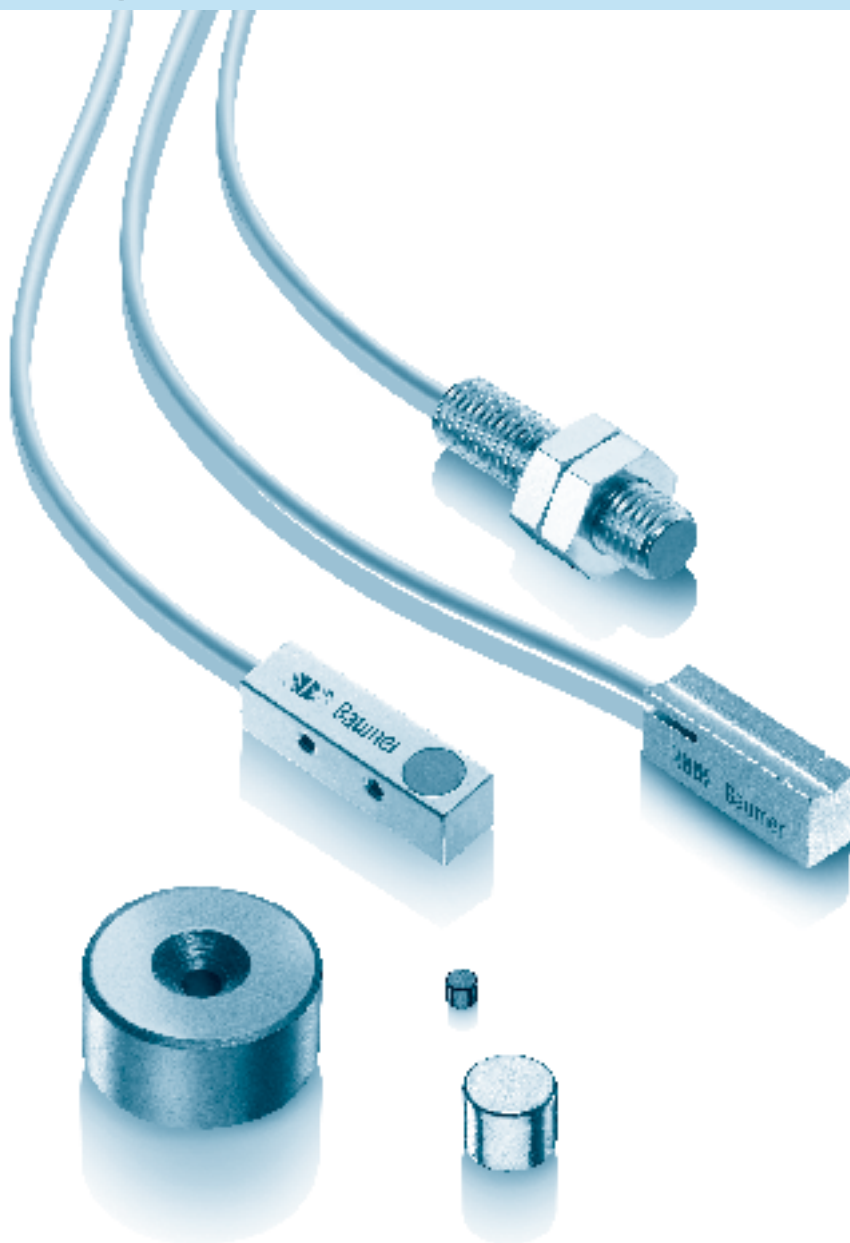




Magnetic proximity switches



Overview

Functional principle and installation

Cylindrical designs




Rectangular designs

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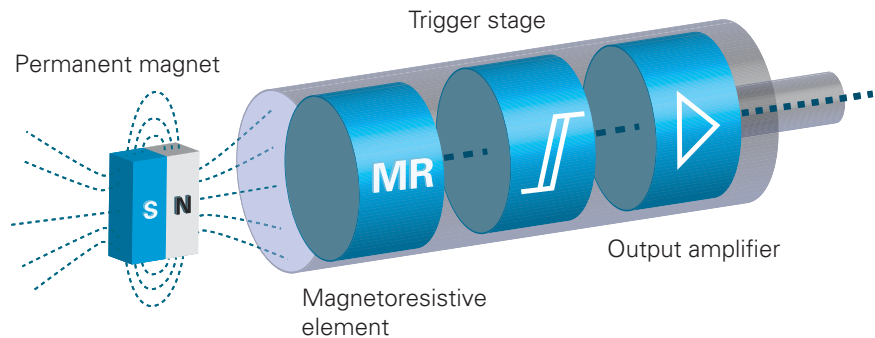
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product family	MFRM 08	MFFM 08	MFVM 08
			
mounting type	shielded	shielded	shielded
dimension	8 mm	8 mm	8 mm
housing length	30 mm	30 mm	30 mm
NPN	■	■	■
PNP	■	■	■
cable PUR, 2 m	■	■	■
housing material	stainless steel	brass nickel plated	aluminum
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Sensor

