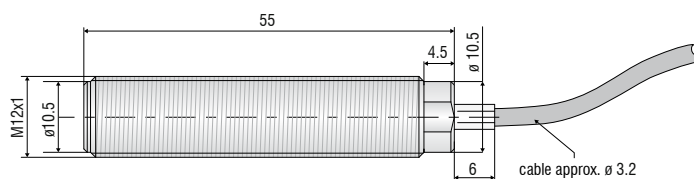




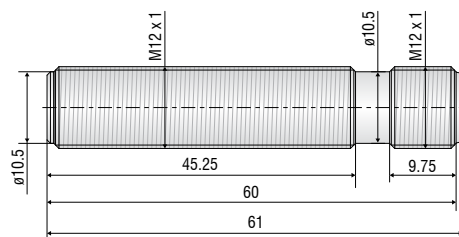
Magneto-inductive M12 sensors are industrial-grade models for restricted installation spaces. Designed for use in harsh environments and high temperatures up to 120 °C, these sensors are available either with connector or integrated cable.

MDS-M12 sensors are ideally suitable for applications in demanding, industrial environments.

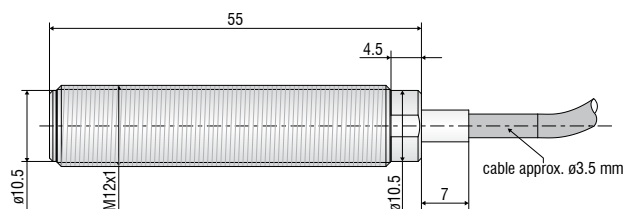
MDS-45-M12-CA



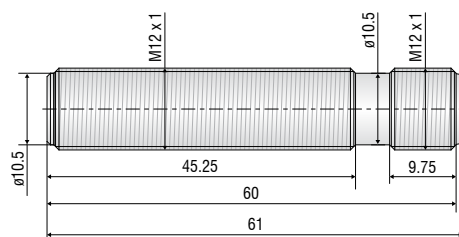
MDS-45-M12-SA



MDS-35-M12-CA-HT



MDS-35-M12-SA-HT



Model	MDS-45-M12-CA	MDS-45-M12-SA	MDS-35-M12-CA-HT	MDS-35-M12-SA-HT
Measuring range ¹⁾	45 mm (for other measuring ranges see page 18)		35 mm (for other measuring ranges see page 18)	
Magnet included in delivery	MB45		MB35HT	
Offset distance ¹⁾	5 mm		1 mm	
Linearity ^{1) 2)}	< ± 3 % FSO		< ± 5 % FSO	
Temperature stability	< ± 250 ppm FSO/K		< ± 500 ppm FSO/K	
Resolution ³⁾	< 0.05% FSO		< 0.05% FSO	
Frequency response (-3 dB)	3000 Hz		5000 Hz	
Electrical connection	integrated cable 3 m	M12x1 plug, 4 poles	integrated cable 3 m	M12x1 plug, 4 poles
Output	2 V ± 0.3 V ... 9.6 V ± 0.4 V		2 V ± 0.4 V ... 9.6 V ± 0.4 V	
Storage temperature	-20 ... +80 °C		-20 ... +120 °C	
Operating temperature	-20 ... +80 °C		-20 ... +120 °C	
Supply voltage	11.5 ... 30 VDC			
Current consumption	max. 20 mA		max. 15 mA	
Protection class	IP67 ⁴⁾ ; higher protection class available on request		IP68	IP65 ⁴⁾
Pressure resistance (static)	100 bar (front)		5 bar	5 bar (front)
Vibration	DIN EN 60068-2-6 (20 g, 58 ... 500 Hz)			
Shock	DIN EN 60068-2-29 (40 g, 6 ms, 1000 cycles) DIN EN 60068-2-27 (100 g, 6 ms, 3 cycles)			
EMC	EN 61326-1; EN 61326-2-3			
Housing material	stainless steel			
Weight	approx. 60 g	approx. 20 g	approx. 25 g	approx. 20 g

FSO = full scale output

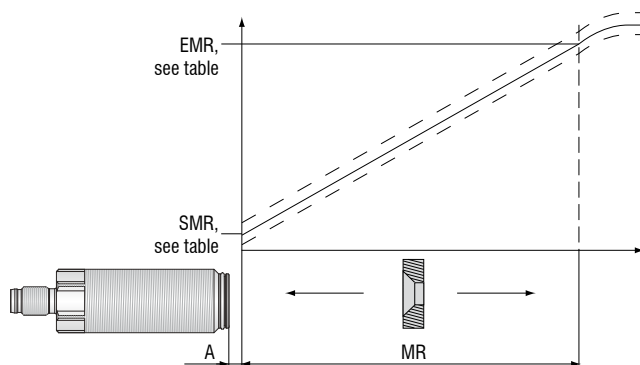
¹⁾ Measuring range changes by using other magnets (see catalog p.18); external magnetic fields and/or ferromagnetic material in the measuring range of the sensor system affect the sensor characteristic line and the technical data.

