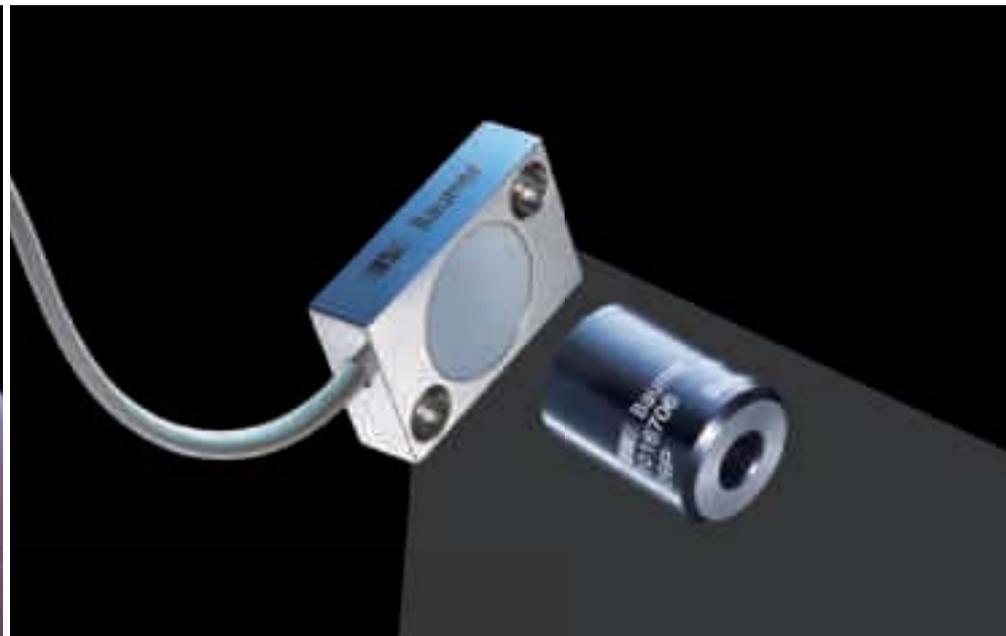


Compact, fast, non-contact.  
Magnetic sensors.



Edition 2012



Magnetic sensors are proven in the field and are constantly further developed and refined. Thanks to their substantial benefits like high detection speed or extreme dirt resistance and by utilizing a non-contact and wear free sensing principle they are indispensable in many applications. The extensive Baumer portfolio provides magnetic sensors with different techniques and designs and hence the optimal solution for every application.

Make your choice:

- Magnetic angle sensors for non-contact detection of rotation angles throughout 360°
- Hall sensors to pick up rotating speeds and directions of toothed wheels
- Magnetic proximity switches for long-range detection of magnetic fields
- Cylinder sensors to detect limit positions of pistons in cylinders

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## Magnetic cylinder sensors

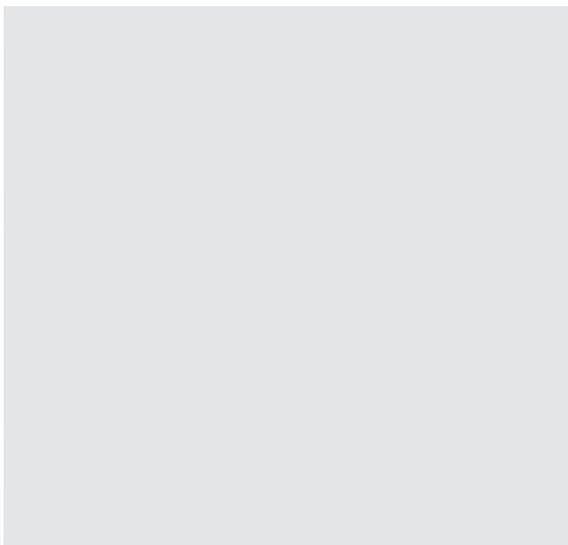
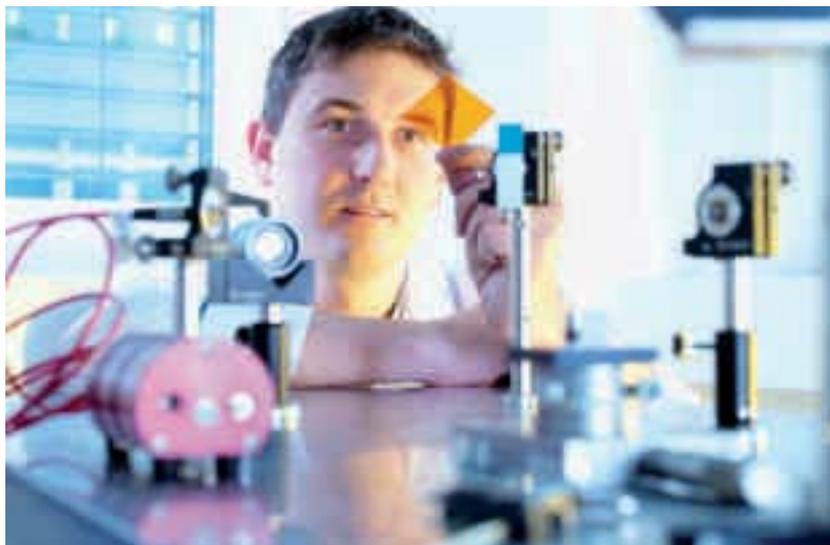
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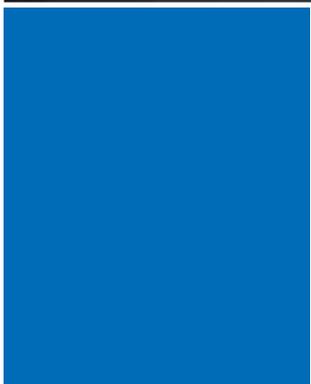
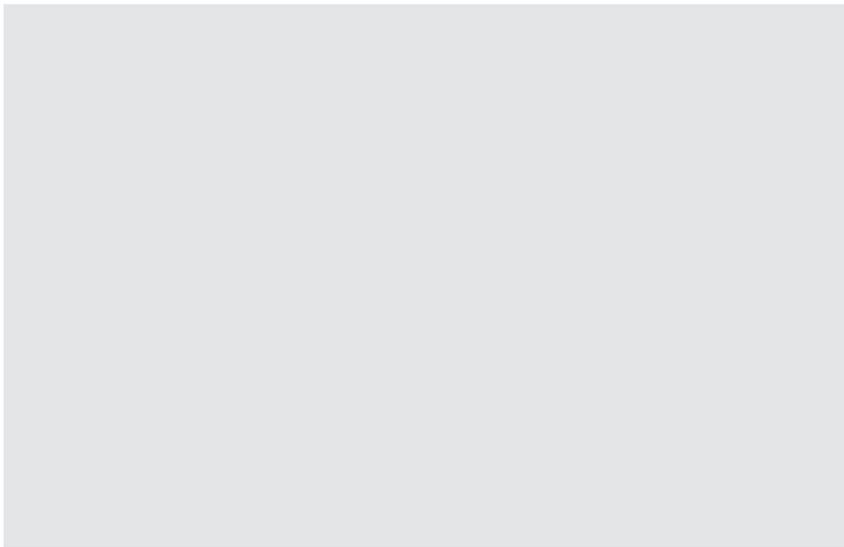
# Baumer – Setting standards with innovations