Magneto-resistive proximity switches detect the magnetic fields of permanent magnets. Depending on size and material of the deployed permanent magnet, the sensors provide different switching distance capabilities.

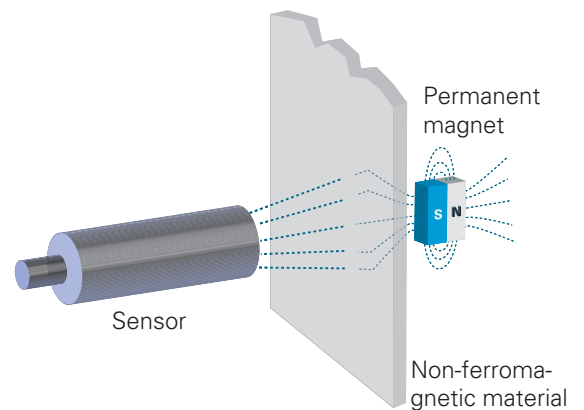


Functional principle

The magnetoresistive element is made of a specialized material which will only respond to magnetic fields, such as generated by a permanent magnet, by outputting a digital signal. Capable of detecting even very weak magnetic fields, the material is about ten times more sensitive than a Hall element and thus allows for substantially extended sensing distances. Magneto-resistive proximity switches are omnipolar and therefore capable of detecting both north and south pole of the permanent magnet.

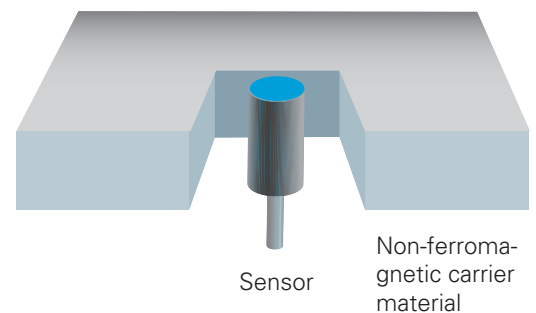
Detection through tank walls

The sensor can detect magnetic fields through non-ferromagnetic materials. This is particularly useful if sensor or permanent magnet require protected or isolated mounting, or when being separated from each other by a tank wall.



Installation

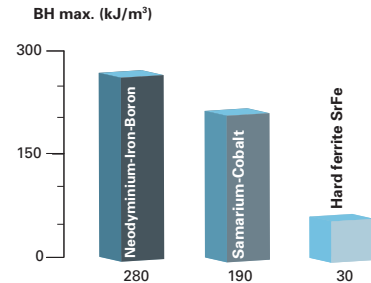
Shielded (flush) installation
Magneto-resistive proximity switches are conceived for shielded (flush) installation, meaning the sensing face being plain to the carrier surface. The carrier material must be non-ferromagnetic. Shielded installation in a ferromagnetic material will reduce the sensing distance by up to 25%, unshielded or non-flush installation (sensing face protruding by its diameter from the ferromagnetic carrier surface) will enhance the sensing distance by up to 25%.





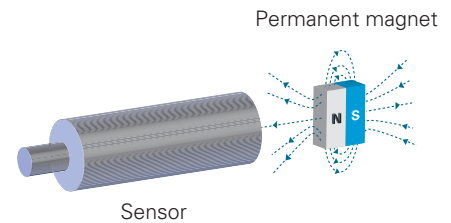
Permanent magnet Alloy

The switching distance of a magnetic sensor relates to the magnet deployed. Not only size but also alloy of the permanent magnet play a decisive role. The higher the energy product of the magnetic alloy in kJm^3 , the stronger the magnetic field and hence the more extended the switching distance.



