

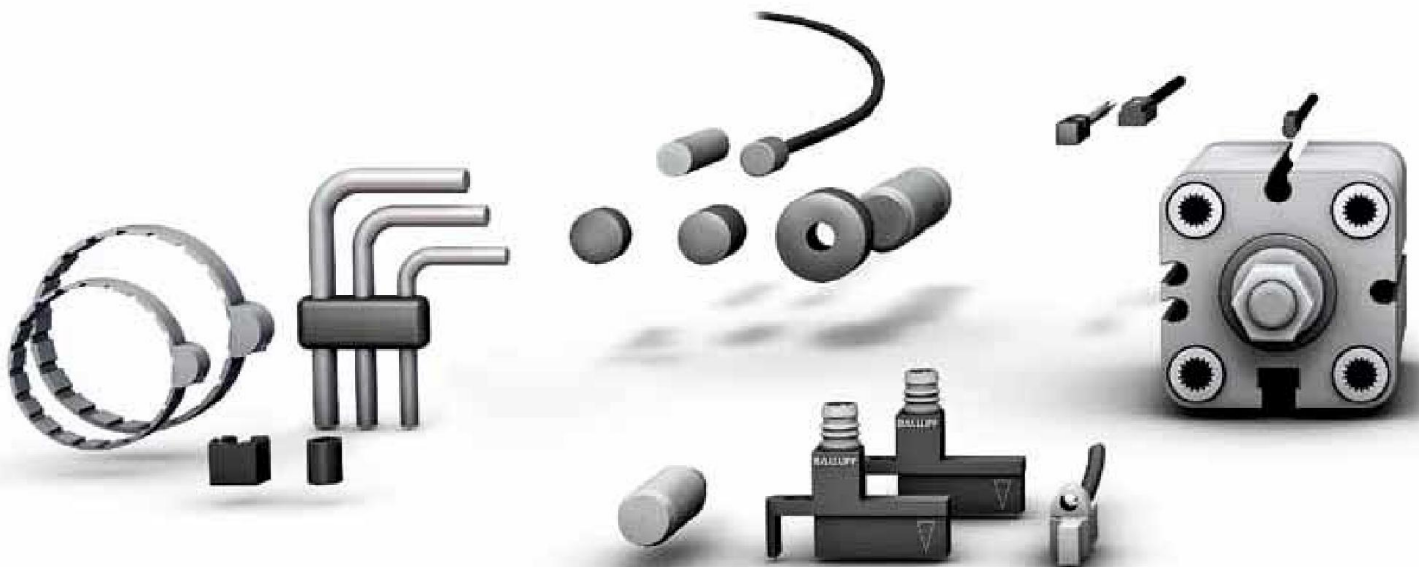


Magnetic Cylinder Sensors

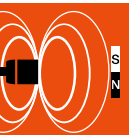
Magnetic cylinder sensors for object detection

The primary application for magnetic sensors is scanning piston positions on pneumatic and hydraulic cylinders.

- Can be used universally
- Very precise, reliable switching behavior
- Long service life due to lack of contact and wear
- Vibration-resistant
- Space-saving attachment thanks to small sizes

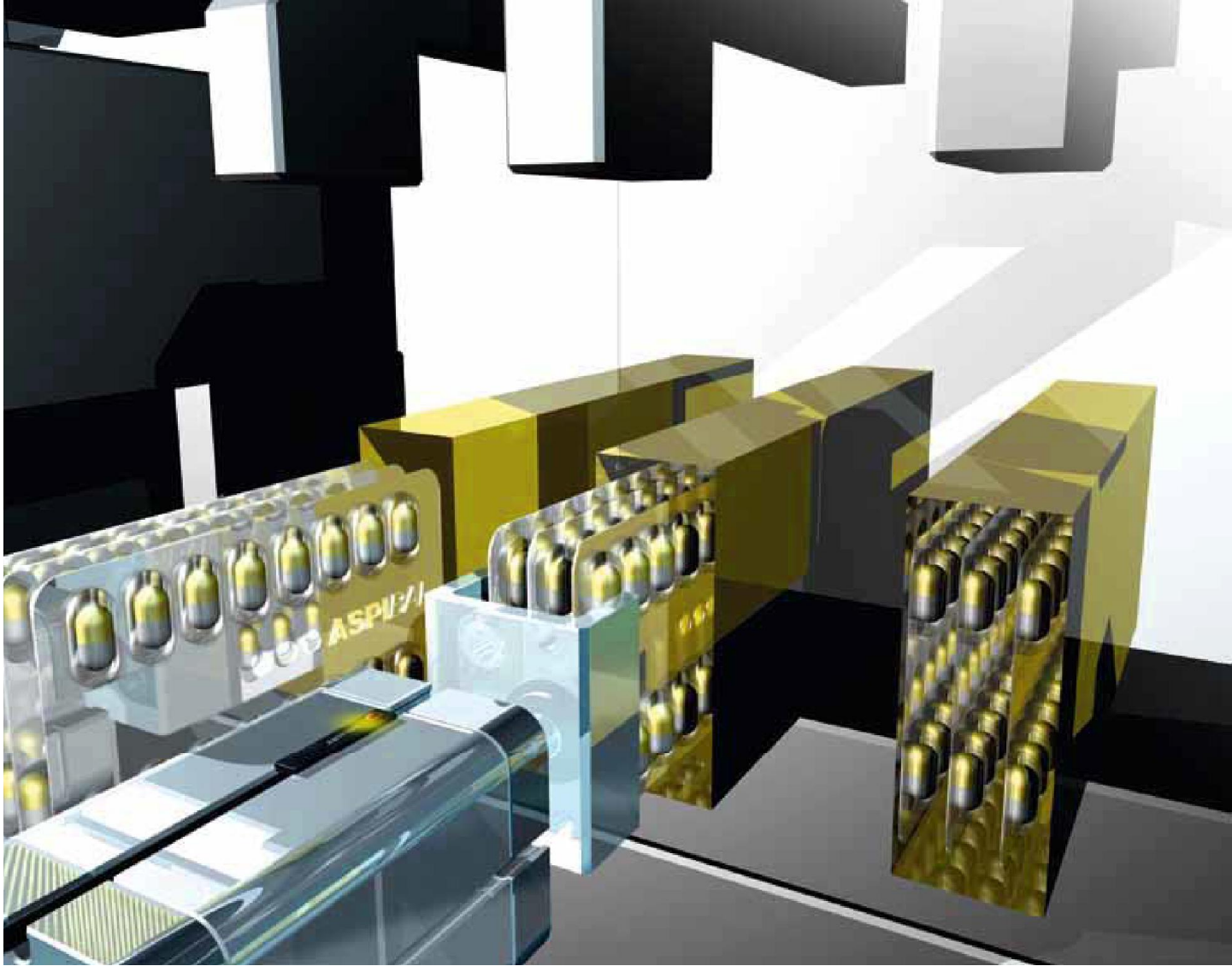


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Basic information and definitions can be found on **page 934**.





Reliable and wear-free position detection on all pneumatic cylinders – Increase your machine's functional reliability and availability

Magnetic cylinder sensors are used chiefly on cylinders and grippers for monitoring the piston position. The sensor detects the field of the magnet embedded in the piston through the actuator wall. Thanks to non-contacting position detection, magnetic and electronic cylinder sensors from Balluff function reliably and without wear, with no contact erosion, no bouncing, no sticking and just one switching point. The piston position is reliably detected even at high traverse speeds.



Mini-sensors for mini-actuators – Better integration options

Balluff offers ideal solutions for short-stroke cylinders and mini-grippers. The mini cylinder switches from Balluff are among the smallest on the market and have a highly accurate switching point. The sensor achieves maximum precision, even over short switching distances!



The right sensor for each cylinder—reduce costs: Universal use ensured with only a few different types

Virtually any cylinder size and make can be covered with the small number of designs as well as fastening and mounting materials. A special sensor element enables Balluff sensors to be used on any cylinder from virtually any manufacturer.

Sensors with mounting system or compact sensors – Which sensor is optimal for your application?



Magnetic Cylinder Sensors
Performance Spectrum
 Product Overview

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

	Sensors with mounting system	Compact sensors
Would you like to use just one sensor for a variety of cylinder types?	<input checked="" type="checkbox"/> Reduce the number of types – one for all!	<input type="checkbox"/>
Do you need to change out sensors quickly and easily?	<input checked="" type="checkbox"/> Switching point remains the same	<input type="checkbox"/>
Do you always use the same standard cylinder type (T- or C-slot)?	<input type="checkbox"/>	<input checked="" type="checkbox"/> Simple to install, compact

Our standard sensors have a perfect mounting system: Magnetic cylinder sensors BMF with our mounting system have a captive switching point and can be used universally.

Compact sensors with an integrated holding element feature compact design and ease of installation.

on page 824



on page 842



Magnetic cylinder sensors with special properties

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Magnetic sensors for object detection

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Magnetic Cylinder Sensors

Product overview

	Magnetic cylinder sensors with mounting System					Magnetic cylinder sensors with a compact design				
--	--	--	--	--	--	---	--	--	--	--



BMF series	103	303	305	21	32	204	214	243	235
Mini designs	■	■				■	■	■	■
Maxi designs			■	■	■				
Global series						■	■	■	■

Properties									
The connector variant			Page 857	Page 838	Page 857				
Cable with connector	page 827	Page 831	Page 835			Page 845	Page 847	Page 849	Page 851
Cable variant	page 827	Page 831	Page 835	Page 838		Page 845	Page 847	Page 849	Page 851
V-Twin available	page 827	Page 831	Page 835			Page 845	Page 847	Page 849	Page 851
Robust metal housing for the food industry			Page 857		Page 857				
Weld-immune electronics			Page 860		Page 860				
High-temperature resistant up to 105 °C			Page 862						
ATEX cylinder sensors									
Reed switches			Page 866						
Cylinder designs with a long range									
For analog distance measurement									

Cylinder profile

	Size 10 slot (C-slot)	Festo, Sommer, Bosch	■	■				■		
	Rounded groove (C-slot)	SMC, Bimba, Schunk	■	■				■	■	
	T-slot	General	■	■	■					■
	Round cylinder	General		■	■	■	■			
	Trapezoidal slot	Bosch, Parker, Norgren		■	■					■
	Trapezoidal guide	Bosch		■	■					
	C-slot, large	Numatics, Norgren		■	■					
	with rail/SMC slot A and slot B	SMC		■	■					
	Profile cylinder and tie rod 5...11 mm	General		■	■	■	■			■
	Profile cylinder and tie rod 9...15 mm	General		■	■	■	■			■
	Profile cylinder and tie rod 14...20 mm	General		■	■	■	■			■
	U-slot	SMC CP95		■						

Magnetic Cylinder Sensors

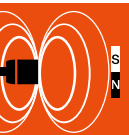
Product overview

Magnetic sensors for object detection							Magneto-inductive displacement sensors for analog position measurement
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307	315	10E	255	Ø 6.5 mm	M8x1	M12x1	Micro-BIL
-----	-----	-----	-----	----------	------	-------	-----------

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								Magnetic Cylinder Sensors Performance Spectrum
	■	■		■				Magnetic Cylinder Sensors with Mounting System
			■					Magnetic Cylinder Sensors with a Compact Design
								Magnetic Cylinder Sensors with Special Properties
								Magnetic Sensors for Object Detection
								Magneto-inductive Position Sensors for Analog Position Measurement
	■			■				Accessories for Magnetic Cylinder Sensors
	■			■				
	■			■				

Magnetic Cylinder Sensors Performance Spectrum

Product Overview

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Magnetic Cylinder Sensors

Magnetic cylinder sensors with mounting system

With its standard sensors for grippers and pneumatic cylinders, Balluff provides a flexible solution for position detection: with standard sensors and the perfect mounting system.

Magnetic cylinder sensors with mounting system are suited for use on mini-grippers and in short-stroke cylinders (BMF 103), for miniaturized (BMF 303) as well as for larger actuators (BMF 305).

The switching point is set just once and remains intact, even when replacing the sensor. This way you increase the functional reliability of your equipment. Replacement is significantly easier and more secure even at difficult-to-access locations.

By selecting the right mounting brackets you can adapt these sensors to virtually all pneumatic cylinder types. A few all-purpose types reduce costs and save storage space.

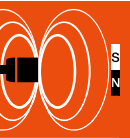


Magnetic Cylinder Sensors with Mounting System

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Magnetic Cylinder Sensors with Mounting System

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BMF 303	830
BMF 303 mounting bracket	832
BMF 305	834
BMF 305 mounting bracket	836
BMF 21	838
BMF 21 mounting bracket	839
Total Productive Maintenance (TPM)	840



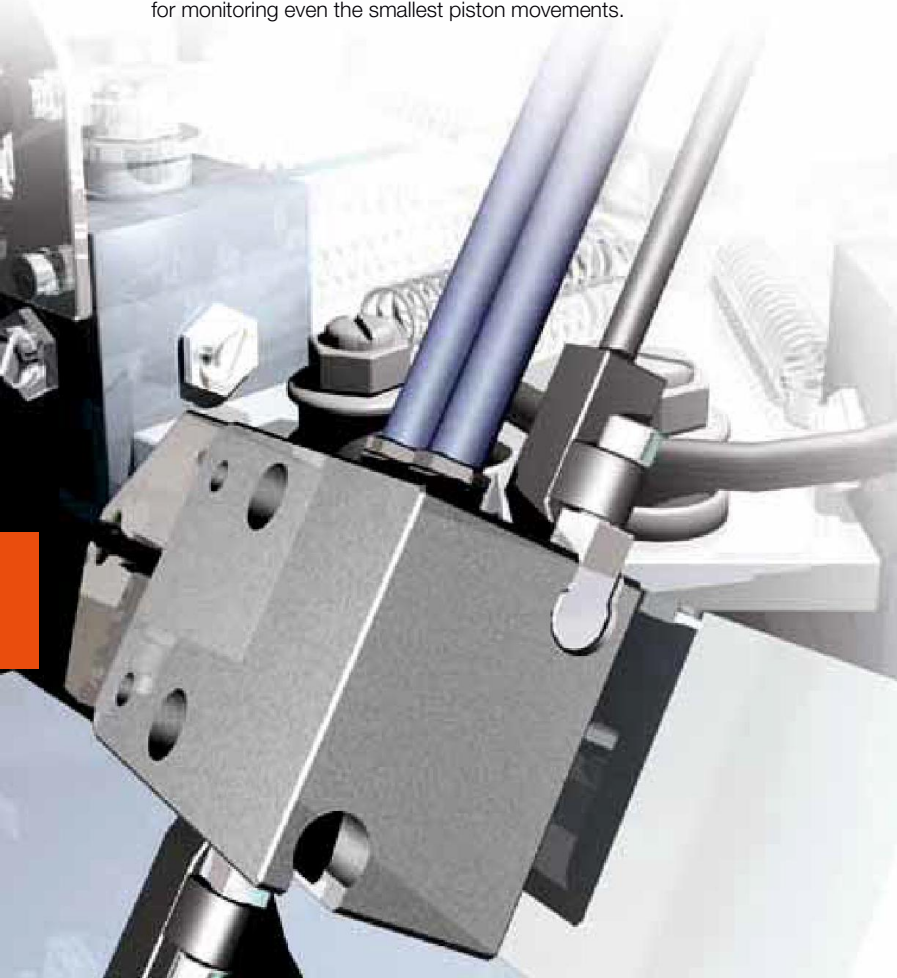
Basic information
and definitions
can be found
on **page 934**.



Magnetic Cylinder Sensors with Mounting System

BMF 103

The sensor for positioning monitoring on miniature grippers and miniature cylinders with C- or T-slot. Highly precise switching response for monitoring even the smallest piston movements.



Model		
Properties		
PNP, NO	Ordering code	
	Part number	
PNP, NC	Ordering code	
	Part number	
NPN, NO	Ordering code	
	Part number	
Supply voltage U_S		
Voltage drop U_d		
Rated insulation voltage U_e		
Rated operating current I_e		
Polarity reversal protected/transposition protected/short-circuit protected		
Rated switching field strength $ H_n $		
Assured switching field strength $ H_a $		
Temperature drift of switch-on point of $ H_n $		
Ambient temperature T_a		
On/off delay		
Degree of protection as per IEC 60529		
Approval		
Material	Housing	
Connection		

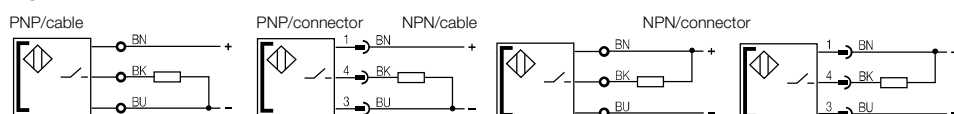
Basic information and definitions can be found on page 976, associated mounting brackets for BMF 103 can be found on page 828.

Additional cable lengths on request.

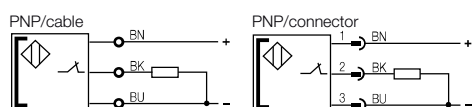


Wiring diagrams

NO



NC

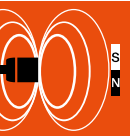


Magnetic Cylinder Sensors with Mounting System

BMF 103



BMF 103	BMF 103	BMF 103	BMF 103	BMF 103	BMF 103
Unrivalled short cylinder sensor with M5 connector	Unrivalled short cylinder sensor with M8 connector	Unrivalled short V-Twin variant with M8 connector	Unrivalled short cylinder sensor with M12 connector	Unrivalled short cylinder sensor with direct PUR cable	
BMF001J	BMF001L	BMF001R	BMF001K	BMF001E	
BMF 103K-PS-C-2A-S26-00,3	BMF 103K-PS-C-2A-SA2-S49-00,3	BMF 103K-PS-C-2A-SA95-S75-00,3	BMF 103K-PS-C-2A-S4-00,5	BMF 103K-PS-C-2A-PU-02	
	BMF0015			BMF0013	
	BMF 103K-PO-C-2A-SA2-S49-00,3			BMF 103K-PO-C-2A-PU-02	
	BMF0011			BMF000Y	
	BMF 103K-NS-C-2A-SA2-S49-00,3			BMF 103K-NS-C-2A-PU-02	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
≤ 2.5 V	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V	
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC	
100 mA	100 mA	100 mA	100 mA	100 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m	
≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	
≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	
-25...+70 °C	-25...+70 °C	-25...+85 °C	-25...+85 °C	-25...+70 °C	
≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	
IP 67	IP 67	IP 67	IP 67	IP 67	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus	
LCP	LCP	LCP	LCP	LCP	
0.3 m PUR cable with M5 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 4-pin	0.5 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 3×0.1 mm ²	



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

BMF 103
BMF 303
BMF 305
BMF 21

Total Productive Maintenance

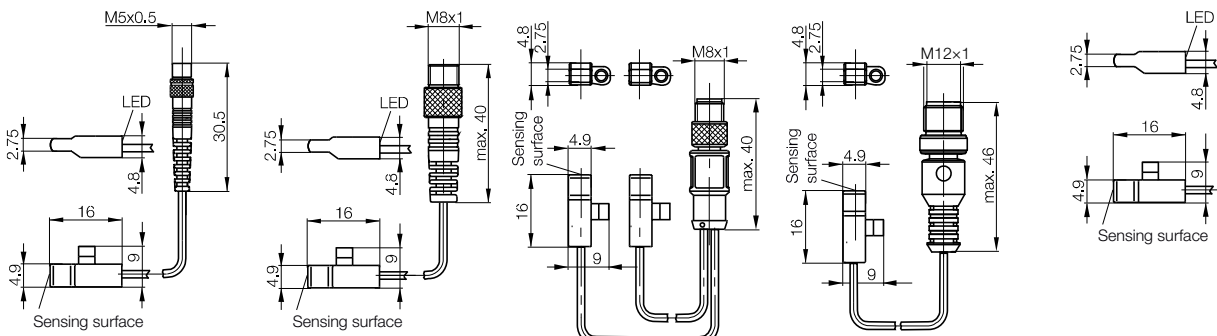
Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Suitable mounting brackets for BMF 103 can be found on **page 828**

Magnetic Cylinder Sensors with Mounting System

BMF 103 mounting bracket



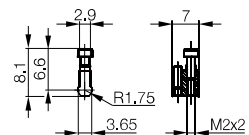
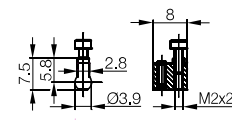
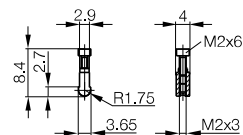
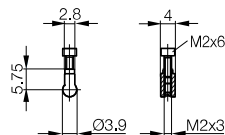
robust

robust

Mounting bracket for	BMF 103	BMF 103	BMF 103	BMF 103
Slot	Rounded groove (C-slot)	Size 10 slot (C-slot)	Rounded groove (C-slot)	Size 10 slot (C-slot)
Ordering code	BAM00K8	BAM00K9	BAM00KN	BAM00KP
Part number	BMF 103-HW-41	BMF 103-HW-42	BMF 103-HW-85	BMF 103-HW-87
Installation advantages				
Cylinder type, for example	SMC, Bimba, Schunk	Festo, Sommer, Bosch	SMC, Bimba, Schunk	Festo, Sommer, Bosch
Dimensions of cylinder slot				









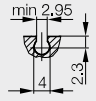
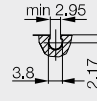
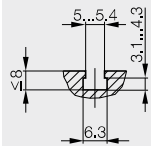
Switching point adjusted in seconds! Open screw with one turn, adjust position, tighten.

