PRODUCT INFORMATION

# Magnetic proximity sensors

## MAGNETIC PROXIMITY SENSORS WITH MAXIMUM OPERATING DISTANCES AND A MINIMAL DESIGN

Proximity sensors

SICK
Sensor Intelligence.

# PRODUCT FAMILY OVERVIEW

**MQ**

Magnetic proximity sensors in a rectangular housing

| Technical data overview | |
|---|---|
| **Housing** | Rectangular |
| **Thread size** | – |
| **Housing** | 10 mm x 16 mm x 28 mm |
| **Sensing range $S_n$** | ≤ 60 mm |
| **Housing material** | VISTAL™ |
| **Enclosure rating** | IP 67, IP 68 |
| **Connection** | Connector M8, 3-pin / Cable, 3-wire / Cable with connector M12, 3-pin |

**At a glance**

- Type: 10 mm x 28 mm x 16 mm
- Sensing ranges: up to 60 mm
- Electrical configuration: DC, 3-wire
- Enclosure rating: IP 67, IP 68
- Temperature range: –25 °C to +75 °C
- Tough VISTAL™ housing
- Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood
- Solves high-temperature applications by installing the permanent magnet in the high-temperature area and the sensor behind an insulated area

**Detailed information** ➜ 6



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| | | |
|---|---|---|
| | | |
| | **MM** | **MM Namur** |
| | Magnetic proximity sensors in common M8, M12, and M18 cylindrical housing | NAMUR magnetic proximity sensors in a cylindrical housing for explosive areas |
| | | |
| | Cylindrical thread design | Cylindrical thread design |
| | M8 x 1<br>M12 x 1<br>M18 x 1 | M12 x 1<br>M18 x 1 |
| | – | – |
| | ≤ 120 mm | ≤ 120 mm |
| | Nickel-plated brass | Nickel-plated brass / Stainless steel V4A (1.4404, 316L) |
| | IP 67 | IP 67 |
| | Connector M8, 3-pin / Cable, 3-wire / M12, 4-pin male connector | M12, 4-pin male connector / Cable, 2-wire /<br>Cable with connector M9, 5-pin, with knurled nuts |
| | | |
| | • Types: M8 to M18<br>• Sensing range: up to 120 mm<br>• Electrical configuration: DC 3-wire<br>• Enclosure rating: IP 67<br>• Temperature range: –25 °C to +75 °C<br>• Nickel-plated brass housing; plastic sensing face<br>• Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood<br>• Solves high-temperature applications by installing the permanent magnet in the high-temperature area and the sensor behind an insulated area | • Types: M12 to M18<br>• Sensing range: up to 120 mm<br>• Electrical configuration: NAMUR<br>• Enclosure rating: IP 67<br>• Temperature range: –25 °C to +70 °C<br>• Nickel-plated brass housing; plastic sensing face<br>• Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood<br>• NAMUR design for usage in explosion-hazardous areas |
| | ➜ 10 | ➜ 16 |

# OVERVIEW OF MAGNETIC PROXIMITY SENSORS

| Product | | | Housing | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Design | | Size | | | | Material | | | |
| | | | Cylindrical thread design | Rectangular | M8 | M12 | M18 | 10.3 mm x 37 mm x 16 mm | Nickel plated brass | Stainless steel | VISTAL™ | |
| **Magnetic proximity sensors** | | | | | | | | | | | | |
| | MQ | MQ10 | | ■ | | | | ■ | | | ■ | |
| | MM | MM08 | ■ | | ■ | | | | ■ | | | |
| | | MM12 | ■ | | | ■ | | | ■ | | | |
| | | MM18 | ■ | | | | ■ | | ■ | ■ | | |
| | MM Namur | MM12 Namur | ■ | | | ■ | | | ■ | | | |
| | | MM18 Namur | ■ | | | | ■ | | ■ | | | |



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| | Sensor properties | | Application | | | Sensing range $S_n$ | Page |
|---|---|---|---|---|---|---|---|
| | DC 3-wire | NAMUR output | Factory automation | Explosion-hazardous areas | Object detection behind surfaces | 20 40 60 80 100 120 | |
| | ■ | | ■ | | ■ | 60 mm | → 6 |
| | ■ | | ■ | | ■ | 60 mm | → 10 |
| | ■ | | ■ | | ■ | 90 mm | → 10 |
| | ■ | | ■ | | ■ | 120 mm | → 10 |
| | | ■ | | ■ | ■ | 90 mm | → 16 |
| | | ■ | | ■ | ■ | 120 mm | → 16 |

# MAGNETIC PROXIMITY SENSORS IN A RECTANGULAR HOUSING

## Product description

The MQ magnetic proximity sensors reliably detect permanent magnets through non-magnetic materials such as stainless steel, aluminum, plastic or wood. The MQ sensors feature a square, compact plastic housing that makes them easy to install. These sensors are resistant to dust, heat and vibration, making them ideal for use in harsh environments.

## At a glance

- Type: 10 mm x 28 mm x 16 mm
- Sensing ranges: up to 60 mm
- Electrical configuration: DC, 3-wire
- Enclosure rating: IP 67, IP 68
- Temperature range: –25 °C to +75 °C
- Tough VISTAL™ housing
- Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood
- Solves high-temperature applications by installing the permanent magnet in the high-temperature area and the sensor behind an insulated area

## Your benefits

- Short-circuit protection (pulsed)
- Large sensing ranges ensure reliable switching, even with target position tolerances
- Low-cost sensor solution saves installation time and costs
- Compact plastic housing makes machine integration easy

## Additional information

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→ www.sick.com/MQ

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



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## Detailed technical data

### Features

| | |
|---|---|
| **Housing** | Rectangular |
| **Dimensions (W x H x D)** | 10 mm x 16 mm x 28 mm |
| **Sensing range $S_n$** [1] | 0 mm ... 60 mm |
| **Safe sensing range $S_a$** | 48.6 mm |
| **Magnetic sensitivity** | ≤ 1 mT |
| **Switching frequency** | 1,000 Hz |
| **Output type** | PNP / NPN (depending on type) |
| **Output function** | NO |
| **Electrical wiring** | DC 3-wire |
| **Enclosure rating** [2] | IP 67, IP 68 |

[1] Sensing range based on installation in non-magnetic material using Magnet MAG-3010-B (M4.0)

[2] According to EN 60529.

### Mechanics/electronics

| | |
|---|---|
| **Supply voltage** | 10 V DC ... 30 V DC |
| **Ripple** [1] | ≤ 10 % |
| **Voltage drop** [2] | ≤ 1.5 V |
| **Current consumption** [3] | ≤ 5 mA |
| **Time delay before availability** | ≤ 26 ms |
| **Hysteresis** | 1 % ... 10 % |
| **Repeatability** [4] | ≤ 1 % |
| **Temperature drift (of $S_r$)** | ± 10 % |
| **EMC** | According to EN 60947-5-2 |
| **Continuous current $I_a$** | ≤ 200 mA |
| **Connection type** | Male connector, M8<br>Cable, 2 m, PUR/PVC [5]<br>Cable with male connector, M12, 1 m, PUR/PVC [5]<br>(depending on type) |
| **Short-circuit protection** | ✔ |
| **Reverse polarity protection** | ✔ |
| **Power-up pulse protection** | ✔ |
| **Shock and vibration resistance** | 30 g, 11 ms / 10 ... 55 Hz, 1 mm |
| **Ambient operating temperature** | –25 °C ... +75 °C |
| **Housing material** | VISTAL™ |
| **Sensing face material** | Plastic, VISTAL™ |

[1] Of $V_S$.

[2] At $I_a$ max.

[3] Without load.

[4] Von Sr (VS und Ta constant)

[5] Do not bend below 0 °C.

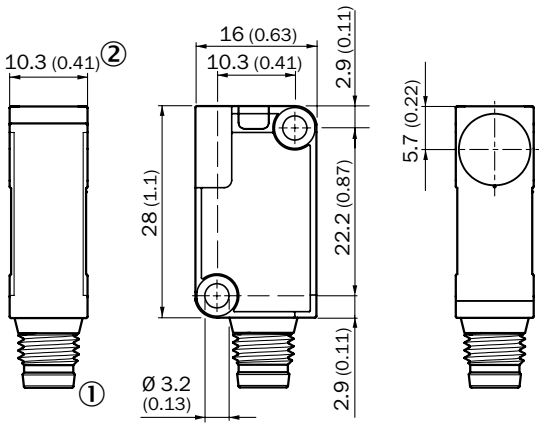
## Ordering information

Other models ➜ www.sick.com/MQ

| Sensing range $S_n$ | Output function | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|
| ≤ 60 mm | NO | PNP | Connector M8, 3-pin | Cd-002 | MQ10-60APSKT0 | 1078008 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-001 | MQ10-60APSKU0 | 1078006 |
| | | | Cable with connector M12, 3-pin, 1 m, PUR | Cd-002 | MQ10-60AP-SKQDS01 | 1078005 |
| | | NPN | Connector M8, 3-pin | Cd-002 | MQ10-60ANSKT0 | 1078009 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-001 | MQ10-60ANSKU0 | 1078007 |

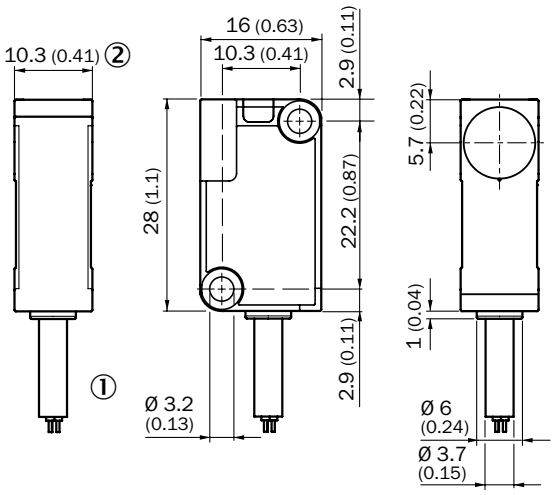
## Dimensional drawings (Dimensions in mm (inch))

MQ10, connector




① Connection
② LED indicator 270°

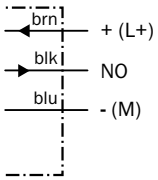
MQ10, cable



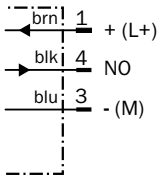

① Connection
② LED indicator 270°

## Connection diagram

Cd-001

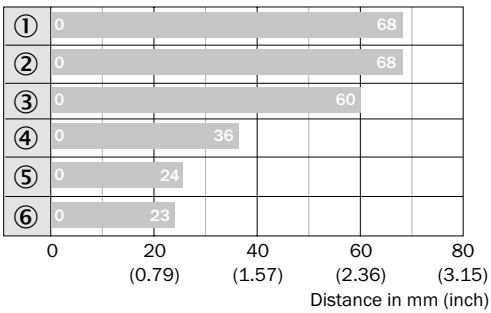



Cd-002




## Maximum sensing range

MMxx-60Axx-xxx



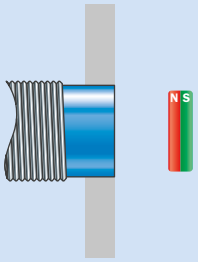

Max. sensing range $S_n$, flush or non-flush installation, non-magnetizable material

| Magnet type | Part no. |
|---|---|
| ① MAG-3315-B (M 5.1) | 7902086 |
| ② MAG-3015-B (M 5.0) | 7901786 |
| ③ MAG-3010-B (M 4.0) | 7901785 |
| ④ MAG-2006-B (M 3.0) | 7901784 |
| ⑤ MAG-0625-A (M 2.0) | 7901783 |
| ⑥ MAG-1003-S (M 1.0) | 7901782 |

## Installation notes

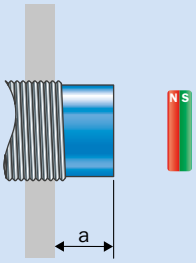
### Flush sensor installation

Magnetic proximity sensors can be installed flush in all materials and metals with affecting the sensing range with the exception of magnetizable materials.




