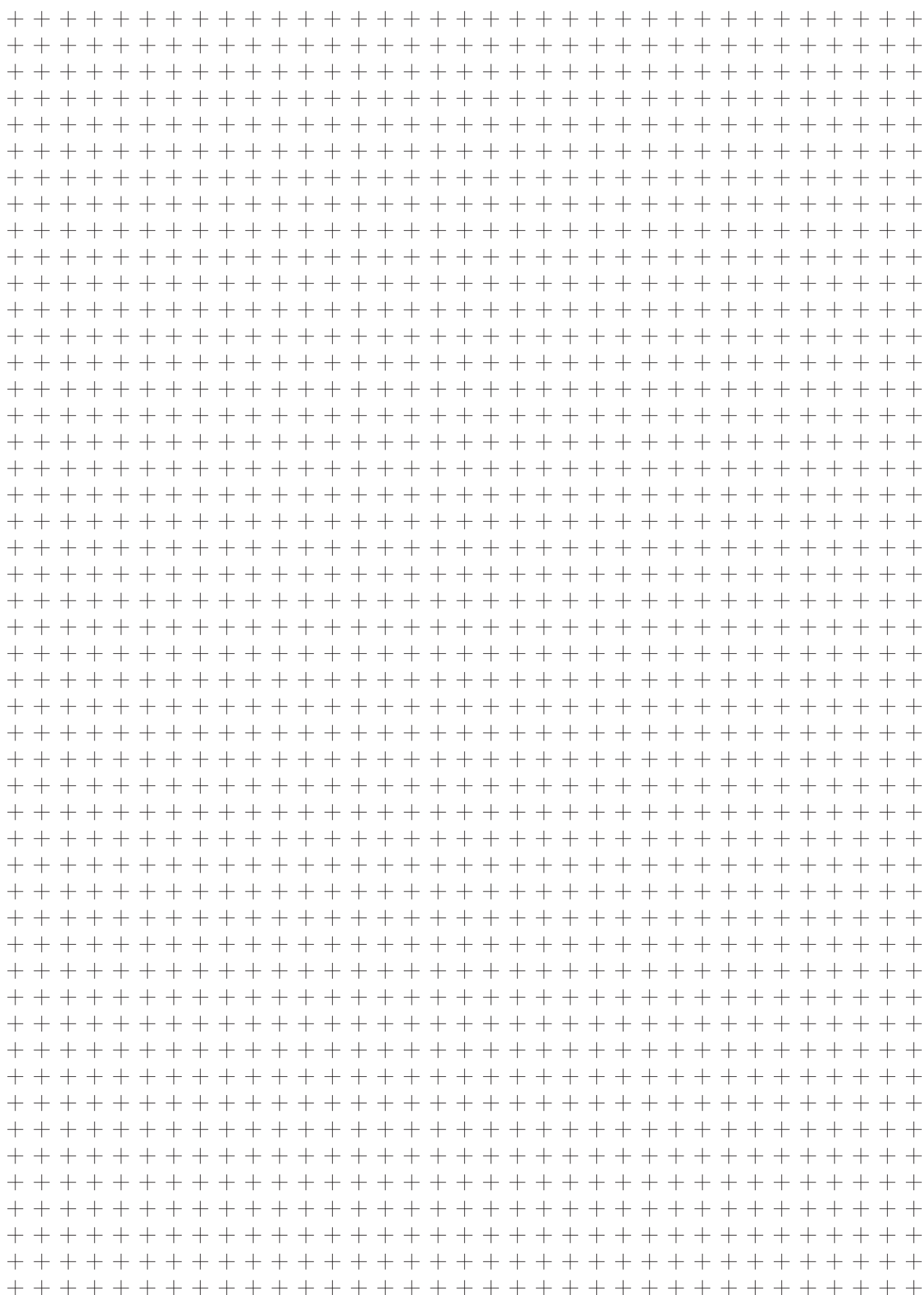
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Headquarters
Balluff GmbH
Schurwaldstrasse 9
73765 Neuhausen a. d. F.
Germany
Phone +49 7158 173-0
Fax +49 7158 5010
balluff@balluff.de



CONTACT OUR
WORLDWIDE
SUBSIDIARIES