



## CM

TRIED-AND-TESTED SENSORS FOR OBJECT DETECTION AND FILL LEVEL DETECTION

Capacitive proximity sensors

**SICK**  
Sensor Intelligence.

# TRIED-AND-TESTED OVER MANY YEARS: SENSORS FOR OBJECT DETECTION AND FILL LEVEL DETECTION

## CM capacitive proximity sensors – Redefining well-rounded

Capacitive proximity sensors can detect all powdery, granulated, liquid, and solid materials – even through plastic or glass walls.

The CM product family with metric housing offers extremely high electromagnetic compatibility (EMC), which prevents switching errors. The CM18 PTFE can be used in areas with high levels of chemical contaminants. What's more, PTFE is a harmless material which conforms to FDA regulations, meaning it can safely be used in the food industry.

For sensors in the CM product family, sensitivity adjustment can be performed quickly and easily using a potentiometer or teach-in button, saving valuable time during commissioning. Sensors installed in inaccessible locations can be equipped with an external, cabled teach-in button.

The CM capacitive proximity sensors are characterized by high shock and vibration resistance, and minimal sensitivity to dust and moisture. Together with optical adjustment indicators, these features ensure reliable object detection, in turn ensuring reduced machine downtime.

Want to know what is hidden behind a surface, such as a wall or cover? Or what is inside in a storage container or shipping container? CM capacitive proximity sensors from SICK can provide this “background information.”

	CM12	CM18 PTFE	CM18	CM30
Nominal Sensing Range (S <sub>n</sub> )	8 mm	8 mm	8 ... 12 mm	16 ... 25 mm
Electric version	DC, 4 cables	DC, 4 cables	DC, 4 cables	DC, 4 cables
Enclosure rating	IP 68	IP 67	IP 68, IP 69K	IP 68, IP 69K
Temperature range	-20 °C ... +85 °C	-25 °C ... +60 °C	-30 °C ... +85 °C	-30 °C ... +85 °C
Material	PBT (30% glass fiber reinforced)	PTFE	PBT (30% glass fiber reinforced)	PBT (30% glass fiber reinforced)
Special features	<ul style="list-style-type: none"> <li>Optical adjustment indicator</li> <li>Teach-in functionality (incl. external teach-in)</li> <li>Dynamic teach-in</li> <li>Programmable output function (NO/NC)</li> <li>Automatic load detection (PNP/NPN)</li> </ul>	<ul style="list-style-type: none"> <li>Potentiometer (incl. external teach-in)</li> <li>PTFE housing for use in environments severely contaminated by chemicals</li> </ul>	<ul style="list-style-type: none"> <li>Optical adjustment indicator</li> <li>Potentiometer (incl. external teach-in)</li> <li>Programmable output function (NO/NC)</li> <li>Optimized dust and moisture compensation</li> <li>Enhanced electromagnetic compatibility (exceeds standard)</li> <li>Larger active sensing range</li> </ul>	<ul style="list-style-type: none"> <li>Optical adjustment indicator</li> <li>Potentiometer (incl. external teach-in)</li> <li>Programmable output function (NO/NC)</li> <li>Optimized dust and moisture compensation</li> <li>Enhanced electromagnetic compatibility (exceeds standard)</li> <li>Larger active sensing range</li> </ul>
Certifications	<ul style="list-style-type: none"> <li>CE</li> <li>cULus</li> </ul>	<ul style="list-style-type: none"> <li>CE</li> <li>cULus</li> </ul>	<ul style="list-style-type: none"> <li>CE</li> <li>cULus</li> <li>Ecolab</li> </ul>	<ul style="list-style-type: none"> <li>CE</li> <li>cULus</li> <li>Ecolab</li> </ul>
Switching frequency	15 Hz	30 Hz	50 Hz	50 Hz

## The new generation CM18 and CM30

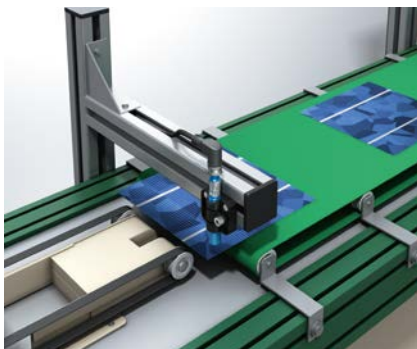
Owing to their cylindrical thread design, the new generation of capacitive proximity sensors from SICK can be used in a wide range of industrial applications. When developing the sensors, SICK focused heavily on reliability. Compared to their predecessors, they feature improved electromagnetic compatibility for reliable detection even in critical applications, such as those near frequency converters, for example. Their resistant housing, which is certified by Ecolab, allows them to be used in hygienic and washdown zones. A further new development comes in the form of enclosure rating IP 69K, which allows the sensors to withstand even high-pressure cleaning techniques.

And that's not all: The sensing range has increased, the moisture and dust compensation has improved, and an additional LED has been added to display signal stability. These features all work together to guarantee safe and reliable sensor configuration,



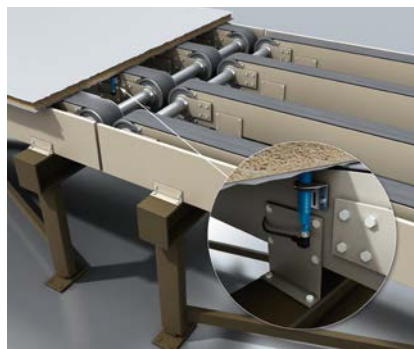
The new generation of capacitive proximity sensors from SICK with optical adjustment indicators.

and thereby highly reliable object and media detection. And when the situation starts hotting up, the capacitive proximity sensors can withstand extreme temperature fluctuations within a range of  $-30\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$ .



### Solar and electronics industries: Detection of solar wafers

The CM12 capacitive proximity sensor is easy to install, reliably detecting wafer trays that have changed color due to the vacuum process.



### Woodworking machines: Detection of wood

The CM18 capacitive proximity sensor is totally shock-proof. Thanks to its high levels of vibration and dust resistance, it can detect wooden objects with a variety of different surfaces (black, white, gloss, and matte) – regardless of wood shavings and sawdust.



### Plastics industry: Detection of various media

The CM30 capacitive proximity sensor detects the minimum fill level in material feed hoppers, reducing the risk of running empty and any resultant machine downtime.

# INTELLIGENT CAPACITIVE SENSOR WITH CYLINDRICAL THREAD DESIGN



## Product description

The CM12 has a number of excellent features. It is equipped with optimized moisture compensation technology and offers a high level of protection against electro-magnetic interference. The Dynamic Teach function enables you to adjust the sensor's sensitivity to suit the prevailing conditions. The CM12 also automatically detects the NPN output or PNP output load. Teach allows you to switch between the NO and NC func-

tions.

The sensor has a compact design and long sensing range of up to 8 mm. Its fields of application are diverse and range from detecting objects in packaging for food, beverage, pharmaceutical, and cosmetic products to monitoring fill levels in print machine tanks or containers and supply lines for rubber and polymer granules.

## At a glance

- High electromagnetic compatibility
- Compact sensor with long sensing range of up to 8 mm
- Teach-button for teaching in the background and/or the object (also possible via an external cable)
- Dynamic Teach for teaching in the background and/or the object
- Automatic detection of NPN output or PNP output load
- Teach-in procedure allows you to switch between the NO and NC functions

## Your benefits

- Its high electromagnetic compatibility prevents switching errors and increases machine availability
- Its long sensing range and compact design allow the sensor to be used in a number of different applications
- The compact sensor design saves installation space
- Fast sensor configuration possible using Teach-in pushbutton or external control cable
- The Dynamic Teach function can be used to familiarize the sensor with the object/medium. This enables more reliable detection and thus increases the machine's throughput
- Less variants (NO/NC, NPN/PNP, flush/non-flush) means that fewer parts need to be stored
- Since measurements can also be made through the wall of the tank or container, there is no need to drill holes, reducing installation time



## Additional information

Detailed technical data . . . . .	3
Ordering information . . . . .	4
Dimensional drawings . . . . .	4
Characteristic curve . . . . .	5
Connection diagram . . . . .	5
Installation note . . . . .	5
Accessories . . . . .	23

→ [www.mysick.com/en/CM12](http://www.mysick.com/en/CM12)

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.



## Detailed technical data

## Features

<b>Housing</b>	Cylindrical thread design
<b>Thread size</b>	M12 x 1
<b>Sensing range <math>S_n</math></b>	8 mm
<b>Safe sensing range <math>S_a</math></b>	5.76 mm
<b>Installation type <sup>1)</sup></b>	Non-flush / flush
<b>Switching frequency</b>	Approx. 15 Hz
<b>Output type</b>	PNP / NPN
<b>Output function</b>	Programmable
<b>Output characteristic <sup>2)</sup></b>	Wire configurable
<b>Electrical wiring</b>	DC 4-wire
<b>Adjustment</b>	Single teach-in button (Sensitivity) Cable (Sensitivity)
<b>Enclosure rating <sup>3) 4)</sup></b>	IP 68

<sup>1)</sup> For flush mounting, Teach-in necessary.

<sup>2)</sup> Automatic detection.

<sup>3)</sup> According to EN 60529.

<sup>4)</sup> 1.3 m water depth / 60 min.

## Mechanics/electronics

<b>Supply voltage</b>	10 V DC ... 36 V
<b>Ripple <sup>1)</sup></b>	≤ 10 %
<b>Voltage drop <sup>2)</sup></b>	≤ 2.5 V DC
<b>Current consumption <sup>3)</sup></b>	≤ 12 mA
<b>Time delay before availability</b>	≤ 120 ms
<b>Hysteresis</b>	3 % ... 20 %
<b>Repeatability <sup>4) 5)</sup></b>	≤ 5 %
<b>EMC <sup>6)</sup></b>	According to EN 60947-5-2
<b>Continuous current <math>I_a</math></b>	≤ 200 mA
<b>Connection type</b>	Male connector, M12 Cable, 2 m, PVC <sup>7)</sup> (depending on type)
<b>Short-circuit protection</b>	✓
<b>Reverse polarity protection</b>	✓
<b>Power-up pulse protection</b>	✓
<b>Shock and vibration resistance</b>	30 g, 11 ms / 10 ... 55 Hz, 1 mm
<b>Ambient operating temperature</b>	-20 °C ... +85 °C
<b>Ambient storage temperature</b>	-40 °C ... +85 °C
<b>Tightening torque, max.</b>	≤ 1 Nm

<sup>1)</sup> Of  $U_b$ .