### Non-flush sensor installation

The table shows how much the proximity sensor must protrude when installed in magnetic materials to prevent a reduction in the sensing range by more than 5%. Measurement standard MAG-3010-B (M 4.0).




| Type | Free zone (a) |
|---|---|
| MM08-60A-xxx | 10 mm |
| MM12-60A-xxx | 10 mm |
| MM18-70A-xxx | 15 mm |
| MQ10-60A-xxx | 10 mm |

# MAGNETIC PROXIMITY SENSORS IN COMMON M8, M12, AND M18 CYLINDRICAL HOUSING

## Product description

MM magnetic proximity sensors provide long sensing ranges that can reliably detect magnetic objects. Magnetic proximity sensors are resistant to dust, heat, vibrations and other harsh environments. The MM magnetic sensors are enclosed in a cylindrical housing and are available in sizes MM08, MM12 and MM18.

## At a glance

- Types: M8 to M18
- Sensing range: up to 120 mm
- Electrical configuration: DC 3-wire
- Enclosure rating: IP 67
- Temperature range: –25 °C to +75 °C
- Nickel-plated brass housing; plastic sensing face
- Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood
- Solves high-temperature applications by installing the permanent magnet in the high-temperature area and the sensor behind an insulated area

## Your benefits

- Non-contact operation eliminates interference from dirt, dust and vibrations, increasing sensor life and reducing maintenance costs
- Space-saving installation due to small design
- Large operating ranges with reliable switching increase throughput
- Non-contact, universal detection through several substances, including plastic containers and pipes protective PTFE walls and non-magnetic metal walls

## Additional information

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→ www.sick.com/MM

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



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## Detailed technical data

### Features

| | Standard sensing range | | | Extended sensing range | |
|---|---|---|---|---|---|
| | MM08 | MM12 | MM18 | MM12 | MM18 |
| **Housing** | Cylindrical thread design | | | | |
| **Thread size** | M8 x 1 | M12 x 1 | M18 x 1 | M12 x 1 | M18 x 1 |
| **Sensing range $S_n$** [1] | 0 mm ... 60 mm | | 0 mm ... 70 mm | 5 mm ... 90 mm | 0 mm ... 120 mm |
| **Safe sensing range $S_a$** | 48.6 mm | | 56.7 mm | 72.9 mm | 97.2 mm |
| **Magnetic sensitivity** | 1 mT | | 0.7 mT | 0.6 mT | 0.4 mT |
| **Switching frequency** | 1,000 Hz | | | 5,000 Hz | 1,000 Hz |
| **Output type** | PNP / NPN (depending on type) | | | | PNP |
| **Output function** | NO | NO / NC (depending on type) | | NO | |
| **Electrical wiring** | DC 3-wire | | | | |
| **Magnetic alignment** | Axial | | | | |
| **Enclosure rating** [2] | IP 67 | | | | |

[1] Sensing range based on installation in non-magnetic material using Magnet MAG-3010-B (M4.0)

[2] According to EN 60529.

### Mechanics/electronics

| | Standard sensing range | | | Extended sensing range | |
|---|---|---|---|---|---|
| | MM08 | MM12 | MM18 | MM12 | MM18 |
| **Supply voltage** | 10 V DC ... 30 V DC | | | | |
| **Ripple** [1] | ≤ 10 % | | | | |
| **Voltage drop** [2] | ≤ 2 V | | | ≤ 1.5 V | ≤ 2 V |
| **Current consumption** | ≤ 10 mA [3] | | | | |
| **Time delay before availability** | ≤ 20 ms | | | ≤ 2 ms | ≤ 100 ms |
| **Hysteresis** | 1 % ... 10 % | | | | 1 % ... 20 % |
| **Repeatability** [4] | ≤ 1 % | | | | |
| **Temperature drift (of $S_r$)** | ± 10 % | | | | |
| **EMC** | According to EN 60947-5-2 | | | | |
| **Continuous current $I_a$** | ≤ 200 mA | | | ≤ 300 mA | ≤ 200 mA |
| **Connection type** | Male connector, M8<br>Cable, 2 m, PUR [5]<br>(depending on type) | Male connector, M12<br>Cable, 2 m, PUR [5]<br>(depending on type) | | | |
| **Short-circuit protection** [6] | ✔ | | | | |
| **Reverse polarity protection** | ✔ | | | | |
| **Power-up pulse protection** | ✔ | | | | |
| **Shock and vibration resistance** | 30 g, 11 ms / 10 ... 55 Hz, 1 mm | | | | |
| **Ambient operating temperature** | –25 °C ... +75 °C | | | | |
| **Housing material** | Nickel-plated brass | | | | |
| **Tightening torque, max.** | 6 Nm | 15 Nm | 40 Nm | 7 Nm | 40 Nm |
| **Items supplied** | Fastening nuts (Metal, 2 x) | | | | |

[1] Of $V_S$.

[2] At $I_a$ max.

[3] Without load.

[4] Von Sr (VS und Ta constant)

[5] Do not bend below 0 °C.

[6] Pulsed.

## Ordering information

Other models ➔ www.sick.com/MM

### MM08, standard sensing range

- **Magnetic sensitivity:** 1 mT

| Sensing range $S_n$ | Output function | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|
| 0 mm ... 60 mm | NO | PNP | Connector M8, 3-pin | Cd-002 | MM08-60APS-ZTK | 1040067 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-001 | MM08-60APS-ZUK | 1040027 |
| | | NPN | Connector M8, 3-pin | Cd-002 | MM08-60ANS-ZTK | 1040068 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-001 | MM08-60ANS-ZUK | 1040066 |

### MM12, standard sensing range

- **Magnetic sensitivity:** 1 mT

| Sensing range $S_n$ | Output function | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|
| 0 mm ... 60 mm | NO | PNP | M12, 4-pin male connector | Cd-011 | MM12-60APS-ZCK | 1040070 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-002 | MM12-60APS-ZUK | 1040069 |
| | | NPN | M12, 4-pin male connector | Cd-011 | MM12-60ANS-ZCK | 1040071 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-002 | MM12-60ANS-ZUK | 1040026 |
| | NC | PNP | Cable, 3-wire, 2 m, PUR | Cd-003 | MM12-60APO-ZUK | 1040065 |

### MM18, standard sensing range

- **Magnetic sensitivity:** 0.7 mT

| Sensing range $S_n$ | Output function | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|
| 0 mm ... 70 mm | NO | PNP | M12, 4-pin male connector | Cd-011 | MM18-70APS-ZCK | 1040072 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-001 | MM18-70APS-ZUK | 1040029 |
| | | NPN | M12, 4-pin male connector | Cd-011 | MM18-70ANS-ZCK | 1040073 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-001 | MM18-70ANS-ZUK | 1040085 |
| | NC | PNP | M12, 4-pin male connector | Cd-279 | MM18-70APO-ZCK | 1047255 |

### MM12, extended sensing range

- **Magnetic sensitivity:** 0.6 mT

| Sensing range $S_n$ | Output function | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|
| 5 mm ... 90 mm | NO | PNP | M12, 4-pin male connector | Cd-011 | MM12-90APS-ZC0 | 1029950 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-001 | MM12-90APS-ZU0 | 1029951 |
| | | NPN | Cable, 3-wire, 2 m, PUR | Cd-001 | MM12-90ANS-ZU0 | 1051013 |

### MM18, extended sensing range

- **Magnetic sensitivity:** 0.4 mT

| Sensing range $S_n$ | Output function | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|
| 0 mm ... 120 mm | NO | PNP | M12, 4-pin male connector | Cd-011 | MM18-00APS-ZCK | 1076085 |
| | | | Cable, 3-wire, 2 m, PUR | Cd-001 | MM18-00APS-ZUK | 1077120 |



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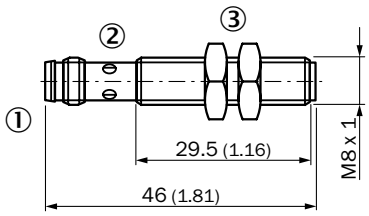
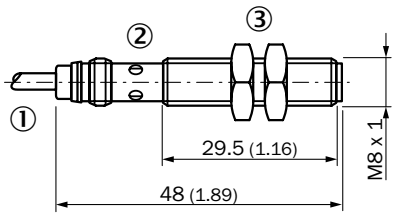
## Dimensional drawings (Dimensions in mm (inch))