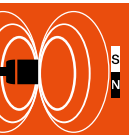
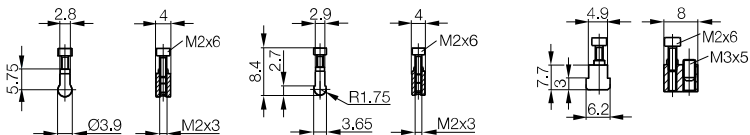


Switching point cannot be lost. Even if you replace the sensor, the adjusted switching point is permanently set by the mounting bracket.

Magnetic Cylinder Sensors with Mounting System

BMF 103 mounting bracket

	with hollow bolt	with hollow bolt			
					
	BMF 103 Rounded groove (C-slot)	BMF 103 Size 10 slot (C-slot)	BMF 103 T-slot		
	BAM01K6	BAM01K7	BAM00KA		
	BMF 103-HW-100	BMF 103-HW-102	BMF 103-HW-43		
					
	SMC, Bimba, Schunk	Festo, Sommer, Bosch	Festo, Bosch, SMC		
					



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

- BMF 103**
- BMF 303
- BMF 305
- BMF 21
- Total Productive Maintenance

Magnetic Cylinder Sensors with a Compact Design

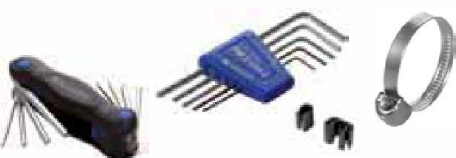
Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.



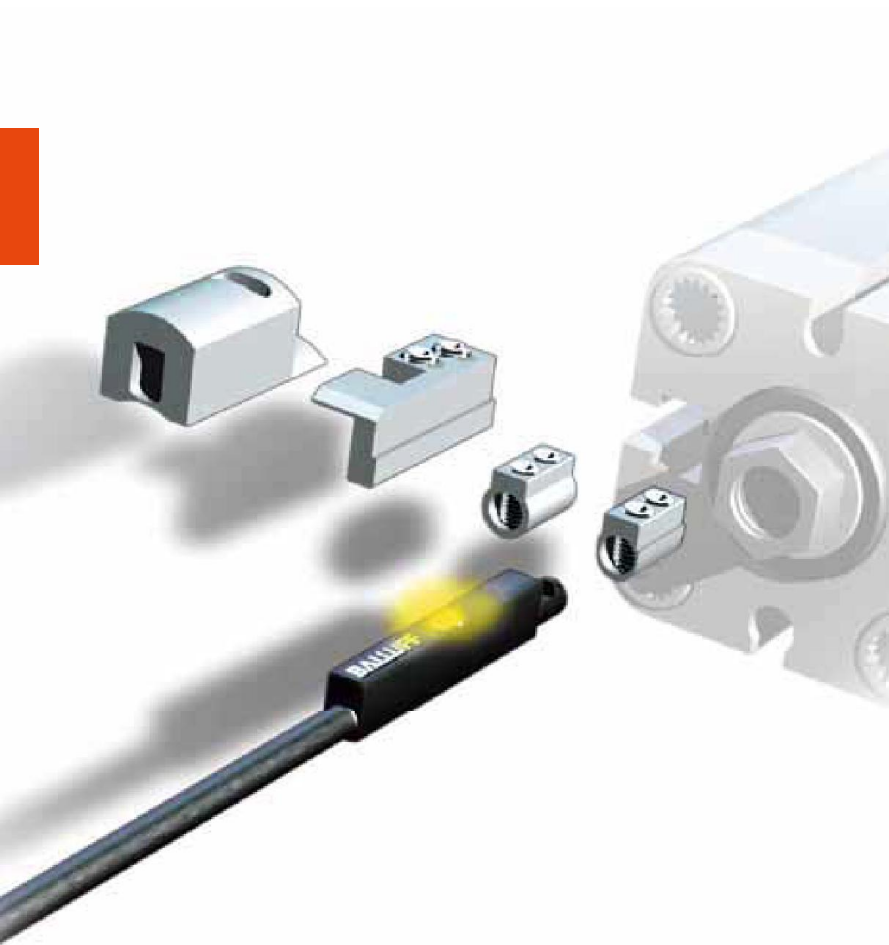
Magnetic Cylinder Sensors with Mounting System

BMF 303

The universal sensor for position monitoring on small grippers and cylinders. A variety of mounting brackets enables adapting to virtually every miniaturized pneumatic actuator on the market.



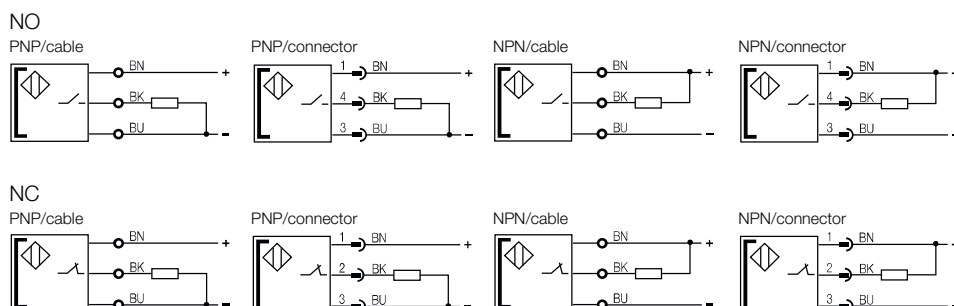
Model Properties	
PNP, NO	Ordering code Part number
PNP, normally closed	Ordering code Part number
NPN, NO	Ordering code Part number
NPN, NC	Ordering code Part number
Supply voltage U_S	
Voltage drop U_d	
Rated insulation voltage U_i	
Rated operating current I_o	
Polarity reversal protected/transposition protected/short-circuit protected	
Rated switching field strength I_{H_n}	
Assured switching field strength I_{H_a}	
Hysteresis of I_{H_n}	
Temperature drift of switch-on point of I_{H_n}	
On/off delay	
Ambient temperature T_a	
Degree of protection as per IEC 60529	
Approval	
Material	Housing
Connection	



Basic information and definitions can be found on page 976, associated mounting brackets for BMF 303 can be found on page 832.

Additional cable lengths on request.

Wiring diagrams

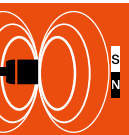


Magnetic Cylinder Sensors with Mounting System

BMF 303



BMF 303 Cylinder sensor for all common cylinders with M5 connector	BMF 303 Cylinder sensor for all common cylinders with M8 connector	BMF 303 V-Twin variant for all common cylinders with M8 connector	BMF 303 V-Twin variant for all common cylinders with M12 connector	BMF 303 Cylinder sensor for all common cylinders with direct PUR cable
BMF003Z BMF 303K-PS-C-2A-S26-00,3	BMF0043 BMF 303K-PS-C-2A-SA2-S49-00,3	BMF004F BMF 303K-PS-C-2A-SA95-S75-00,3	BMF004E BMF 303K-PS-C-2A-SA95-S4-00,3	BMF003U BMF 303K-PS-C-2A-PU-02
	BMF0039 BMF 303K-PO-C-2A-SA2-S49-00,3			BMF0036 BMF 303K-PO-C-2A-PU-02
BMF0033 BMF 303K-NS-C-2A-S26-00,3	BMF0034 BMF 303K-NS-C-2A-SA2-S49-00,3			BMF0031 BMF 303K-NS-C-2A-PU-02
	BMF002Y BMF 303K-NO-C-2A-SA2-S49-00,3			BMF002U BMF 303K-NO-C-2A-PU-02
10...30 V DC ≤ 2 V 75 V DC 100 mA Yes/Yes/Yes 1.2 kA/m ≥ 2 kA/m ≤ 45% ≤ 0.3 %/°C ≤ 0.07 ms/≤ 0.07 ms -25...+70 °C IP 67 CE, cULus LCP 0.3 m PUR cable with M5 connector, 4-pin	10...30 V DC ≤ 2 V 75 V DC 100 mA Yes/Yes/Yes 1.2 kA/m ≥ 2 kA/m ≤ 45% ≤ 0.3 %/°C ≤ 0.07 ms/≤ 0.07 ms -25...+70 °C IP 67 CE, cULus LCP 0.3 m PUR cable with M8 connector, 3-pin	10...30 V DC ≤ 2 V 75 V DC 100 mA Yes/Yes/Yes 1.2 kA/m ≥ 2 kA/m ≤ 45% ≤ 0.3 %/°C ≤ 0.07 ms/≤ 0.07 ms -25...+70 °C IP 67 CE, cULus LCP 0.3 m PUR cable with M8 connector, 4-pin	10...30 V DC ≤ 2 V 75 V DC 100 mA Yes/Yes/Yes 1.2 kA/m ≥ 2 kA/m ≤ 45% ≤ 0.3 %/°C ≤ 0.07 ms/≤ 0.07 ms -25...+70 °C IP 67 CE, cULus LCP 0.3 m PUR cable with M12 connector, 4-pin	10...30 V DC ≤ 2 V 75 V DC 100 mA Yes/Yes/Yes 1.2 kA/m ≥ 2 kA/m ≤ 45% ≤ 0.3 %/°C ≤ 0.07 ms/≤ 0.07 ms -25...+70 °C IP 67 CE, cULus LCP 2 m PUR cable, 3×0.1 mm ²



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

BMF 103
BMF 303
BMF 305
BMF 21
Total Productive Maintenance

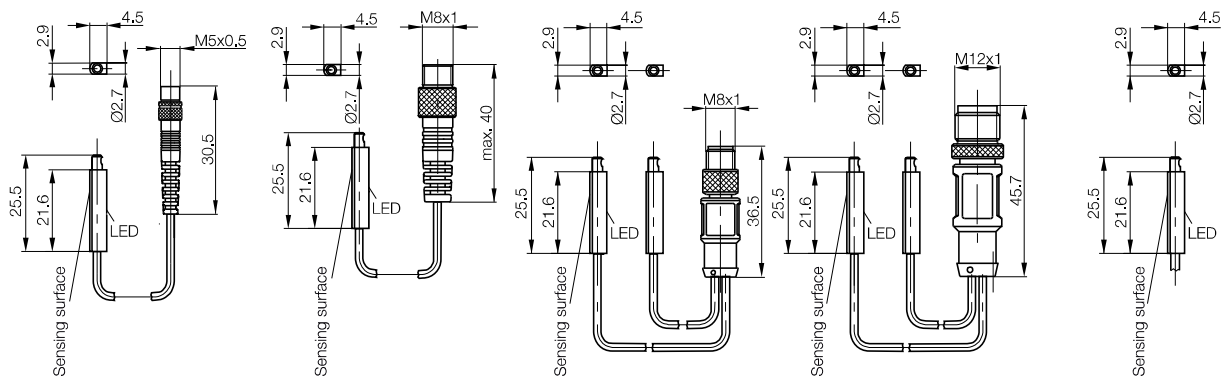
Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

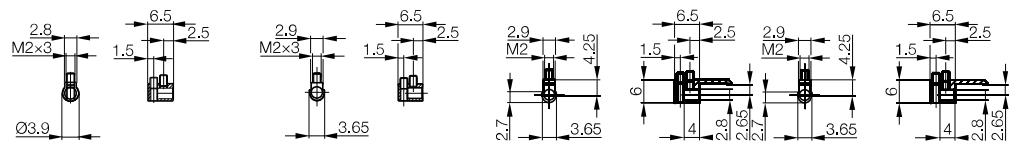


Suitable mounting brackets for BMF 303 can be found on page 832

Magnetic Cylinder Sensors with Mounting System

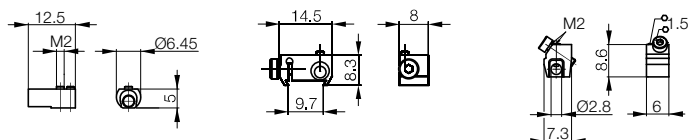
BMF 303 mounting bracket

Mounting bracket for Slot	BMF 303 Rounded groove (C-slot)	BMF 303 Size 10 slot (C-slot)	BMF 303 Rounded groove (C-slot)	BMF 303 Size 10 slot (C-slot)	
Ordering code	BAM00KZ	BAM00LO	BAM01FO	BAM00L1	
Part number	BMF 303-HW-28	BMF 303-HW-30	BMF 303-HW-97	BMF 303-HW-31	
Installation advantages					
Cylinder type, for example	SMC, Bimba, Schunk	Festo, Sommer, Bosch	SMC, Bimba, Schunk	Festo, Sommer, Bosch	
Dimensions of cylinder slot					



Mounting bracket for Slot	BMF 303 with rail	BMF 303 C-slot, large	BMF 303 Trapezoidal slot	BMF 303 U-slot	
Ordering code	BAM00L8	BAM00LA	BAM00LF	BAM01K4	
Part number	BMF 303-HW-60	BMF 303-HW-62	BMF 303-HW-80	BMF 303-HW-103	
Installation advantages					
Cylinder type, for example	SMC Slot A and Slot B for expanding the BMF 303-HW-51	Numatics, Norgren	Bosch	SMC CP95	
Dimensions of cylinder slot					

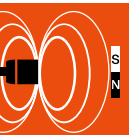
Expansion of the HW-51 with HW-60: for fastening the sensor next to the slot. This lets you attach two sensors to the cylinder even when space is tight. For example, 2x HW-51 + 2x HW-60 or 2x HW-51 + 1x HW-60



Magnetic Cylinder Sensors with Mounting System

BMF 303 mounting bracket

BMF 303	BMF 303	BMF 303	BMF 303	BMF 303
T-slot	T-slot	Trapezoidal slot	with rail	Round cylinder
BAM00L4	BAM00L2	BAM01K9	BAM00L6	BAM00L7
BMF 303-HW-40	BMF 303-HW-33	BMF 303-HW-101	BMF 303-HW-51	BMF 303-HW-59



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System
BMF 103
BMF 303
BMF 305
BMF 21
 Total Productive Maintenance

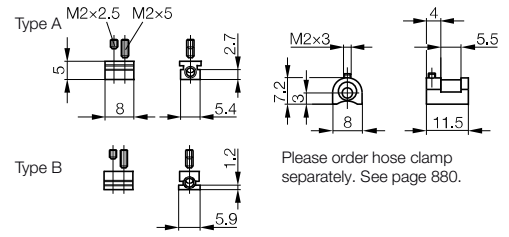
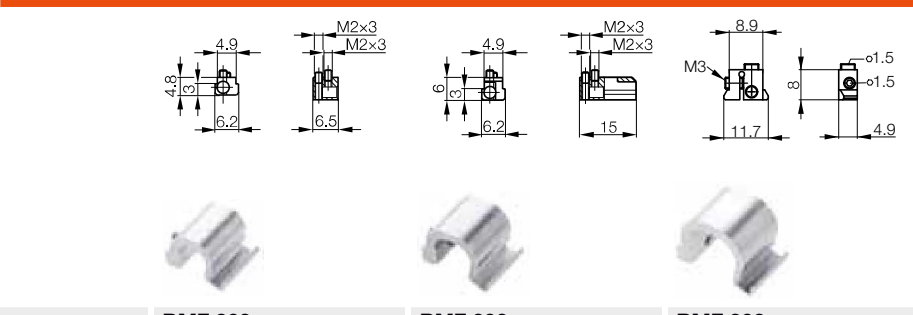
Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



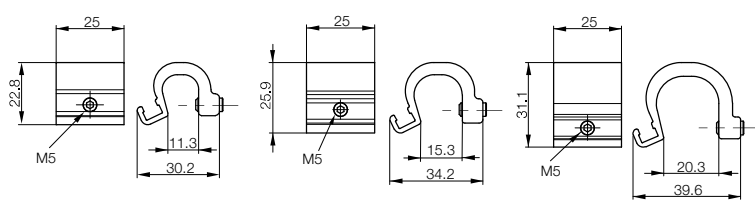
Please order hose clamp separately. See page 880.

BMF 303	BMF 303	BMF 303
Profile/tie rod	Profile/tie rod	Profile/tie rod
BAM01M9	BAM01MA	BAM01MC
BMF 235-HW-109	BMF 235-HW-110	BMF 235-HW-111
For profile/tie rod cylinders 5...11 mm in conjunction with T-slot holder, for example BAM00L2	For profile/tie rod cylinders 9...15 mm in conjunction with T-slot holder, for example BAM00L2	For profile/tie rod cylinders 14...20 mm in conjunction with T-slot holder, for example BAM00L2

Sensor disappears in the slot.

Switching point adjusted in seconds! Open screw with one turn, adjust position, tighten.

Switching point cannot be lost. Even if you replace the sensor, the adjusted switching point is permanently set by the mounting bracket.