<sup>2)</sup> At  $I_a$  max.

<sup>3)</sup> Without load.

<sup>4)</sup> Of  $S_r$ .

<sup>5)</sup>  $U_b$  and  $T_a$  constant.

<sup>6)</sup> For non-flush installation min. 1 x  $S_n$  and sensor grounded.

<sup>7)</sup> Do not bend below 0 °C.

## Reduction factors

Note	The values are reference values which may vary
Metal	1
Water	1
PVC	Approx. 0.4
Oil	Approx. 0.25
Glass	0.6
Ceramics	0.5
Alcohol	0.7
Wood	0.2 ... 0.7

## Ordering information

Other models → [www.mysick.com/en/CM12](http://www.mysick.com/en/CM12)

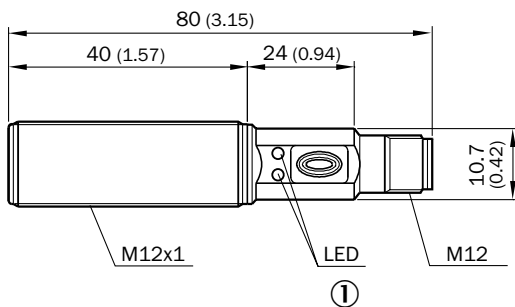
## CM12

- **Housing:** M12 x 1
- **Adjustment:** Single teach-in button (Sensitivity) cable (Sensitivity)

Sensing range $S_n$	Installation type	Output function	Output type	Connection	Connection diagram	Type	Part no.
≤ 8 mm	Non-flush, flush	Program-mable	PNP, NPN	M12, 4-pin male connector	Cd-235	CM12-08EBP-KC1	6051030
				Cable, 4-wire, 2 m, PVC	Cd-236	CM12-08EBP-KW1	6051029

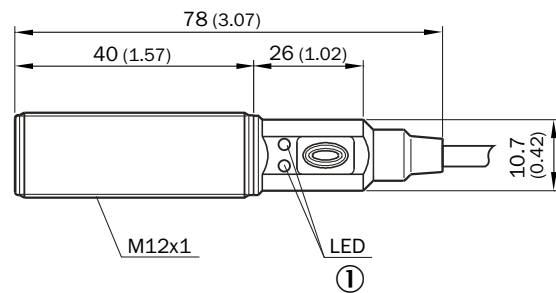
## Dimensional drawings (Dimensions in mm (inch))

CM12, connector



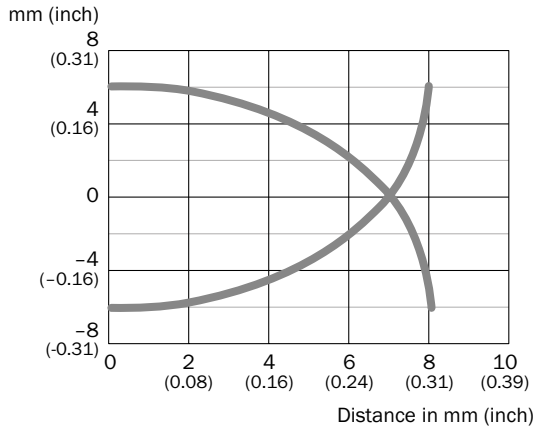
① LED yellow: output active; LED green: Power and signal reserve

CM12, cable



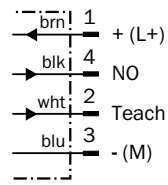
① LED yellow: output active; LED green: Power and signal reserve

### Characteristic curve

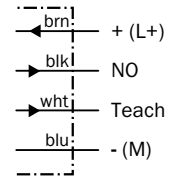


### Connection diagram

Cd-235

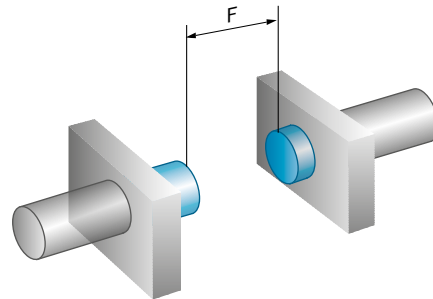
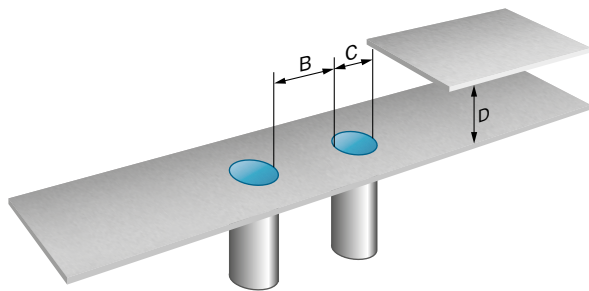


Cd-236

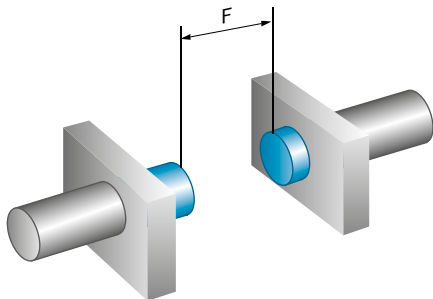
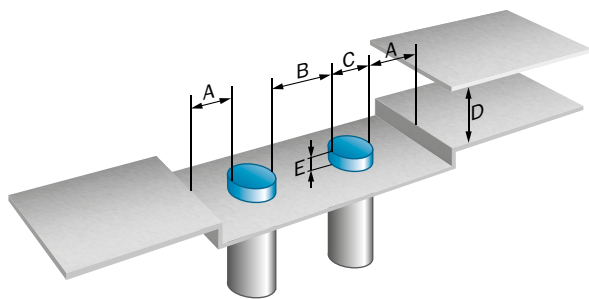


### Installation note

Flush installation



Non-flush installation



	Installation type	Sensing range $S_n$	A	B	C	D	E
CM12-08EBx-xx	Flush	8 mm	-	12 mm	12 mm	12 mm	$\geq 8$ mm
CM12-08EBx-xx	Non-flush	8 mm	12 mm	24 mm	12 mm	24 mm	$\geq 16$ mm

## SENSORS IN CYLINDRICAL HOUSING



### Product description

With their cylindrical design, the new generation of capacitive proximity sensors from SICK can be used in a wide range of industrial applications. SICK has placed particular emphasis on ensuring the reliability of these sensors as part of its continual product development. Their electromagnetic compatibility is even better than in previous models and the housing has been Ecolab certi-

fied. A further new development is the IP 69K enclosure rating, which allows the sensors to withstand high-pressure cleaning processes. And that's not all: The sensing range has increased, the moisture and dust compensation has improved, and a secondary LED has been added for indicating signal stability. This all combines to provide highly reliable object and media detection.

### At a glance

- High electromagnetic compatibility
- Long sensing range
- Outstanding moisture and dust compensation
- IP65, IP 68, and IP 69K enclosure rating
- Ecolab certification
- Operating temperatures: -30 °C to +85 °C
- Indicator LEDs to display switching output and signal stability

### Your benefits

- Excellent electromagnetic compatibility for reliable detection – even in critical applications – for example, near frequency converters
- Capable of withstanding high-pressure cleaning processes thanks to IP69K enclosure rating. The additional Ecolab certification makes it ideal for use in hygienic and wash-down areas
- The increased sensing range and outstanding moisture and dust compensation provide highly reliable detection, which minimizes machine downtime
- Visual installation aid to ensure signal stability for simple and reliable sensor adjustment



### Additional information

Detailed technical data . . . . .	7
Ordering information . . . . .	8
Dimensional drawings . . . . .	8
Response curve . . . . .	9
Connection diagram . . . . .	9
Installation note . . . . .	10
Accessories . . . . .	23

→ [www.mysick.com/en/CM18](http://www.mysick.com/en/CM18)

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.





## Detailed technical data

## Features

<b>Housing</b>	Cylindrical thread design
<b>Thread size</b>	M18 x 1
<b>Sensing range <math>S_n</math></b>	
Flush	8 mm
Non-flush	12 mm
<b>Safe sensing range <math>S_a</math> <sup>1)</sup></b>	
Flush	6.12 mm
Non-flush	9.18 mm
<b>Installation type</b>	Flush / non-flush (depending on type)
<b>Switching frequency</b>	50 Hz
<b>Output type</b>	NPN / PNP (depending on type)
<b>Output function</b>	Complementary
<b>Output characteristic</b>	Wire configurable
<b>Electrical wiring</b>	DC 4-wire
<b>Adjustment</b>	Potentiometer (Sensitivity)
<b>Enclosure rating <sup>2)</sup></b>	IP 68, IP 69K

<sup>1)</sup> For flush mounting in electrically conductive materials  $S_a = 0.8 \times S_r$  at temperatures  $<0\text{ }^\circ\text{C}$  and  $>60\text{ }^\circ\text{C}$ .

<sup>2)</sup> 1 m water depth / 60 min.

## Mechanics/electronics

<b>Supply voltage</b>	10 V DC ... 36 V DC
<b>Ripple <sup>1)</sup></b>	$\leq 10\%$
<b>Voltage drop <sup>2)</sup></b>	$\leq 2.5\text{ V DC}$
<b>Current consumption <sup>3)</sup></b>	$\leq 12\text{ mA}$
<b>Time delay before availability</b>	$\leq 200\text{ ms}$
<b>Hysteresis</b>	3 % ... 20 %
<b>Repeatability <sup>4) 5)</sup></b>	$\leq 5\%$
<b>Temperature drift (of <math>S_n</math>)</b>	$\pm 10\%$
<b>EMC <sup>6)</sup></b>	According to EN 60947-5-2
<b>Continuous current <math>I_a</math></b>	$\leq 200\text{ mA}$
<b>Connection type</b>	Male connector, M12 Cable, 2 m, PVC <sup>7)</sup> (depending on type)
<b>Short-circuit protection</b>	✓
<b>Reverse polarity protection</b>	✓
<b>Power-up pulse protection</b>	✓
<b>Shock and vibration resistance</b>	According to EN 60068
<b>Ambient operating temperature <sup>8)</sup></b>	$-30\text{ }^\circ\text{C} \dots +85\text{ }^\circ\text{C}$
<b>Ambient storage temperature</b>	$-40\text{ }^\circ\text{C} \dots +85\text{ }^\circ\text{C}$

<sup>1)</sup> Of  $U_b$ .