### MM08, connector, standard sensing range



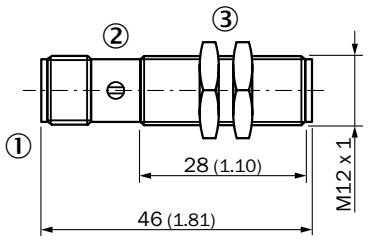

① Connection
② Indication LED
③ Fastening nuts (2 x); width across 13, plastic

### MM08, cable, standard sensing range



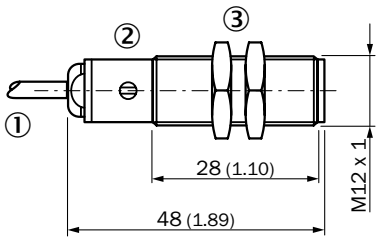

① Connection
② Indication LED
③ Fastening nuts (2 x); width across 13, plastic

### MM12, connector, standard sensing range



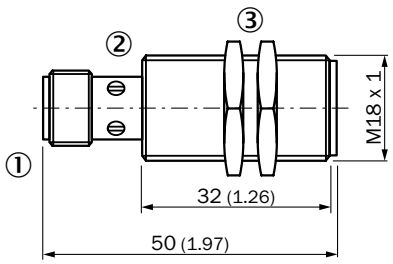

① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal

### MM12, cable, standard sensing range



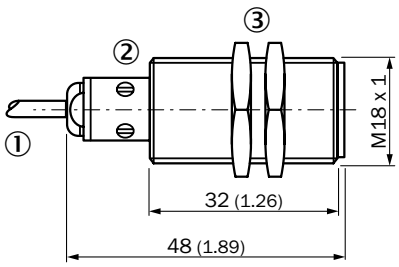

① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal

### MM18, connector, standard / extended sensing range



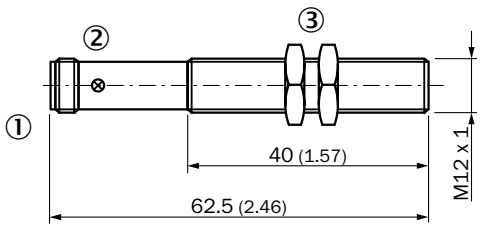

① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal

### MM18, cable, standard / extended sensing range



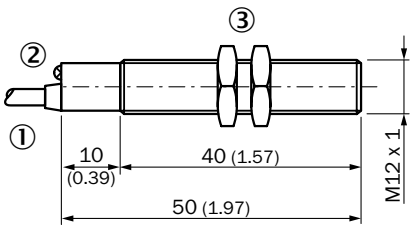

① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal

### MM12, connector, extended sensing range




① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal

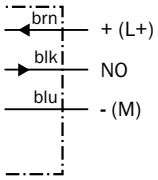
### MM12, cable, extended sensing range



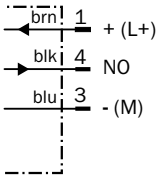

① Connection
② Indication LED
③ Fastening nut; 24 mm hex, metal

## Connection diagram

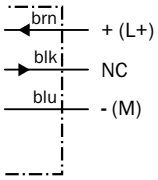
Cd-001



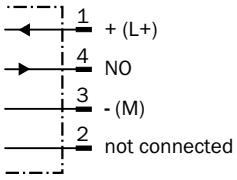

Cd-002



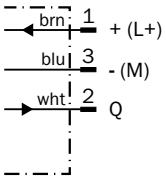

Cd-003




Cd-011

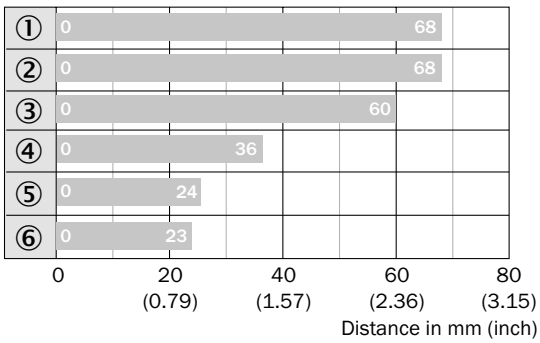



Cd-279




## Maximum sensing range

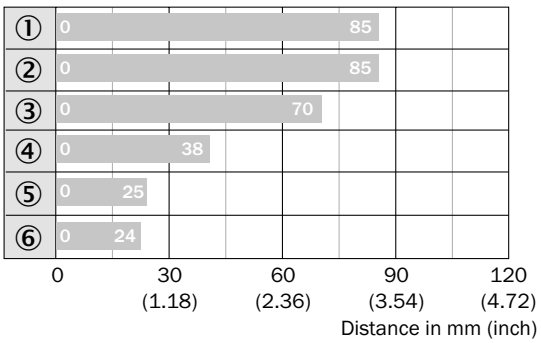
MMxx-60Axx-xxx




Max. sensing range $S_n$, flush or non-flush installation, non-magnetizable material

| Magnet type | Part no. |
|---|---|
| ① MAG-3315-B (M 5.1) | 7902086 |
| ② MAG-3015-B (M 5.0) | 7901786 |
| ③ MAG-3010-B (M 4.0) | 7901785 |
| ④ MAG-2006-B (M 3.0) | 7901784 |
| ⑤ MAG-0625-A (M 2.0) | 7901783 |
| ⑥ MAG-1003-S (M 1.0) | 7901782 |

MMxx-70Axx-xxx




Max. sensing range $S_n$, flush or non-flush installation, non-magnetizable material

| Magnet type | Part no. |
|---|---|
| ① MAG-3315-B (M 5.1) | 7902086 |
| ② MAG-3015-B (M 5.0) | 7901786 |
| ③ MAG-3010-B (M 4.0) | 7901785 |
| ④ MAG-2006-B (M 3.0) | 7901784 |
| ⑤ MAG-0625-A (M 2.0) | 7901783 |
| ⑥ MAG-1003-S (M 1.0) | 7901782 |



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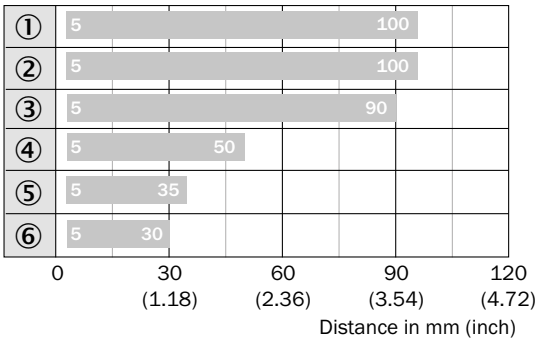
MMxx-90Axx-xxx




Max. sensing range $S_n$, flush or non-flush installation, non-magnetizable material

| Magnet type | Part no. |
|---|---|
| ① MAG-3315-B (M 5.1) | 7902086 |
| ② MAG-3015-B (M 5.0) | 7901786 |
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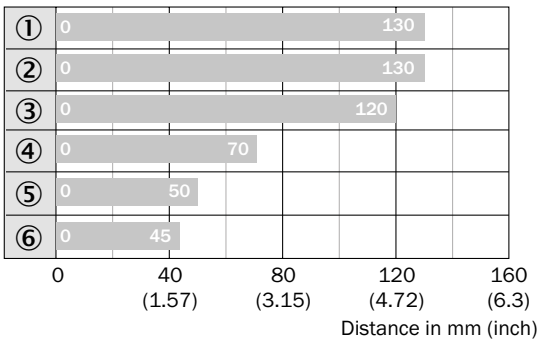
| ④ MAG-2006-B (M 3.0) | 7901784 |
| ⑤ MAG-0625-A (M 2.0) | 7901783 |
| ⑥ MAG-1003-S (M 1.0) | 7901782 |

MMxx-00Axx-xxx



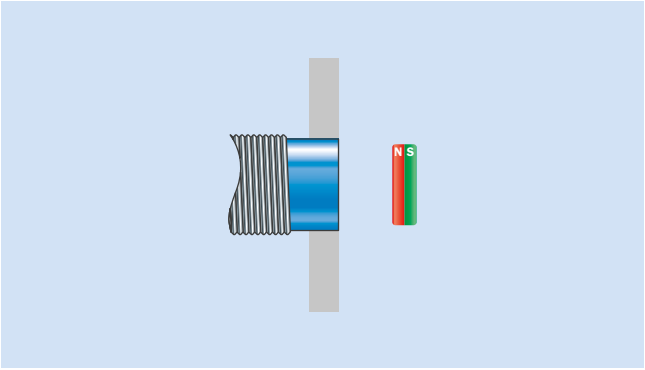

Max. sensing range $S_n$, flush or non-flush installation, non-magnetizable material

| Magnet type | Part no. |
|---|---|
| ① MAG-3315-B (M 5.1) | 7902086 |
| ② MAG-3015-B (M 5.0) | 7901786 |
| ③ MAG-3010-B (M 4.0) | 7901785 |
| ④ MAG-2006-B (M 3.0) | 7901784 |
| ⑤ MAG-0625-A (M 2.0) | 7901783 |
| ⑥ MAG-1003-S (M 1.0) | 7901782 |

## Installation notes

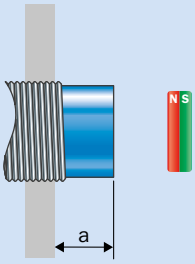
### Flush sensor installation

Magnetic proximity sensors can be installed flush in all materials and metals with affecting the sensing range with the exception of magnetizable materials.




### Non-flush sensor installation

The table shows how much the proximity sensor must protrude when installed in magnetic materials to prevent a reduction in the sensing range by more than 5%. Measurement standard MAG-3010-B (M 4.0).




| Type | Free zone (a) |
|---|---|
| MM08-60A-xxx | 10 mm |
| MM12-60A-xxx | 10 mm |
| MM18-70A-xxx | 15 mm |
| MQ10-60A-xxx | 10 mm |

# NAMUR MAGNETIC PROXIMITY SENSORS IN A CYLINDRICAL HOUSING FOR EXPLOSIVE AREAS

## Product description

MM NAMUR magnetic proximity sensors provide large operating distances that can reliably detect magnetic objects. Magnetic proximity sensors are resistant to dust, heat and vibration, making them ideal for use in harsh environments – even highly explosive atmospheres. By using magnetic conductors, these sensors are able to reliably detect objects over greater distances. The NAMUR design for hazardous areas is available in MM12 and MM18 designs.

## At a glance

- Types: M12 to M18
- Sensing range: up to 120 mm
- Electrical configuration: NAMUR
- Enclosure rating: IP 67
- Temperature range: –25 °C to +70 °C
- Nickel-plated brass housing; plastic sensing face
- Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood
- NAMUR design for usage in explosion-hazardous areas

## Your benefits

- NAMUR version ensures safe function in explosion-hazardous areas
- Non-contact operation eliminates interference from dirt, dust and vibrations, increasing sensor life and reducing maintenance costs
- Large sensing ranges ensure reliable switching, even with target position tolerances
- Universal use since detection through other objects, such as plastic walls or non-magnetic stainless steel walls, is also possible

## Additional information

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Dimensional drawings . . . . . 18
Connection diagram . . . . . 19
Maximum sensing range . . . . . 19
Installation notes . . . . . 20
Recommended accessories . . . . . 22

→ www.sick.com/MM_Namur

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



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## Detailed technical data

### Features

| | MM12 NAMUR | MM18 NAMUR |
|---|---|---|
| **Housing** | Cylindrical thread design | |
| **Thread size** | M12 x 1 | M18 x 1 |
| **Sensing range $S_n$** [1] | 5 mm ... 60 mm / 5 mm ... 90 mm (depending on type) | 5 mm ... 70 mm / 5 mm ... 120 mm (depending on type) |
| **Safe sensing range $S_a$** | 48.6 mm / 72.9 mm (depending on type) | 56.7 mm / 97.2 mm (depending on type) |
| **Magnetic sensitivity** | ≤ 1 mT / ≤ 0.6 mT (depending on type) | 0.7 mT / ≤ 0.4 mT (depending on type) |
| **Switching frequency** | 5,000 Hz | |
| **Output type** | NAMUR | |
| **Output characteristic** | According NAMUR EN 60947-5-6. Using of isolated switch amplifier with certificates of conformity for explosion areas is recommended(U ≤ 20 V, I ≤ 60 mA, P ≤ 100 mW) | |
| **Magnetic alignment** | Axial | |
| **Enclosure rating** [2] | IP 67 | |

[1] Sensing range based on installation in non-magnetic material using Magnet MAG-3010-B (M4.0)

[2] According to EN 60529.

### Mechanics/electronics

| | MM12 NAMUR | MM18 NAMUR |
|---|---|---|
| **Ripple** [1] | ≤ 5 % | |
| **Time delay before availability** | ≤ 2 ms | |
| **Hysteresis** | 1 % ... 10 % | |
| **Repeatability** [2] | ≤ 1 % | |
| **Temperature drift (of $S_r$)** | ± 10 % | |
| **EMC** | According to EN 60947-5-2 | |
| **Current consumption, sensor is activated** | ≥ 2.5 mA | |
| **Current consumption, sensor is not activated** | ≤ 1 mA | |
| **Connection type** | Male connector, M12<br>Cable, 2 m, PVC [3]<br>Cable with male connector, 0.8 m, PUR<br>(depending on type) | Male connector, M12<br>Cable, 2 m, PVC [3]<br>(depending on type) |
| **Wire-break protection** | ✔ | |
| **Short-circuit protection** | ✔ | |
| **Reverse polarity protection** | ✔ | |
| **Shock and vibration resistance** | 30 g, 11 ms / 10 ... 55 Hz, 1 mm | |
| **Ambient operating temperature** | –25 °C ... +70 °C | |
| **Housing material** | Nickel-plated brass | |
| **Tightening torque, max.** | ≤ 7 Nm | ≤ 25 Nm |
| **Items supplied** | Fastening nuts (2 x) | |
| **EC Approval Certificate** | TÜV 99 ATEX 1398 | |
| **ATEX marking** | EX II 2G Ex ib IIC T6 Gb Ta: - 25 °C ... + 70 °C | |
| **Ex area category** | 2G | |
| **Input voltage $U_i$ max.** [4] | 16 V | |
| **Input power $P_i$ max.** [4] | 100 mW | |
| **Input current $I_i$ max.** [4] | 30 mA | |
| **Internal capacitance $C_i$ max.** [4] | 15 nF | |
| **Internal inductance $L_i$ max.** [4] | 35 µH | |

| | MM12 NAMUR | MM18 NAMUR |
|---|---|---|
| **Nominal voltage** | 8.2 V DC (with isolating amplifier - available accessory) | |

[1] Of $V_S$.