## Development at Baumer

The success story of the Baumer Group is heavily marked by innovations. In the past years, many trend setting Baumer products have been brought to the market. Particular attention was given to miniaturization, precision and measuring speed as well as robustness of sensors. These attributes set Baumer products apart. In order to realize ambitious future targets, Baumer attaches great importance to research and development. Over 10% of our staff, whether hard- and software engineers, designers or process engineers, develop new products and systems. The Baumer development teams are part of an international network and cultivate close contact with research institutions and universities. As one of the technological leaders, Baumer strives to maintain its advantage and to protect its innumerable innovations with patents.





### **Comprehensive product range**

- Actuators and positioning drives
- Capacitive proximity sensors
- Counters
- Digital cameras
- Encoders
- Force and strain sensors
- Inductive sensors
- Level measurement
- Magnetic sensors
- OCR and code reader systems
- Optical inspection systems
- Photoelectric sensors
- Precision switches My-Com
- Pressure measurement
- Process analysis
- Process displays
- Resolvers
- Smart vision sensors
- Speed switches
- Spindle positioning systems
- Tachogenerators
- Temperature sensors
- Ultrasonic sensors
- Vision sensors
- Conductivity sensors
- Network components

# Magnetic sensors for every requirement



## Always the optimally suited technology

Baumer offers an extensive standard product range with sophisticated solutions for the most diverse demands and applications. There is a wide choice of measuring and switching magnetic sensors, optionally in full-metal or plastic configurations, and sensor platforms individually designed for demanding industries such as railway vehicles and materials handling.

The multifaceted portfolio comprises products with various specifications and properties and is continuously expanded.

The benefits of the all-encompassing product range are obvious:

- Quick availability
- Eased selection of the optimum solution
- Approved and certified products
- No initial costs



### Individually adapted to your application

The extensive Baumer portfolio offers end-to-end solutions, individually suited for your very special application. To meet the site's specific requirements or harsh environment, the sensors features and properties are designed to suit your specific application.

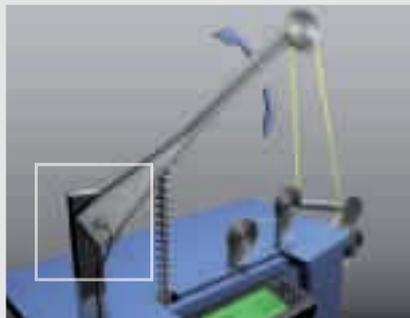
Baumer has got what it takes to be your trusted and expert partner for customised solutions:

- Longstanding experience and know-how in design and engineering
- In-house manufacturing resources including SMD facilities
- Practical application expertise in diverse industries and markets
- Implementation experience from the stage of the product idea to series maturity

Benefit from our dependable, cost-optimized solutions and short implementation time.

# Magnetic angle measuring sensors

## Fields of application



### Strain control via the dancer arm rotation angle

- Non-contact product alternative to mechanical potentiometers
- Non-wearing despite repeating movements
- Top quality of control by short response time and high resolution



### Inclination angle detection of the container on garbage trucks

- Reliable absolute angle detection, impervious to moisture and dirt
- The measuring operation is unaffected by any changes in the gap between sensor and magnet when within the specified sensing range
- The electronics being fully integrated in the sensor housing allows for eased installation even if space is a constraint



### Output of the crane's current rotation angle

- Dependable position feedback even after power failure thanks to absolute sensing method
- Thanks to the non-contact sensing method both strong vibrations and heavy load conditions on the crane do not have an influence on the sensor performance
- The electronics being fully integrated in the sensor housing allows for eased installation even if space is a constraint



### Angle measuring sensors – some facts in brief

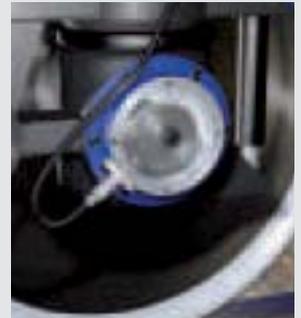
Magnetic angle measuring sensors detect rotation angles throughout the entire 360° range by aid of a permanent magnet. The current position is output as an absolute analog signal. The sensor's non-contact sensing method is absolutely wearfree and ensures topgrade fail-free performance. The high resolution of 0,09° and a response time of less than 3 ms enable precise control of complex processes. Even in demanding environments with dust, fabric and moisture, the magnetic angle measuring sensors provide dependable operation.