<sup>2)</sup> At  $I_a$  max.

<sup>3)</sup> Without load.

<sup>4)</sup> Of  $S_r$ .

<sup>5)</sup>  $U_b$  and  $T_a$  constant.

<sup>6)</sup> In EMC critical applications, conducted interference levels may lie within the frequency range of the oscillator. This can cause changes to the output signal. (See operating instructions.)

<sup>7)</sup> Do not bend below  $0\text{ }^\circ\text{C}$ .

<sup>8)</sup>  $+120\text{ }^\circ\text{C}$  short time, at the front of the sensor.

<b>Housing material</b>	PBT
<b>Tightening torque, max.</b>	≤ 2.6 Nm

<sup>1)</sup> Of Ub.

<sup>2)</sup> At I<sub>a</sub> max.

<sup>3)</sup> Without load.

<sup>4)</sup> Of Sr.

<sup>5)</sup> Ub and Ta constant.

<sup>6)</sup> In EMC critical applications, conducted interference levels may lie within the frequency range of the oscillator. This can cause changes to the output signal. (See operating instructions.)

<sup>7)</sup> Do not bend below 0 °C.

<sup>8)</sup> +120 °C short time, at the front of the sensor.

## Reduction factors

<b>Note</b>	The values are reference values which may vary
<b>Metal</b>	1
<b>Water</b>	1
<b>PVC</b>	Approx. 0.4
<b>Oil</b>	Approx. 0.25
<b>Glass</b>	0.6
<b>Ceramics</b>	0.5
<b>Alcohol</b>	0.7
<b>Wood</b>	0.2 ... 0.7

## Ordering information

Other models → [www.mysick.com/en/CM18](http://www.mysick.com/en/CM18)

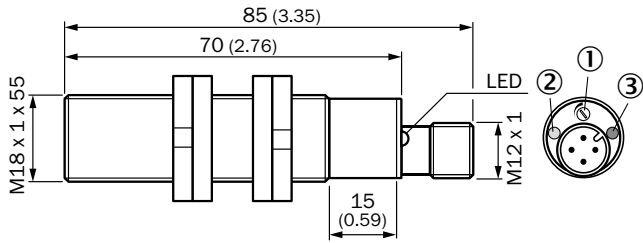
## CM18

- **Housing:** M18 x 1
- **Adjustment:** potentiometer (Sensitivity)

Sensing range S <sub>n</sub>	Installation type	Output function	Output type	Connection	Connection diagram	Type	Part no.
≤ 8 mm	Flush	Complementary	NPN	M12, 4-pin male connector	Cd-006	CM18-08BNP-EC1	6058147
				Cable, 4-wire, 2 m, PVC	Cd-005	CM18-08BNP-EW1	6058146
			PNP	M12, 4-pin male connector	Cd-006	CM18-08BPP-EC1	6058145
				Cable, 4-wire, 2 m, PVC	Cd-005	CM18-08BPP-EW1	6058144
≤ 12 mm	Non-flush	Complementary	NPN	M12, 4-pin male connector	Cd-006	CM18-12NNP-EC1	6058151
				Cable, 4-wire, 2 m, PVC	Cd-005	CM18-12NNP-EW1	6058150
			PNP	M12, 4-pin male connector	Cd-006	CM18-12NPP-EC1	6058149
				Cable, 4-wire, 2 m, PVC	Cd-005	CM18-12NPP-EW1	6058148

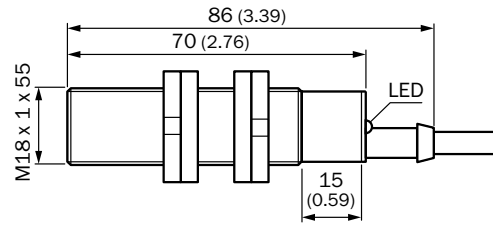
**Dimensional drawings** (Dimensions in mm (inch))

CM18, flush, connector

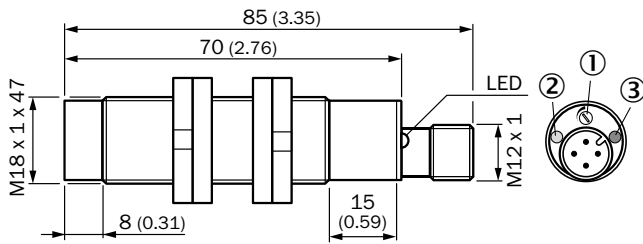


- ① Sensitivity control
- ② LED yellow: output active
- ③ LED green: operating indicator

CM18, flush, cable

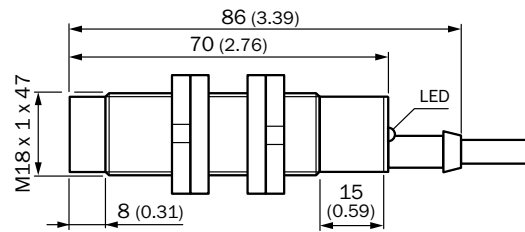


CM18, non-flush, connector



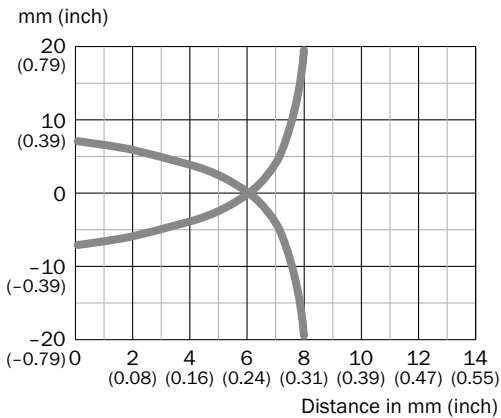
- ① Sensitivity control
- ② LED yellow: output active
- ③ LED green: operating indicator

CM18, non-flush, cable

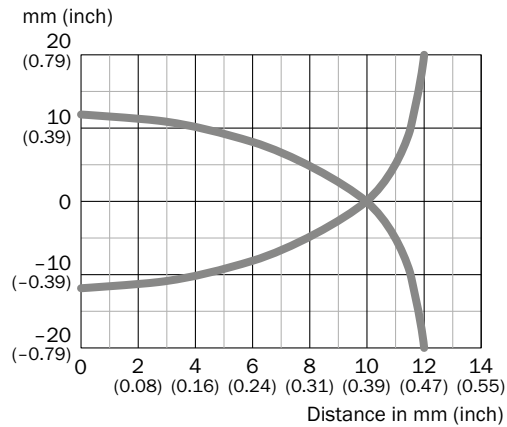


**Response curve**

Flush installation

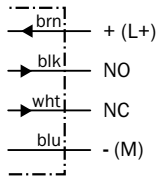


Non-flush installation

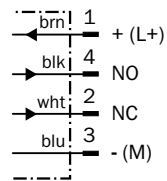


Connection diagram

Cd-005

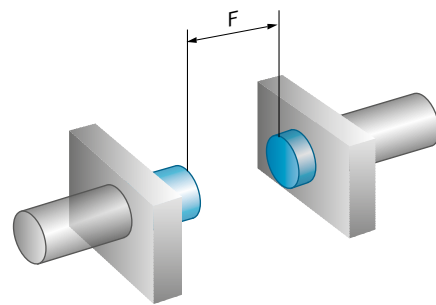
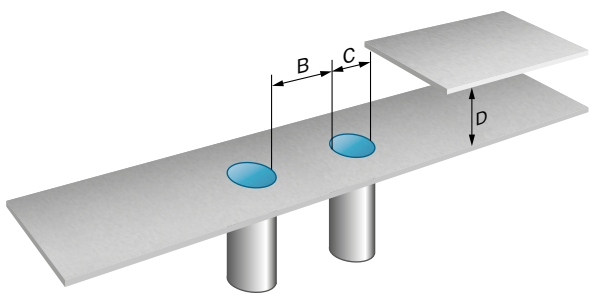


Cd-006

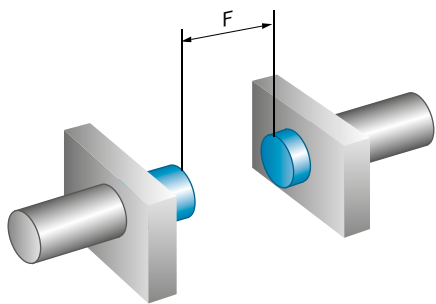
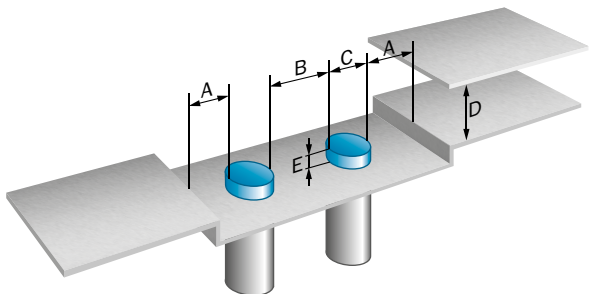


Installation note

Flush installation



Non-flush installation



	Installation type	Sensing range Sn	A	B	C	D	E
CM18-08Bxx-xxx	Flush	8 mm	-	18 mm	18 mm	18 mm	-
CM18-12Nxx-xxx	Non-flush	12 mm	18 mm	36 mm	18 mm	36 mm	>= 24 mm



# SENSORS IN CYLINDRICAL HOUSING



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## At a glance

- High electromagnetic compatibility
- Long sensing range
- Outstanding moisture and dust compensation
- IP65, IP 68, and IP 69K enclosure rating
- Ecolab certification
- Operating temperatures: -30 °C to +85 °C
- Indicator LEDs to display switching output and signal stability

## Your benefits

- Excellent electromagnetic compatibility for reliable detection – even in critical applications – for example, near frequency converters
- Capable of withstanding high-pressure cleaning processes thanks to IP69K enclosure rating. The additional Ecolab certification makes it ideal for use in hygienic and wash-down areas
- The increased sensing range and outstanding moisture and dust compensation provide highly reliable detection, which minimizes machine downtime
- Visual installation aid to ensure signal stability for simple and reliable sensor adjustment



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Detailed technical data . . . . .	13
Ordering information . . . . .	14
Dimensional drawings . . . . .	14
Response curve . . . . .	15
Connection diagram . . . . .	15
Installation note . . . . .	16
Accessories . . . . .	23

→ [www.mysick.com/en/CM30](http://www.mysick.com/en/CM30)

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.