[2] Von Sr (VS und Ta constant)

[3] Do not bend below 0 °C.

[4] For connection to a separately certified intrinsically safe circuit only.

## Ordering information

Other models ➔ www.sick.com/MM_Namur

### MM12 NAMUR

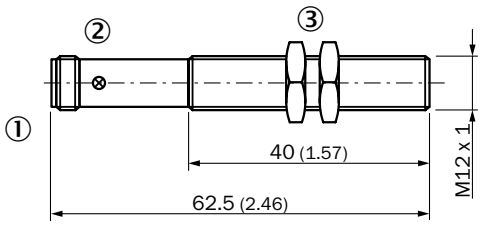
| Sensing range $S_n$ | Magnetic sensitivity | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|
| ≤ 60 mm | ≤ 1 mT | M12, 4-pin male connector | Cd-015 | MM12-60A-N-ZC0 | 7900287 |
| | | Cable, 2-wire, 2 m, PVC | Cd-012 | MM12-60A-N-ZW0 | 7900286 |
| ≤ 90 mm | ≤ 0,6 mT | Cable with connector M9, 5-pin, with knurled nuts, 0.8 m, PUR | Cd-012 | MM12-90A-N-ZUD | 1046761 |

### MM18 NAMUR

| Sensing range $S_n$ | Magnetic sensitivity | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|
| ≤ 70 mm | ≤ 0,7 mT | M12, 4-pin male connector | Cd-015 | MM18-70A-N-ZC0 | 7900289 |
| | | Cable, 2-wire, 2 m, PVC | Cd-012 | MM18-70A-N-ZW0 | 7900288 |
| ≤ 120 mm | ≤ 0,4 mT | M12, 4-pin male connector | Cd-015 | MM18-00A-N-ZC0 | 1026614 |

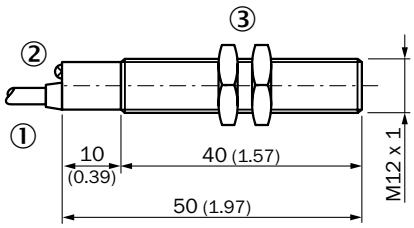
## Dimensional drawings (Dimensions in mm (inch))

MM12 Namur, connector




① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal

MM12 Namur, cable




① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal



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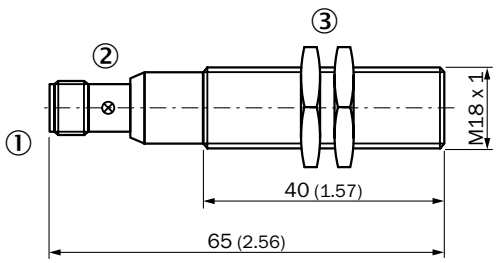
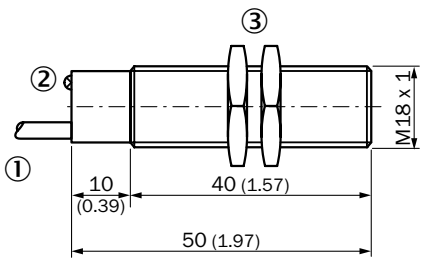
MM18 Namur, connector




① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal

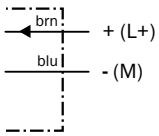
MM18 Namur, cable



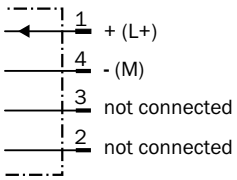

① Connection
② Indication LED
③ Fastening nuts (2x); width across 17, metal

## Connection diagram

Cd-012

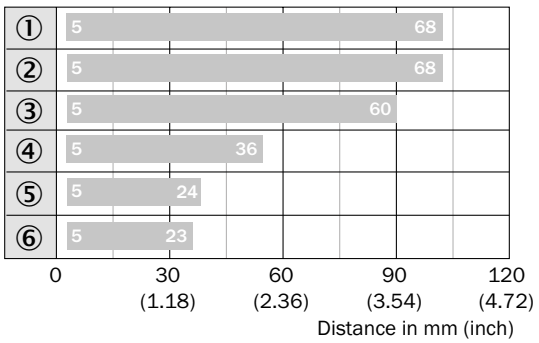



Cd-015




## Maximum sensing range

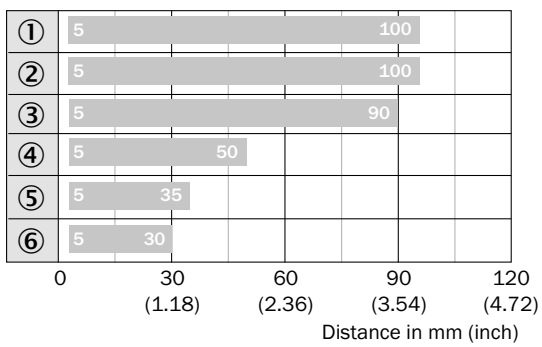
MMxx-60Axx-xxx




Max. sensing range $S_n$, flush or non-flush installation, non-magnetizable material

| Magnet type | Part no. |
|---|---|
| ① MAG-3315-B (M 5.1) | 7902086 |
| ② MAG-3015-B (M 5.0) | 7901786 |
| ③ MAG-3010-B (M 4.0) | 7901785 |
| ④ MAG-2006-B (M 3.0) | 7901784 |
| ⑤ MAG-0625-A (M 2.0) | 7901783 |
| ⑥ MAG-1003-S (M 1.0) | 7901782 |

MMxx-90Axx-xxx




Max. sensing range $S_n$, flush or non-flush installation, non-magnetizable material

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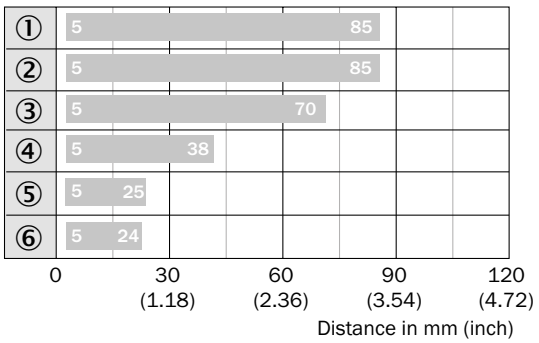
| ④ MAG-2006-B (M 3.0) | 7901784 |
| ⑤ MAG-0625-A (M 2.0) | 7901783 |
| ⑥ MAG-1003-S (M 1.0) | 7901782 |

MMxx-70Axx-xxx




Max. sensing range $S_n$, flush or non-flush installation, non-magnetizable material

| Magnet type | Part no. |
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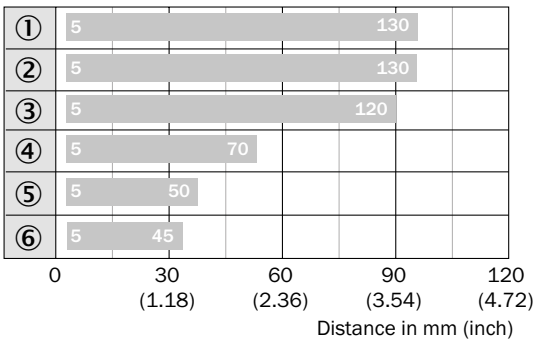
| ⑥ MAG-1003-S (M 1.0) | 7901782 |

MMxx-00Axx-xxx

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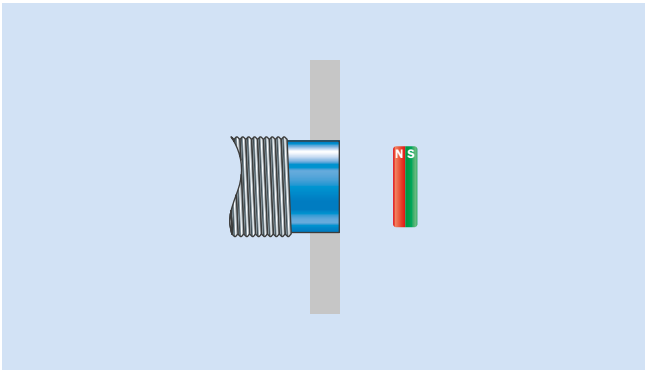
| ⑥ MAG-1003-S (M 1.0) | 7901782 |

## Installation notes

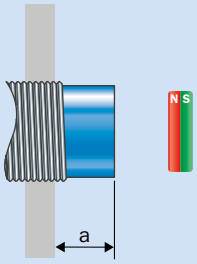
### Flush sensor installation

Magnetic proximity sensors can be installed flush in all materials and metals with affecting the sensing range with the exception of magnetizable materials.




### Non-flush sensor installation

The table shows how much the proximity sensor must protrude when installed in magnetic materials to prevent a reduction in the sensing range by more than 5%. Measurement standard MAG-3010-B (M 4.0).




| Type | Free zone (a) |
|---|---|
| MM08-60A-xxx | 10 mm |
| MM12-60A-xxx | 10 mm |
| MM18-70A-xxx | 15 mm |
| MQ10-60A-xxx | 10 mm |

## Accessories

### Mounting systems

#### Mounting brackets and plates

| Figure | Description | Material | Type | Part no. |
|---|---|---|---|---|
| | Mounting plate for M8 sensors | Steel, zinc coated | BEF-WG-M08 | 5321722 |
| | Mounting bracket for M8 sensors | | BEF-WN-M08 | 5321721 |
| | Mounting plate for M12 sensors | | BEF-WG-M12 | 5321869 |
| | Mounting bracket for M12 sensors | | BEF-WN-M12 | 5308447 |
| | Mounting plate for M18 sensors | | BEF-WG-M18 | 5321870 |
| | Mounting bracket for M18 sensors | | BEF-WN-M18 | 5308446 |

#### Universal bar clamp systems

| Figure | Description | Material | Type | Part no. |
|---|---|---|---|---|
| | Plate N05 for universal clamp bracket, M12 | Zinc plated steel (sheet), Zinc die cast (clamping bracket) | BEF-KHS-N05 | 2051611 |
| | Plate N05N for universal clamp bracket, M12 | Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp) | BEF-KHS-N05N | 2051621 |
| | Plate N06 for universal clamp bracket, M18 | Zinc plated steel (sheet), Zinc die cast (clamping bracket) | BEF-KHS-N06 | 2051612 |
| | Plate N06N for universal clamp bracket, M18 | Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp) | BEF-KHS-N06N | 2051622 |
| | Mounting bar, straight, 200 mm, steel | Steel, zinc coated | BEF-MS12G-A | 4056054 |
| | Mounting bar, straight, 300 mm, steel | | BEF-MS12G-B | 4056055 |
| | Mounting bar, straight, 200 mm, stainless steel | Stainless steel (1.4571) | BEF-MS12G-NA | 4058914 |
| | Mounting bar, straight, 300 mm, stainless steel | | BEF-MS12G-NB | 4058915 |
| | Mounting bar, L-shaped, 150 mm x 150 mm, steel | Steel, zinc coated | BEF-MS12L-A | 4056052 |
| | Mounting bar, L-shaped, 250 x 250 mm, steel | | BEF-MS12L-B | 4056053 |
| | Mounting bar, L-shaped, 150 mm x 150 mm, stainless steel | Stainless steel (1.4571) | BEF-MS12L-NA | 4058912 |
| | Mounting bar, L-shaped, 250 mm x 250 mm, stainless steel | | BEF-MS12L-NB | 4058913 |