# Hall sensors

## Fields of application

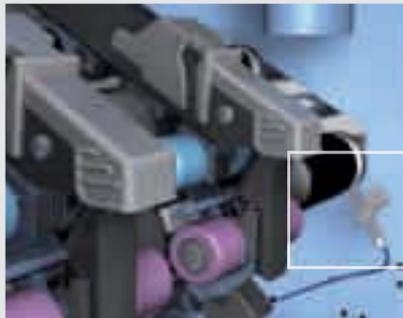
### Slide control and speed monitoring at railed vehicles

- Consistent speed feedback prevents the wheels slipping and locking
- Dependable operation by extreme immunity to shocks and vibrations
- Top safety level by compliance with strict railway standards



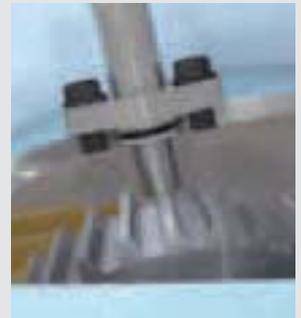
### Speed monitoring at ring spinning machines

- The high switching frequency allows for highly dynamic applications
- Dependable detection in any environment thanks to extreme dirt resistance
- Wearfree and ultra-long service life by non-contact Hall technology



### Directly integrated in the gear

- Dependable feedback of speed and rotational direction of toothed wheels
- Sensor face can also be deployed in oil
- Extended temperature range and pressure resistance for a wide application range



### Hall sensors – some facts in brief

Thanks to their high switching frequency of max. 20 kHz, Hall sensors are mainly deployed for detecting fast running toothed wheels. The high resolution ensures reliable detection of module sizes as little as 1 and up. By two signals shifted in a phase the sensor not only picks the wheels' speed but at the same time also the sense of rotation. Since Hall sensors fully eliminate the need for any mechanical moving components, wear is down to a minimum whereas longevity is substantially enhanced. In a full-metal housing they are the product to choose in dirty, humid or oily environments.



# Magnetic proximity switches

## Fields of application



### Liquid level detection using a float carried magnet

- Non-invasive detection through the tank wall without direct media contact and contamination by the sensor
- Level detection unaffected by foam and soiling
- Quick and easy sensor installation by cable ties



### Monitoring final positions of telescopic outriggers

- Safe detection impervious to humidity and dirt
- Optionally with full-metal sensor and/or magnet encapsulation for improved protection
- Versatile application possibilities thanks to extended switching distance



### Stroke limitation in hydraulic cylinders

- The piston-carried permanent magnet is detected from the outside of the cylinder
- Dependable piston feedback unaffected by other metal components
- Substantially eased maintenance since the sensor is installed outside the closed high-pressure system

### Magnetic proximity switches – some facts in brief

Magnetic proximity switches respond to magnetic fields within a distance of 60 mm and will detect them even through non-ferromagnetic materials like stainless steel. They provide precise and dependable switching behaviour even in damp or dirty environments. Their sensing range capabilities depend on the selected permanent magnet, thus they provide versatile mounting options even in a confined space.

The permanent magnet can be attached independently from polarity. Generous mounting tolerances save both time and effort during installation.



# Magnetic cylinder sensors

## Fields of application

### Cylinders with C- and T-slot

- Eased installation – simply inserted in the slot
- The permanent magnet inside the cylinder is detected through the cylinder wall
- Completely free from maintenance and wear



### Attachment to cylinders without slot

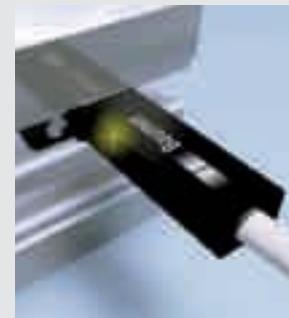
Versatile mounting accessory kits allow attachment to any conventional cylinder:

- Round cylinders
- Tie-rod cylinders
- Dovetail or other specialised slots



### Compact sensor designs for short-stroke cylinders

- By virtue of its lateral cable outlet, the sensor is very short and easy to fit into tight spots



### Cylinder sensors – some facts in brief

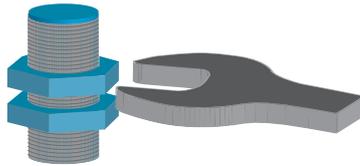
Monitoring the movements of pneumatic cylinders is an essential task in countless fields of automation. Magnetic cylinder sensors exactly recognize the piston positions by non-contact technique and will output a switching signal. Completely free from wear they are attached outside the cylinder. Where standard T- or C-slots are provided, the sensor can be directly inserted into the slot and fixed. For other cylinder types there is a wide selection of accessory kits which enable easy and quick installation.





## Maximum installation torque

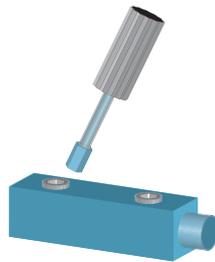
Observe the specified maximum installation torque to prevent the sensor from damage during installation.



### Cylindrical design with male (external) thread

Brass nickel-plated	Chrome-nickel-Steel
M8 = 7 Nm	M8 = 10 Nm
M12 = 15 Nm	M12 = 20 Nm
M18 = 40 Nm	M18 = 55 Nm

The values applicable to the sensing head are reduced by approx. 30%.



### Rectangular design with female (internal) thread

M2 = 0,1 Nm
M2,5 = 0,1 Nm
M3 = 0,3 Nm

## Protection class



- 1) Protection against penetration of dust and complete protection against contact with electrical components
- 2) Protection against a water jet from any direction.



Water must not enter in a harmful quantity when the enclosure is immersed in water under defined conditions of pressure and time to be specified between manufacturer and user.

The conditions however must exceed IP 67 requirements.



IP69K was initially developed for road vehicles, especially those needing regular intensive cleaning (dump trucks, cement mixers, etc.), but also finds use in other areas (e.g. food industry, car wash centres). IP 69K is an important standard for components deployed in road vehicles and the food and beverage industry. The test specification describes high-pressure cleaning with pure water at a pressure of 8'000 to 10'000 kPa and at a temperature of +80°C with a flow rate of 14 - 16 l/min for 30 seconds. Since the test specification differs substantially from those of other IPs, IP 69K protection does not automatically imply IP 67 or IP 68. IP 67 is the only standard to comprise also the lower degrees of protection.