## Detailed technical data

## Features

<b>Housing</b>	Cylindrical thread design
<b>Thread size</b>	M30 x 1.5
<b>Sensing range <math>S_n</math></b>	
Flush	16 mm
Non-flush	25 mm
<b>Safe sensing range <math>S_a</math> <sup>1)</sup></b>	
Flush	12.24 mm
Non-flush	19.13 mm
<b>Installation type</b>	Flush / non-flush (depending on type)
<b>Switching frequency</b>	50 Hz
<b>Output type</b>	NPN / PNP (depending on type)
<b>Output function</b>	Complementary
<b>Output characteristic</b>	Wire configurable
<b>Electrical wiring</b>	DC 4-wire
<b>Adjustment</b>	Potentiometer (Sensitivity)
<b>Enclosure rating <sup>2)</sup></b>	IP 68, IP 69K

<sup>1)</sup> For flush mounting in electrically conductive materials  $S_a = 0.8 \times S_r$  at temperatures  $<0\text{ °C}$  and  $>60\text{ °C}$ .

<sup>2)</sup> 1 m water depth / 60 min.

## Mechanics/electronics

<b>Supply voltage</b>	10 V DC ... 36 V DC
<b>Ripple <sup>1)</sup></b>	$\leq 10\%$
<b>Voltage drop <sup>2)</sup></b>	$\leq 2\text{ V DC}$
<b>Current consumption <sup>3)</sup></b>	$\leq 12\text{ mA}$
<b>Time delay before availability</b>	$\leq 200\text{ ms}$
<b>Hysteresis</b>	3 % ... 20 %
<b>Repeatability <sup>4) 5)</sup></b>	$\leq 5\%$
<b>Temperature drift (of <math>S_r</math>)</b>	$\pm 10\%$
<b>EMC <sup>6)</sup></b>	According to EN 60947-5-2
<b>Continuous current <math>I_a</math></b>	$\leq 200\text{ mA}$
<b>Connection type</b>	Male connector, M12 Cable, 2 m, PVC <sup>7)</sup> (depending on type)
<b>Short-circuit protection</b>	✓
<b>Reverse polarity protection</b>	✓
<b>Power-up pulse protection</b>	✓
<b>Shock and vibration resistance</b>	According to EN 60068
<b>Ambient operating temperature <sup>8)</sup></b>	$-30\text{ °C} \dots +85\text{ °C}$
<b>Ambient storage temperature</b>	$-40\text{ °C} \dots +85\text{ °C}$

<sup>1)</sup> Of  $U_b$ .

<sup>2)</sup> At  $I_a$  max.

<sup>3)</sup> Without load.

<sup>4)</sup> Of  $S_r$ .

<sup>5)</sup>  $U_b$  and  $T_a$  constant.

<sup>6)</sup> In EMC critical applications, conducted interference levels may lie within the frequency range of the oscillator. This can cause changes to the output signal. (See operating instructions.)

<sup>7)</sup> Do not bend below  $0\text{ °C}$ .

<sup>8)</sup>  $+120\text{ °C}$  short time, at the front of the sensor.

<b>Housing material</b>	PBT
<b>Tightening torque, max.</b>	≤ 7.5 Nm

<sup>1)</sup> Of Ub.

<sup>2)</sup> At I<sub>a</sub> max.

<sup>3)</sup> Without load.

<sup>4)</sup> Of Sr.

<sup>5)</sup> Ub and Ta constant.

<sup>6)</sup> In EMC critical applications, conducted interference levels may lie within the frequency range of the oscillator. This can cause changes to the output signal. (See operating instructions.)

<sup>7)</sup> Do not bend below 0 °C.

<sup>8)</sup> +120 °C short time, at the front of the sensor.

## Reduction factors

Note	The values are reference values which may vary
<b>Metal</b>	1
<b>Water</b>	1
<b>PVC</b>	Approx. 0.4
<b>Oil</b>	Approx. 0.25
<b>Glass</b>	0.6
<b>Ceramics</b>	0.5
<b>Alcohol</b>	0.7
<b>Wood</b>	0.2 ... 0.7

## Ordering information

Other models → [www.mysick.com/en/CM30](http://www.mysick.com/en/CM30)

## CM30

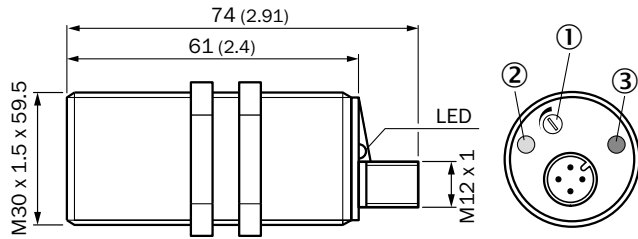
- **Housing:** M30 x 1.5
- **Adjustment:** potentiometer (Sensitivity)

Sensing range S <sub>n</sub>	Installation type	Output function	Output type	Connection	Connection diagram	Type	Part no.
≤ 16 mm	Flush	Complementary	NPN	M12, 4-pin male connector	Cd-006	CM30-16BNP-EC1	6058155
				Cable, 4-wire, 2 m, PVC	Cd-005	CM30-16BNP-EW1	6058154
			PNP	M12, 4-pin male connector	Cd-006	CM30-16BPP-EC1	6058153
				Cable, 4-wire, 2 m, PVC	Cd-005	CM30-16BPP-EW1	6058152
≤ 25 mm	Non-flush	Complementary	NPN	M12, 4-pin male connector	Cd-006	CM30-25NNP-EC1	6058159
				Cable, 4-wire, 2 m, PVC	Cd-005	CM30-25NNP-EW1	6058158
			PNP	M12, 4-pin male connector	Cd-006	CM30-25NPP-EC1	6058157
				Cable, 4-wire, 2 m, PVC	Cd-005	CM30-25NPP-EW1	6058156



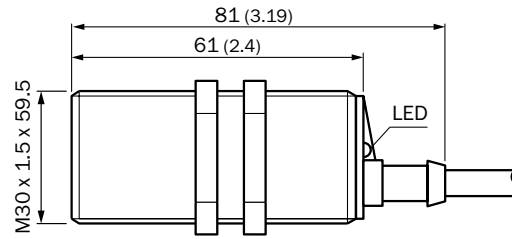
**Dimensional drawings** (Dimensions in mm (inch))

CM30, flush, connector

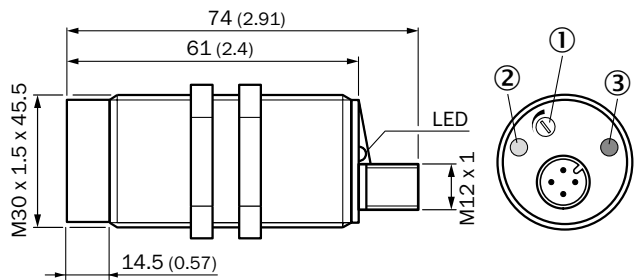


- ① Sensitivity control
- ② LED yellow: output active
- ③ LED green: operating indicator

CM30, flush, cable

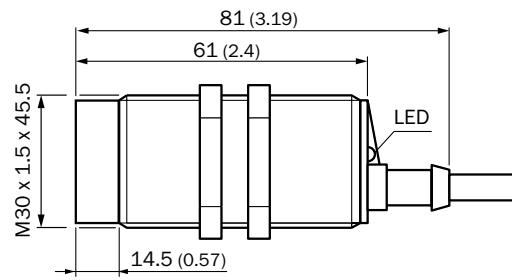


CM30, non-flush, connector



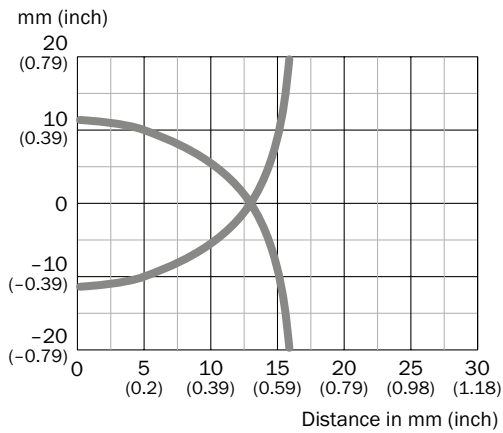
- ① Sensitivity control
- ② LED yellow: output active
- ③ LED green: operating indicator

CM30, non-flush, cable

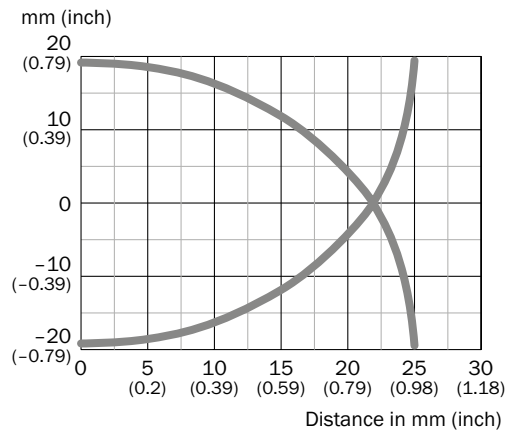


**Response curve**

Flush installation

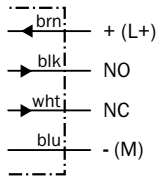


Non-flush installation

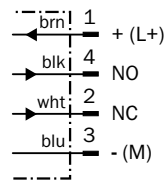


Connection diagram

Cd-005

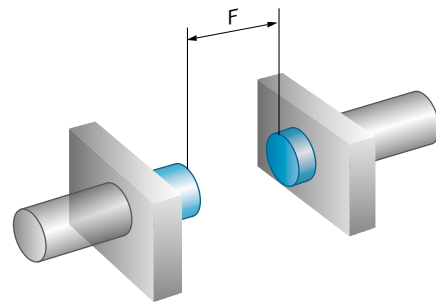
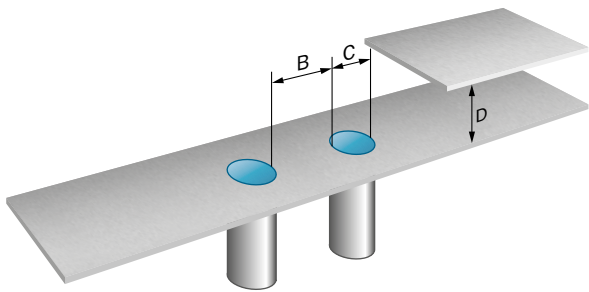