Recommended accessories (please order separately)

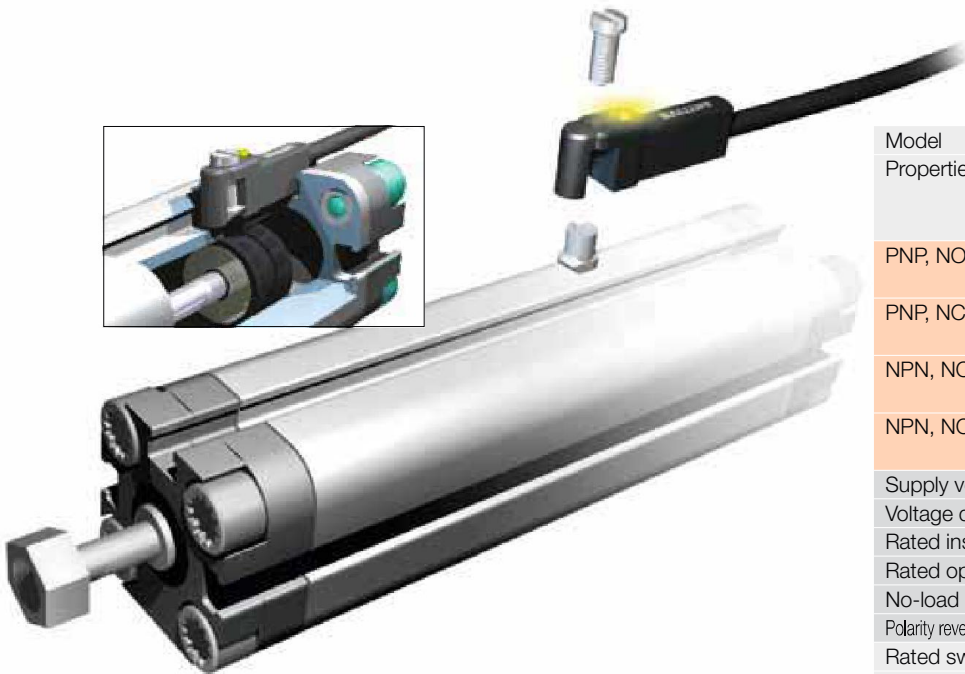


Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with Mounting System

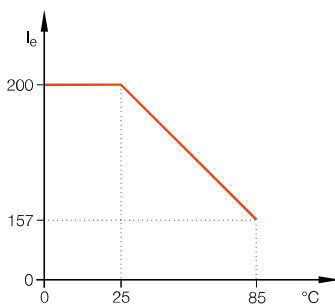
BMF 305

The all-rounder for position monitoring on large actuators



Model Properties	
PNP, NO	Ordering code Part number
PNP, NC	Ordering code Part number
NPN, NO	Ordering code Part number
NPN, NC	Ordering code Part number
Supply voltage U_S	
Voltage drop U_d	
Rated insulation voltage U_i	
Rated operating current I_e	
No-load supply current I_0 max.	
Polarity reversal protected/transposition protected/short-circuit protected	
Rated switching field strength $ H_n $	
Assured switching field strength $ H_a $	
Hysteresis of $ H_n $	
Temperature drift of switch-on point of $ H_n $	
On/off delay	
Ambient temperature T_a	
Degree of protection as per IEC 60529	
Approval	
Material	Housing
Connection	

Temperature load curve



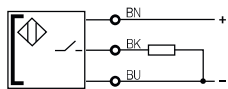
Basic information and definitions can be found on page 976, associated mounting brackets for BMF 305 can be found on page 836.

Additional cable lengths on request.

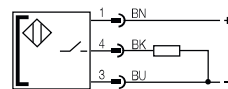
Wiring diagrams

NO

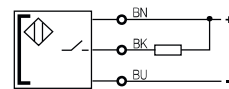
PNP/cable



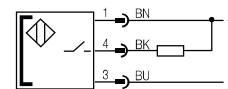
PNP/connector



NPN/cable

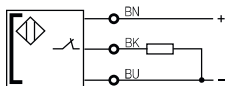


NPN/connector

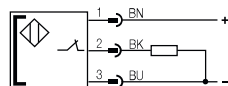


NC

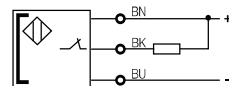
PNP/cable



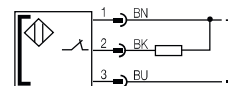
PNP/connector



NPN/cable



NPN/connector

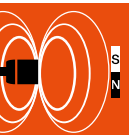


Magnetic Cylinder Sensors with Mounting System

BMF 305



BMF 305	BMF 305	BMF 305	BMF 305	BMF 305
The all-rounder for position monitoring with M8 connector	The all-rounder for position monitoring with M8 connector	The all-rounder for position monitoring with M12 connector	The all-rounder for position monitoring with M12 connector	The all-rounder for position monitoring with direct PUR cable
BMF005L	BMF0060	BMF0058	BMF005Z	BMF0056
BMF 305K-PS-C-2-SA2-S49-00,3	BMF 305K-PS-C-2-SA95-S75-00,3	BMF 305K-PS-C-2-S4-00,2	BMF 305K-PS-C-2-SA95-S4-00,3	BMF 305K-PS-C-2-PU-02
BMF0055				BMF0052
BMF 305K-PO-C-2-SA2-S49-00,3				BMF 305K-PO-C-2-PU-02
BMF0050				BMF004W
BMF 305K-NS-C-2-SA2-S49-00,3				BMF 305K-NS-C-2-PU-02
BMF004U				BMF004P
BMF 305K-NO-C-2-SA2-S49-00,3				BMF 305K-NO-C-2-PU-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 3,1 V	≤ 3,1 V	≤ 2 V	≤ 3,1 V	≤ 3,1 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	100 mA	200 mA	200 mA
≤ 30 mA	≤ 30 mA	≤ 5 mA	≤ 30 mA	≤ 30 mA
Yes/Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m
≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m
≤ 45%	≤ 45%	≤ 45%	≤ 45%	≤ 45%
≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C
≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms	≤ 0.07 ms	≤ 0.05 ms	≤ 0.05 ms
-25...+85 °C	-25...+85 °C	-25...+70 °C	-25...+85 °C	-25...+85 °C
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
LCP	LCP	LCP	LCP	LCP
0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 4-pin	0.2 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 3x0.14 mm ²



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

BMF 103
BMF 303
BMF 305
BMF 21
Total Productive Maintenance

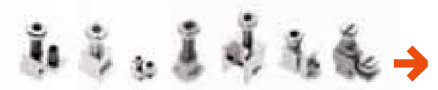
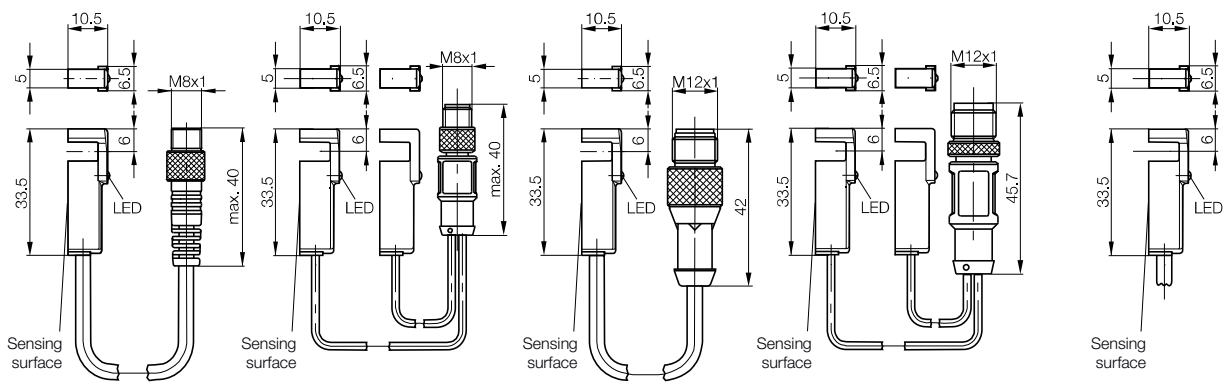
Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement









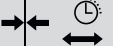

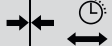


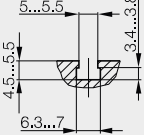
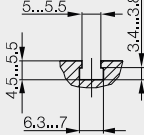
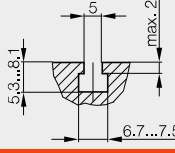
Accessories for Magnetic Cylinder Sensors

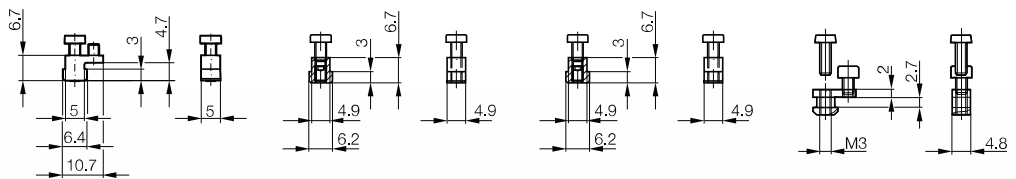






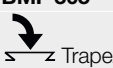



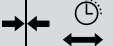
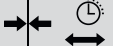



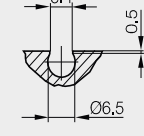
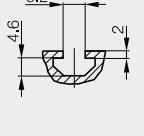
Suitable mounting brackets for BMF 305 can be found on **page 836**

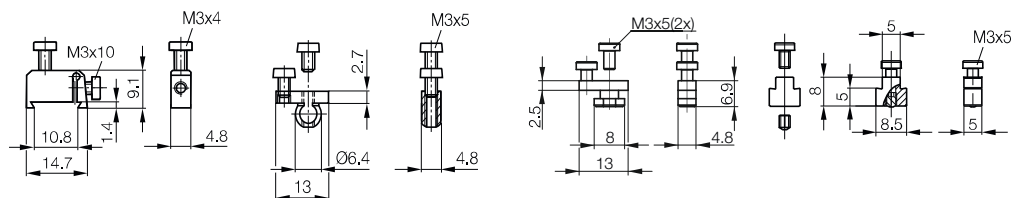
Magnetic Cylinder Sensors with Mounting System

BMF 305 mounting bracket











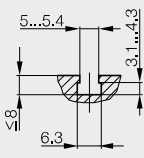
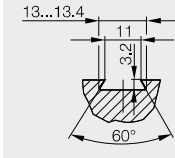
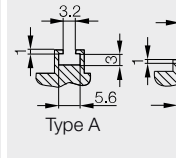
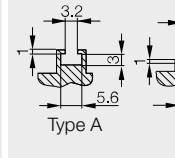
	 For lateral mounting	 For lateral mounting	 with hollow bolt	 For lateral mounting, can be inserted from above
Mounting bracket for Slot	 T-slot	 T-slot	 T-slot	 T-slot
Ordering code	BAM00LH	BAM00LJ	BAM01EZ	BAM00LM
Part number	BMF 305-HW-17	BMF 305-HW-20	BMF 305-HW-98	BMF 305-HW-22
Installation advantages				
Cylinder type, for example	Festo, SMC, Bosch	Festo, SMC, Bosch	Festo, SMC, Bosch	Festo, SMC, Bosch
Dimensions of cylinder slot				

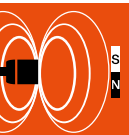


				
Mounting bracket for Slot	 Trapezoidal guide	 C-slot, large	 C-slot, large	 Profile cylinder
Ordering code	BAM00LU	BAM00LW	BAM01C4	BAM00M9
Part number	BMF 305-HW-27	BMF 305-HW-32	BMF 305-HW-92	BMF 305-HW-64
Installation advantages				
Cylinder type, for example	Bosch	Norgren	Numatics	Bosch
Dimensions of cylinder slot				



Magnetic Cylinder Sensors with Mounting System BMF 305 mounting bracket

Can be installed from above			With slotted screw		With Allen screw	
						
BMF 305	BMF 305	BMF 305	BMF 305	BMF 305	BMF 305	
T-slot	Round cylinder	Trapezoidal slot	with rail	with rail		
BAM00LN	BAM00LP	BAM01K8	BAM00LT	BAM01EY		
BMF 305-HW-23	BMF 305-HW-24	BMF 305-HW-106	BMF 305-HW-26	BMF 305-HW-99		
						
Festo, SMC, Bosch	Round cylinder Ø 8...80 mm		SMC	SMC		
						



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System
BMF 103
BMF 303
BMF 305
BMF 21
Total Productive Maintenance

Magnetic Cylinder Sensors with a Compact Design










Magnetic Cylinder Sensors with Special Properties

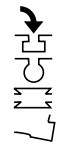
Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Can be inserted in slot from above. At any time, even later. Quick and time-saving.		
		
BMF 305	BMF 305	BMF 305
Profile/tie rod	Profile/tie rod	Profile/tie rod
BAM01M9	BAM01MA	BAM01MC
BMF 235-HW-109	BMF 235-HW-110	BMF 235-HW-111
		
For profile/tie rod cylinders 5...11 mm in conjunction with T-slot holder, for example BAM01EZ	For profile/tie rod cylinders 9...15 mm in conjunction with T-slot holder, for example BAM01EZ	For profile/tie rod cylinders 14...20 mm in conjunction with T-slot holder, for example BAM01EZ
		
		Switching point cannot be lost. Even if you replace the sensor, the adjusted switching point is permanently set by the mounting bracket.



Can be inserted in slot from above. At any time, even later. Quick and time-saving.

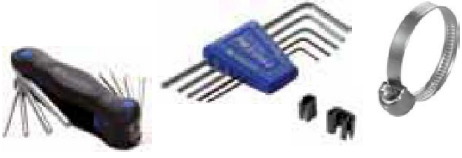
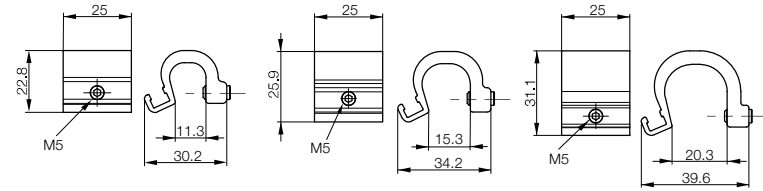


Switching point adjusted in seconds! Open screw with one turn, adjust position, tighten.



Switching point cannot be lost. Even if you replace the sensor, the adjusted switching point is permanently set by the mounting bracket.

Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with Mounting System

BMF 21

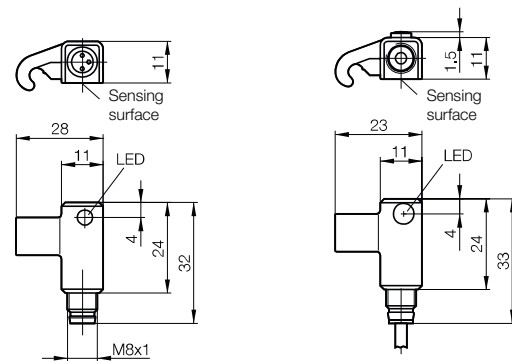
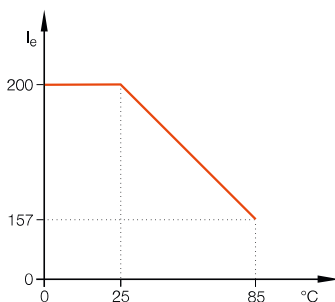


Model		BMF 21	BMF 21
Properties		The classics for cylinders with tie rod, DUO rail, round cylinder and profile cylinder with M8 connector	The classics for cylinders with tie rod, DUO rail, round cylinder and profile cylinder with direct PUR cable
PNP, NO	Ordering code	BMF0029	BMF0026
	Part number	BMF 21K-PS-C-2-S49	BMF 21K-PS-C-2-PU-02
NPN, NO	Ordering code	BMF0025	BMF0023
	Part number	BMF 21K-NS-C-2-S49	BMF 21K-NS-C-2-PU-02
Supply voltage U_S		10...30 V DC	10...30 V DC
Voltage drop U_d		$\leq 3,1$ V	$\leq 3,1$ V
Rated insulation voltage U_i		75 V DC	75 V DC
Rated operating current I_e		200 mA	200 mA
No-load supply current I_0 max.		≤ 30 mA	≤ 30 mA
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Rated switching field strength $I H_n I$		1.2 kA/m	1.2 kA/m
Assured switching field strength $I H_a I$		≥ 2 kA/m	≥ 2 kA/m
Hysteresis of $I H_n I$		$\leq 45\%$	$\leq 45\%$
Temperature drift of switch-on point of $I H_n I$		$\leq 0,3$ %/°C	$\leq 0,3$ %/°C
Turn-on delay		$\leq 0,05$ ms	$\leq 0,05$ ms
Turn-off delay		$\leq 0,05$ ms	$\leq 0,05$ ms
Ambient temperature T_a		-25...+85 °C	-25...+85 °C
Degree of protection as per IEC 60529		IP 67	IP 67
Approval		CE, cULus	CE
Material	Housing	PBT (fiberglass-reinforced)	PBT (fiberglass-reinforced)
Connection		M8 connector, 3-pin	2 m PUR cable, 3x0.14 mm ²

Basic information and definitions can be found on page 976, associated mounting brackets for BMF 21 can be found on page 839.

Additional cable lengths on request.

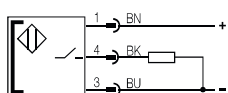
Temperature load curve



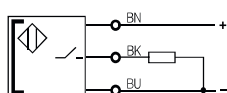
Wiring diagrams

NO

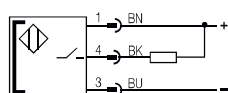
PNP/cable



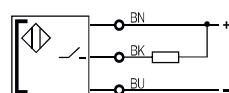
PNP/connector



NPN/cable



NPN/connector

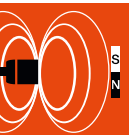


Magnetic Cylinder Sensors with Mounting System

BMF 21 mounting bracket



Mounting bracket for Slot	Tie rod	Profile/tie rod	Profile/tie rod	Round cylinder
Ordering code	BAM00KY	BAM00KT	BAM00KU	BAM00KW
Part number	BMF 21-HW-8	BMF 21-HW-10	BMF 21-HW-10-E	BMF 21-HW-11
Cylinder type	For pneumatic cylinders with tie rod, any piston diameter, tie rod diameter up to 6.5 mm. Pneumatic cylinder with DUO rail (Festo), any piston diameter	For pneumatic cylinders with tie rod. Any piston diameter, tie rod diameter up to 17 mm. For pneumatic cylinder with tie rod integrated in housing (profile). Any piston diameter, profile width up to 17 mm.	For pneumatic cylinders with tie rod. Any piston diameter, tie rod diameter up to 17 mm. For pneumatic cylinder with tie rod integrated in housing (profile). Any piston diameter, profile width up to 17 mm. Stainless steel 1.4305	For pneumatic cylinders without tie rod/rail. Piston diameter 8...80 mm. Mounting bracket usable only with hose clamps.
Cylinder				



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

BMF 103
BMF 303
BMF 305
BMF 21

Total Productive Maintenance

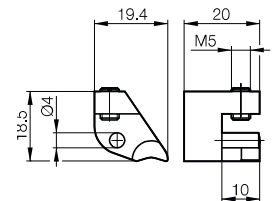
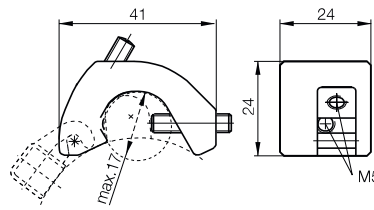
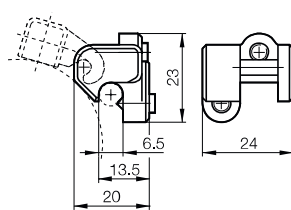
Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Please order hose clamp separately. See page 880.

Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.



Magnetic Cylinder Sensors

Ready for Total Productive Maintenance (TPM)











The advantages of the sensors with a perfect mounting system, all in a single case. With just one order number you can cover the position detection for all common pneumatic cylinders.

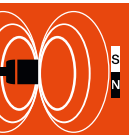
- Time and cost savings every time a sensor is changed
- Covers all common pneumatic cylinders
- Clearly laid out for easy handling



Magnetic Cylinder Sensors

Ready for Total Productive Maintenance (TPM)

	Conventional sensors	BMF service case with sensors BMF 103, 303, 305 and mounting system
Sensor replacement		 <ul style="list-style-type: none"> ■ Case has space to store all the necessary materials ■ Mounting system retains the switching point when device is replaced
Complexity		 <ul style="list-style-type: none"> ■ Standard operating principle for all cylinders ■ Very easy installation
Variety of models		 <ul style="list-style-type: none"> ■ One sensor for all cylinders ■ Reduce your storage costs
Service life		 <ul style="list-style-type: none"> ■ Robust metal clamp ■ Fully electronic, wear-free
€		 Sensors with the Balluff mounting system can reduce your costs significantly.



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

- BMF 103
- BMF 303
- BMF 305
- BMF 21

Total Productive Maintenance

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

- Contains detailed information
- Particularly user-friendly due to the ingenious overview of contents
- Cover flap seals tightly when closed
- Contains two BMF 103, 303, and 305 sensors
- Contains two mounting elements for all common slots
- Robust, industrial aluminum case
- Contains an extensive range of accessories



Description	BMF service case
Ordering code	BAV0005
Part number	BAV AS-OD-00002-01



Magnetic Cylinder Sensors

Magnetic cylinder sensors with a compact design

Compact magnetic cylinder sensors are adapted to the various slot shapes and thus have a perfect hold. They can not only be installed flush in the respective slot, but also fit in completely.

Some series can even be installed, for example, if the cylinder cover is not allowing them to be pushed in. These can be inserted from above.

Global: The complete series of standard sensors

Magnetic standard cylinder sensors are mostly available ex warehouse, can be used around the world, and meet worldwide standards. They offer an optimal price/performance ratio.

Compact designs for

- Insertion from above or the side
- Cable and connector versions
- V-Twin variants available



Global



Magnetic Cylinder Sensors with a Compact Design

Contents

Magnetic Cylinder Sensors with a Compact Design

BMF 204 Global	844
BMF 214 Global	846
BMF 243 Global	848
BMF 235 Global	850
BMF 307	852



Basic information and definitions can be found on **page 934**.



Magnetic Cylinder Sensors with a Compact Design

BMF 204 Global

C-slot (size 10 slot)

Global

Secure hold in the slot

The design is adapted to the slot, i.e. the sensor can be inserted into the slot.

Installed and adjusted quickly and easily

The retaining element is integrated into the sensor.

Can also be used in space-critical applications

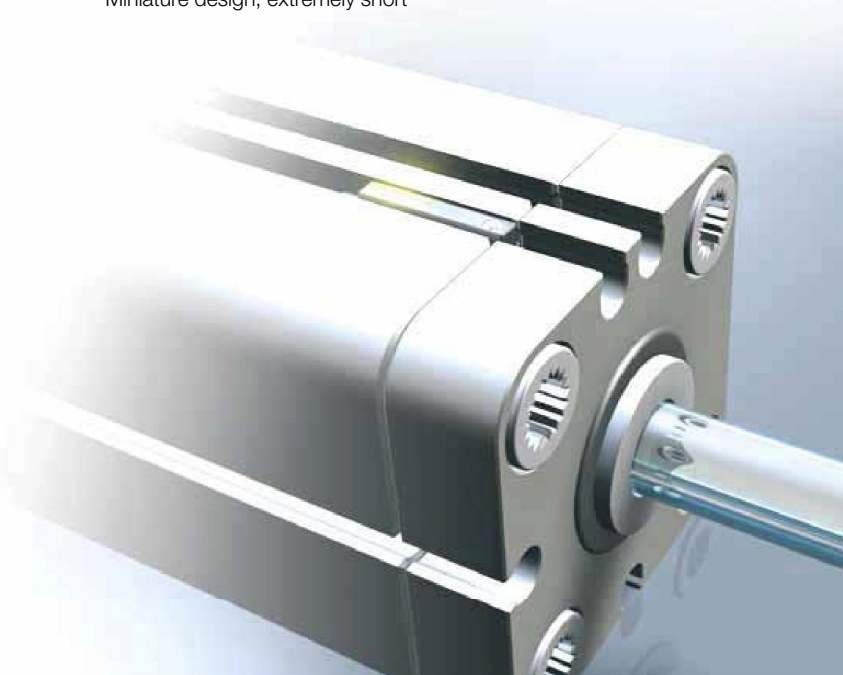
Flush-fitting, the sensor "disappears" in the slot.

Optimum solution for every gripper and short-stroke cylinder

Miniature design, extremely short



Model	
Properties	
PNP, NO	Ordering code
	Part number
Supply voltage U_S	
Voltage drop U_d	
Rated insulation voltage U_i	
Rated operating current I_o	
No-load supply current I_o max.	
Polarity reversal protected/transposition protected/short-circuit protected	
Rated switching field strength $I H_n I$	
Assured switching field strength $I H_a I$	
Temperature drift of switch-on point of $I H_n I$	
On/off delay	
Ambient temperature T_a	
Degree of protection as per IEC 60529	
Approval	
Material	Housing
Connection	
Assembly	
Slot	



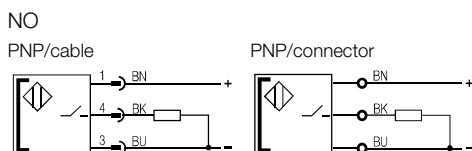
Basic information and definitions can be found on page 976.

Additional cable lengths on request.

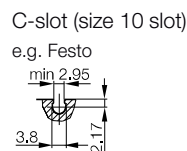


The BMF 204 and BMF 214 have an impressive, extremely compact design.

Wiring diagrams



Slot dimension





Magnetic Cylinder Sensors with a Compact Design

BMF 204 Global



	BMF 204	BMF 204	BMF 204	BMF 204	BMF 204
	Small housing for the Festo C-slot with M8 connector	Small housing for the Festo C-slot with M8 connector	Small housing for the Festo C-slot with M12 connector	Small housing for the Festo C-slot with M12 connector	Small housing for the Festo C-slot with direct PUR cable
	BMF0002	BMF0006	BMF00A6	BMF0005	BMF0001
	BMF 204K-PS-C-2A-SA2-S49-00,3	BMF 204K-PS-C-2A-SA95-S75-00,3	BMF 204K-PS-C-2A-SA2-S4-00,3	BMF 204K-PS-C-2A-SA95-S4-00,3	BMF 204K-PS-C-2A-PU-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V
	75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
	100 mA	100 mA	100 mA	100 mA	100 mA
	≤ 8 mA	≤ 8 mA	≤ 8 mA	≤ 8 mA	≤ 8 mA
	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m
	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m
	≤ 0.3%/°C	≤ 0.3%/°C	≤ 0.3%/°C	≤ 0.3%/°C	≤ 0.3%/°C
	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms
	-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C
	IP 67	IP 67	IP 67	IP 67	IP 67
	CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
	PA 12	PA 12	PA 12	PA 12	PA 12
	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 3×0.1 mm ²
	Can be inserted from the side	Can be inserted from the side	Can be inserted from the side	Can be inserted from the side	Can be inserted from the side
	↳ C-slot (size 10 slot)	↳ C-slot (size 10 slot)	↳ C-slot (size 10 slot)	↳ C-slot (size 10 slot)	↳ C-slot (size 10 slot)



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

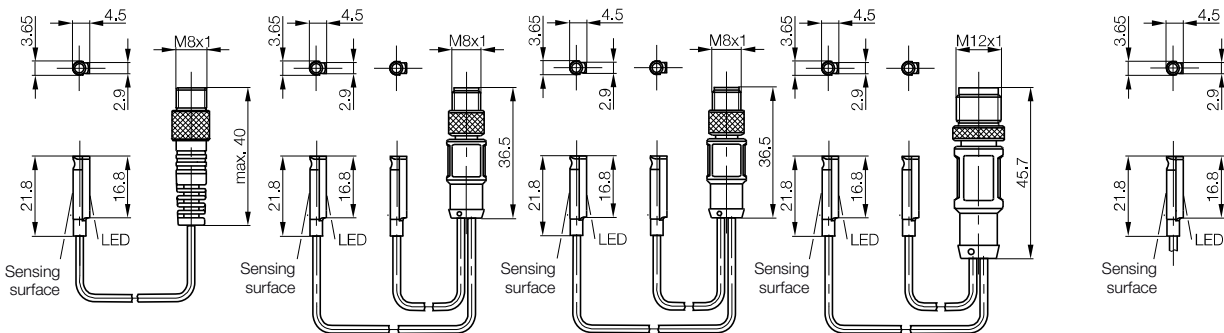
- BMF 204 Global
- BMF 214 Global
- BMF 243 Global
- BMF 235 Global
- BMF 307

Magnetic Cylinder Sensors with Special Properties

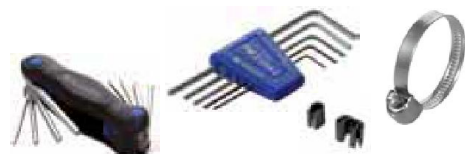
Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with a Compact Design

BMF 214 Global

C-slot (rounded slot)

Global

Secure hold in the slot

The design is adapted to the slot, i.e. the sensor can be inserted into the slot.

Installed and adjusted quickly and easily

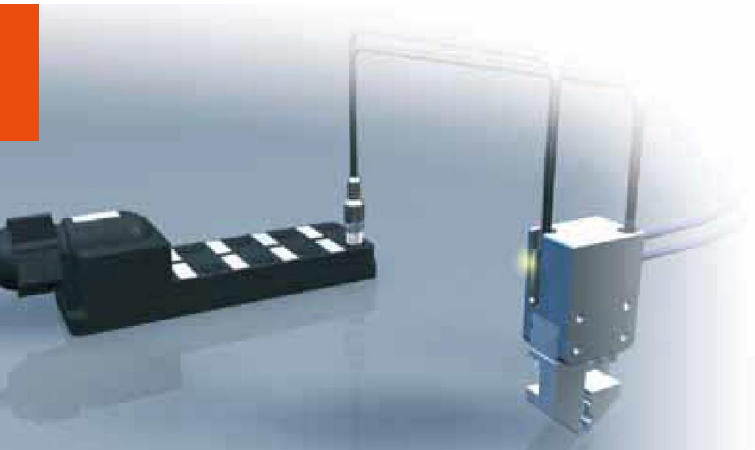
The retaining element is integrated into the sensor.

Can also be used in space-critical applications

Flush-fitting, the sensor "disappears" in the slot.

Optimum solution for every gripper and short-stroke cylinder

Miniature design, extremely short.



Model	
Properties	
PNP, NO	Ordering code
	Part number
Supply voltage U_S	
Voltage drop U_d	
Rated insulation voltage U_i	
Rated operating current I_o	
No-load supply current I_o max.	
Polarity reversal protected/transposition protected/short-circuit protected	
Rated switching field strength $I H_n I$	
Assured switching field strength $I H_a I$	
Temperature drift of switch-on point of $I H_n I$	
On/off delay	
Ambient temperature T_a	
Degree of protection as per IEC 60529	
Approval	
Material	Housing
Connection	
Assembly	
Slot	

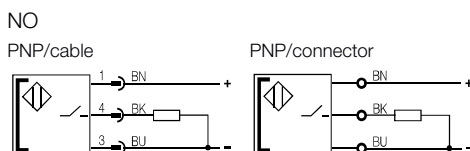
Basic information and definitions can be found on page 976.

Additional cable lengths on request.

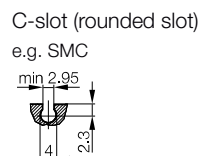
V-Twin – two sensors, one connector

- Save on connectors and increase value creation.
- Just one plug-in position for two sensors.
- Flexibly detect multiple positions on pneumatic grippers and cylinders.

Wiring diagrams



Slot dimension



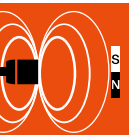


Magnetic Cylinder Sensors with a Compact Design

BMF 214 Global



BMF 214	BMF 214	BMF 214	BMF 214
Small housing for the SMC C-slot with M8 connector	Small housing for the SMC C-slot with M8 connector	Small housing for the SMC C-slot with M12 connector	Small housing for the SMC C-slot with direct PUR cable
BMF00A2	BMF00A5	BMF00A4	BMF00A1
BMF 214K-PS-C-2A-SA2-S49-00,3	BMF 214K-PS-C-2A-SA95-S75-00,3	BMF 214K-PS-C-2A-SA95-S4-00,3	BMF 214K-PS-C-2A-PU-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 2.5 V	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V
75 V DC	75 V DC	75 V DC	75 V DC
100 mA	100 mA	100 mA	100 mA
≤ 8 mA	≤ 8 mA	≤ 8 mA	≤ 8 mA
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m
≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m
≤ 0.3%/°C	≤ 0.3%/°C	≤ 0.3%/°C	≤ 0.3%/°C
≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms	≤ 0.07 ms/≤ 0.07 ms
-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C
IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus
PA 12	PA 12	PA 12	PA 12
0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 3×0.1 mm ²
Can be inserted from the side	Can be installed from above	Can be installed from above	Can be installed from above
∩ C-slot (rounded slot)	∩ C-slot (rounded slot)	∩ C-slot (rounded slot)	∩ C-slot (rounded slot)



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

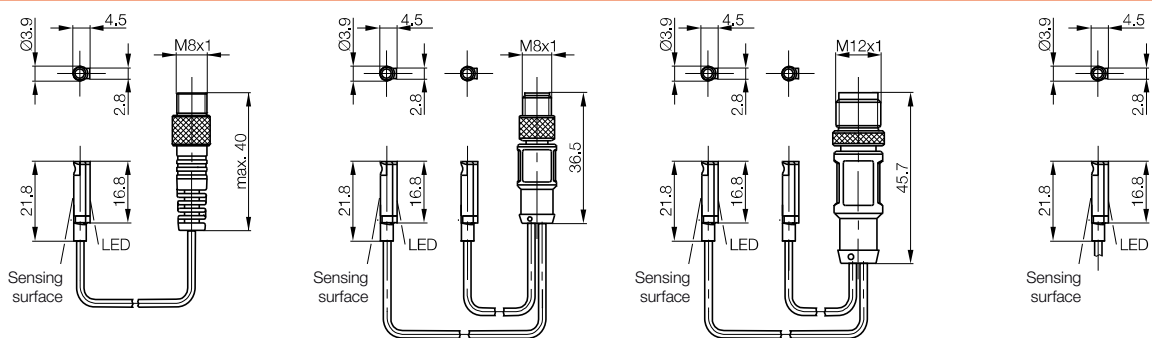
- BMF 204 Global
- BMF 214 Global**
- BMF 243 Global
- BMF 235 Global
- BMF 307

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with a Compact Design

BMF 243 Global

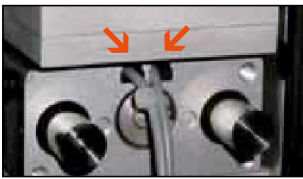
C-slot (rounded groove 3.9 mm)



New mounting concept
Secure hold in the slot;
Sensor cannot be torn out
of the groove.



Can be installed in the slot from above
Can be installed even on cylinders with a covered slot



Compact design, i.e. can be mounted flush
Can also be used in space-critical applications



As short as possible (24 mm)
Can also be used in space-critical applications



Model Properties		
PNP, NO	Ordering code	
	Part number	
PNP, NC	Ordering code	
	Part number	
NPN, NO	Ordering code	
	Part number	
NPN, NC	Ordering code	
	Part number	
Supply voltage U_S		
Voltage drop U_d		
Rated insulation voltage U_i		
Rated operating current I_o		
No-load supply current I_o max.		
Polarity reversal protected/transposition protected/short-circuit protected		
Rated switching field strength $I H_n I$		
Assured switching field strength $I H_a I$		
On/off delay		
Ambient temperature T_a		
Degree of protection as per IEC 60529		
Approval		
Material	Housing	
Connection		
Assembly		
Slot		

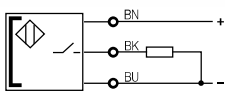
Basic information and definitions can be found on page 976.

Additional cable lengths on request.