IP 67 comprises the IP 65 test specification and further enhanced water protection. The test piece must be immersed in water to a depth of 1 meter for 30 minutes.



## ■ A

### Assured sensing distance Sa

Sensing distance from sensing face to target object which is assured under observation of the relevant technical data and installation instructions.

## ■ C

### Cable length, permissible

Extended cable length means increased interference which will hamper the capacitive capabilities of the output of the proximity switch. Where possible, avoid cables of more than 5 m length.

### Connection cable

Our standard magnetic sensors provide PUR cables for top resistance against oil and lubricants. For specific applications, the sensors are optionally available with FEP or Radox cables.

### Current consumption

Maximum current consumed by the circuit at nominal voltage (without load).

## ■ D

### Differential Hall Sensors

Differential Hall Sensors are less sensitive to interference caused by stray magnetic fields. When installing the sensor attention must be paid to its proper orientation in relation to the gear wheel.

## ■ F

### Ferromagnetic

A material is said to provide ferromagnetic properties if it gets magnetized when being exposed to any – even weak-external magnetic field. Some ferromagnetic materials: Iron, cobalt, nickel or ferrite.

## ■ L

### Lines of force

Lines of force visualize a magnetic force direction towards a test object.

### Load current

Maximum permissible output current without time limit.

## ■ H

### Hysteresis

Hysteresis means the difference between the sensor's switch on and off point with the target object approaching then withdrawing.

## ■ M

### Magneto-resistive

When being exposed to an external magnetic field, a material inside the sensor will change its electric resistance. This change will be evaluated by the integrated electronics.

### Module m

The module m of a gear represents the ratio of reference diameter d to number of teeth z. Meshing gears must always have the same module. Formula:  $m = d/z$

## ■ O

### Oil resistance

For oily environments we offer sensors in full-metal housing with PUR cable options.

## ■ P

### Permanent magnet

After having been exposed to a magnetic field, a permanent magnet will retain its static magnetic field without any flow of electrical current.

## ■ R

### Rotationally symmetric

The sensor has been designed so that rotational movement around its own axes in relation to the object does not have any influence.

## ■ S

### Status indicator

The LED indicates the output switching status.

### System accuracy

The system accuracy defines the maximum measuring error originating from both sensor and permanent magnet combined within the angular measuring range specified. Values stated apply to an ambient temperature of 22 °C entigrades and it is required that the installation has been carried out according to the applicable guidelines.

## ■ V

### Voltage drop Vd

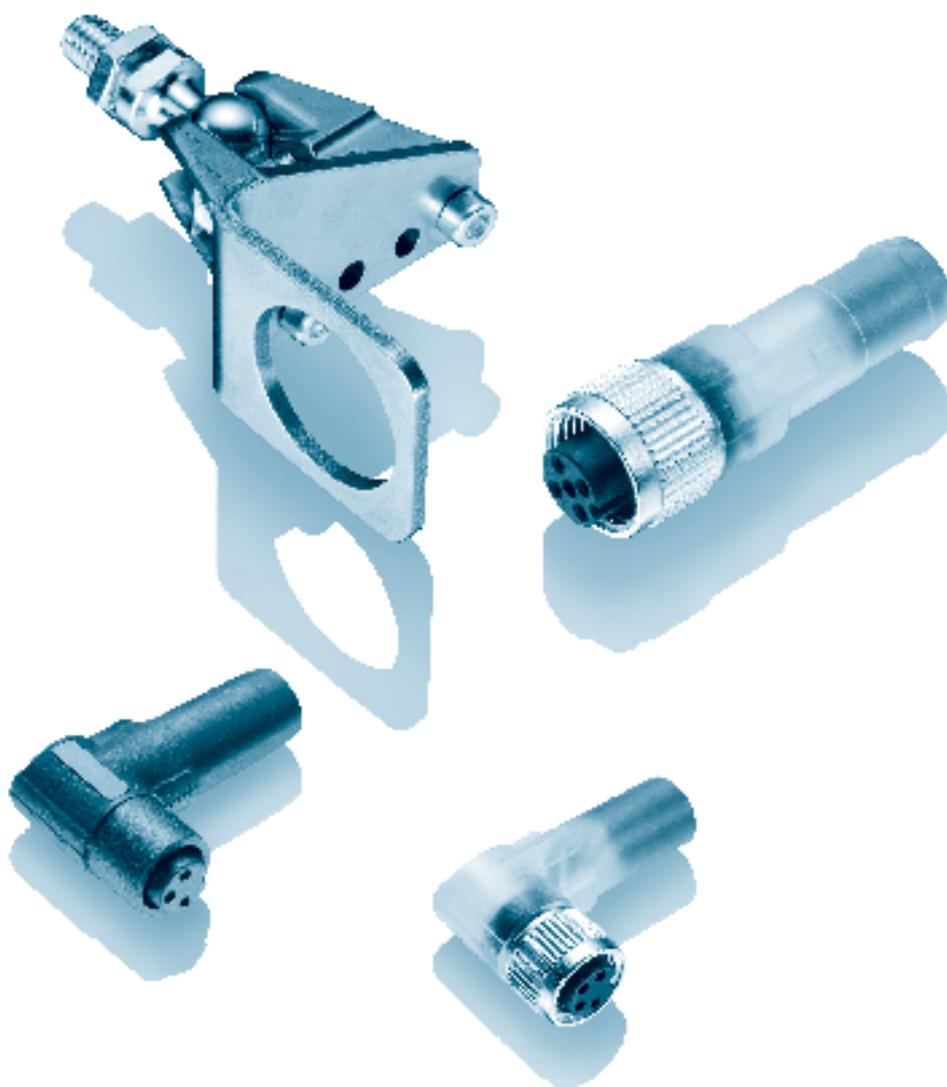
The value specifies the maximum voltage drop measured across the conducting output.