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| Figure | Description | Material | Type | Part no. |
|---|---|---|---|---|
| | Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm, steel | Steel, zinc coated | BEF-MS12Z-A | 4056056 |
| | Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm, steel | | BEF-MS12Z-B | 4056057 |
| | Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm, stainless steel | Stainless steel (1.4571) | BEF-MS12Z-NA | 4058916 |
| | Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm, stainless steel | | BEF-MS12Z-NB | 4058917 |
| | Bar clamp for bar diameter of 12 mm (fixing the mounting rod) | Aluminum | BEF-RMC-D12 | 5321878 |

Terminal and alignment brackets

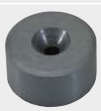
Terminal brackets

| Figure | Description | Material | Type | Part no. |
|---|---|---|---|---|
| | Clamping block for round sensors M8, without fixed stop | Plastic (PA12), glass-fiber reinforced | BEF-KH-M08 | 2051477 |
| | Clamping block for round sensors M12, without fixed stop | | BEF-KH-M12 | 2051479 |
| | Clamping block for round sensors M18, without fixed stop | | BEF-KH-M18 | 2051481 |
| | Clamping block for round sensors M8, with fixed stop | | BEF-KHF-M08 | 2051478 |
| | Clamping block for round sensors M12, with fixed stop | | BEF-KHF-M12 | 2051480 |
| | Clamping block for round sensors M18, with fixed stop | | BEF-KHF-M18 | 2051482 |

Dimensional drawings ➜ Seite 28

## Further accessories

Magnets

| Figure | Description | Dimensions | Diameter | Type | Part no. |
|---|---|---|---|---|---|
| | Magnet without mounting hole, Ø 6 mm, height 25 mm | 25 mm | 6 mm | MAG-0625-A | 7901783 |
| | Magnet without mounting hole, Ø 10 mm, height 3 mm | 3 mm | 10 mm | MAG-1003-S | 7901782 |
| | Magnet with mounting hole for M4 countersunk screw, Ø 20 mm, height 6.5 mm | 6.5 mm | 20 mm | MAG-2006-B | 7901784 |
| | Magnet without mounting hole, Ø 30 mm, height 10 mm | 10 mm | 30 mm | MAG-3010-B | 7901785 |
|  | Magnet with mounting hole for M5 flat head screw, Ø 31 mm, height 15 mm | 15 mm | 31 mm | MAG-3015-B | 7901786 |

| Figure | Description | Dimensions | Diameter | Type | Part no. |
|---|---|---|---|---|---|
| | Magnet with mounting hole for M5 flat head screw, Ø 36 mm, height 19.5 mm | 19.5 mm | 36 mm | MAG-3515-B | 7902086 |

## Connection systems

### Modules and gateways

#### Power supply modules

| Figure | Brief description | Type | Part no. |
|---|---|---|---|
| | NAMUR isolatig amplifier, Cable fault detection, Switching outputs: 2 NO relay (1 per channel), Supply voltage: 24 V ... 230 V, Voltage type: AC/DC | EN2-2EX1 | 6041096 |
| | NAMUR isolatig amplifier, Cable fault detection, Switching outputs: 2 NO relay (1 per channel), Supply voltage: 19,2 V ... 30 V, Voltage type: DC | EN2-2EX3 | 6041095 |

Connecting cables with female connector M8, 3-pin, PVC, chemical resistant

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn, nickel-plated brass

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M8, 3-pin, straight, unshielded | Cable, Flying leads | 2 m, 3-wire | DOL-0803-G02M | 6010785 |
| | | | 5 m, 3-wire | DOL-0803-G05M | 6022009 |
| | | | 10 m, 3-wire | DOL-0803-G10M | 6022011 |
| | | | 15 m, 3-wire | DOL-0803-G15M | 6036472 |
| | Female connector, M8, 3-pin, angled, unshielded | Cable, Flying leads | 2 m, 3-wire | DOL-0803-W02M | 6008489 |
| | | | 5 m, 3-wire | DOL-0803-W05M | 6022010 |
| | | | 10 m, 3-wire | DOL-0803-W10M | 6022012 |
| | | | 15 m, 3-wire | DOL-0803-W15M | 6036473 |

Connecting cables with female connector M8, 3-pin, PUR, halogen-free, Oil / grease resistant

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M8, 3-pin, straight, unshielded | Cable, Flying leads | 1 m, 3-wire | DOL-0803-G01MC | 6036455 |
| | | | 2 m, 3-wire | DOL-0803-G02MC | 6025888 |
| | | | 3 m, 3-wire | DOL-0803-G03MC | 6038991 |
| | | | 5 m, 3-wire | DOL-0803-G05MC | 6025889 |
| | | | 10 m, 3-wire | DOL-0803-G10MC | 6025890 |
| | | | 20 m, 3-wire | DOL-0803-G20MC | 6036456 |
| | Female connector, M8, 3-pin, angled, unshielded | Cable, Flying leads | 2 m, 3-wire | DOL-0803-W02MC | 6025891 |
| | | | 5 m, 3-wire | DOL-0803-W05MC | 6025892 |
| | | | 10 m, 3-wire | DOL-0803-W10MC | 6025893 |



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Connecting cables with female connector M8, 3-pin, PP, hygienic systems

- **Cable material:** PP
- **Connector material:** PP
- **Locking nut material:** stainless steel (V4A/1.4404/316L)

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M8, 3-pin, straight, unshielded | Cable, Flying leads | 5 m, 3-wire | DOL-0803-G05MN | 6033665 |
| | | | 10 m, 3-wire | DOL-0803-G10MN | 6033666 |
| | Female connector, M8, 3-pin, angled, unshielded | Cable, Flying leads | 2 m, 3-wire | DOL-0803-W02MN | 6033667 |
| | | | 5 m, 3-wire | DOL-0803-W05MN | 6033668 |
| | | | 10 m, 3-wire | DOL-0803-W10MN | 6033669 |

Connecting cables with female connector M12, 4-pin, PVC, chemical resistant

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn, nickel-plated brass

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M12, 4-pin, straight, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-G02M | 6009382 |
| | | | 5 m, 4-wire | DOL-1204-G05M | 6009866 |
| | | | 10 m, 4-wire | DOL-1204-G10M | 6010543 |
| | | | 15 m, 4-wire | DOL-1204-G15M | 6010753 |
| | | | 20 m, 4-wire | DOL-1204-G20M | 6034401 |
| | Female connector, M12, 4-pin, angled, with 3 LEDs, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-L02M | 6027945 |
| | | | 5 m, 4-wire | DOL-1204-L05M | 6027944 |
| | | | 10 m, 4-wire | DOL-1204-L10M | 6027946 |
| | Female connector, M12, 4-pin, angled, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-W02M | 6009383 |
| | | | 5 m, 4-wire | DOL-1204-W05M | 6009867 |
| | | | 10 m, 4-wire | DOL-1204-W10M | 6010541 |
| | | | 15 m, 4-wire | DOL-1204-W15M | 6036474 |
| | | | 20 m, 4-wire | DOL-1204-W20M | 6033559 |

Connecting cables with female connector M12, 4-pin, PUR, halogen-free, Oil / grease resistant

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M12, 4-pin, straight, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-G02MC | 6025900 |
| | | | 5 m, 4-wire | DOL-1204-G05MC | 6025901 |
| | | | 10 m, 4-wire | DOL-1204-G10MC | 6025902 |
| | | | 15 m, 4-wire | DOL-1204-G15MC | 6034749 |
| | | | 20 m, 4-wire | DOL-1204-G20MC | 6034750 |
| | | | 25 m, 4-wire | DOL-1204-G25MC | 6034751 |
| | Female connector, M12, 4-pin, angled, with 3 LEDs, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-L02MC | 6039086 |
| | | | 5 m, 4-wire | DOL-1204-L05MC | 6020398 |
| | | | 10 m, 4-wire | DOL-1204-L10MC | 6039088 |
| | Female connector, M12, 4-pin, angled, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-W02MC | 6025903 |
| | | | 5 m, 4-wire | DOL-1204-W05MC | 6025904 |
| | | | 10 m, 4-wire | DOL-1204-W10MC | 6025905 |

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M12, 4-pin, straight, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204G02MC75KM0 | 2079290 |
| | | | 5 m, 4-wire | DOL-1204G05MC75KM0 | 2079291 |
| | | | 10 m, 4-wire | DOL-1204G10MC75KM0 | 2079292 |
| | | | 20 m, 4-wire | DOL-1204G20MC75KM0 | 2089703 |
| | Female connector, M12, 4-pin, angled, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204W02MC75KM0 | 2079293 |
| | | | 5 m, 4-wire | DOL-1204W05MC75KM0 | 2079294 |
| | | | 10 m, 4-wire | DOL-1204W10MC75KM0 | 2079295 |
| | | | 20 m, 4-wire | DOL-1204W20MC75KM0 | 2089704 |

Connecting cables with female connector M12, 4-pin, PP, hygienic systems

- **Cable material:** PP
- **Connector material:** PP
- **Locking nut material:** stainless steel (V4A/1.4404)
- **Description:** This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked.

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M12, 4-pin, straight, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-G02MRN | 6058291 |
| | | | 5 m, 4-wire | DOL-1204-G05MRN | 6058476 |
| | | | 10 m, 4-wire | DOL-1204-G10MRN | 6058478 |
| | | | 15 m, 4-wire | DOL-1204-G15MRN | 2092884 |
| | | | 25 m, 4-wire | DOL-1204-G25MRN | 6058480 |
| | Female connector, M12, 4-pin, angled, with 2 LEDs, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-L02MRN | 6058482 |
| | | | 5 m, 4-wire | DOL-1204-L05MRN | 6058483 |
| | | | 10 m, 4-wire | DOL-1204-L10MRN | 6058484 |
| | | | 25 m, 4-wire | DOL-1204-L25MRN | 6058485 |
| | Female connector, M12, 4-pin, angled, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-W02MRN | 6058474 |
| | | | 5 m, 4-wire | DOL-1204-W05MRN | 6058477 |
| | | | 10 m, 4-wire | DOL-1204-W10MRN | 6058479 |
| | | | 25 m, 4-wire | DOL-1204-W25MRN | 6058481 |

Connecting cables with female connector M12, 4-pin, PVC, hygienic systems

- **Cable material:** PVC
- **Connector material:** PUR
- **Locking nut material:** stainless steel (V4A/1.4404)

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M12, 4-pin, straight, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-G02MNI | 6052613 |
| | | | 5 m, 4-wire | DOL-1204-G05MNI | 6052615 |
| | | | 10 m, 4-wire | DOL-1204-G10MNI | 6052617 |
| | | | 25 m, 4-wire | DOL-1204-G25MNI | 6052619 |
| | Female connector, M12, 4-pin, angled, with 3 LEDs, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-L02MNI | 6052621 |
| | | | 5 m, 4-wire | DOL-1204-L05MNI | 6052622 |
| | | | 10 m, 4-wire | DOL-1204-L10MNI | 6052623 |
| | | | 25 m, 4-wire | DOL-1204-L25MNI | 6052624 |
| | Female connector, M12, 4-pin, angled, unshielded | Cable, Flying leads | 2 m, 4-wire | DOL-1204-W02MNI | 6052614 |
| | | | 5 m, 4-wire | DOL-1204-W05MNI | 6052616 |
| | | | 10 m, 4-wire | DOL-1204-W10MNI | 6052618 |
| | | | 25 m, 4-wire | DOL-1204-W25MNI | 6052620 |

Connecting cables with female connector M12, 5-pin, PP, hygienic systems

- **Cable material:** PP
- **Connector material:** PP
- **Locking nut material:** stainless steel (V4A/1.4404)
- **Description:** This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked.