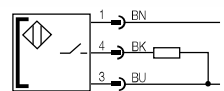
Wiring diagrams

NO

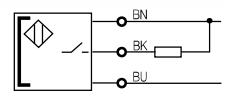
PNP/cable



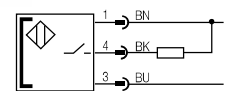
PNP/connector



NPN/cable

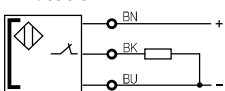


NPN/connector

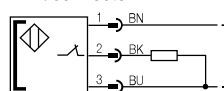


NC

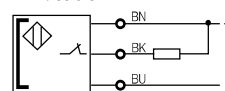
PNP/cable



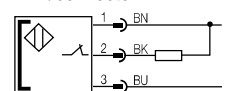
PNP/connector



NPN/cable



NPN/connector



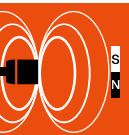


Magnetic Cylinder Sensors with a Compact Design

BMF 243 Global



	BMF 243	BMF 243	BMF 243	BMF 243
	The new benchmark for the C-slot (rounded groove) with M8 connector	The new benchmark for the C-slot (rounded groove) with M8 connector	The new benchmark for the C-slot (rounded groove) with M12 connector	The new benchmark for the C-slot (rounded groove) with direct PUR cable
	BMF00EL	BMF00ET	BMF00ER	BMF00EF
	BMF 243K-PS-C-2A-SA2-S49-00,3	BMF 243K-PS-C-2A-SA95-S75-00,3	BMF 243K-PS-C-2A-SA2-S4-00,3	BMF 243K-PS-C-2A-PU-02
	BMF00EM			BMF00EH
	BMF 243K-PO-C-2A-SA2-S49-00,3			BMF 243K-PO-C-2A-PU-02
	BMF00EN			BMF00EJ
	BMF 243K-NS-C-2A-SA2-S49-00,3			BMF 243K-NS-C-2A-PU-02
	BMF00EP			BMF00EK
	BMF 243K-NO-C-2A-SA2-S49-00,3			BMF 243K-NO-C-2A-PU-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 2.4 V	≤ 2.4 V	≤ 2.4 V	≤ 2.4 V
	75 V DC	75 V DC	75 V DC	75 V DC
	100 mA	100 mA	100 mA	100 mA
	7.5 mA	7.5 mA	7.5 mA	7.5 mA
	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
	2 kA/m	2 kA/m	2 kA/m	2 kA/m
	≥ 2.4 kA/m	≥ 2.4 kA/m	≥ 2.4 kA/m	≥ 2.4 kA/m
	≤ 0,07 ms/≤ 0,07 ms	≤ 0,07 ms/≤ 0,07 ms	≤ 0,07 ms/≤ 0,07 ms	≤ 0,07 ms/≤ 0,07 ms
	-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C
	IP 67	IP 67	IP 67	IP 67
	CE, cULus	CE, cULus	CE, cULus	CE, cULus
	PA 12 and A2 steel	PA 12 and A2 steel	PA 12 and A2 steel	PA 12 and A2 steel
	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 3×0.10 mm ²
	Can be installed from above	Can be installed from above	Can be installed from above	Can be installed from above
	∩ C-slot (rounded groove 3.9 mm)	∩ C-slot (rounded groove 3.9 mm)	∩ C-slot (rounded groove 3.9 mm)	∩ C-slot (rounded groove 3.9 mm)



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

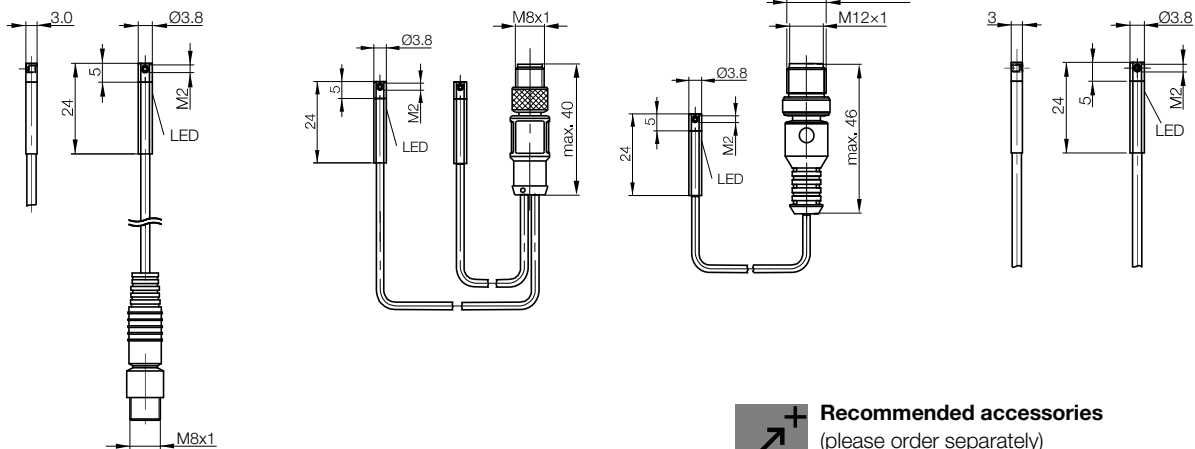
- BMF 204 Global
- BMF 214 Global
- BMF 243 Global**
- BMF 235 Global
- BMF 307

Magnetic Cylinder Sensors with Special Properties

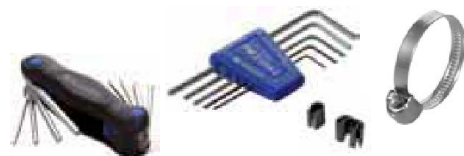
Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with a Compact Design

BMF 235 Global



Very bright LED

Reliable detection of switching function from far away (25 m in bright factory building).



New mounting concept

Secure hold in the slot; Sensor cannot be torn out of the groove.



Knurled screw

Sensor screws in firmly; extremely secure hold in any slot (e.g. Parker, Festo, SMC, Bosch).



Model Properties	
PNP, NO	Ordering code Part number
PNP, normally closed	Ordering code Part number
NPN, NO	Ordering code Part number
NPN, NC	Ordering code Part number
Supply voltage U_S	
Voltage drop U_d	
Rated insulation voltage U_i	
Rated operating current I_o	
No-load supply current I_o max.	
Polarity reversal protected/transposition protected/short-circuit protected	
Rated switching field strength $ H_n $	
Assured switching field strength $ H_a $	
Temperature drift of switch-on point of $ H_n $	
On/off delay	
Ambient temperature T_a	
Degree of protection as per IEC 60529	
Approval	
Material	Housing
Connection	
Assembly	
Slot	



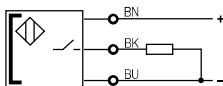
Basic information and definitions can be found on page 976.

Additional cable lengths on request.

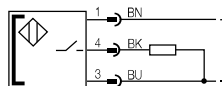
Wiring diagrams

NO

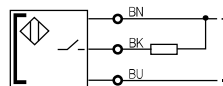
PNP/cable



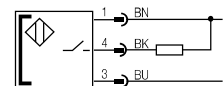
PNP/connector



NPN/cable

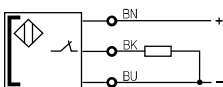


NPN/connector

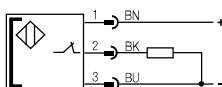


NC

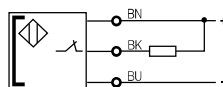
PNP/cable



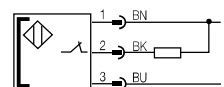
PNP/connector



NPN/cable



NPN/connector



Cylinder profile	Mounting bracket	See page
Profile cylinder and tie rod up to 5...11 mm	Ordering code: BAM01M9	833
Profile cylinder and tie rod up to 9...15 mm	Ordering code: BAM01MA	833
Profile cylinder and tie rod 14...20 mm	Ordering code: BAM01MC	833
Round cylinder	Ordering code: BAM01Y9	



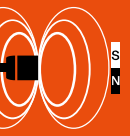


Magnetic Cylinder Sensors with a Compact Design

BMF 235 Global



Model	BMF 235	BMF 235	BMF 235	BMF 235	BMF 235
	The new benchmark for every T-slot with M8 connector	The new benchmark for every T-slot with M8 connector	The new benchmark for every T-slot with M12 connector	The new benchmark for every T-slot with M12 connector	The new benchmark for every T-slot with direct PUR cable
	BMF00C4	BMF00CA	BMF00C5	BMF00C9	BMF00AR
	BMF 235K-PS-C-2A-SA2-S49-00,3	BMF 235K-PS-C-2A-SA95-S75-00,3	BMF 235K-PS-C-2A-SA2-S4-00,3	BMF 235K-PS-C-2A-SA95-S4-00,3	BMF 235K-PS-C-2A-PU-02
	BMF00C6				BMF00AT
	BMF 235K-PO-C-2A-SA2-S49-00,3				BMF 235K-PO-C-2A-PU-02
	BMF00C2				BMF00AU
	BMF 235K-NS-C-2A-SA2-S49-00,3				BMF 235K-NS-C-2A-PU-02
	BMF00C3				BMF00AW
	BMF 235K-NO-C-2A-SA2-S49-00,3				BMF 235K-NO-C-2A-PU-02
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V
	75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
	100 mA	100 mA	100 mA	100 mA	100 mA
	6 mA	6 mA	6 mA	6 mA	6 mA
	Yes/No/Yes	Yes/No/Yes	Yes/No/Yes	Yes/No/Yes	Yes/No/Yes
	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m
	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m
	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C
	≤ 0.1 ms/≤ 0.1 ms	≤ 0.1 ms/≤ 0.1 ms	≤ 0.1 ms/≤ 0.1 ms	≤ 0.1 ms/≤ 0.1 ms	≤ 0.1 ms/≤ 0.1 ms
	-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C
	IP 67	IP 67	IP 67	IP 67	IP 67
	CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
	PA12	PA12	PA12	PA12	PA12
	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 3×0.1 mm ²
	Can be installed from above	Can be installed from above	Can be installed from above	Can be installed from above	Can be installed from above
	┌5 T-slot	┌5 T-slot	┌5 T-slot	┌5 T-slot	┌5 T-slot

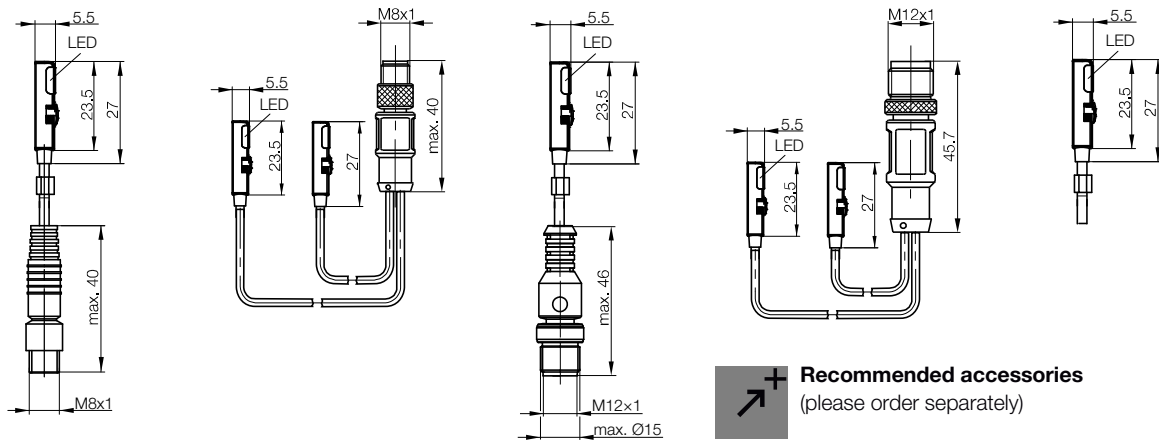


Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

BMF 204 Global
BMF 214 Global
BMF 243 Global
BMF 235 Global
BMF 307



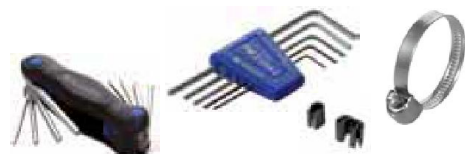
Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

Recommended accessories
(please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with a Compact Design

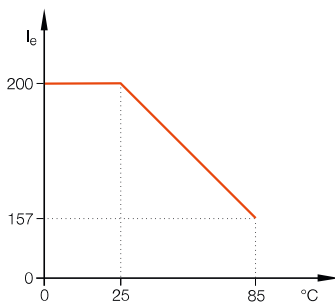
BMF 307

T-slot

The robust and compact sensor for the T-slot. The shape is adapted to the slot and guarantees a strong hold. The sensor slides into the slot from the side.



Temperature load curve



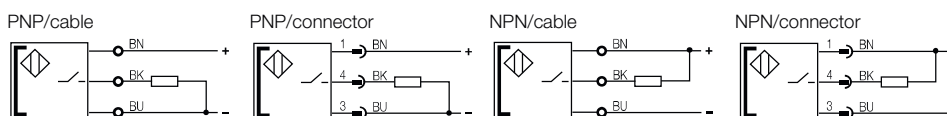
Model Properties	
PNP, NO	Ordering code Part number
PNP, normally closed	Ordering code Part number
NPN, NO	Ordering code Part number
NPN, NC	Ordering code Part number
Supply voltage U_S	
Voltage drop U_d	
Rated insulation voltage U_i	
Rated operating current I_e	
No-load supply current I_0 max.	
Polarity reversal protected/transposition protected/short-circuit protected	
Rated switching field strength $ H_n $	
Assured switching field strength $ H_a $	
Temperature drift of switch-on point of $ H_n $	
On/off delay	
Ambient temperature T_a	
Degree of protection as per IEC 60529	
Approval	
Material	Housing
Connection	
Assembly	
Slot	

Basic information and definitions can be found on page 976.

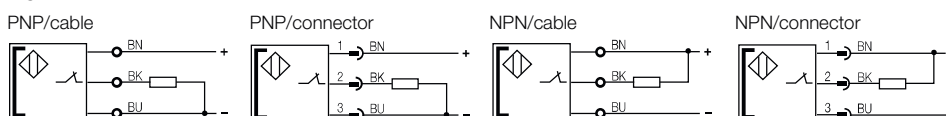
Additional cable lengths on request.

Wiring diagrams

NO



NC



Cylinder profile	Mounting bracket	See page
Profile cylinder and tie rod up to 5...11 mm	Ordering code: BAM01M9	833
Profile cylinder and tie rod up to 9...15 mm	Ordering code: BAM01MA	833
Profile cylinder and tie rod 14...20 mm	Ordering code: BAM01MC	833
Round cylinder	Ordering code: BAM01Y9	



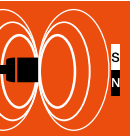


Magnetic Cylinder Sensors with a Compact Design

BMF 307



BMF 307	BMF 307	BMF 307	BMF 307	BMF 307
The compact sensor for the T-slot with M8 connector	The compact sensor for the T-slot with M8 connector	The compact sensor for the T-slot with M12 connector	The compact sensor for the T-slot with M12 connector	The compact sensor for the T-slot with direct PUR cable
BMF0072	BMF0077	BMF006Y	BMF0076	BMF006U
BMF307K-PS-C-2-SA2-S49-00,3	BMF307K-PS-C-2-SA95-S75-00,3	BMF307K-PS-C-2-S4-00,2	BMF307K-PS-C-2-SA95-S4-00,3	BMF307K-PS-C-2-PU-02
BMF006T				BMF006M
BMF307K-PO-C-2-SA2-S49-00,3				BMF307K-PO-C-2-PU-02
BMF006L				BMF006H
BMF307K-NS-C-2-SA2-S49-00,3				BMF307K-NS-C-2-PU-02
BMF006E				BMF0069
BMF307K-NO-C-2-SA2-S49-00,3				BMF307K-NO-C-2-PU-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 3.1 V	≤ 3.1 V	≤ 3.1 V	≤ 3.1 V	≤ 3.1 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA	200 mA
30 mA	30 mA	30 mA	30 mA	30 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m
≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m
≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C
≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms
-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
LCP	LCP	LCP	LCP	LCP
0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 4-pin	0.2 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 3×0.14 mm ²
Can be inserted from the side	Can be inserted from the side	Can be inserted from the side	Can be inserted from the side	Can be inserted from the side
┌┐ T-slot	┌┐ T-slot	┌┐ T-slot	┌┐ T-slot	┌┐ T-slot



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

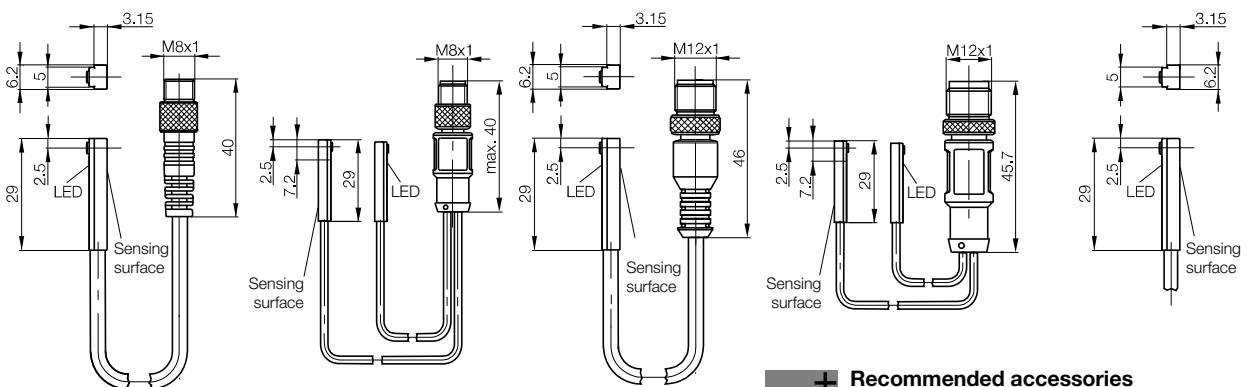
BMF 204 Global
BMF 214 Global
BMF 243 Global
BMF 235 Global
BMF 307

Magnetic Cylinder Sensors with Special Properties

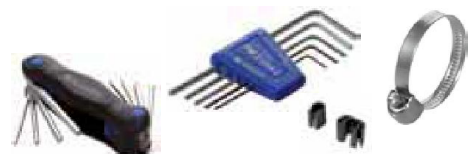
Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.



Magnetic Cylinder Sensors

Magnetic cylinder sensors with special properties

Our magnetic cylinder sensors with special properties come in many different varieties, stainless steel or ATEX design. For radially magnetized magnets or with weld-immune electronics. And more. By means of their broad spectrum, the special features solve almost all applications – even in demanding environments.



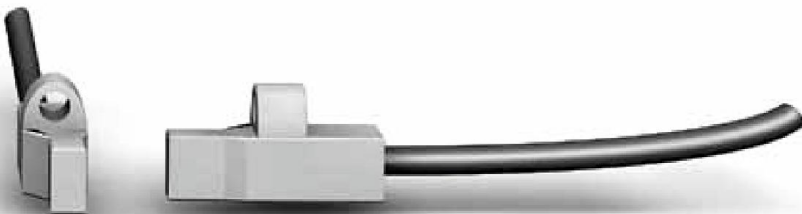
Magnetic Cylinder Sensors with Special Properties

Contents

Magnetic Cylinder Sensors with Special Properties	
Robust metal housings	856
With weld-immune electronics	860
High-temperature resistant up to 105 °C	862
For the food industry	863
ATEX cylinder sensor	865
Reed switches	866



Basic information and definitions can be found on **page 934**.

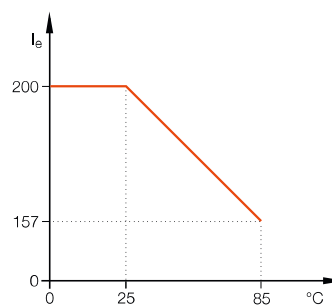




Model	
Properties	
PNP, NO	Ordering code Part number
NPN, NO	Ordering code Part number
Supply voltage U_S	
Voltage drop U_d	
Rated insulation voltage U_i	
Rated operating current I_e	
No-load supply current I_0 max.	
Polarity reversal protected/transposition protected/short-circuit protected	
Rated switching field strength $ H_n $	
Assured switching field strength $ H_a $	
Hysteresis of $ H_n $	
Temperature drift of switch-on point of $ H_n $	
On/off delay	
Ambient temperature T_a	
Degree of protection as per IEC 60529	
Approval	
Material	Housing
Connection	
Installation	

Basic information and definitions can be found on page 976;
associated mounting brackets for BMF 32M can be found on
page 858 and for BMF 305M on page 834.