### Voltage supply range +VS

Maximum ripple 10% of VS. The supply voltage should not be higher or lower than the indicated maximum or minimum values.



## Accessories

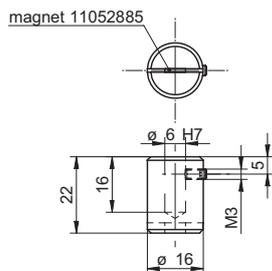


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Max. working distance sensor – permanent magnet

Sensor family	Max. working distance	
	Permanent magnet MMFN AA01X06	Permanent magnet MMFS AA03X08
Resolution 1,41°	0 ... 1 mm	1 ... 4 mm
Resolution 0,09°	0 ... 2 mm	1 ... 5 mm

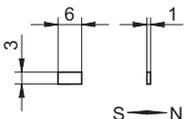
Rotor with permanent magnet



Rotor Aluminum  
 Magnet 11052885  
 Energy product 280 kJ/m<sup>3</sup>  
 Operating temp. -40 ... +85 °C

**order reference**  
 11052887 Rotor with permanent magnet MSFN AA01X06

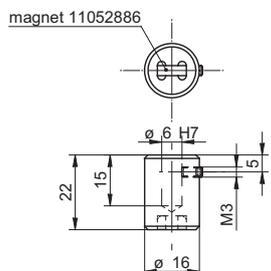
Single permanent magnet



Magnet NdFeB  
 Energy product 280 kJ/m<sup>3</sup>  
 Operating temp. -40 ... +100 °C  
 Quantity 10 pieces

**order reference**  
 11052885 Permanent magnet MMFN AA01X06

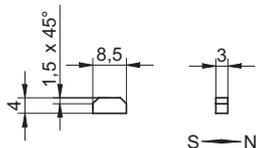
Rotor with permanent magnet



Rotor Aluminum  
 Magnet 11052886  
 Energy product 190 kJ/m<sup>3</sup>  
 Operating temp. -40 ... +125 °C

**order reference**  
 11016706 Rotor with permanent magnet MSFS AA03X08

Single permanent magnet



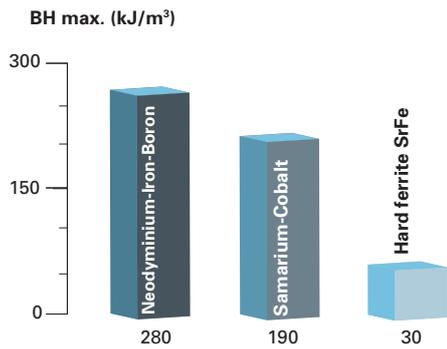
Magnet SmCo  
 Energy product 190 kJ/m<sup>3</sup>  
 Operating temp. -40 ... +180 °C  
 Quantity 10 pieces

**order reference**  
 11052886 Permanent magnet MMFS AA03X08

Magnetic angular sensors

Accessories

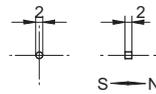
Permanent magnet



Assured sensing distance Sa Sensor – Magnet

Sensor family	Assured sensing distance Sa		
	Permanent magnet MMRS AA02X02	Permanent magnet MMRN AA06X05	Permanent magnet MMRH BA31X15
MFRM 08	5 mm	20 mm	60 mm
MFFM 08	5 mm	20 mm	60 mm
MFVM 08	5 mm	20 mm	60 mm

Permanent magnet

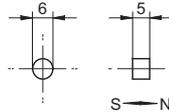


Magnet: Samarium-Cobalt (SmCo5)  
 Energy product: 190 kJ/m³  
 Operating temp.: -40 ... +180 °C  
 Quantity: 10 pieces

order reference

11052882 Permanent magnet MMRS AA02X02

Permanent magnet

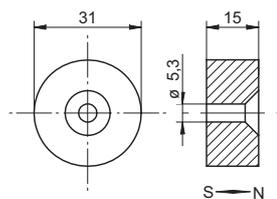


Magnet: Neodymium-Iron-Boron (NdFeB)  
 Energy product: 280 kJ/m³  
 Operating temp.: -40 ... +100 °C  
 Quantity: 10 pieces

order reference

11052883 Permanent magnet MMRN AA06X05

Permanent magnet



Magnet: Hard ferrite (SrFe)  
 Energy product: 30 kJ/m³  
 Operating temp.: -25 ... +130 °C  
 Quantity: 5 pieces

order reference

11053959 Permanent magnet MMRH BA31X15

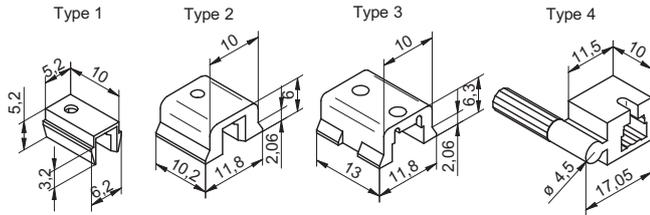
Selection matrix – Sensor and mounting accessories

	Cylinder with slots			Cylinder round		Cylinder with Tie-Rod
	C-slot	T-slot	Dovetail slot	Round cylinder	For different round cylinders	Mounting bracket
				MZZB 01 	MZZB 02 	MZZC 01 
MZCK 03x1011... 	yes	MZZA 01 Adaptor kit	MZZA 01 Adaptor kit	MZZA 01 Adaptor kit	MZZA 01 Adaptor kit	MZZA 01 Adaptor kit
MZCK 03x1012... 	yes	non	non	non	non	non
MZTK 06x1011... 	non	yes	MZZA 01 Adaptor kit	yes	MZZA 01 Adaptor kit	MZZA 01 Adaptor kit
MZTK 06x1012... 	non	yes	MZZA 01 Adaptor kit	yes	MZZA 01 Adaptor kit	MZZA 01 Adaptor kit
MZTK 06x1013... 	non	yes	MZZA 01 Adaptor kit	yes	MZZA 01 Adaptor kit	MZZA 01 Adaptor kit