Permanent magnet Alignment

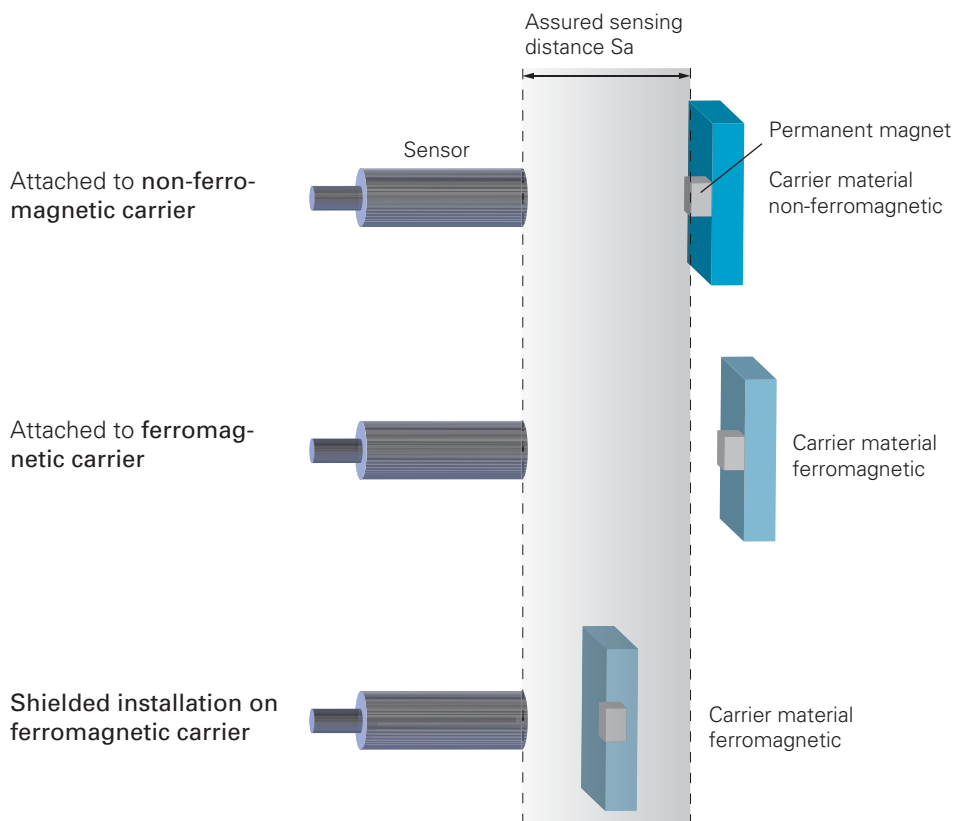
By principle, magnetoresistive proximity switches are polarity neutral, i.e. the sensor will detect both north and southpole of the permanent magnet. It is recommended to always attach the permanent magnet with one pole in alignment to the sensor to ensure reliable detection.



Permanent magnet Mounting

The way a permanent magnet is mounted plays a crucial role in the sensing distance. When attached to a non-ferromagnetic carrier, the influence on the assured sensing distance will be nearly not noticeable. However, a permanent magnet mounted unshielded on a ferromagnetic carrier will enhance the switching distance by up to 25%. Attached flush or shielded to a ferromagnetic carrier, the switching distance will be reduced by up to 40% (always related to the assured sensing distance).

If the permanent magnet is to be screwed on, always use non-ferromagnetic screws (e.g. stainless steel).





Cylindrical M8

- Detects permanent magnets on long distances
- Polarity independent
- High switching frequencies



general data

type	magneto-resistive
assured sensing distance Sa	60 mm
output indicator	LED red
mounting type	shielded
nominal operation point	2,5 mT
hysteresis	2 ... 20 % of Sr
repeat accuracy	< 1 % of Sr

electrical data

switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max.	20 mA
voltage drop Vd	< 3 VDC
output current	< 150 mA
short circuit protection	yes
reverse polarity protection	yes, Vs to GND

mechanical data

material (sensing face)	PBT
type	cylindrical threaded
dimension	8 mm
housing material	stainless steel
housing length	30 mm
connection types	cable PUR, 2 m