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Female connector, M12, 5-pin, straight, unshielded | Cable, Flying leads | 2 m, 5-wire | DOL-1205-G02MRN | 6058494 |
| | | | 5 m, 5-wire | DOL-1205-G05MRN | 6058495 |
| | | | 10 m, 5-wire | DOL-1205-G10MRN | 6058496 |
| | | | 25 m, 5-wire | DOL-1205-G25MRN | 6058497 |

Connecting cables with male connector M12, 4-pin, PUR, halogen-free, Oil / grease resistant

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

| Figure | Connection type head A | Connection type head B | Connecting cable | Type | Part no. |
|---|---|---|---|---|---|
| | Male connector, M12, 4-pin, straight, unshielded | Cable, Flying leads | 2 m, 4-wire | STL-1204-G02MC | 6028077 |
| | | | 5 m, 4-wire | STL-1204-G05MC | 6048170 |
| | | | 0.29 m, 4-wire | STL-1204-G0M3C | 6011311 |
| | | | 10 m, 4-wire | STL-1204-G10MC | 6041750 |
| | | | 15 m, 4-wire | STL-1204-G15MC | 6048171 |
| | Male connector, M12, 4-pin, angled, unshielded | Cable, Flying leads | 5 m, 4-wire | STL-1204-W05MC | 6037472 |
| | | | 15 m, 4-wire | STL-1204-W15MC | 6037473 |

Female connectors (ready to assemble) M8, 3-pin

| Figure | Connection type head A | Connection type head B | Connector material | Locking nut material | Type | Part no. |
|---|---|---|---|---|---|---|
| | Female connector, M8, 3-pin, straight, unshielded | Screw-type terminals | PBT/PA | CuZn | DOS-0803-G | 7902077 |
| | Female connector, M8, 3-pin, angled, unshielded | Solder connection | PA/Zinc diecast | CuZn | DOS-0803-W | 7902078 |

Female connectors (ready to assemble) M12, 4-pin

| Figure | Connection type head A | Connection type head B | Connector material | Locking nut material | Type | Part no. |
|---|---|---|---|---|---|---|
| | Female connector, M12, 4-pin, straight, unshielded | Screw-type terminals | PA | CuZn | DOS-1204-G | 6007302 |
| | Female connector, M12, 4-pin, angled, unshielded | Screw-type terminals | PBT | CuZn | DOS-1204-W | 6007303 |

Male connectors (ready to assemble) M8, 3-pin

| Figure | Connection type head A | Connection type head B | Connector material | Locking nut material | Type | Part no. |
|---|---|---|---|---|---|---|
| | Male connector, M8, 3-pin, straight, unshielded | Screw-type terminals | PBT/PA | CuZn | STE-0803-G | 6037322 |

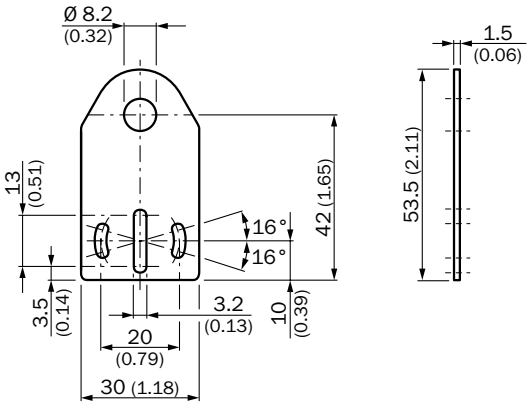
Male connectors (ready to assemble) M12, 4-pin

| Figure | Connection type head A | Connection type head B | Connector material | Locking nut material | Type | Part no. |
|---|---|---|---|---|---|---|
| | Male connector, M12, 4-pin, straight, unshielded | -, screw-type terminals | PA | CuZn | STE-1204-G | 6009932 |
| | Male connector, M12, 4-pin, angled, unshielded | -, screw-type terminals | PBT | CuZn | STE-1204-W | 6022084 |

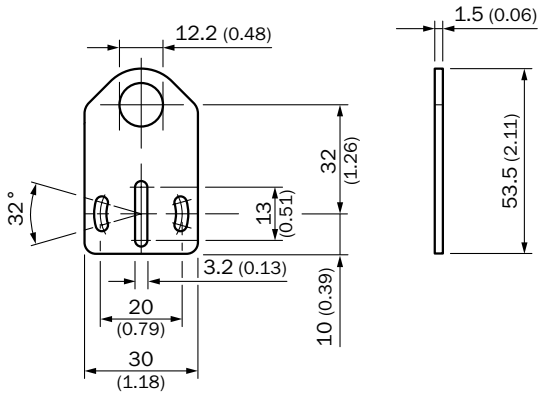
Dimensional drawings ➜ Seite 31

## Dimensional drawings Mounting systems

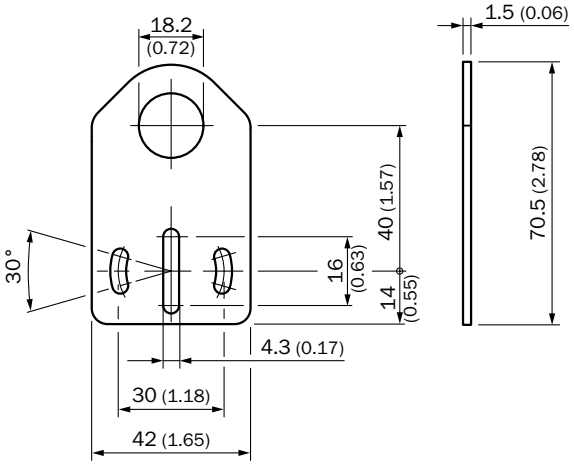
BEF-WG-M08



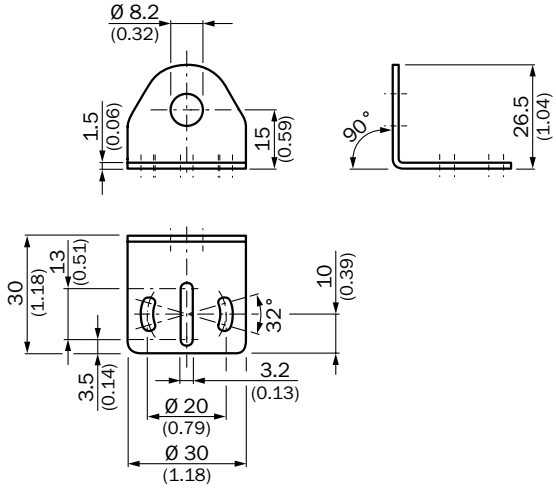

BEF-WG-M12




BEF-WG-M18




BEF-WN-M08



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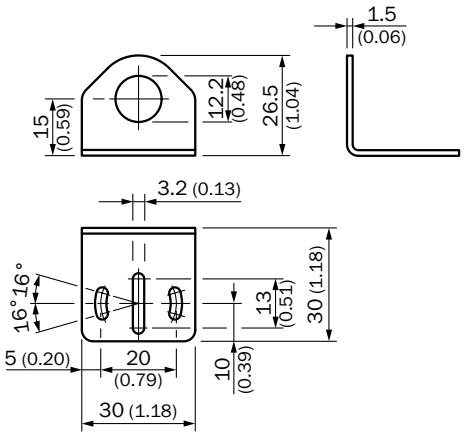
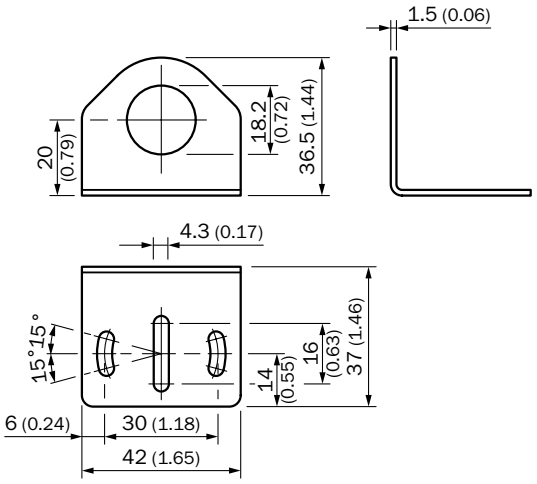
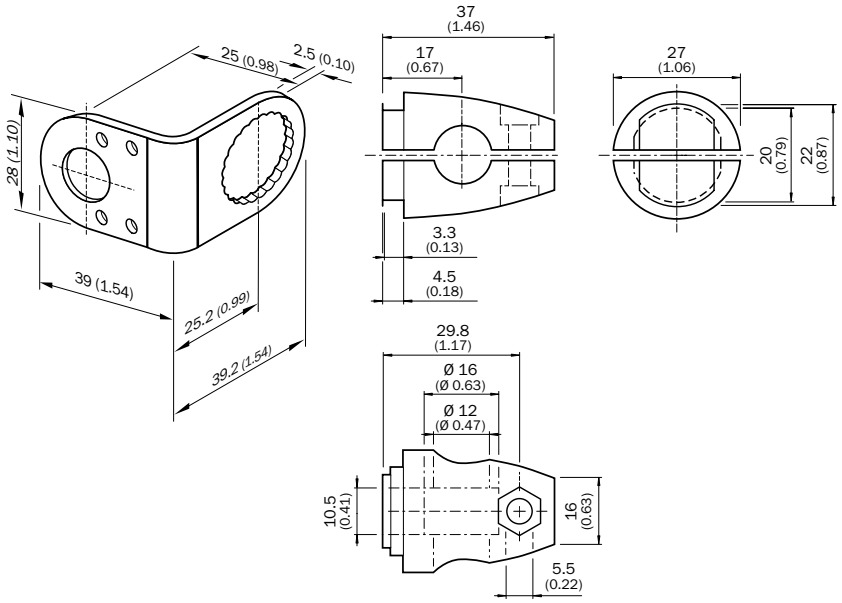
BEF-WN-M12



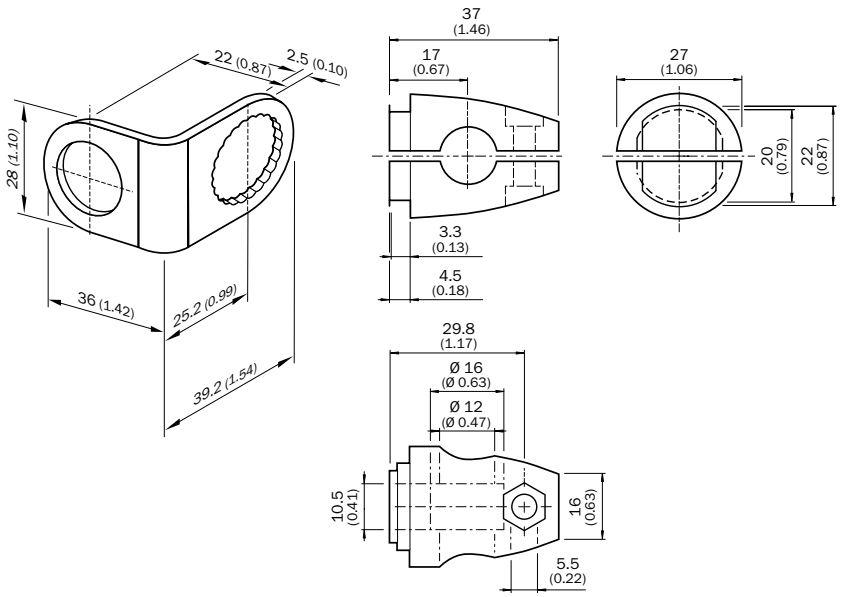

BEF-WN-M18



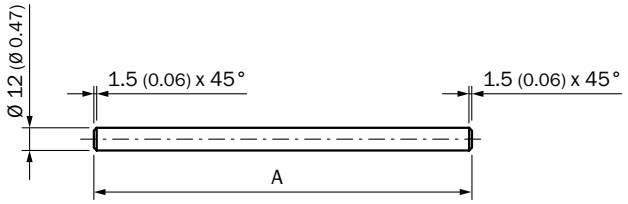

BEF-KHS-N05(N)