Adapter set for standard slots



- Type 1: C-slot sensors in T-slots
- Type 1: C-slot sensors in dovetail slots
- Type 3: T-slot sensors in dovetail slots
- Type 4: C- and T-slot sensors with additional fastening clamp or mounting bracket

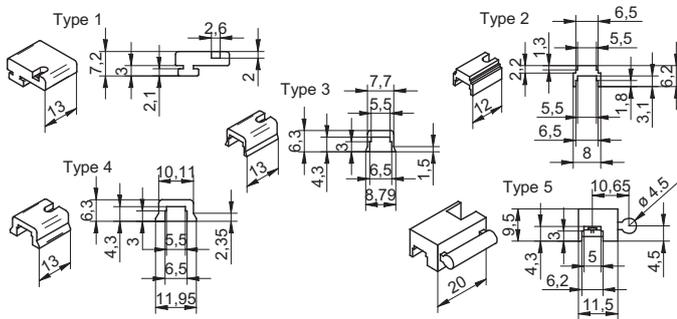


**order reference**  
 MZZA 01 Adapter set for C- and T-slot sensors in standard slots

Adapter set for special slots



- Type 1 - 4: T-slot sensors in special slots
- Type 5: T-slot sensors with additional fastening clamp for round cylinders

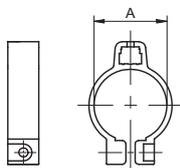


**order reference**  
 MZZA 02 Adapter set for T-slot sensors for special slots

Fastening clamps for micro cylinders



- Diameter:  $\varnothing 8 \dots 25$  mm
- Material: PA AISI 303



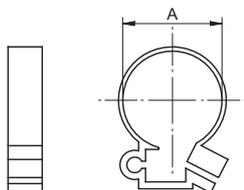
**order reference**

MZZB 01/008	Fastening clamp for micro cylinder $\varnothing 8$ mm (A)
MZZB 01/010	Fastening clamp for micro cylinder $\varnothing 10$ mm (A)
MZZB 01/012	Fastening clamp for micro cylinder $\varnothing 12$ mm (A)
MZZB 01/016	Fastening clamp for micro cylinder $\varnothing 16$ mm (A)
MZZB 01/020	Fastening clamp for micro cylinder $\varnothing 20$ mm (A)
MZZB 01/025	Fastening clamp for micro cylinder $\varnothing 25$ mm (A)

Fastening clamps for round cylinders



- Diameter:  $\varnothing$  11 ... 65 mm
- Material: PA AISI 303

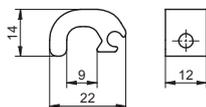


order reference	
MZZB 02/011	Fastening clamp for round cylinder $\varnothing$ 11,3 mm
MZZB 02/012	Fastening clamp for round cylinder $\varnothing$ 12 mm
MZZB 02/013	Fastening clamp for round cylinder $\varnothing$ 13,3 mm
MZZB 02/014	Fastening clamp for round cylinder $\varnothing$ 14 mm
MZZB 02/016	Fastening clamp for round cylinder $\varnothing$ 16 mm
MZZB 02/017	Fastening clamp for round cylinder $\varnothing$ 17,3 mm
MZZB 02/018	Fastening clamp for round cylinder $\varnothing$ 18 mm
MZZB 02/020	Fastening clamp for round cylinder $\varnothing$ 20 mm
MZZB 02/021	Fastening clamp for round cylinder $\varnothing$ 21,3 mm
MZZB 02/022	Fastening clamp for round cylinder $\varnothing$ 22 mm
MZZB 02/024	Fastening clamp for round cylinder $\varnothing$ 24 mm
MZZB 02/026	Fastening clamp for round cylinder $\varnothing$ 26,3 mm
MZZB 02/027	Fastening clamp for round cylinder $\varnothing$ 27 mm
MZZB 02/029	Fastening clamp for round cylinder $\varnothing$ 29 mm
MZZB 02/030	Fastening clamp for round cylinder $\varnothing$ 30 mm
MZZB 02/033	Fastening clamp for round cylinder $\varnothing$ 33,6 mm
MZZB 02/036	Fastening clamp for round cylinder $\varnothing$ 36 mm
MZZB 02/041	Fastening clamp for round cylinder $\varnothing$ 41,6 mm
MZZB 02/045	Fastening clamp for round cylinder $\varnothing$ 45 mm
MZZB 02/052	Fastening clamp for round cylinder $\varnothing$ 52,4 mm
MZZB 02/065	Fastening clamp for round cylinder $\varnothing$ 65,4 mm

Mounting brackets for round cylinders with tie rods 5 ... 9 mm



- Cylinder:  $\varnothing$  5 ... 9 mm
- Material: PA AISI 303 6005A

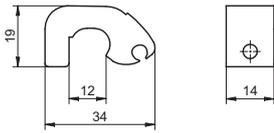


order reference	
MZZC 01/005	Mounting bracket for round cylinders with tie rods $\varnothing$ 5 ... 9 mm

Mounting brackets for round cylinders with tie rods 32 ... 40 mm



- Cylinder:  $\varnothing$  32 ... 40 mm
- Material: PA AISI 303 6005A



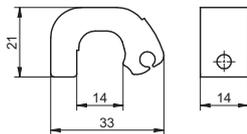
order reference

MZZC 01/032	Mounting bracket for round cylinders with tie rods $\varnothing$ 32 ... 40 mm
-------------	---

Mounting brackets for round cylinders with tie rods 50 ... 63 mm



- Cylinder:  $\varnothing$  50 ... 63 mm
- Material: PA AISI 303 6005A



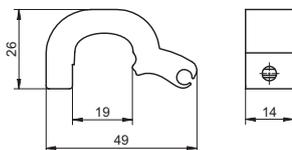
order reference

MZZC 01/050	Mounting bracket for round cylinders with tie rods $\varnothing$ 50 ... 63 mm
-------------	---