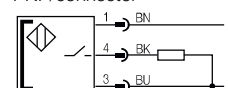
Temperature load curve



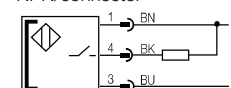
Wiring diagrams

NO

PNP/connector



NPN/connector

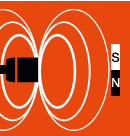


Magnetic Cylinder Sensors with Special Properties

Rugged metal housing BMF 305M, BMF 32M



BMF 305M	BMF 305M	BMF 32M	BMF 32M
The robust all-rounder made of metal for position monitoring with M8 connector	The robust all-rounder made of metal for position monitoring with M12 connector	The robust specialist for metal housings with M8 direct connector	The robust specialist for metal housings with M12 direct connector
BMF008F BMF 305M-PS-C-2-S49	BMF008E BMF 305M-PS-C-2-S4	BMF0088 BMF 32M-PS-C-2-S49	BMF0087 BMF 32M-PS-C-2-S4
BMF008C BMF 305M-NS-C-2-S49		BMF0086 BMF 32M-NS-C-2-S49	BMF0085 BMF 32M-NS-C-2-S4
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 3.1 V	≤ 3.1 V	≤ 3.1 V	≤ 3.1 V
75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA
30 mA	15 mA	15 mA	15 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m
2 kA/m	2 kA/m	2 kA/m	2 kA/m
45 %	45 %	45 %	45 %
0.3 %	0.3 %	0.3 %	0.3 %
≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms
-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C
IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus
Aluminum	Aluminum	Aluminum	Aluminum
M8 connector, 3-pin	M12 connector, 4-pin	M8 connector, 3-pin Can be installed on cylinder with 60°- or 90°-trapezoidal slot or with mounting bracket	M12 connector, 4-pin Can be installed on cylinder with 60°- or 90°-trapezoidal slot or with mounting bracket



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Robust Metal Housing

For the Food Industry

Weld-immune Electronics

Temperature-resistant up to 105 °C

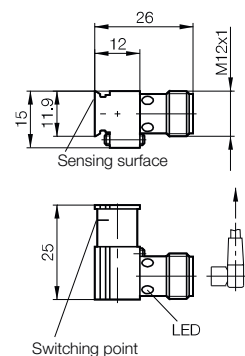
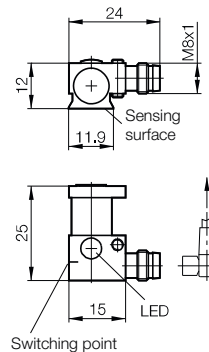
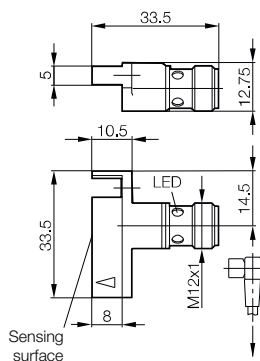
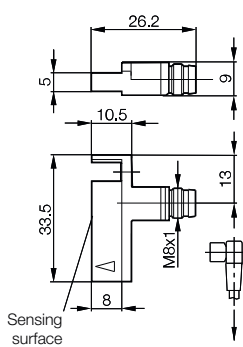
ATEX Cylinder Sensor

Reed Switches

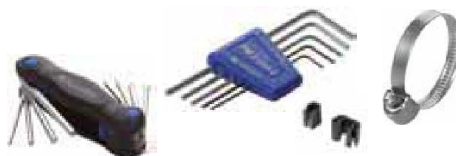
Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Recommended accessories (please order separately)




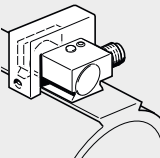
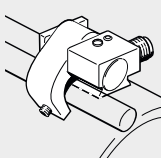
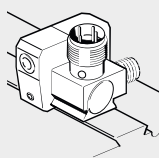


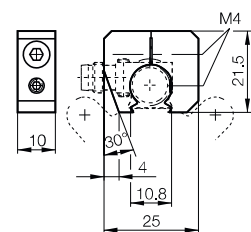
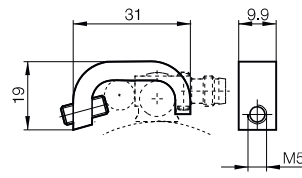
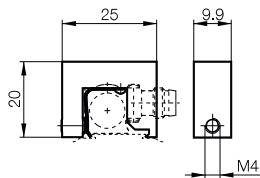
Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with Special Properties

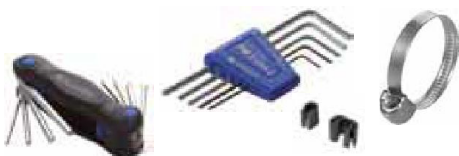
Robust metal housing BMF 32M



Mounting bracket for Slot	BMF 32M 	BMF 32M 	BMF 32M 	
Ordering code	BAM00MR	BAM00MT	BAM00MU	
Part number	BMF 32-HW-12	BMF 32-HW-13	BMF 32-HW-14	
Cylinder type	For pneumatic cylinders with a Bosch Rexroth trapezoidal rail of any piston diameter	For pneumatic cylinders with tie rod, any piston diameter, tie rod diameter max. 11 mm	For pneumatic cylinders with trapezoidal rail (Bosch) type: 0 822... ■ 350 ■ 351 ■ 352 ■ 353 ■ 354 ■ 355 Any piston diameter	
Cylinder				



Recommended accessories (please order separately)

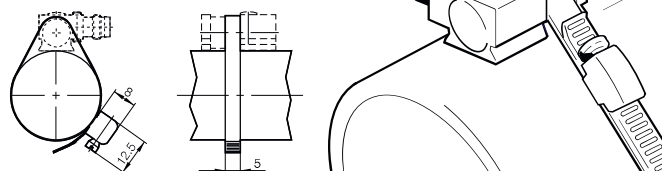


Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Hose clamp BMF size 0...8

Made of stainless steel for pneumatic cylinders without tie rod/rail, piston diameter up to 80 mm

Please order hose clamp separately. See page 880.

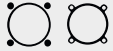


Magnetic Cylinder Sensors with Special Properties

Robust metal housing BMF 32M



BMF 32M

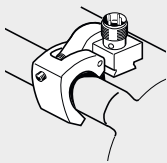


BAM00MW

BMF 32-HW-15

For pneumatic cylinders with tie rod, any piston diameter, tie rod diameter up to 17 mm

Pneumatic cylinder with tie rod integrated in the housing- (profile), any piston diameter, profile width up to 17 mm



BMF 32M

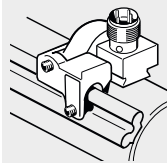


BAM00MY

BMF 32-HW-16

For pneumatic cylinders with tie rod, any piston diameter, tie rod diameter up to 6.5 mm

Pneumatic cylinder with DUO rail (Festo), any piston diameter



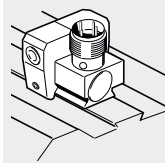
BMF 32M



BAM00MZ

BMF 32-HW-18

For pneumatic cylinders with Bosch Rexroth trapezoidal rail Series 2700



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Robust Metal Housing

For the Food Industry

Weld-immune Electronics

Temperature-resistant up to 105 °C

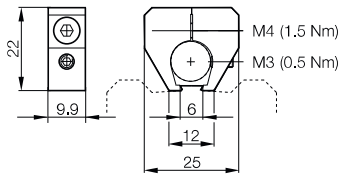
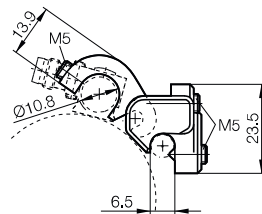
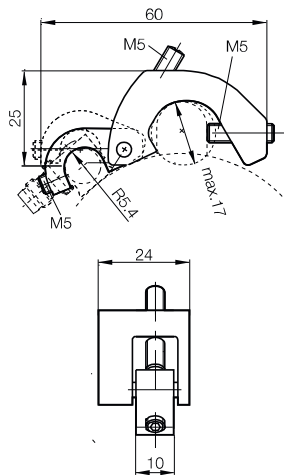
ATEX Cylinder Sensor

Reed Switches

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors



Magnetic Cylinder Sensors with Special Properties

With weld-immune electronics
BMF32M, BMF 305M

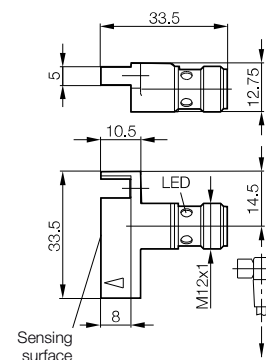
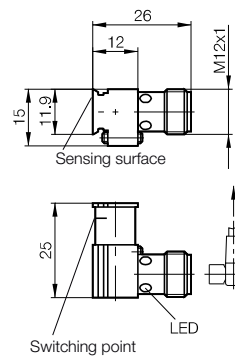
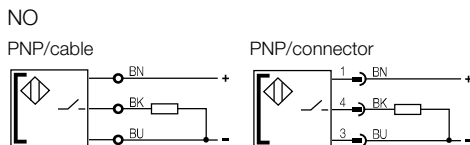
Weld-immune Electronics



Model		BMF 32M	BMF 305M
Properties		The robust specialist for metal housings with M12 direct connector	The robust all-rounder made of metal for position monitoring with M12 connector
PNP, NO	Ordering code	BMF008A	BMF0067
	Part number	BMF 32M-PS- W -2-S4	BMF 305M-PS- W -2-S4
Supply voltage U_S		10...30 V DC	10...30 V DC
Voltage drop U_d		≤ 4 V	≤ 4 V
Rated insulation voltage U_i		75 V DC	75 V DC
Rated operating current I_e		200 mA	200 mA
No-load supply current I_0 max.		30 mA	30 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Rated switching field strength I_{H_n}		1.2 kA/m	1.2 kA/m
Assured switching field strength I_{H_a}		2 kA/m	2 kA/m
On/off delay		≤ 50 ms/ ≤ 50 ms	≤ 50 ms/ ≤ 50 ms
Ambient temperature T_a		-25...+70 °C	-25...+70 °C
Degree of protection as per IEC 60529		IP 67	IP 67
Approval		CE	CE, cULus
Material	Housing	Aluminum	Aluminum
Connection		M12 connector, 4-pin	M12 connector, 4-pin
Assembly		Can be installed on cylinder with 60° or 90°-trapezoidal slot or with mounting bracket	Installation with mounting bracket

Basic information and definitions can be found on page 976, associated mounting brackets for BMF 32M can be found on page 858; for BMF 305M and 305K see page 834.

Wiring diagrams



Suitable for AC welding environments

The series BMF 3...-...-**W**-... are suitable for applications with extreme conditions. The metal housings are resistant to weld spatter. Applications with welding currents of over 25 kA do not impair the functionality of the sensor. The output state of the sensor is stored during AC welding.

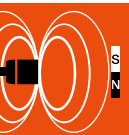
Magnetic Cylinder Sensors with Special Properties

With weld-immune electronics

BMF315 M



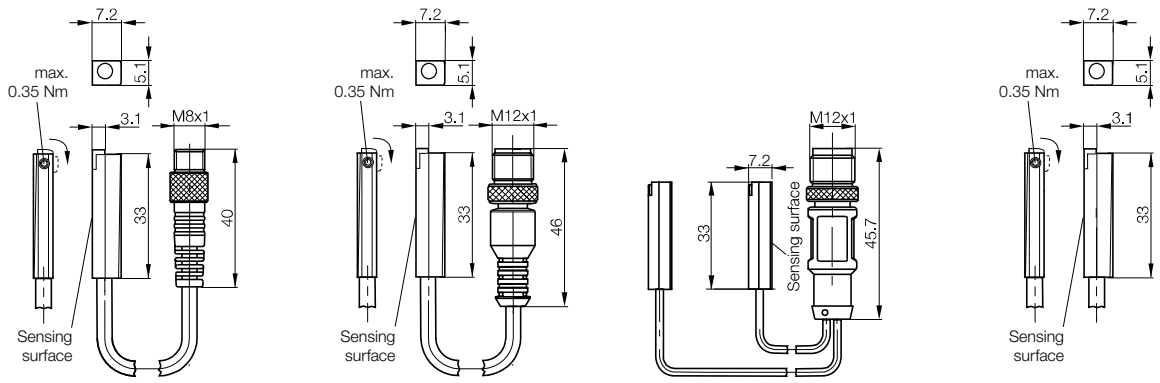
BMF 315M	BMF 315M	BMF 315M	BMF 315M
Made of metal for particularly demanding applications with an M8 connector	Made of metal for particularly demanding applications with an M12 connector	Made of metal for particularly demanding applications with an M12 connector	Made of metal for particularly demanding applications with a direct PUR cable
BMF0082	BMF0081	BMF0084	BMF007Z
BMF 315M-PS-W-2-S49-00,3	BMF 315M-PS-W-2-S4-00,3	BMF 315M-PS-W-2-SA95-S4-00,3	BMF 315M-PS-W-2-PU-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 4 V	≤ 4 V	≤ 4 V	≤ 4 V
75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA
20 mA	20 mA	20 mA	20 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m
2 kA/m	2 kA/m	2 kA/m	2 kA/m
≤ 50 ms/≤ 50 ms	≤ 50 ms/≤ 50 ms	≤ 50 ms/≤ 50 ms	≤ 50 ms/≤ 50 ms
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus
Aluminum	Aluminum	Aluminum	Aluminum
0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 3x0.1 mm ²
Can be installed in the T-slot from above	Can be installed in the T-slot from above	Can be installed in the T-slot from above	Can be installed in the T-slot from above



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design



Magnetic Cylinder Sensors with Special Properties

Robust Metal Housing

For the Food Industry

Weld-immune Electronics

Temperature-resistant up to 105 °C

ATEX Cylinder Sensor

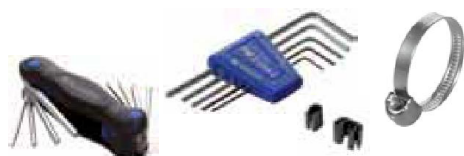
Reed Switches

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with Special Properties

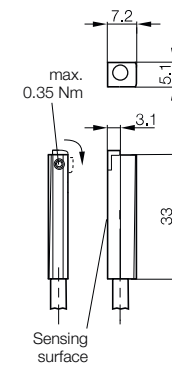
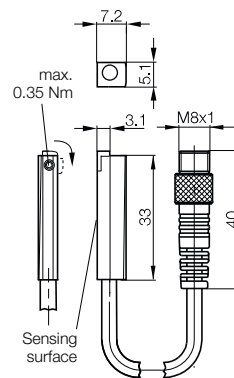
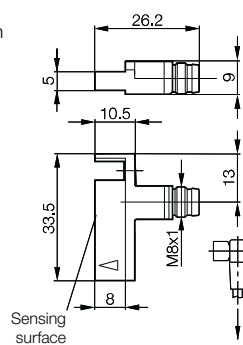
High-temperature resistant up to 105 °C
BMF 315M, 305M

105 °C

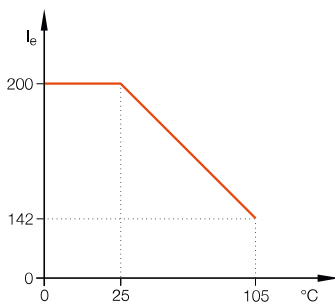


Model		BMF 305M	BMF 315M	BMF 315M
Properties		The all-rounder for position monitoring with M8 connector	For particularly demanding applications with an M8 connector	For particularly demanding applications with a direct PUR cable
PNP, NO	Ordering code	BMF0066	BMF007Y	BMF007U
	Part number	BMF 305M-PS-C-2-SA4-S49	BMF 315M-PS-D-2-SA3-S49-00,3	BMF 315M-PS-D-2-SA3-PU-02
Supply voltage U_S		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d		≤ 3.1 V	≤ 3.1 V	≤ 3.1 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Rated operating current I_e		200 mA	200 mA	200 mA
No-load supply current I_0 max.		15 mA	15 mA	15 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Rated switching field strength $I H_n I$		1.2 kA/m	1.2 kA/m	1.2 kA/m
Assured switching field strength $I H_a I$		2 kA/m	2 kA/m	2 kA/m
On/off delay		≤ 0.05 ms/ ≤ 0.05 ms	≤ 0.05 ms/ ≤ 0.05 ms	≤ 0.05 ms/ ≤ 0.05 ms
Ambient temperature T_a		-25...105 °C	-25...105 °C	-25...105 °C
Degree of protection as per IEC 60529		IP 65	IP 67	IP 67
Approval		CE	CE, cULus	CE, cULus
Material	Housing	Aluminum	Aluminum	Aluminum
Connection		M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 3x0.1 mm ²
Assembly		Installation with mounting bracket	Can be installed in the T-slot from above	Can be installed in the T-slot from above

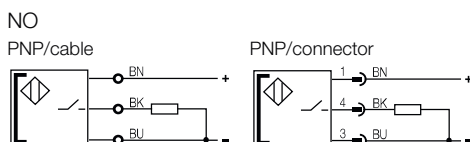
Basic information and definitions can be found on page 976, associated mounting brackets for BMF 305M can be found on page 834.



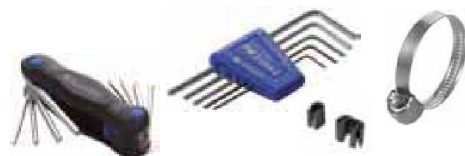
Temperature load curve



Wiring diagrams



Recommended accessories
(please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Stainless Steel

Magnetic Cylinder Sensors with Special Properties For the food industry BMF 10E

BMF 10E – developed for the higher demands of the food industry. Extremely robust due to its one-piece, stainless steel housing.

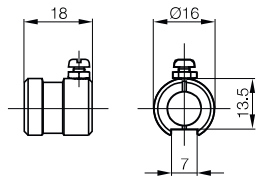


Mounting bracket:

BMF 10E-HW-19 made of stainless steel 1.4571

Ordering code: BAM00KR

(please order separately)



Please order hose clamp separately. See page 880.

Model	BMF 10E	
Properties	The stainless steel sensor specially for the food industry	
PNP, NO	Ordering code	BMF001Z
	Part number	BMF 10E-PS-D-2-SA1-S49
Supply voltage U_S	10...30 V DC	
Voltage drop U_d	≤ 3.1 V	
Rated insulation voltage U_i	75 V DC	
Rated operating current I_e	200 mA	
No-load supply current I_0 max.	12 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Rated switching field strength $ H_n $	1.2 kA/m	
Assured switching field strength $ H_a $	2 kA/m	
Hysteresis of $ H_n $	45 %	
Temperature drift of switch-on point of $ H_n $	0.3 %	
On/off delay	≤ 0.05 ms/ ≤ 0.05 ms	
Ambient temperature T_a	-25...+70 °C	
Degree of protection as per IEC 60529	IP 68 and IP 69K	
Approval	CE	
Material	Housing	Stainless steel 1.4571
Connection	M8 connector, 3-pin	

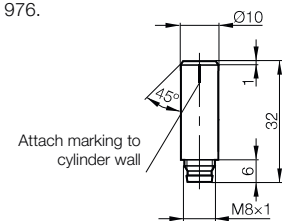


Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Basic information and definitions can be found on page 976.



Magnetic Cylinder Sensors with Special Properties

Robust Metal Housing

For the Food Industry

Weld-immune Electronics

Temperature-resistant up to 105 °C

ATEX Cylinder Sensor

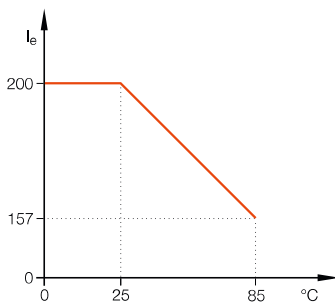
Reed Switches

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

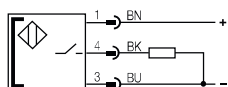
Temperature load curve



Wiring diagrams

NO

PNP/connector



Magnetic Cylinder Sensors with Special Properties

ATEX cylinder sensor BMF 255

Our magnetic cylinder sensors for the ATEX area are specially developed for areas with continuous, long-term, and frequently occurring dust, gases, and steam (Zone 0/20, category 1G/1D).