Cd-006

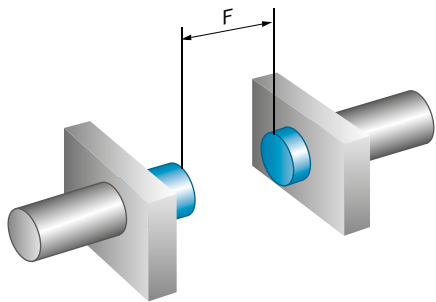
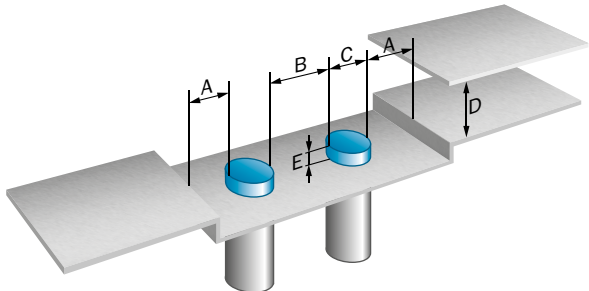


Installation note

Flush installation



Non-flush installation



	Installation type	Sensing range Sn	A	B	C	D	E
CM30-16Bxx-xxx	Flush	16 mm	-	30 mm	30 mm	48 mm	-
CM30-25Nxx-xxx	Non-flush	25 mm	30 mm	60 mm	30 mm	75 mm	>= 50 mm



# SENSORS IN CYLINDRICAL PTFE-HOUSING THAT WITHSTAND TOUGH ENVIRONMENTS



## Product description

Capacitive proximity sensors can detect all types of material: powder-based, granulated, liquid, and solid. The CM18 PTFE is ideal for detecting the level of acids, alkalis, or solvents, for

example. It is also used for detection in aggressive environments (acid fumes). PTFE-housing is resistant to almost all chemicals and organic solvents.

## At a glance

- M18 - metric housing
- Detects powders, granulates, liquids, and solids
- Extremely high electromagnetic compatibility
- Electric version: DC, 4-conductor
- Supply voltage: 10 V ... 36 V DC
- Short-circuit protection (pulsed)
- Housing material made from PTFE
- IP 67 protection class

## Your benefits

- Lower maintenance costs due to a durable PTFE housing that withstands harsh ambient conditions
- Quick and easy adjustment via potentiometer saves installation and setup time
- Straightforward and safe sensor technology as an alternative to photoelectric and inductive sensors in applications such as detecting a product in a sealed box, container, or tank
- High electromagnetic compatibility prevents incorrect switching, thus increasing machine availability
- High shock and vibration resistance increases sensor life and reduces machine maintenance costs



## Additional information

Detailed technical data . . . . .	19
Ordering information . . . . .	20
Dimensional drawings . . . . .	20
Connection diagram . . . . .	20
Installation note . . . . .	20
Accessories . . . . .	23

→ [www.mysick.com/en/CM\\_PTFE](http://www.mysick.com/en/CM_PTFE)

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.



## Detailed technical data

## Features

<b>Housing</b>	Cylindrical thread design
<b>Thread size</b>	M18 x 1
<b>Sensing range <math>S_n</math></b>	3 mm 8 mm
<b>Safe sensing range <math>S_a</math></b>	5.76 mm
<b>Installation type</b>	Flush
<b>Switching frequency</b>	$\pm 30$ Hz
<b>Output type</b>	NPN / PNP (depending on type)
<b>Output function</b>	Complementary
<b>Electrical wiring</b>	DC 4-wire
<b>Adjustment</b>	Potentiometer, 270° (Sensitivity)
<b>Enclosure rating <sup>1)</sup></b>	IP 67

<sup>1)</sup> According to EN 60529.

## Mechanics/electronics

<b>Supply voltage</b>	10 V DC ... 36 V
<b>Ripple <sup>1)</sup></b>	$\leq 10$ %
<b>Voltage drop <sup>2)</sup></b>	$\leq 2.5$ V DC
<b>Current consumption <sup>3)</sup></b>	$\leq 10$ mA
<b>Time delay before availability</b>	$\leq 100$ ms
<b>Hysteresis</b>	4 % ... 20 %
<b>Repeatability <sup>4) 5)</sup></b>	$\leq 5$ %
<b>Temperature drift (of <math>S_n</math>)</b>	$\pm 10$ %
<b>EMC <sup>6)</sup></b>	According to EN 60947-5-2
<b>Continuous current <math>I_a</math></b>	$\leq 200$ mA
<b>Connection type <sup>7)</sup></b>	Cable, 2 m, PVC
<b>Short-circuit protection</b>	✓
<b>Reverse polarity protection</b>	✓
<b>Power-up pulse protection</b>	✓
<b>Shock and vibration resistance</b>	30 g, 11 ms / 10 ... 55 Hz, 1 mm
<b>Ambient operating temperature</b>	-25 °C ... +60 °C
<b>Housing material</b>	PTFE
<b>Tightening torque, max.</b>	$\leq 2.6$ Nm

<sup>1)</sup> Of  $U_b$ .

<sup>2)</sup> At  $I_a$  max.

<sup>3)</sup> Without load.

<sup>4)</sup> Of  $S_r$ .

<sup>5)</sup>  $U_b$  and  $T_a$  constant.

<sup>6)</sup> In EMC critical applications, conducted interference levels may lie within the frequency range of the oscillator. This can cause changes to the output signal. (See operating instructions.)

<sup>7)</sup> Do not bend below 0 °C.

## Reduction factors

<b>Note</b>	The values are reference values which may vary
<b>Metal</b>	1
<b>Water</b>	1
<b>PVC</b>	Approx. 0.4
<b>Oil</b>	Approx. 0.25

<b>Glass</b>	0.6
<b>Ceramics</b>	0.5
<b>Alcohol</b>	0.7
<b>Wood</b>	0.2 ... 0.7

## Ordering information

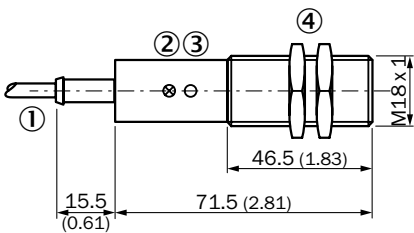
Other models → [www.mysick.com/en/CM\\_PTFE](http://www.mysick.com/en/CM_PTFE)

- **Installation type:** flush
- **Output function:** Complementary

Sensing range $S_n$	Output type	Connection	Connection diagram	Type	Part no.
≤ 8 mm	NPN	Cable, 4-wire, 2 m, PVC	Cd-005	CM18-08BNP-TW0	6026194
	PNP	Cable, 4-wire, 2 m, PVC	Cd-005	CM18-08BPP-TW0	6026195

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

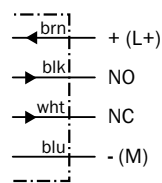
CM18 PTFE, flush, cable



- ① Connection
- ② LED indicator
- ③ Potentiometer
- ④ Fastening nuts (2 x); 34 mm hex, plastic

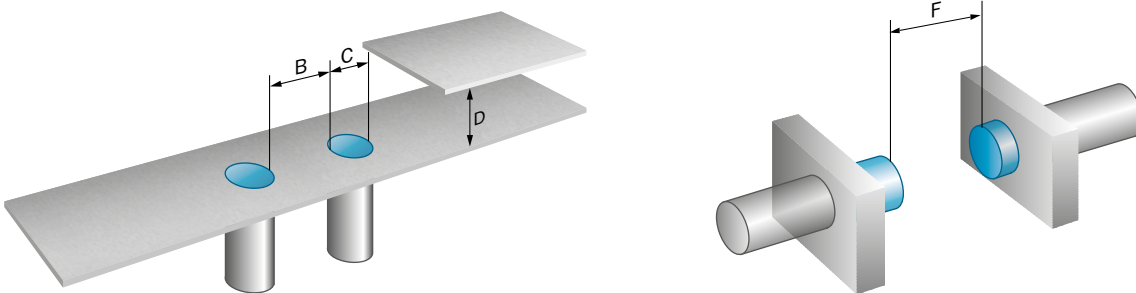
## Connection diagram

Cd-005



## Installation note












Flush installation



	Installation	Sensing range $S_n$	B	C	D
CM18-08Bxx-xxx	Flush	8 mm	18 mm	18 mm	24 mm





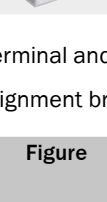
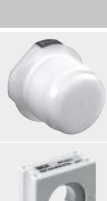


**Accessories****Mounting systems**

## Universal bar clamp systems

Figure	Material	Description	Type	Part no.	CM CM12	CM CM18	CM CM30	CM PTFE
	Steel, zinc coated	Plate H for universal clamp bracket	BEF-KHS-H01	2022465	-	●	-	●
	Zinc diecast	Universal bar clamp for mounting bars with 12 mm diameter	BEF-KHS-KH3	5322626	●	-	-	-
	Zinc plated steel (sheet), Zinc die cast (clamping bracket)	Plate N05 for universal clamp bracket, M12	BEF-KHS-N05	2051611	●	-	-	-
		Plate N06 for universal clamp bracket, M18	BEF-KHS-N06	2051612	-	●	-	●
	Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp)	Plate N06N for universal clamp bracket, M18	BEF-KHS-N06N	2051622	-	●	-	●
	Zinc plated steel (sheet), Zinc die cast (clamping bracket)	Plate N10 for universal clamp bracket, M30	BEF-KHS-N10	2062372	-	-	●	-
 Illustration may differ	Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp)	Plate N11N for universal clamp bracket	BEF-KHS-N11N	2071081	-	-	●	-
	Steel, zinc coated	Mounting bar, straight, 200 mm, steel	BEF-MS12G-A	4056054	●	●	●	●
		Mounting bar, straight, 300 mm, steel	BEF-MS12G-B	4056055	●	●	●	●
	Stainless steel (1.4571)	Mounting bar, straight, 200 mm, stainless steel	BEF-MS12G-NA	4058914	-	●	●	●
	Steel, zinc coated	Mounting bar, L-shaped, 150 mm x 150 mm, steel	BEF-MS12L-A	4056052	●	●	●	●
		Mounting bar, L-shaped, 250 x 250 mm, steel	BEF-MS12L-B	4056053	●	●	●	●
	Steel, zinc coated	Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm, steel	BEF-MS12Z-A	4056056	●	●	●	●
		Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm, steel	BEF-MS12Z-B	4056057	●	●	●	●
	Aluminum	Bar clamp for bar diameter of 12 mm (fixing the mounting rod)	BEF-RMC-D12	5321878	●	●	●	●