Mounting brackets for round cylinders with tie rods 82 ... 100 mm



- Cylinder:  $\varnothing$  82 ... 100 mm
- Material: PA AISI 303 6005A



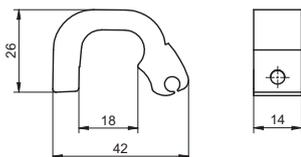
order reference

MZZC 01/082	Mounting bracket for round cylinders with tie rods $\varnothing$ 82 ... 100 mm
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## Mounting brackets for round cylinders with tie rods 125 mm

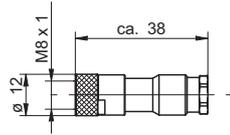


- Cylinder:  $\varnothing$  125 mm
- Material: PA AISI 303 6005A

**order reference**

MZZC 01/125	Mounting bracket for round cylinders with tie rods $\varnothing$ 125 mm
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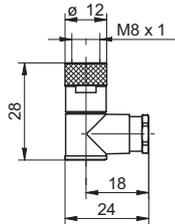
**ES 21 - Cable socket M8 straight, not pre-assembled**



order reference	
ES 21	Connector M8, 3 pin, straight
ES 21A	Connector M8, 4 pin, straight

- Connector unshielded
- Connector only, no cable supplied
- 3 and 4 pin version

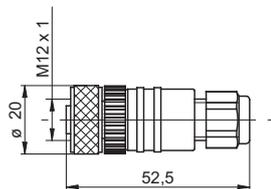
**ES 22 - Cable socket M8 angular, not pre-assembled**



order reference	
ES 22	Connector M8, 3 pin, angular
ES 22A	Connector M8, 4 pin, angular

- Connector unshielded
- Connector only, no cable supplied
- 3 and 4 pin versions

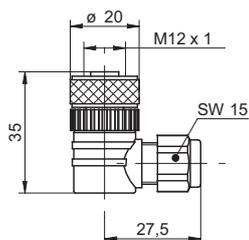
**ES 18 - Cable socket M12 straight, not pre-assembled**



order reference	
ES 18 PG7	Connector M12, 4 pin, straight
ES 18C PG7	Connector M12, 5 pin, straight

- Connector unshielded
- Connector only, no cable supplied
- 4 and 5 pin versions

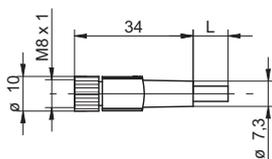
**ES 14** - Cable socket M12 angular, not pre-assembled



order reference	
ES 14 PG7	Connector M12, 4 pin, angular
ES 14C PG7	Connector M12, 5 pin, angular

- Connector unshielded
- Connector only, no cable supplied
- 4 and 5 pin versions

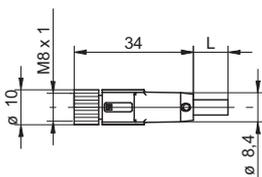
**ESG 32** - Connector M8 straight



order reference	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESG 32AH0500	Connector M8, 4 pin, straight, 5 m
ESG 32AH1000	Connector M8, 4 pin, straight, 10 m
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESG 32SH0500	Connector M8, 3 pin, straight, 5 m
ESG 32SH1000	Connector M8, 3 pin, straight, 10 m

- Connector unshielded
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

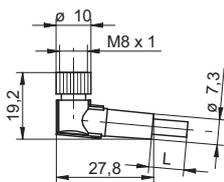
**ESG 32G** - Connector M8 straight, shielded



order reference	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESG 32AH0500G	Connector M8, 4 pin, straight, 5 m, shielded
ESG 32AH1000G	Connector M8, 4 pin, straight, 10 m, shielded
ESG 32SH0500G	Connector M8, 3 pin, straight, 5 m, shielded
ESG 32SH1000G	Connector M8, 3 pin, straight, 10 m, shielded

- Connector shielded, screen connected with cap nut
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

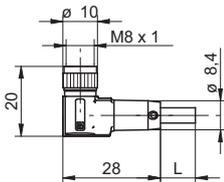
**ESW 31** - Connector M8 angular



order reference	
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
ESW 31AH0500	Connector M8, 4 pin, angular, 5 m
ESW 31AH1000	Connector M8, 4 pin, angular, 10 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
ESW 31SH0500	Connector M8, 3 pin, angular, 5 m
ESW 31SH1000	Connector M8, 3 pin, angular, 10 m

- Connector unshielded
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

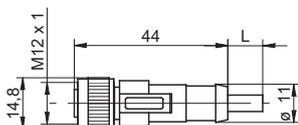
**ESW 31G** - Connector M8 angular, shielded



order reference	
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
ESW 31AH0500G	Connector M8, 4 pin, angular, 5 m, shielded
ESW 31AH1000G	Connector M8, 4 pin, angular, 10 m, shielded
ESW 31SH0200G	Connector M8, 3 pin, angular, 2 m, shielded
ESW 31SH0500G	Connector M8, 3 pin, angular, 5 m, shielded

- Connector shielded, screen connected with cap nut
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

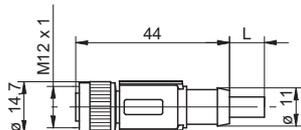
**ESG 34** - Connector M12 straight



order reference	
ESG 34AH0200	Connector M12, 4 pin, straight, 2 m
ESG 34AH0500	Connector M12, 4 pin, straight, 5 m
ESG 34AH1000	Connector M12, 4 pin, straight, 10 m
ESG 34CH0200	Connector M12, 5 pin, straight, 2 m
ESG 34CH0500	Connector M12, 5 pin, straight, 5 m
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESG 34SH0500	Connector M12, 3 pin, straight, 5 m
ESG 34SH1000	Connector M12, 3 pin, straight, 10 m

- Connector unshielded
- 3, 4 and 5 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

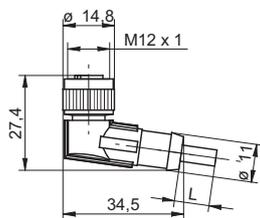
**ESG 34G** - Connector M12 straight, shielded