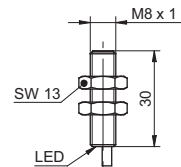
ambient conditions

operating temperature	-25 ... +75 °C
protection class	IP 67

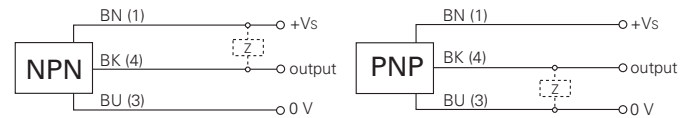
remarks

assured sensing distance in conjunction with permanent magnet 11053959 (available as an accessory)

dimension drawing



connection diagrams



mounting accessories

10151719	Sensofix series 08
11052882	Permanent magnet MMRS AA02X02
11052883	Permanent magnet MMRN AA06X05
11053959	Permanent magnet MMRH BA31X15

for details: see accessories section

order reference

order reference	output circuit
MFRM 08N1524/PL	NPN make function (NO)
MFRM 08N3524/PL	NPN break function (NC)
MFRM 08P1524/PL	PNP make function (NO)
MFRM 08P3524/PL	PNP break function (NC)



Rectangular

- Detects permanent magnets on long distances
- Polarity independent
- High switching frequencies

general data

type	magneto-resistive
assured sensing distance Sa	60 mm
output indicator	LED red
mounting type	shielded
nominal operation point	2,5 mT
hysteresis	2 ... 20 % of Sr
repeat accuracy	< 1 % of Sr

electrical data

switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max.	20 mA
voltage drop Vd	< 3 VDC
output current	< 150 mA
short circuit protection	yes
reverse polarity protection	yes, Vs to GND

mechanical data

material (sensing face)	PBT
type	rectangular
dimension	8 mm
housing material	brass nickel plated
housing length	30 mm
connection types	cable PUR, 2 m

ambient conditions

operating temperature	-25 ... +75 °C
protection class	IP 67

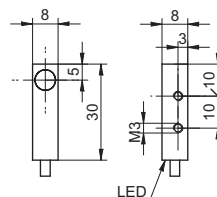
remarks

assured sensing distance in conjunction with permanent magnet 11053959 (available as an accessory)

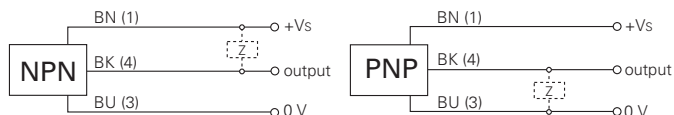
order reference	output circuit
MFFM 08N1424/PL	NPN make function (NO)
MFFM 08N3424/PL	NPN break function (NC)
MFFM 08P1424/PL	PNP make function (NO)
MFFM 08P3424/PL	PNP break function (NC)



dimension drawing



connection diagrams



mounting accessories

11052882	Permanent magnet MMRS AA02X02
11052883	Permanent magnet MMRN AA06X05
11053959	Permanent magnet MMRH BA31X15

for details: see accessories section



Rectangular, with V-slot

- Fully enclosed full metal housing
- Housing for mounting directly on cylinders
- Detects permanent magnets on long distances



general data

type	magneto-resistive
version	full metal
assured sensing distance Sa	60 mm
output indicator	LED red
mounting type	shielded
nominal operation point	2,5 mT
hysteresis	2 ... 20 % of Sr
repeat accuracy	< 1 % of Sr

electrical data

switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max.	20 mA
voltage drop Vd	< 3 VDC
output current	< 150 mA
short circuit protection	yes
reverse polarity protection	yes, Vs to GND

mechanical data

type	rectangular
dimension	8 mm
housing material	aluminum
housing length	30 mm
connection types	cable PUR, 2 m

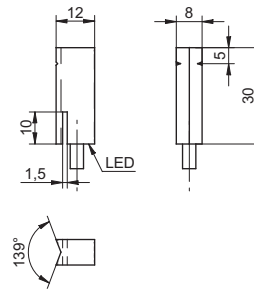
ambient conditions

operating temperature	-25 ... +75 °C
protection class	IP 67

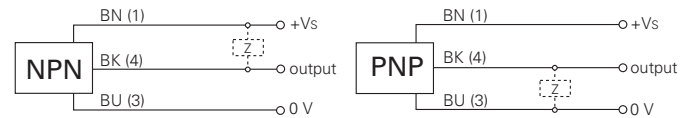
remarks

assured sensing distance in conjunction with permanent magnet 11053959 (available as an accessory)

dimension drawing



connection diagrams



mounting accessories

11052882	Permanent magnet MMRS AA02X02
11052883	Permanent magnet MMRN AA06X05
11053959	Permanent magnet MMRH BA31X15

for details: see accessories section

order reference	output circuit
MFVM 08N1424/PL	NPN make function (NO)
MFVM 08N3424/PL	NPN break function (NC)
MFVM 08P1424/PL	PNP make function (NO)
MFVM 08P3424/PL	PNP break function (NC)