BEF-KHS-N06(N)

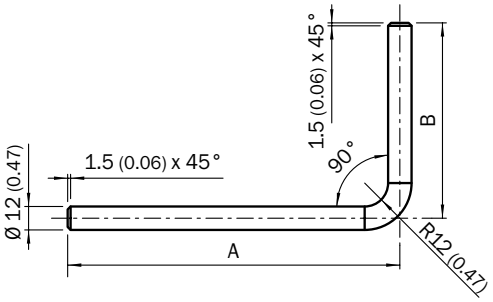


### BEF-MS12G-(N)A / BEF-MS12G-(N)B



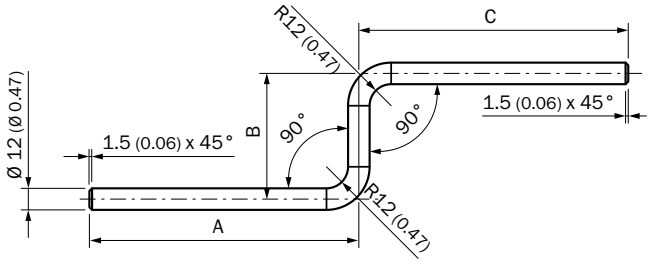

① BEF-MS12G-(N)A: A = 200 mm
② BEF-MS12G-(N)B: A = 300 mm

### BEF-MS12L-(N)A /BEF-MS12L-(N)B



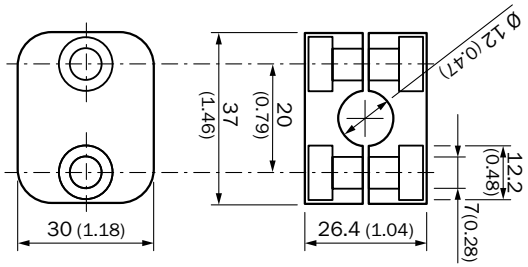

① BEF-MS12L-(N)A: A = 200 mm, B = 150 mm
② BEF-MS12L-(N)B: A = 250 mm, B = 250 mm

### BEF-MS12Z-(N)A / BEF-MS12Z-(N)B

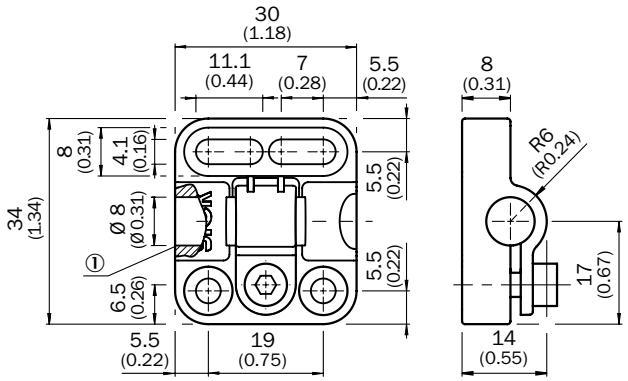



① BEF-MS12Z-(N)A: A = 150 mm, B = 70 mm, C = 150 mm
② BEF-MS12Z-(N)B: A = 150 mm, B = 70 mm, C = 250 mm

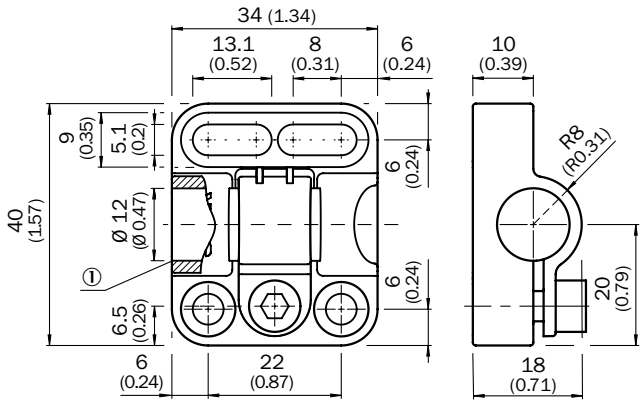
### BEF-RMC-D12




### BEF-KH-M08

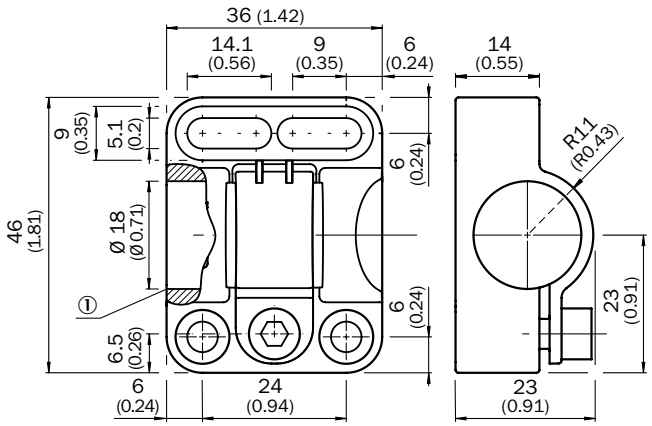



### BEF-KH-M12

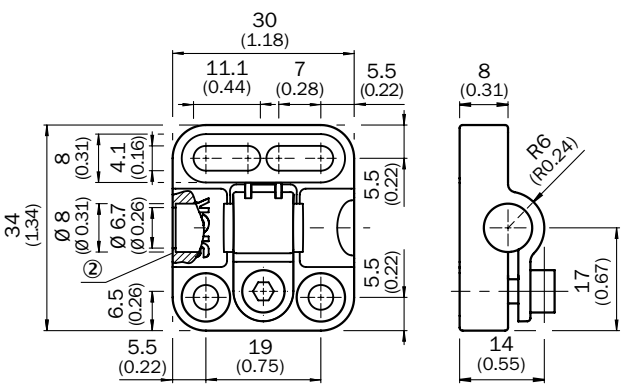



② Without fixed stop

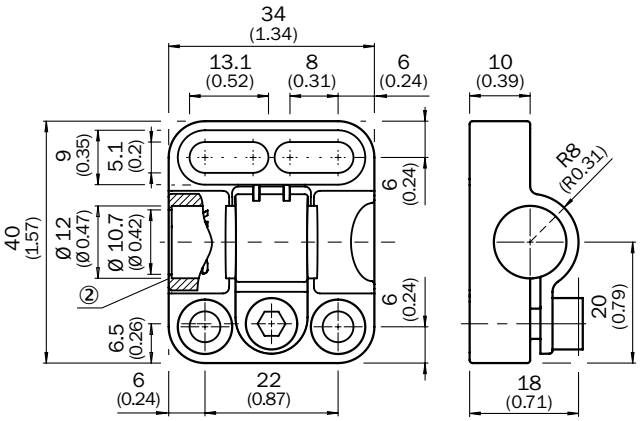
### BEF-KH-M18




### BEF-KHF-M08



BEF-KHF-M12

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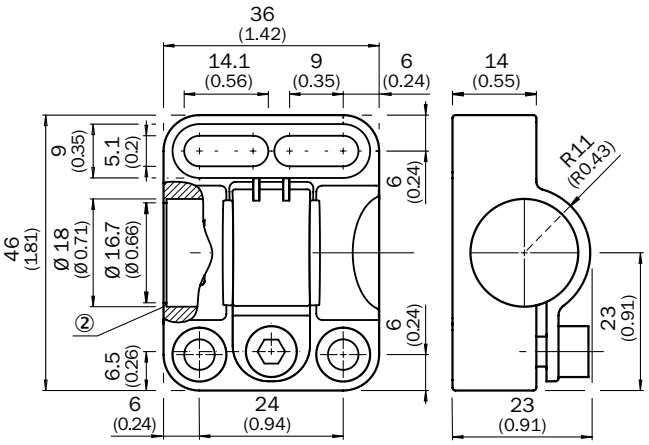


② With fixed stop

## Dimensional drawings Connection systems

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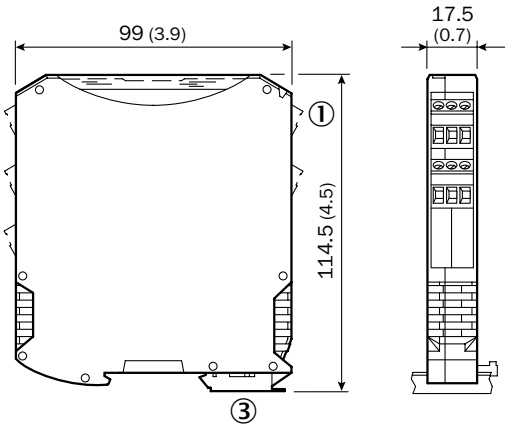


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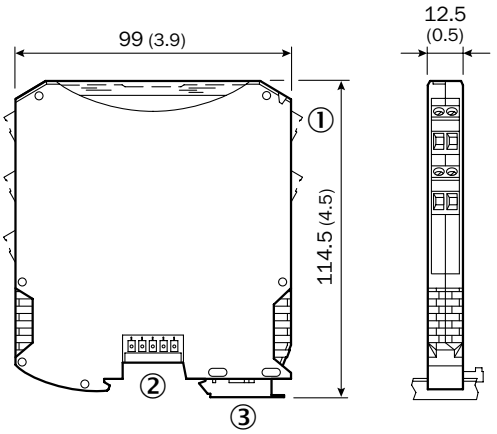


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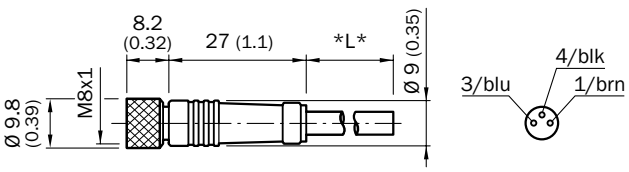


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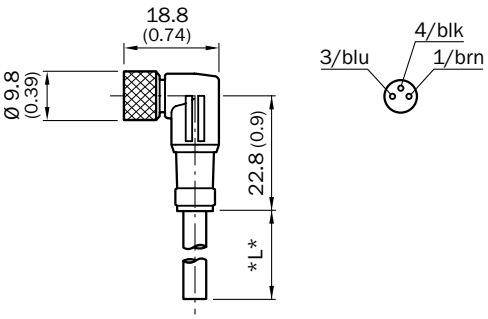


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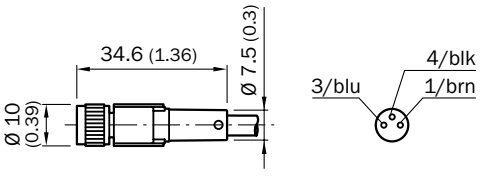


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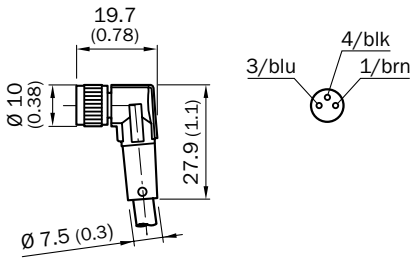