As usual, the sensors can be easily installed in T-slots; using corresponding mounting brackets they can also be installed on round and tie bar cylinders. With a 6-meter long self-configurable cable, you can quickly and easily connect the sensor to the correct isolating amplifier outside of the ATEX zone. Of course, you also get this isolating amplifier from us.

- Highest Ex protection with the category 1G/1D (Zone 0/20)
- Can be quickly and easily inserted into the T-slot from above, with clamping fixture
- Sensors, isolating amplifiers, and angle brackets, all from a single source
- 6-meter-long, user-fabricated cable

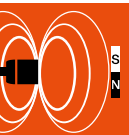


Magnetic Cylinder Sensors with Special Properties

ATEX cylinder sensor BMF 255



Description		BMF 255	Isolating amplifier
Namur, NO	Ordering code	BMF00E4	
	Part number	BMF 255K-N-06-EEX	
24 V DC	Ordering code		FHW004P
	Part number		STAHL 9170/20-12-11S
120...230 V AC	Ordering code		FHW004R
	Part number		STAHL 9170/20-12-21s
Rated operating voltage U_e		8.2 V DC	<p>The isolating amplifier with relay output serves as the interface between electrical signals from the hazardous area (Ex zone) and the non-hazardous area (safe zone).</p> <p>The input signals from ATEX sensors are converted using relay switching contacts at the outputs. Input, output, and auxiliary power circuits are securely galvanically isolated.</p> <p>See page 637 for more information.</p>
Supply voltage U_S max.		15 V DC	
Internal inductance L_i max.		400 μ H	
Internal capacitance C_i max.		140 nF	
Power P_i max.		120 mW	
Current consumption, damped, max.		2.2 mA	
Current consumption, undamped, min.		1 mA	
Responsiveness		2 mT	
Switching frequency f		2 kHz	
Function indicator		Yes	
Ambient temperature T_a		-25...+70 °C	
Degree of protection as per IEC 60529		IP 67	
Approval		CE, BVS 11 ATEX E071, IECEx BVS 11.0043, Ex II 1G Ex ia IIC T4 Ga, Ex II 1D Ex ia IIIC T 135 °C Da	
Material	Housing	PA	
	Sensing surface	PA	
	Clamping screw	Stainless steel	
Connection		6 m PVC cable, 2x0.14 mm ²	
Assembly		Can be installed from above	
Slot		┘┘ T-slot	



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Robust Metal Housing

For the Food Industry

Weld-immune Electronics

Temperature-resistant up to 105 °C

ATEX Cylinder Sensor
Reed Switches

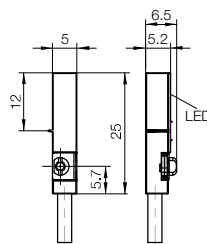
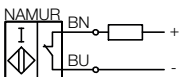
Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

Basic information and definitions can be found on page 976.

Wiring diagram



Angle bracket for round and tie bar cylinders



Part number
For round cylinders: BMF 307-HW-112 (BAM01Y9) with hose clamp BMF size 2 (BAM00N4)

Cylinder profile
Profile cylinder and tie rod up to 5...11 mm
Profile cylinder and tie rod up to 9...15 mm
Profile cylinder and tie rod 14...20 mm

Part number
BMF 235-HW-109 (BAM01M9)
BMF 235-HW-110 (BAM01MA)
BMF 235-HW-111 (BAM01MC)

Magnetic Cylinder Sensors with Special Properties

Reed-Schalter BMF 305K

Reed



Model		BMF 305K Reed	BMF 305K Reed	BMF 305K Reed
Properties		The all-rounder for position monitoring as a reed switch	The all-rounder for position monitoring as a reed switch	The all-rounder for position monitoring as a reed switch
PNP, NO (DC)	Ordering code	BMF0063	BMF0062	
	Part number	BMF 305K-R-PS-F-3-S49-00,2	BMF 305K-R-PS-F-3-03	
NO (AC)/polarized, NO (DC)	Ordering code			BMF0064
	Part number			BMF 305K-R-US-L-3-03
Sensed medium		Magnetic field	Magnetic field	Magnetic field
Supply voltage U_s		10...30 V DC	10...30 V DC	6...240 V DC
Switching capacity max. reed contact		10 W	10 W	10 W
Rated operating current I_o		500 mA	500 mA	128 mA at 24 V AC/DC 86 mA at 115 V AC/DC 43 mA at 230 V AC/DC
Minimum operating current I_m				3 mA
Polarity reversal protected/transposition protected/short-circuit protected		No/No/No	No/No/No	No/No/No
On/off delay		≤ 0.7 ms/ ≤ 0.7 ms	≤ 0.7 ms/ ≤ 0.7 ms	≤ 0.7 ms/ ≤ 0.7 ms
Ambient temperature T_a		-20...+70 °C	-20...+70 °C	-20...+70 °C
Degree of protection as per IEC 60529		IP 65	IP 65	IP 65
Approval		CE	CE	CE, cULus
Material	Housing	LCP	LCP	LCP
Connection		0.2 m PUR cable with M8 connector, 3-pin	3 m PVC cable, 3x0.14 mm ²	3 m PVC cable, 2x0.18 mm ²
Assembly		Installation with mounting bracket	Installation with mounting bracket	Installation with mounting bracket

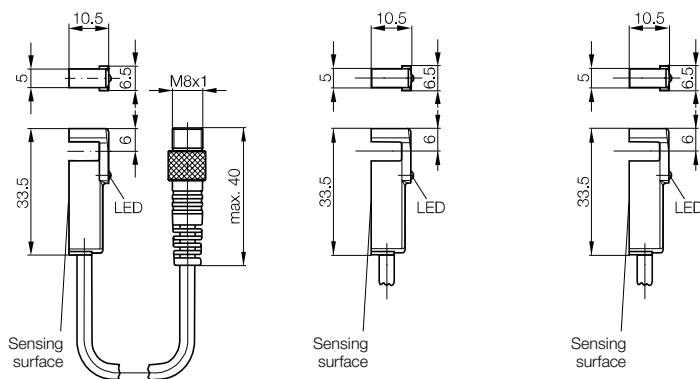
Basic information and definitions can be found on page 976, associated mounting brackets for BMF 305K can be found on page 834.

Recommended short circuit protection equipment:

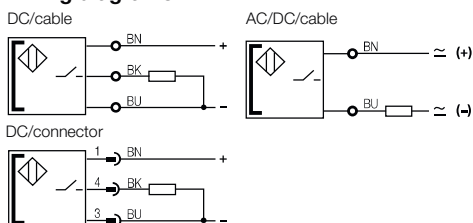
Miniature fuse in accordance with IEC60127-2 Sheet 1, ≤ 2 A (fast-acting). The fuse has to lie in the load current line. The fuse must not be routed into the output line.

The **reed switches BMF 305K-R-...** have an LED to indicate function and act as an adjustment aid. The recovery diode for switching an inductive load is already integrated. For sensing the piston position in pneumatic cylinders you can choose between electronic and mechanical cylinder switches. Select whichever one fits your application. We will be happy to give you advice.

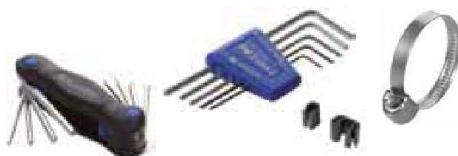
- Fast and easy to install
- Compatible with all common cylinder sizes using corresponding mounting brackets
- No loss of the switching point when replacing a switch



Wiring diagrams



+ Recommended accessories (please order separately)



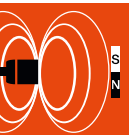
Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Magnetic Cylinder Sensors with Special Properties

Reed-Schalter BMF 307K



Model	BMF 307K Reed		BMF 307K Reed
Properties	The compact sensor for the T-slot as a reed switch		The compact sensor for the T-slot as a reed switch
PNP, NO (DC)	Ordering code		
	Part number		
NO (AC)/polarized, NO (DC)	Ordering code	BMF0078	BMF008P
	Part number	BMF 307K-R-AS-L-3-S49-00,2	BMF 307K-R-AS-L-3-03
Sensed medium	Magnetic field		Magnetic field
Supply voltage U_S	4...30 V AC/DC		4...30 V AC/DC
Switching capacity max. reed contact	10 W		10 W
Rated operating current I_e	128 mA at 24 V DC		128 mA at 24 V DC
Minimum operating current I_m	3 mA		3 mA
Polarity reversal protected/transposition protected/short-circuit protected	No/No/No		No/No/No
On/off delay	≤ 0.7 ms/ ≤ 0.2 ms		≤ 0.7 ms/ ≤ 0.2 ms
Ambient temperature T_a	$-20...+70$ °C		$-20...+70$ °C
Degree of protection as per IEC 60529	IP 65		IP 65
Approval	CE		CE
Material	Housing	LCP	LCP
Connection	0.2 m PUR cable with M8 connector, 3-pin		3 m PVC cable, 2x0.14 mm ²
Assembly	Can be inserted from the side		Can be inserted from the side
Slot	≈ 5 T-slot		≈ 5 T-slot



Magnetic Cylinder Sensors
Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties
Robust Metal Housing
For the Food Industry
Weld-immune Electronics
Temperature-resistant up to 105 °C
ATEX Cylinder Sensor
Reed Switches

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

Basic information and definitions can be found on page 976.

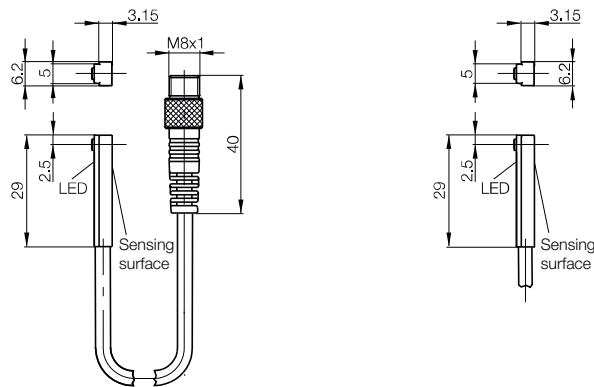
Additional cable lengths on request.

Recommended short circuit protection equipment:

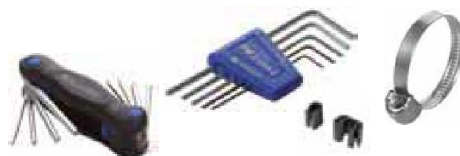
Miniature fuse in accordance with IEC60127-2 Sheet 1, ≤ 2 A (fast-acting). The fuse has to lie in the load current line. The fuse must not be routed into the output line.

The **reed switches BMF 307K-R-...** have an LED to indicate function and act as an adjustment aid. The recovery diode for switching an inductive load is already integrated. For sensing the piston position in pneumatic cylinders, you can choose between electronic and mechanical cylinder switches. Select whichever one fits your application. We will be happy to give you advice.

Can be installed without mounting bracket in cylinders with T-slot, e.g. Festo: ADVU, ADN, DRQ, DGP; SMC; Bosch. When using reed switches you should verify functionality on the pneumatic cylinder by means of pre-testing.



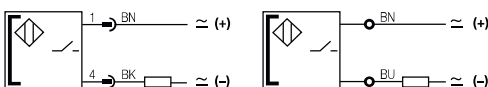
Recommended accessories (please order separately)



Special accessories for magnetic cylinder sensors, such as **installation tools, cable clips, or hose clamps**, can be found in this catalog on page 878.

Wiring diagrams

Example connectors



BU — Connect to ground on controller side!



Magnetic Cylinder Sensors

Magnetic sensors for object detection

Magnetic sensors for object detection in classic cylindrical housings have several application benefits:

- Significantly longer switching distances compared with inductive sensors of the same size
- Switch through walls of non-ferrous metal and aluminum without reducing the switching distance
- Activate from the front or side
- Flush installation in steel possible
- Respond to north and south pole
- Semiconductor sensor, wear-free
- Vibration-resistant
- Output protected against inductive spikes





Magnetic Sensors for Object Detection

Contents

Form Factors

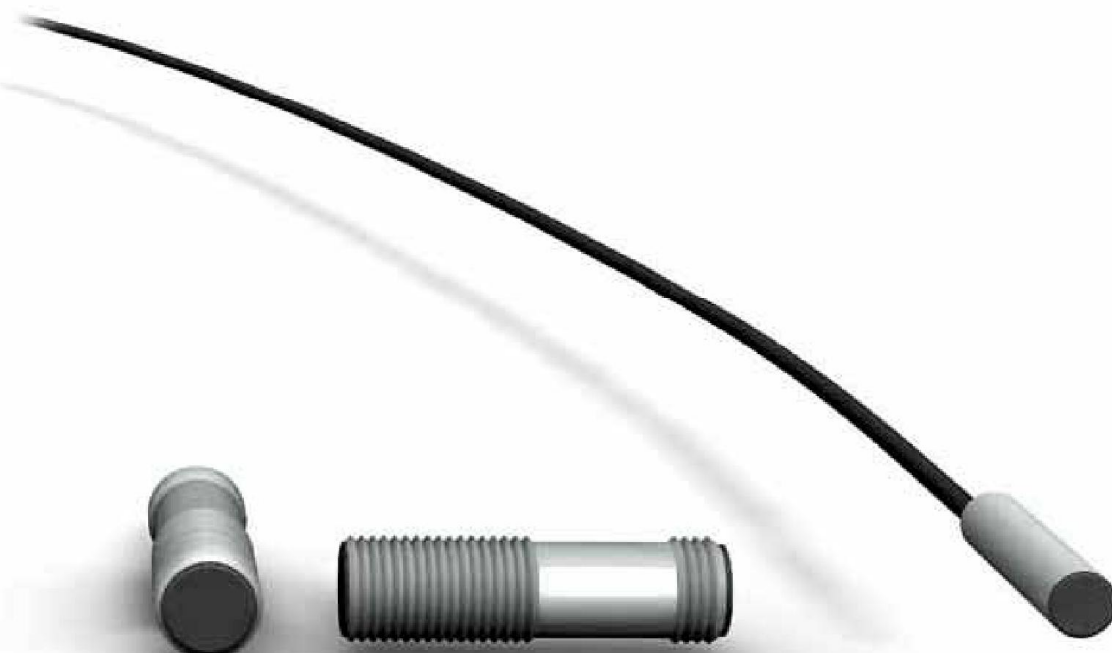
Ø 6.5 mm	870
M8×1	871
M12×1	871

Magnets

Ø 4 mm	872
Ø 10 mm	872
Ø 15 mm	873
Ø 25 mm	873
Ø 22.1 mm	873
16×12 mm	873



Basic information and definitions can be found on **page 934**.



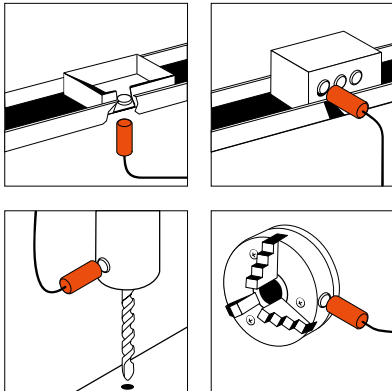
Magnetic Sensors for Object Detection

Designs, Ø 6.5 mm

Magnetic sensors feature small, extremely compact designs. Their magnets for position sensing enable very great switching distances. In particular this means: You can query positions up to 90 mm away in a non-contact method using a single sensor with a diameter of 6.5 mm. These sensors are industrial grade and resistant to soiling.

Positions can also be scanned through containers or pipes because magnetic fields can penetrate many non-magnetizable materials. The detection of codes using magnets is also possible.

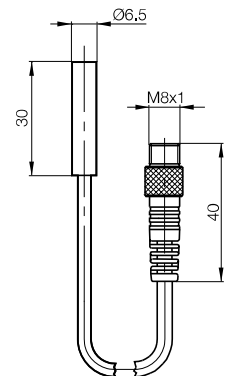
- Non-contact position sensing up to a distance of 90 mm
- Object detection through non-magnetizable materials
- Compact sensors and small magnets provide optimum installation conditions
- Excellent price/performance ratio



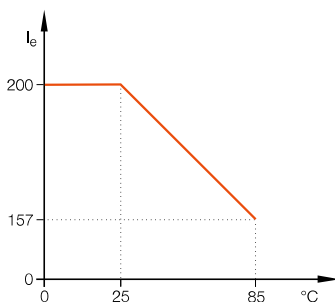
Model	BMF 07M	
Maximum switching distance (with BAM01EL)	90 mm	
PNP, NO	Ordering code	BMF000L
	Part number	BMF 07M-PS-D-2-SA2-S49-00,3
NPN, NO	Ordering code	BMF000C
	Part number	BMF 07M-NS-D-2-SA2-S49-00,3
Supply voltage U_S	10...30 V DC	
Voltage drop U_d	≤ 3.1 V	
Rated insulation voltage U_i	75 V DC	
Rated operating current I_e	200 mA	
No-load supply current I_0 max.	≤ 30 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Rated switching field strength $I H_n I$	1.2 kA/m	
Assured switching field strength $I H_a I$	≥ 2 kA/m	
Hysteresis of $I H_n I$	≤ 45%	
Temperature drift of switch-on point of $I H_n I$	≤ 0.3 %/°C	
On/off delay	≤ 0.05 ms/≤ 0.05 ms	
Ambient temperature T_a	-25...+85 °C	
Output function indicator		
Degree of protection as per IEC 60529	IP 67	
Approval	CE, cULus	
Material	Housing	Brass-coated
Connection	0.3 m PUR cable with M8 connector, 3-pin	

Basic information and definitions can be found on page 976, Magnets on page 872.

Additional cable lengths on request.