- Connector shielded, screen connected with cap nut
- 4, 5 and 8 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

order reference	
ESG 34AH0200G	Connector M12, 4 pin, straight, 2 m, shielded
ESG 34AH0500G	Connector M12, 4 pin, straight, 5 m, shielded
ESG 34AH1000G	Connector M12, 4 pin, straight, 10 m, shielded
ESG 34CH0200G	Connector M12, 5 pin, straight, 2 m, shielded
ESG 34CH0500G	Connector M12, 5 pin, straight, 5 m, shielded
ESG 34CH1000G	Connector M12, 5 pin, straight, 10 m, shielded
ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESG 34FH0500G	Connector M12, 8 pin, straight, 5 m, shielded
ESG 34FH1000G	Connector M12, 8 pin, straight, 10 m, shielded

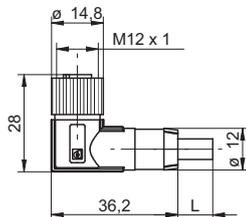
**ESW 33** - Connector M12 angular



- Connector unshielded
- 3, 4 and 5 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

order reference	
ESW 33AH0200	Connector M12, 4 pin, angular, 2 m
ESW 33AH0500	Connector M12, 4 pin, angular, 5 m
ESW 33AH1000	Connector M12, 4 pin, angular, 10 m
ESW 33CH0200	Connector M12, 5 pin, angular, 2 m
ESW 33CH0500	Connector M12, 5 pin, angular, 5 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
ESW 33SH0500	Connector M12, 3 pin, angular, 5 m
ESW 33SH1000	Connector M12, 3 pin, angular, 10 m

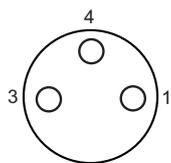
**ESW 33G** - Connector M12 angular, shielded



- Connector shielded, screen connected with cap nut
- 4, 5 and 8 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

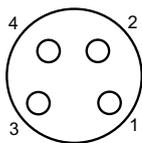
order reference	
ESW 33AH0200G	Connector M12, 4 pin, angular, 2 m, shielded
ESW 33AH0500G	Connector M12, 4 pin, angular, 5 m, shielded
ESW 33AH1000G	Connector M12, 4 pin, angular, 10 m, shielded
ESW 33CH0500G	Connector M12, 5 pin, angular, 5 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded

**M8 3 pin**



- 1 = BN
- 3 = BU
- 4 = BK

**M8 4 pin**

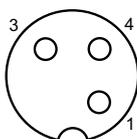


- 1 = BN
- 2 = WH
- 3 = BU
- 4 = BK

ES 21  
ES 22  
ESG 32S  
ESW 31S

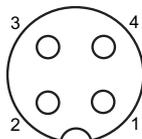
ES 21A  
ES 22A  
ESG 32A  
ESW 31A

**M12 3 pin**



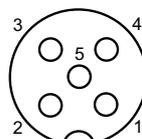
- 1 = BN
- 3 = BU
- 4 = WH

**M12 4 pin**



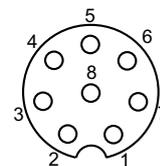
- 1 = BN
- 2 = WH
- 3 = BU
- 4 = BK

**M12 5 pin**



- 1 = BN
- 2 = WH
- 3 = BU
- 4 = BK
- 5 = GY

**M12 8 pin**



- 1 = WH
- 2 = BN
- 3 = GN
- 4 = YE
- 5 = GY
- 6 = PK
- 7 = BU
- 8 = RD

ESG 34S  
ESW 33S

ES 14  
ES 18  
ES 21C  
ES 22C  
ESG 34A  
ESW 33A

ES 14C  
ES 18C  
ESG 34C  
ESW 33C

ESG 34F  
ESW 33F

**Test unit for sensors**

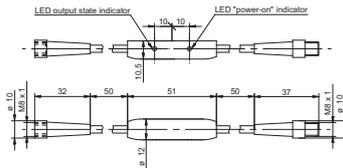


This sensor test unit has been designed primarily to test and demonstrate NPN and/or PNP sensors. Sensor connection is simple using the three spring loaded terminals. Red LED indicates PNP output. Green LED indicates NPN output.

**order reference**

10115437 Test unit for sensors

**PNP to NPN Converter M8**

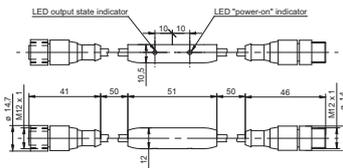


- PNP to NPN Converter
- For frequencies up to max. 5 kHz
- For connector M8 - 3 pins

**order reference**

10161959 Converter PNP/NPN - M8 x 1

**PNP to NPN Converter M12**

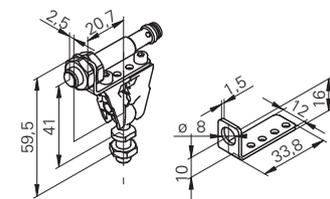


- PNP to NPN Converter
- For frequencies up to max. 5 kHz
- For connector M12 - 3 pins

**order reference**

10161958 Converter PNP/NPN - M12 x 1

**Sensofix-Mounting kit for sensors series 08**



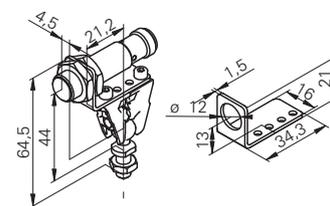
- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M8 housing

**order reference**

10151719 Sensofix series 08

**Sensofix-Mounting kit for sensors series 12 round**



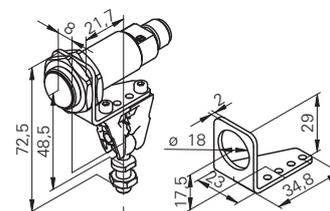
- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M12 housing

**order reference**

10151720 Sensofix series 12 round

**Sensofix-Mounting kit for sensors series 18 round**



- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M18 housing

**order reference**

10151658 Sensofix series 18