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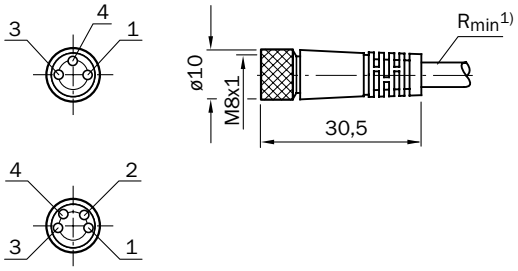


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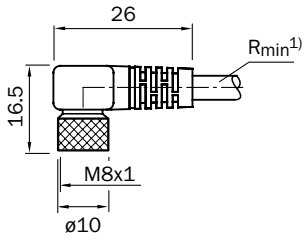


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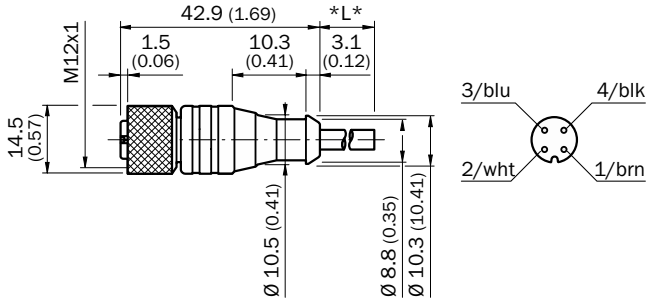


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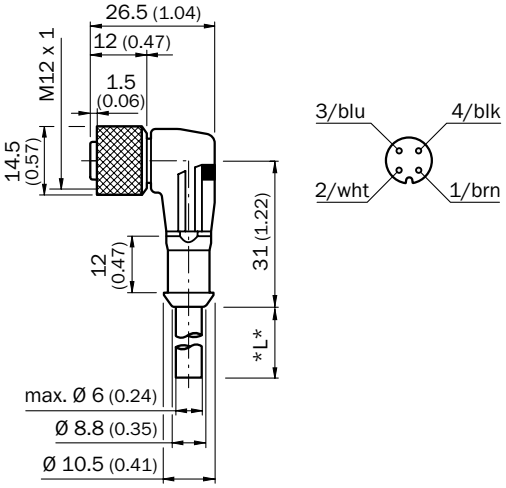


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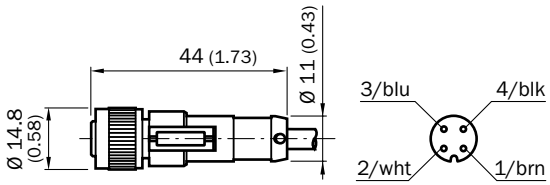


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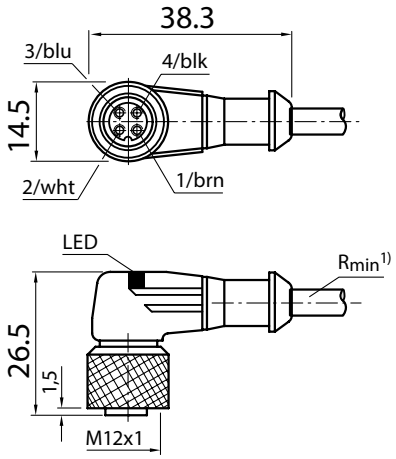

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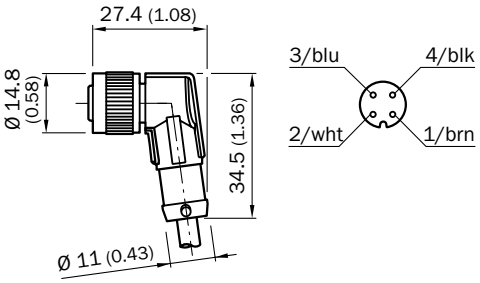


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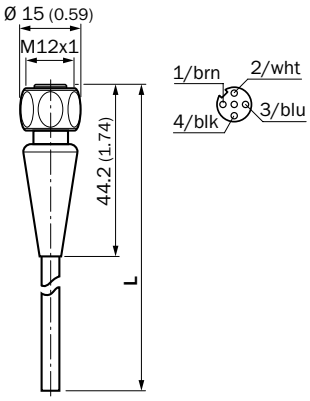


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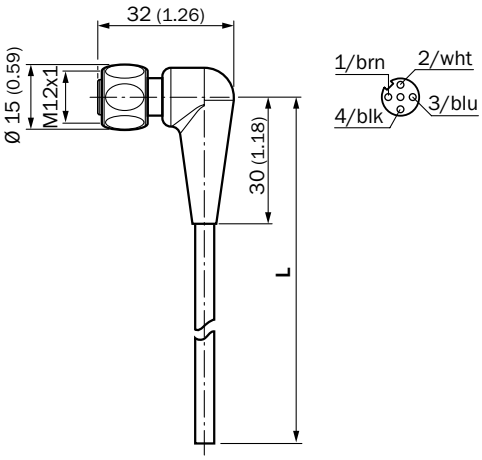


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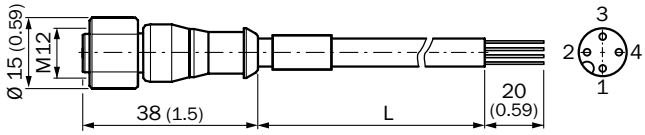


① brn
② wht
③ blu
④ blk

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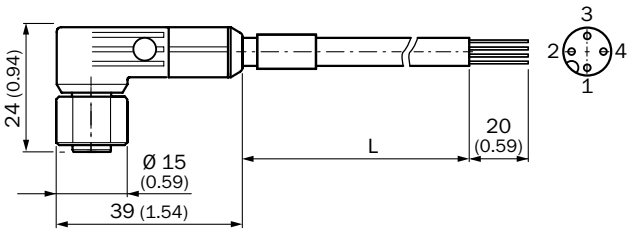


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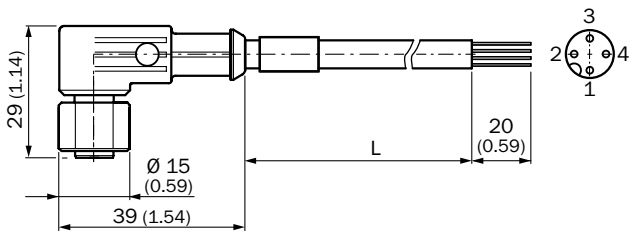


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④ wht

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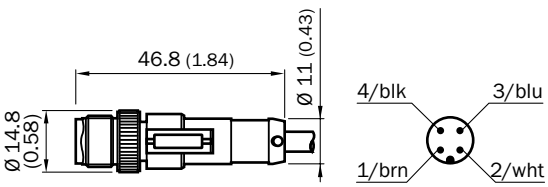


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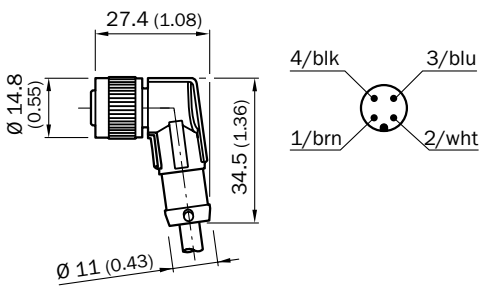

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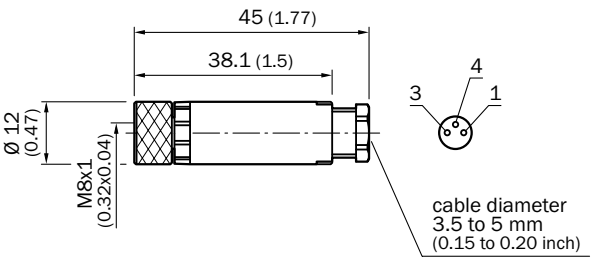


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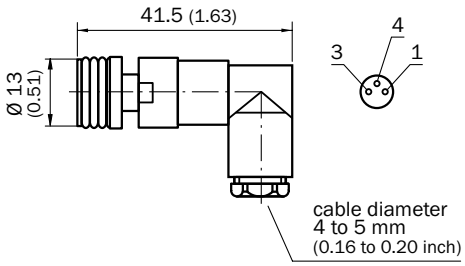


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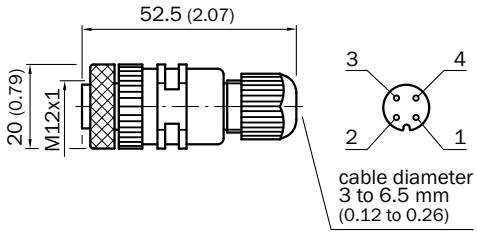


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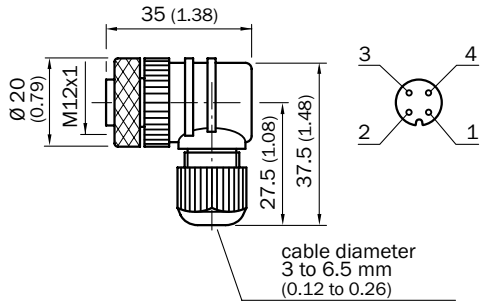


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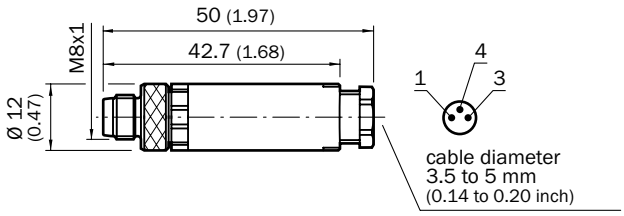


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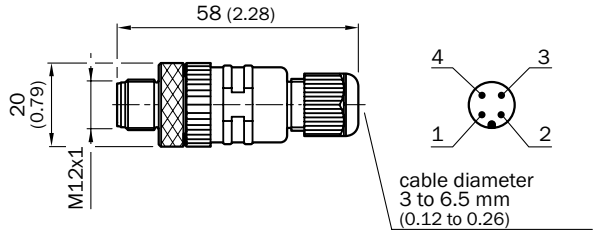


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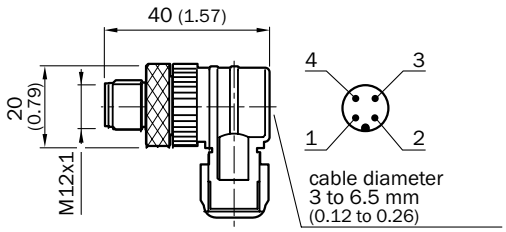

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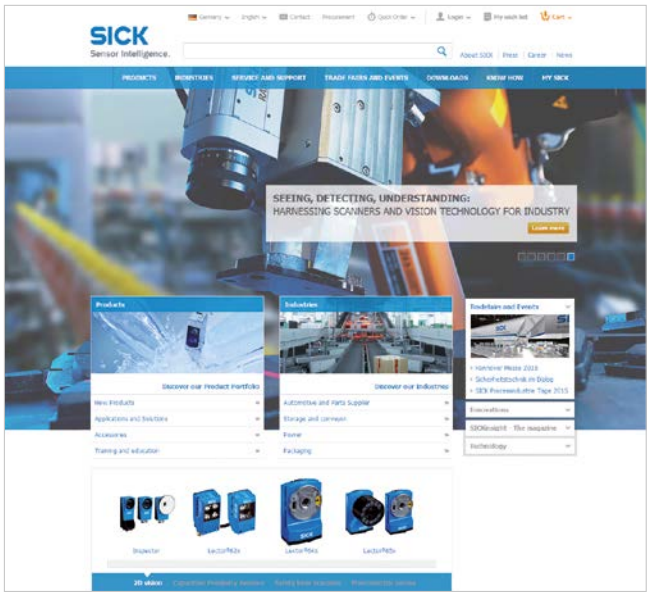


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