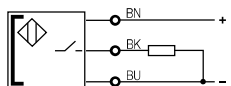
Temperature load curve



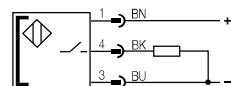
Wiring diagrams

NO

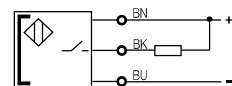
PNP/cable



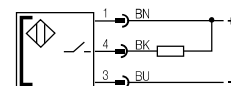
PNP/connector



NPN/cable



NPN/connector

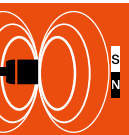


Magnetic Sensors for Object Detection

Designs, Ø 6.5 mm, M8x1, M12x1



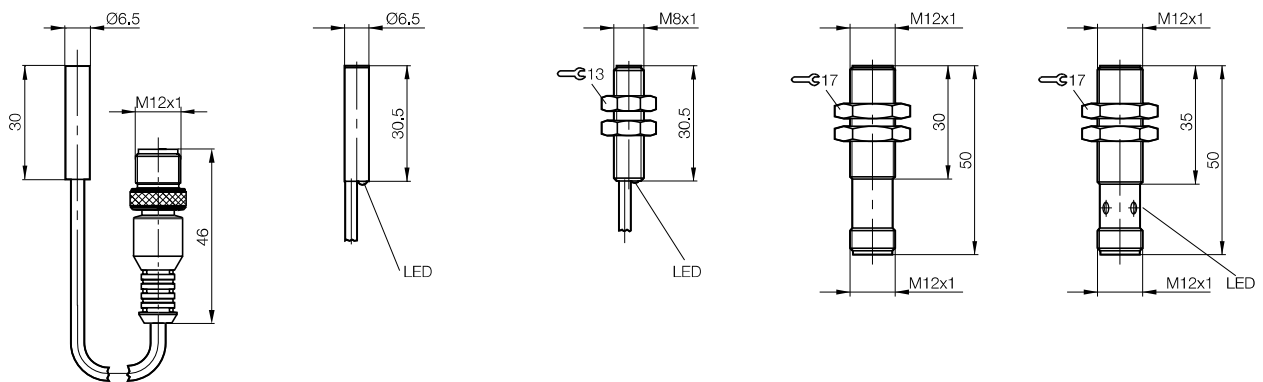
	BMF 07M 90 mm	BMF 07M 90 mm	BMF 08M 90 mm	BMF 12M 90 mm	BMF 12M 90 mm
	BMF000J	BMF000E	BMF000P	BMF0022	BMF00C7
	BMF 07M-PS-D-2-S4-00,6	BMF 07M-PS-C-2-KPU-02	BMF 08M-PS-C-2-KPU-02	BMF 12M-PS-D-2-S4	BMF 12M-PS-C-2-S4
		BMF0008	BMF000M	BMF0021	
		BMF 07M-NS-C-2-KPU-02	BMF 08M-NS-C-2-KPU-02	BMF 12M-NS-D-2-S4	
	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 3.1 V	≤ 3.1 V	≤ 3.1 V	≤ 3.1 V	≤ 3.1 V
	75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
	200 mA	200 mA	200 mA	200 mA	200 mA
	≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 15 mA
	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m	1.2 kA/m
	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m	≥ 2 kA/m
	≤ 45%	≤ 45%	≤ 45%	≤ 45%	≤ 45%
	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C	≤ 0.3 %/°C
	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms	≤ 0.05 ms/≤ 0.05 ms
	-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+85 °C	-25...+70 °C
	IP 67	Yellow LED	Yellow LED	IP 67	Yellow LED
	CE, cULus	IP 67	IP 67	CE, cULus	IP 67
	Brass-coated	CE, cULus	CE, cULus	Brass-coated	CE, cULus
	0.6 m PUR cable with M12 connector, 4-pin	Brass-coated	Brass-coated	Brass-coated	Brass-coated
		2 m PUR cable, 3×0.14 mm ²	2 m PUR cable, 3×0.14 mm ²	M12 connector, 4-pin	M12 connector, 4-pin



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design



Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Form Factors Magnets

Magneto-inductive Position Sensors for Analog Position Measurement

Accessories for Magnetic Cylinder Sensors

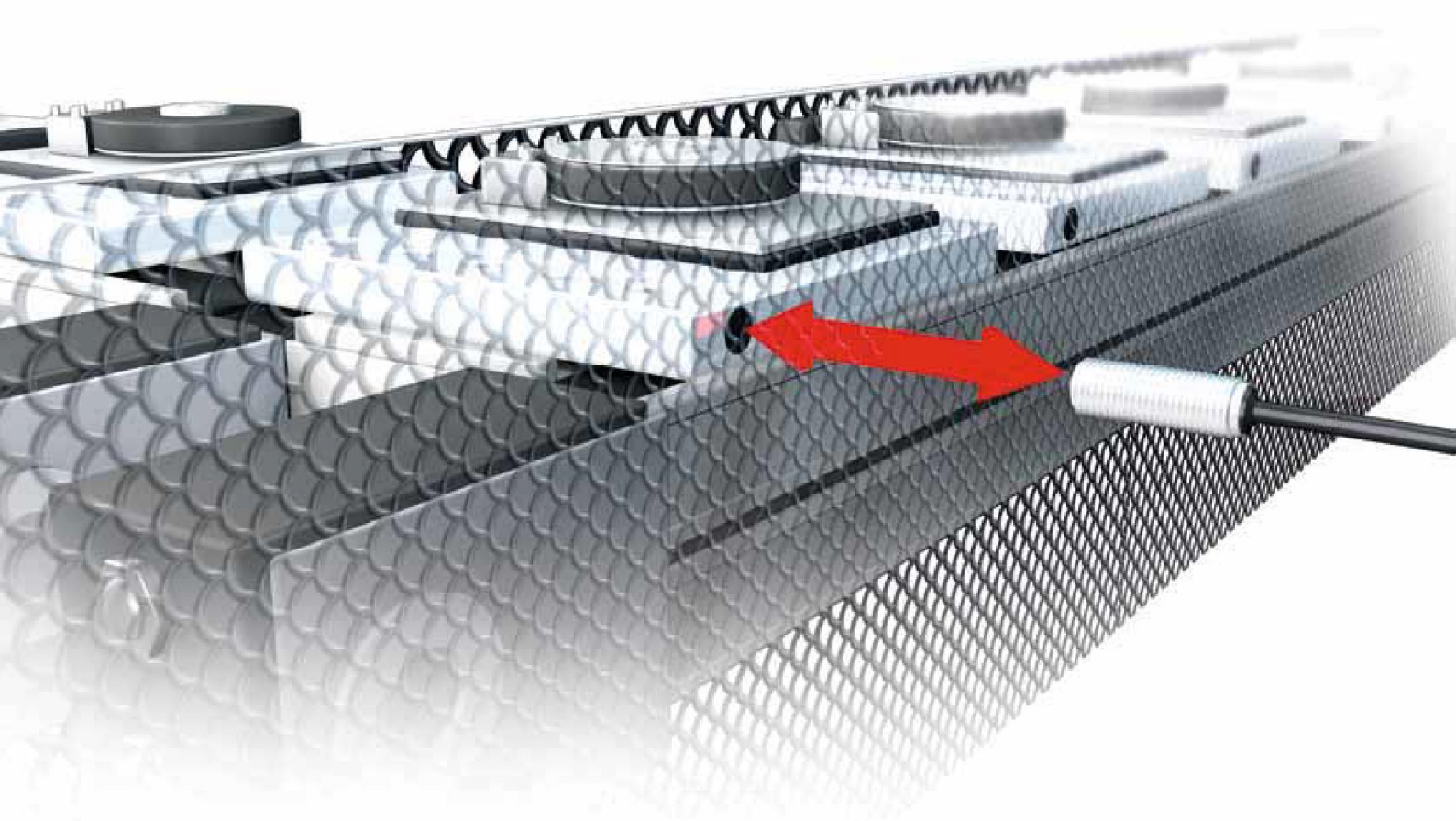
Magnetic Sensors for Object Detection

Magnets



Size	Ø 4 mm	Ø 10 mm	
Ordering code	709084	620961	
Part number	RUNDMAGNET 4.0X 5.0	RUNDMAGNET 10.0X10.0	
Height	5 mm	10 mm	
Maximum switching distance	5 mm	15 mm	
Material	Strontium ferrite	Hard ferrite	

Reliable switching is guaranteed from 0 mm to the switching distance indicated in the table. The specified switching distances are determined from series measurements and should be considered a starting point for selecting a suitable magnet.

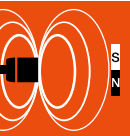


Magnetic Sensors for Object Detection

Magnets



	Ø 15 mm	Ø 15 mm	Ø 25 mm with hole for M5 screw	Ø 22.1 mm with hole for M5 screw	16×12 mm
	BAM01EJ	BAM01EK	BAM01EL	BAM01EM	620260
	BAM TG-MF-006	BAM TG-MF-007	BAM TG-MF-008	BAM TG-MF-009	MAGNETPLATTE 16X12X3
	10 mm	15 mm	15 mm	10.5 mm	3 mm
	40 mm	65 mm	90 mm	40 mm	28 mm
	Neodymium iron boron	Neodymium iron boron	Neodymium iron boron	Ferrite with plastic encapsulation	Samarium cobalt



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Form Factors
Magnets

Magneto-inductive Position Sensors for Analog Position Measurement

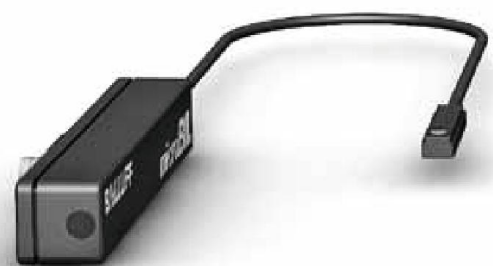
Accessories for Magnetic Cylinder Sensors



Magnetic Cylinder Sensors

Magneto-inductive position sensors for analog position measurement

Magneto-inductive position sensors for analog position measurement can be quickly and easily installed in T-slots. They detect end positions and intermediate positions individually and flexibly. The magneto-inductive position sensor Micro-BIL provides non-contact and absolute measurement on pneumatic miniature grippers or compact cylinders with integrated permanent magnets.



Magneto-inductive Position Sensors for Analog Position Measurement

Contents

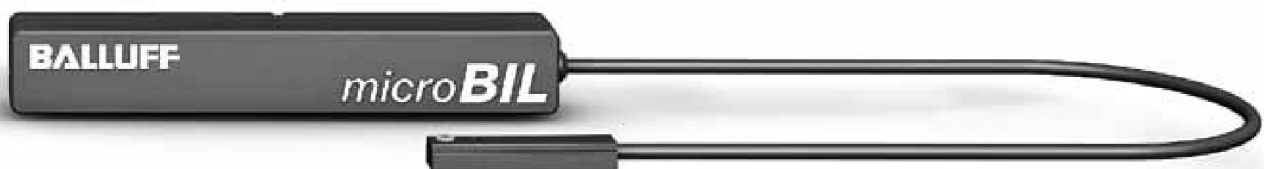
Magneto-inductive Position Sensors for Analog Position Measurement

Micro-BIL

877



Basic information and definitions can be found on **page 934**.



The Micro-BIL provides absolute measurement of the positions on pneumatic miniature grippers or compact cylinders with integrated permanent magnets. Moreover, the sensor element can be installed in the T-slot very easily. The analog output signal enables individual and flexible detection of end positions and intermediate positions on gripper jaws or pistons.

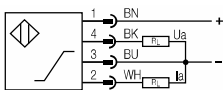
Features

- Wear-free since the measuring position is detected without contact
- Insensitive to shock and vibration
- Absolute output signal: Voltage or current (cable break monitoring possible)
- Adjustable measuring range / magnetic field strength
- Easiest installation in the T-slot

A button enables adjustment to various magnetic field strengths. The technical data refer to reference measurements. Different grippers/cylinders having differing magnetic fields may affect the technical data.

Original mounting brackets and screws are recommended for attaching the Micro-BIL. Please order accessories separately.

Wiring diagram



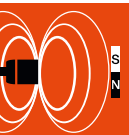
Connect either the voltage or current output.



Magneto-inductive Position Sensors Micro-BIL



Model	Micro-BIL
Output signal U_{out}/I_{out}	Voltage 0...10 V / current 4...20 mA
Working range s_w /linear range s_l	0...10 mm
Ordering code	BIL0002
Part number	BIL ED0-B010P-02/30-S75
Supply voltage U_S	For voltage output U_o : $U_S = 15...30$ V DC, for current output I_o : $I_S = 10...30$ V DC
Field strength, axial H_n	10 kA/m typical
-3dB width of the axial field distribution, typical	2.5 mm
Residual ripple	$\leq 10\%$ of U_e
Rated insulation voltage U_i	75 V DC
Effective distance s_e	5 mm
Load resistance R_L	For voltage output U_o : $R_L = \geq 2$ k Ω , at current output I_o : $R_L = \leq 500$ Ω ,
No-load supply current I_o at U_e	≤ 30 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes
Ambient temperature T_a	-10...+70 °C
Repeat accuracy R_{BWN}	$\leq \pm 30$ μ m
Non-linearity max.	$\leq \pm 0.3$ mm
Temperature coefficient	Typical
TK, in the optimum range	min. +4 μ m/K max. +2 μ m/K
from +10...+50 °C	min. +10 μ m/K
Power-on/programming indicator	Yes/Yes
Degree of protection as per IEC 60529	IP 67
Approvals	CE, cULus
Material	Housing: PA (fiberglass reinforced) Sensing surface: PBT
Connection	M8 connector, 4-pin



Magnetic Cylinder Sensors

Magnetic Cylinder Sensors with Mounting System

Magnetic Cylinder Sensors with a Compact Design

Magnetic Cylinder Sensors with Special Properties

Magnetic Sensors for Object Detection

Magneto-inductive Position Sensors for Analog Position Measurement

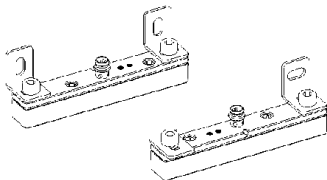
Micro-BIL

Accessories for Magnetic Cylinder Sensors

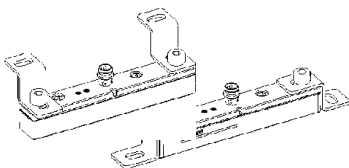
Basic information and definitions can be found on page 980.

Mounting bracket, stainless steel:

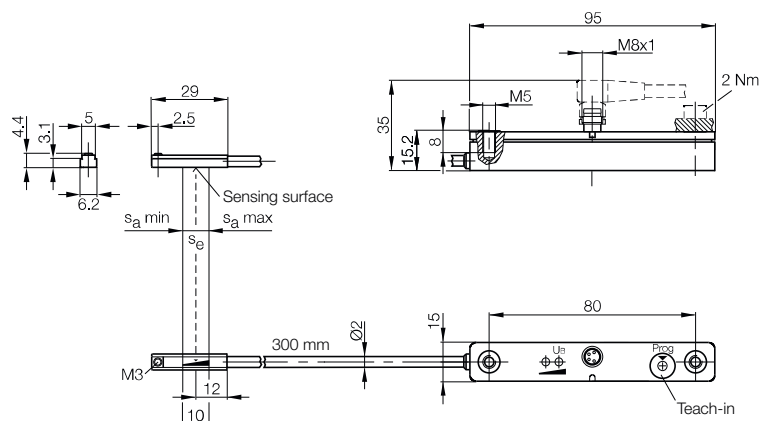
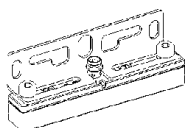
BIL 01-HW-1 (BAM00K4)



BIL 01-HW-2 (BAM00K5)



BIL 01-HW-3 (BAM00K6)





Magnetic Cylinder Sensors

Accessories for magnetic cylinder sensors

In order to be able to accurately mount and adjust sensors, you need the right tools and accessories. We offer you practical cable clips, hose clamps, and tool sets designed for mounting Balluff sensors.





Accessories for Magnetic Cylinder Sensors

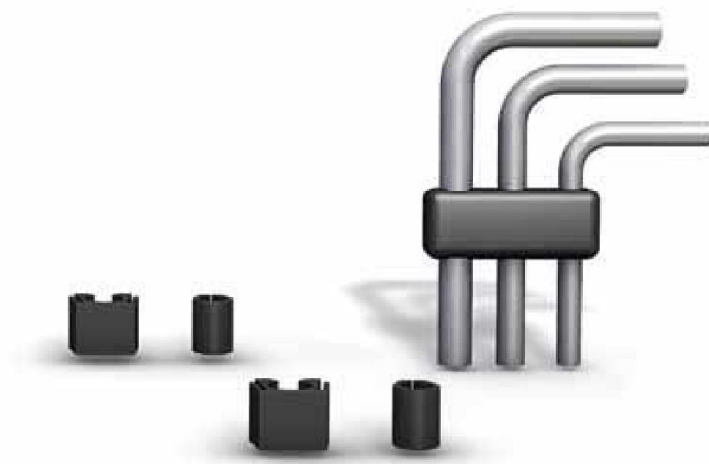
Contents

Accessories for Magnetic Cylinder Sensors

Cable clips	880
Hose clamps	880
Tools	881



Basic information and definitions can be found on **page 934**.



Accessories for Magnetic Cylinder Sensors

Cable clips, hose clamps



	Cable clip for T-slot	Cable clip for C-slot
Part number		
Type	Packaging unit: 50 pcs.	Packaging unit: 50 pcs.
Use	For cable routing and strain relief	For cable routing and strain relief
Ordering code	BAM01EA	BAM01EC
Part number	BAM CC-XA-028-T05-P	BAM CC-XA-025-C03-P
Material	Plastic	Plastic



Piston diameter	BMF 303-HW-59 with hose clamp BMF size _	BMF 305-HW-24 with hose clamp BMF size _	BMF 21-HW-11 with hose clamp BMF size _	BMF 32 with hose clamp BMF size _	BMF 235-HW96 with hose clamp BMF size _	BMF 10E-HW-19 with hose clamp BMF size _
≤ 8 mm		0 BAM00N2			0 BAM00N2	
8...10 mm	1 BAM00N3	1 BAM00N3	1 BAM00N3	1 BAM00N3	1 BAM00N3	2 BAM00N4
12 mm	2 BAM00N4	1	1	1	1	2
16 mm	2	1	2 BAM00N4	2 BAM00N4	1	3 BAM00N5
20 mm	2	2 BAM00N4	2	2	2 BAM00N4	3
25 mm	2	2	2	2	2	3
32 mm	3 BAM00N5	3 BAM00N5	3 BAM00N5	3 BAM00N5	3 BAM00N5	4 BAM00N6
40 mm	4 BAM00N6	4 BAM00N6	4 BAM00N6	4 BAM00N6	4 BAM00N6	5 BAM00N7
50 mm	5 BAM00N7	5 BAM00N7	5 BAM00N7	5 BAM00N7	5 BAM00N7	6 BAM00N8
63 mm	6 BAM00N8	6 BAM00N8	6 BAM00N8	6 BAM00N8	6 BAM00N8	8 BAM00NA
70 mm	8 BAM00NA	8 BAM00NA	8 BAM00NA	8 BAM00NA	8 BAM00NA	8
80 mm	7 BAM00N9	7 BAM00N9	7 BAM00N9	7 BAM00N9	7 BAM00N9	
90 mm	10 BAM01TC	10 BAM01TC	10 BAM01TC	10 BAM01TC	10 BAM01TC	10 BAM01TC
100 mm	9 BAM01F4	9 BAM01F4	9 BAM01F4	9 BAM01F4	9 BAM01F4	9 BAM01F4



Accessories for Magnetic Cylinder Sensors

Tools



Part number	BMF Tool Kit	Hex key set 0.7-2.0
Type	Folding Allen key set, with additional blades, 8-piece	
Use	Tool set for all BMF sensors and BMF angle brackets as well as for sensors having a potentiometer, e.g. BOS, BCS, BUS etc.	Tool set for BMF sensors and BMF angle brackets
Material No.	139868	123264
Material	Blade: chrome vanadium steel, fully hardened, galvanically treated. Handle: ergonomic, fiberglass-reinforced housing, 55 mm long.	

			mm
0.7			
0.9			
1.3			
1.5			
2.0			
2.5			
		3.0	
	PH00		

	0.71
	0.89
	1.27
	1.5
	2.0

Application

Practical folding holder for Allen keys to prevent them from getting lost. Especially good for turning very small screws, for example, for tightening down or accurately adjusting sensors.

Sturdy housing with release button for easily selecting the right blade. Eyelet with matching carabiner hook.

Self-service packaging for hanging with a Euro hole tab.



Magnetic Cylinder Sensors

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Accessories for Magnetic Cylinder Sensors

Cable Clips
Hose Clamps
Tools