Mounting brackets and mounting plates

Mounting brackets

Figure	Material	Description	Type	Part no.	CM CM12	CM CM18	CM CM30	CM PTFE
	Steel, zinc coated	Mounting plate for M12 sensors	BEF-WG-M12	5321869	●	-	-	-
		Mounting plate for M18 sensors	BEF-WG-M18	5321870	-	●	-	●
	Stainless steel	Mounting plate for M18 housing	BEF-WG-M18N	5320948	-	●	-	●
	Steel, zinc coated	Mounting plate for M30 sensors	BEF-WG-M30	5321871	-	-	●	-
		Mounting bracket, M12 thread	BEF-WN-M12	5308447	●	-	-	-
	Stainless steel	Mounting bracket, M18 thread	BEF-WN-M18	5308446	-	●	-	●
		Mounting bracket for M18 housing	BEF-WN-M18N	5320947	-	●	-	●
	Steel, zinc coated	Mounting bracket, M30 thread	BEF-WN-M30	5308445	-	-	●	-





Terminal and alignment brackets

Alignment brackets

Figure	Material	Description	Type	Part no.	CM CM12	CM CM18	CM CM30	CM PTFE
	Plastic (POM)	Integrated adapter	BEF-EA-CM30	2043770	-	-	●	-
	Plastic	Mounting bracket with ball-and-socket	BEF-WN-M18-ST02	5312973	-	●	-	●



## Terminal brackets


Figure	Material	Description	Type	Part no.	CM CM12	CM CM18	CM CM30	CM PTFE
	Plastic (PA12), glass-fiber reinforced	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 M12, with fixed stop	BEF-KHF-M12	2051480	●	-	-	-
		Clamping block for round sensors M18, with fixed stop	BEF-KHF-M18	2051482	-	●	-	●

## Connection systems

## Plug connectors and cables




Connecting cables with female connector M12, 4-pin, PUR, halogen-free

- **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.	CM CM12	CM CM18	CM CM30	CM PTFE
	Female connector, M12, 4-pin, angled, unshielded	Cable, open conductor heads	5 m, 4-wire	DOL-1204-W05MD	6020399	-	●	●	-



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.	CM CM12	CM CM18	CM CM30	CM PTFE
	Female connector, M12, 4-pin, straight, unshielded	Cable, open conductor heads	2 m, 4-wire	DOL-1204-G02MC	6025900	-	●	●	-
			5 m, 4-wire	DOL-1204-G05MC	6025901	-	●	●	-
	Female connector, M12, 4-pin, angled, with 3 LEDs, unshielded	Cable, open conductor heads	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, open conductor heads	2 m, 4-wire	DOL-1204-W02MC	6025903	-	●	●	-
			5 m, 4-wire	DOL-1204-W05MC	6025904	-	●	●	-

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.	CM	CM	CM	CM
						CM12	CM18	CM30	PTFE
 Illustration may differ	Female connector, M12, 4-pin, straight, unshielded	Cable, open conductor heads	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	-	●	●	-
 Illustration may differ	Female connector, M12, 4-pin, angled, unshielded	Cable, open conductor heads	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	-	●	●	-


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.	CM	CM	CM	CM
							CM12	CM18	CM30	PTFE
		Screw-type terminals	PA	CuZn	DOS-1204-G	6007302	●	●	●	●
 Illustration may differ	Female connector, M12, 4-pin, straight, unshielded	Cutting technology	-	CuZn, nickel-plated brass	DOS-1204-GQU6	6042088	-	●	●	-
 Illustration may differ					DOS-1204-GQU8	6053328	-	●	●	-
	Female connector, M12, 4-pin, angled, unshielded	Screw-type terminals	PBT	CuZn	DOS-1204-W	6007303	●	●	●	●

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

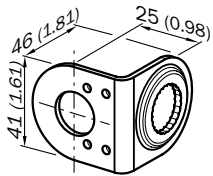
Figure	Connection type head A	Connection type head B	Connector material	Locking nut material	Type	Part no.	CM	CM	CM	CM
							CM12	CM18	CM30	PTFE
	Male connector, M12, 4-pin, straight, unshielded	Screw-type terminals	PA	CuZn	STE-1204-G	6009932	-	●	●	●
			-	CuZn, nickel-plated brass	STE-1204-GQU6	6042089	-	●	●	-
	Male connector, M12, 4-pin, angled, unshielded	Screw-type terminals	PBT	CuZn	STE-1204-W	6022084	-	●	●	●

Male connectors (ready to assemble) M12, 5-pin

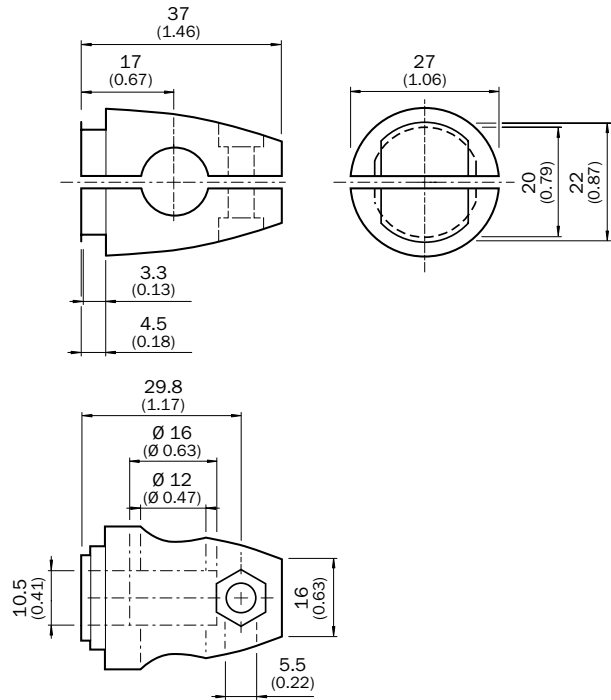
Figure	Connection type head A	Connection type head B	Connector material	Locking nut material	Type	Part no.	CM CM12	CM CM18	CM CM30	CM PTFE
	Male connector, M12, 5-pin, straight, A-coded, unshielded	Spring-cage connection	PA	CuZn, nickel-plated brass	STE-1205-GFE	6044999	-	●	●	-

Dimensional drawings mounting systems

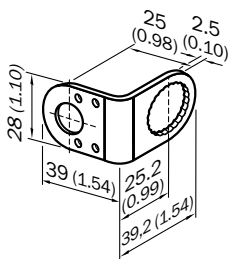
BEF-KHS-H01



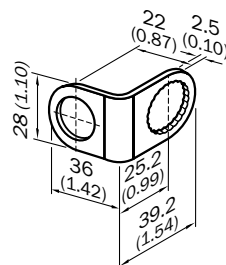
BEF-KHS-KH3



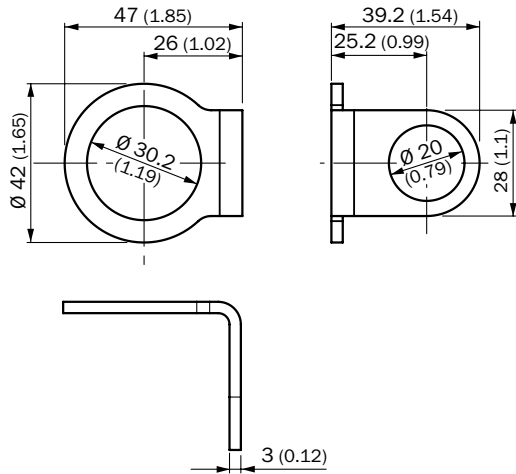
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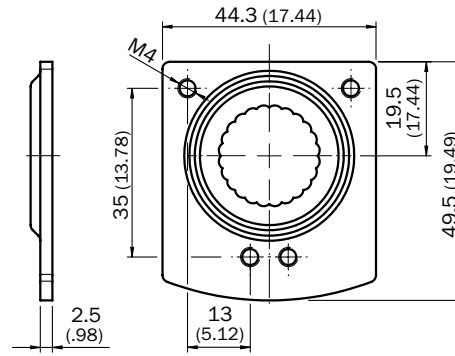
BEF-KHS-N06, BEF-KHS-N06N



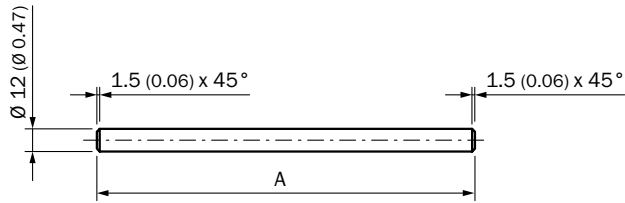
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BEF-KHS-N11N

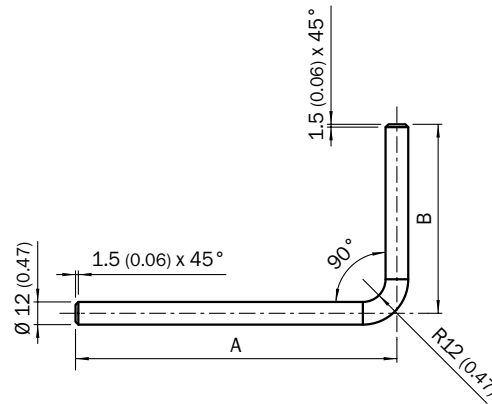


BEF-MS12G-A  
BEF-MS12G-B  
BEF-MS12G-NA



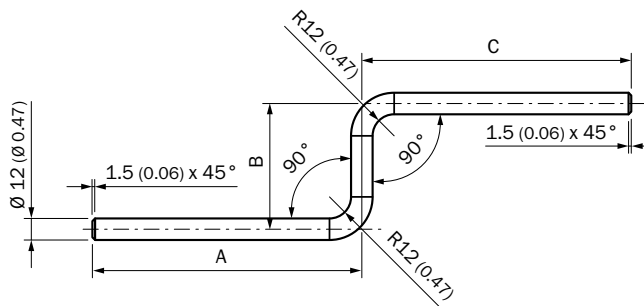
- ① BEF-MS12G-(N)A: A = 200 mm
- ② BEF-MS12G-(N)B: A = 300 mm

BEF-MS12L-A  
BEF-MS12L-B



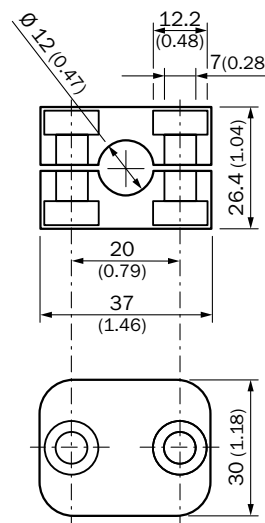
- ① BEF-MS12L-(N)A: A = 200 mm, B = 150 mm
- ② BEF-MS12L-(N)B: A = 250 mm, B = 250 mm

BEF-MS12Z-A  
BEF-MS12Z-B

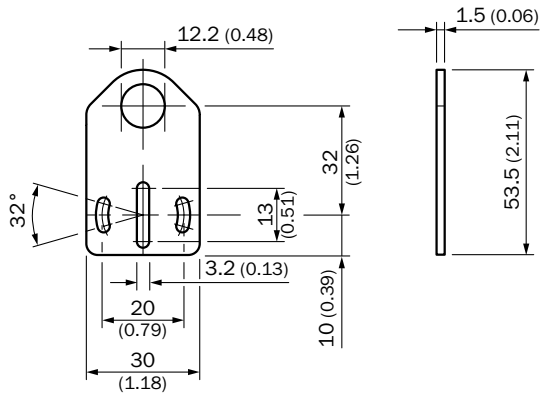


- ① BEF-MS12Z-(N)A: A = 150 mm, B = 70 mm, C = 150 mm
- ② BEF-MS12Z-(N)B: A = 150 mm, B = 70 mm, C = 250 mm

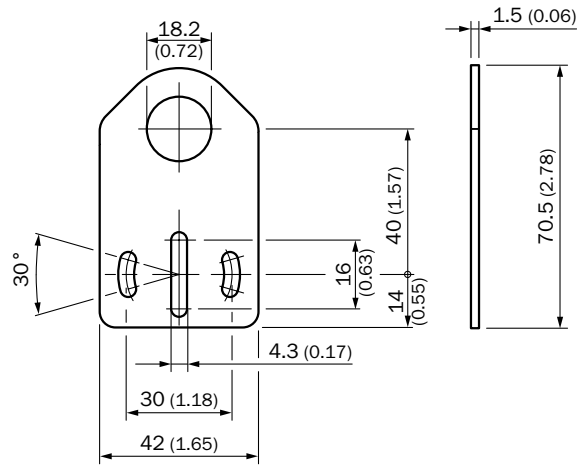
BEF-RMC-D12



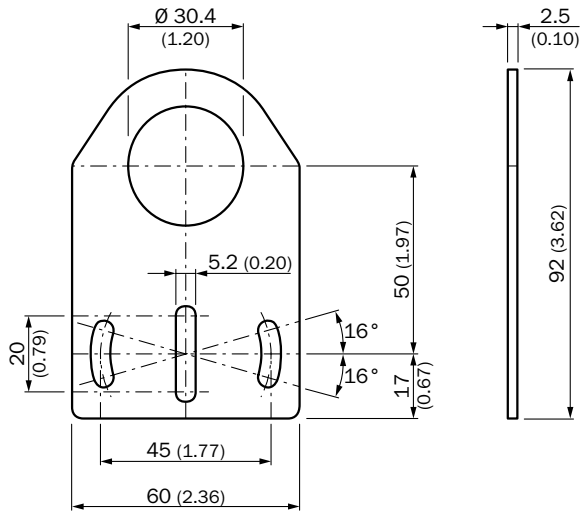
BEF-WG-M12



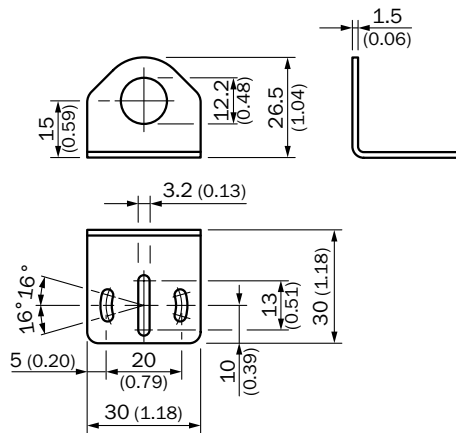
BEF-WG-M18, BEF-WG-M18N



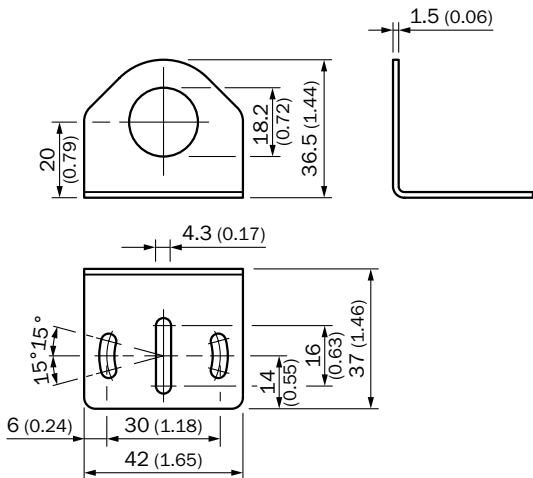
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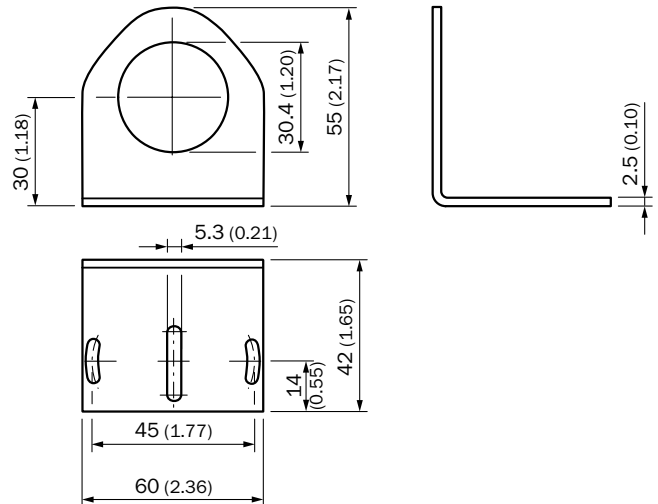
BEF-WN-M12



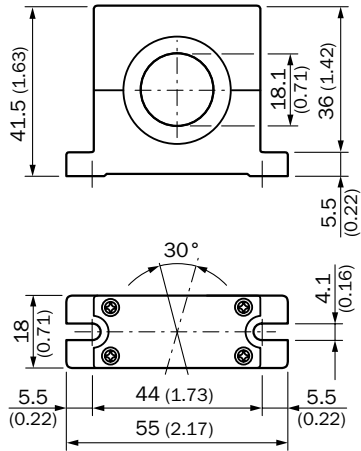
BEF-WN-M18, BEF-WN-M18N



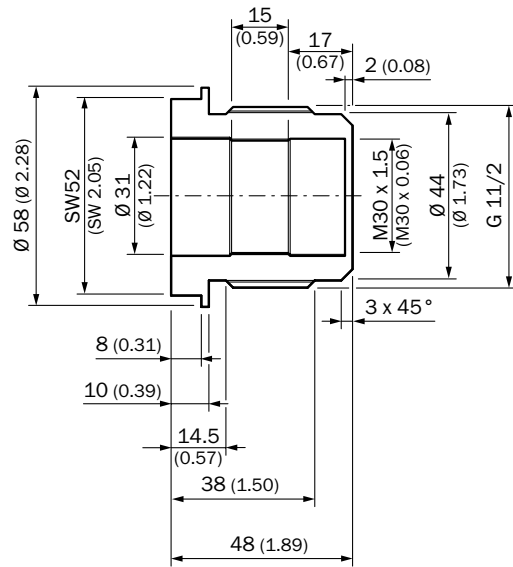
BEF-WN-M30



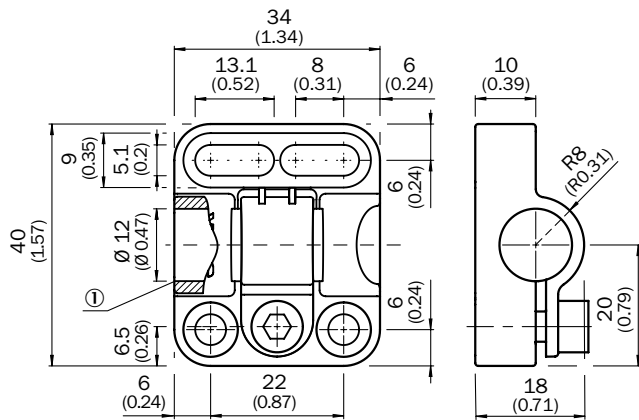
BEF-WN-M18-ST02



BEF-EA-CM30

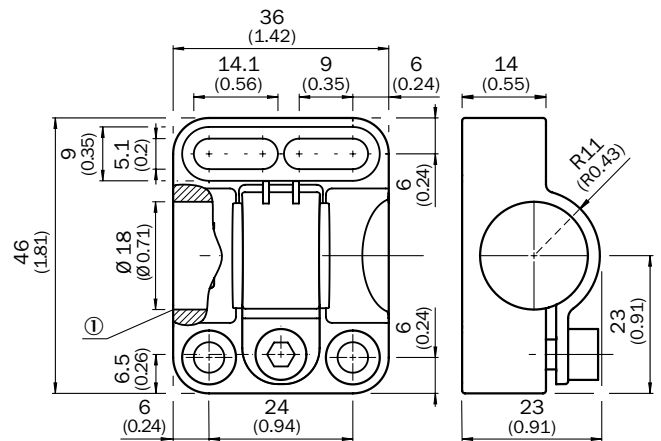


BEF-KH-M12



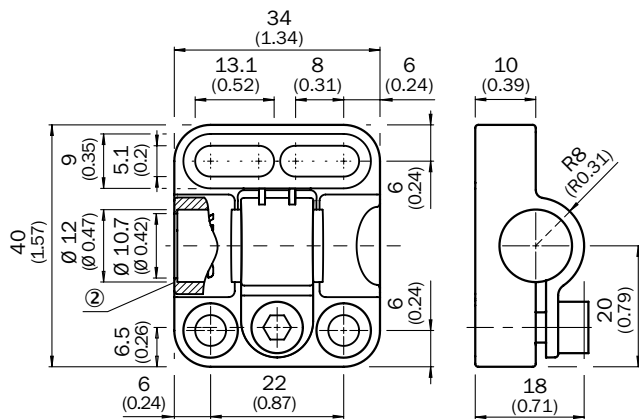
② Without fixed stop

BEF-KH-M18



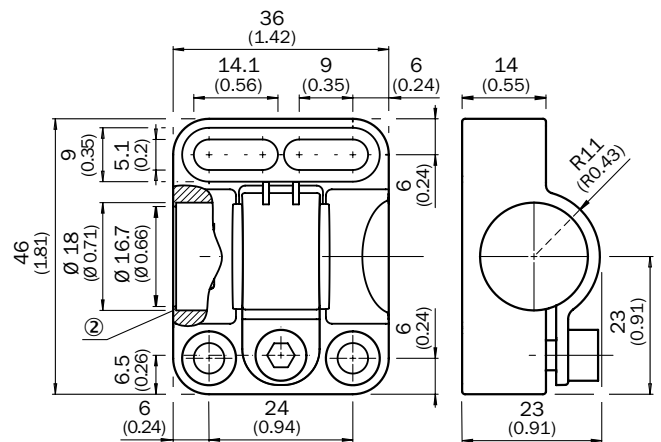
① Without fixed stop

BEF-KHF-M12



② With fixed stop

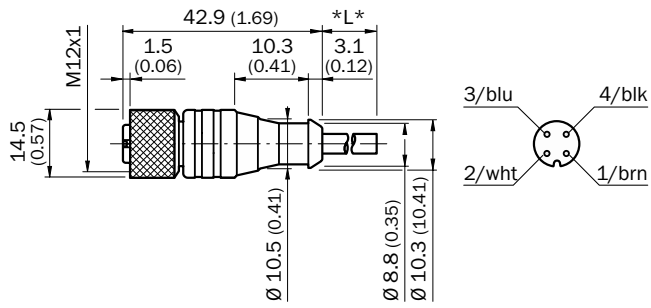
BEF-KHF-M18



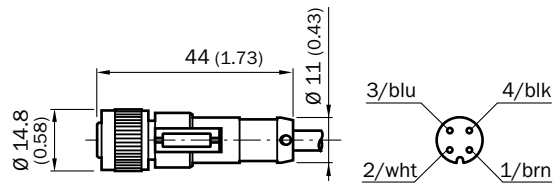
② With fixed stop

Dimensional drawings connection systems

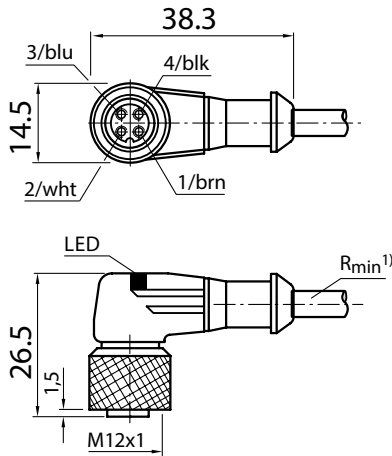
DOL-1204-GxxM



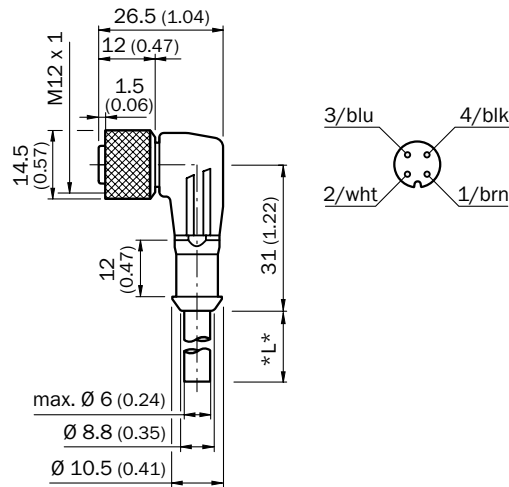
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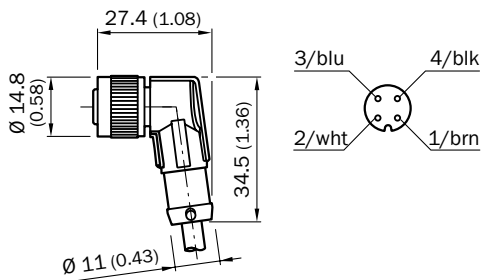
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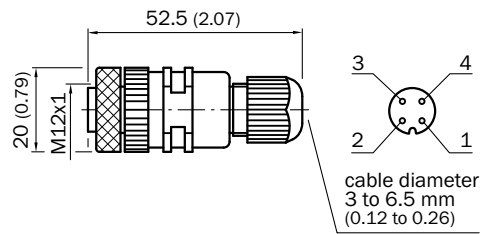
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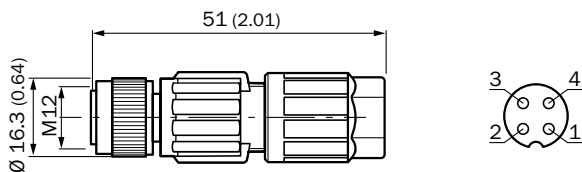
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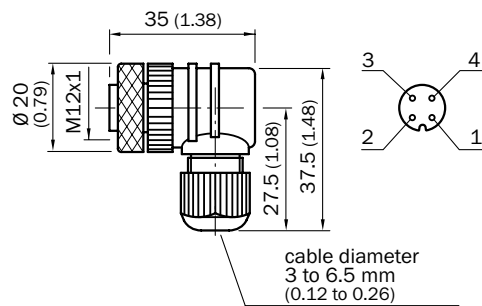
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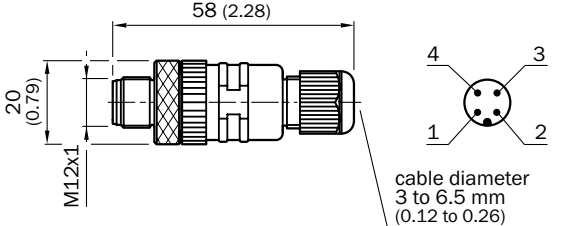
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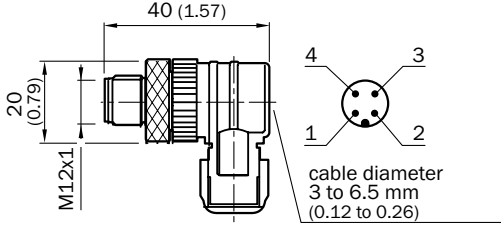
DOS-1204-W



STE-1204-G



STE-1204-W



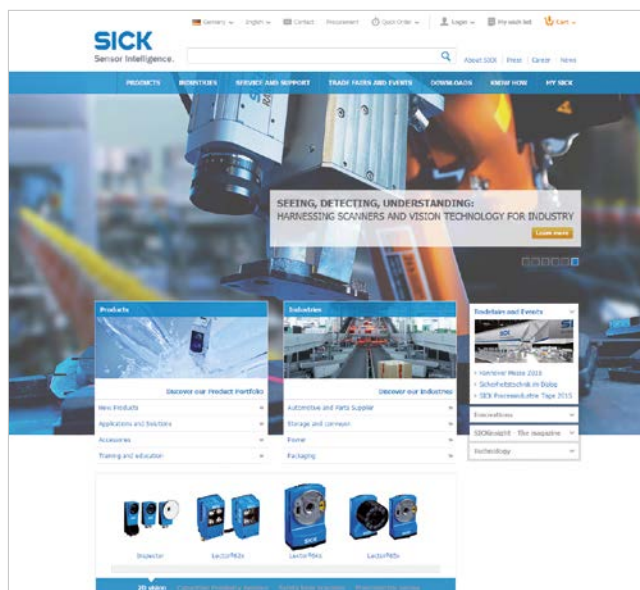






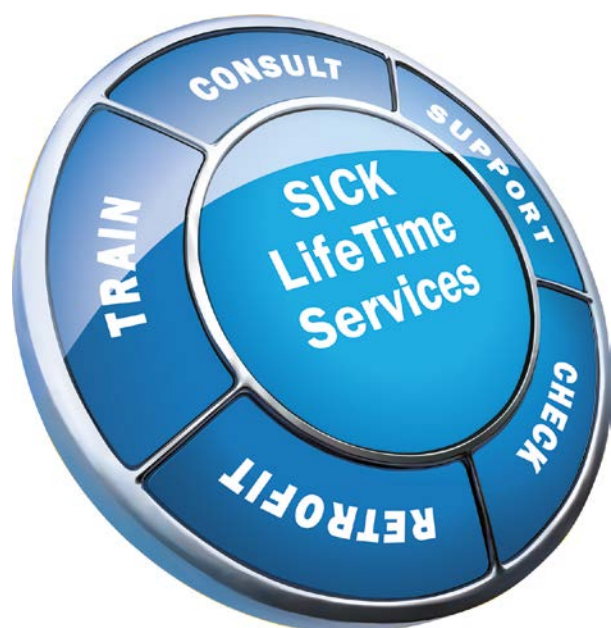
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