²⁾ Deviation to the regression curve according to the method of least squares

³⁾ Peak-Peak; external first-order low pass; frequency response 5 kHz

⁴⁾ Plugs only in mated and locked condition

Sensor signal



MDS	EMR	SMR	Offset distance A
-45-M12-CA	9.6 V ± 0.4 V	2 V ± 0.3 V	5 mm
-45-M12-SA	9.6 V ± 0.4 V	2 V ± 0.3 V	5 mm
-35-M12-CA-HT	9.6 V ± 0.4 V	2 V ± 0.4 V	1 mm
-35-M12-SA-HT	9.6 V ± 0.4 V	2 V ± 0.4 V	1 mm

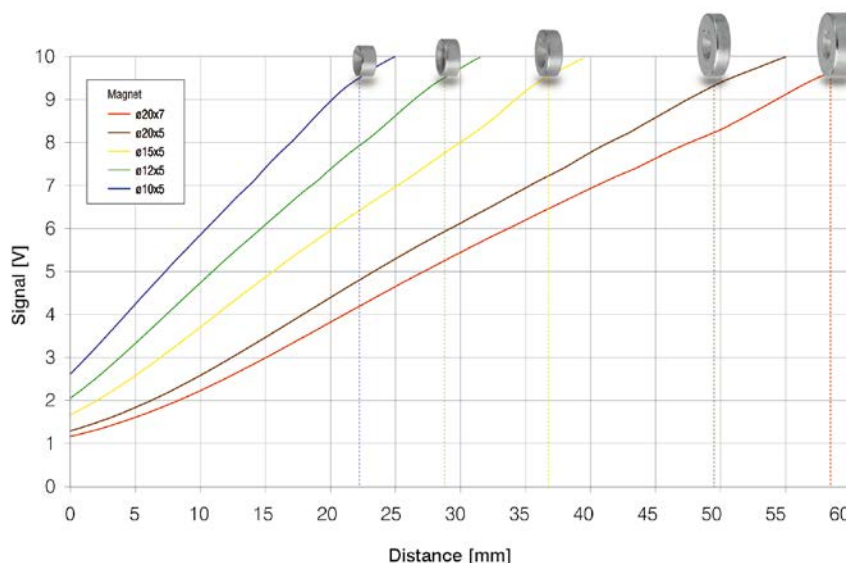
Magnets

The magnets are critical components of the magneto-inductive measuring principle.

Many shapes and materials are available. Application, installation space, temperature and cost factors must be considered. A decisive advantage is that the measuring range of the sensor can be defined by selecting the appropriate magnet. Adapting or set up of the sensor are unnecessary.

Therefore, measuring ranges of 20 to 55mm can be achieved using only one sensor.

Simple change of the measuring range by exchanging the magnet (MDS-45)

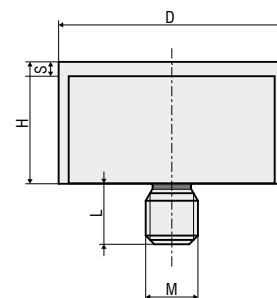
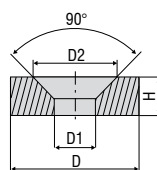


					Standard magnets					Standard magnets in pressure housing					
					Dimensions [mm]					Dimensions [mm]					
Designation	Measuring range MDS-45 [mm]	Measuring range MDS-35 HT [mm]	Measuring range MDS-40-MK [mm]	T _{max} [°C]	Material	d	D1	D2	H	Material	d	H	L	M	S
MB20	20	14	-	150	NeFeB, nickel-plated	10	4.3	8.6	5	1.3964 Nitronic 50HS	16	9.5	5	M4	2
MB27	27	18	~ 23	150	NeFeB, nickel-plated	12	4.3	8.6	5	1.3964 Nitronic 50HS	16	9.5	5	M4	2
MB35	35	24	~ 33	150	NeFeB, nickel-plated	15	4.3	8.6	5	1.3964 Nitronic 50HS	26	14	7	M6	3.5
MB45	45	32	~ 45	150	NeFeB, nickel-plated	20	4	8	5	1.3964 Nitronic 50HS	26	14	7	M6	3.5
MB55	55	38	~ 50	150	NeFeB, nickel-plated	20	4	8	7	1.3964 Nitronic 50HS	26	14	7	M6	3.5
RL21	33	22	~ 30	200	SrFe, hard ferrite	20	4.3	-	10	-	-	-	-	-	-
RL20	25	12	~ 25	200	SrFe, hard ferrite	20	4.3	-	6.5	-	-	-	-	-	-
MB35HT	52	35	-	250	Sm2Co5	22	5.2	10.4	6	-	-	-	-	-	-

Magnets at higher temperatures

Permanent magnets present reversible and irreversible temperature dependence. With low temperatures, the magnetic field changes reversibly with the temperature. In the first approximation, this dependence is linear. Irreversible attenuations of the magnetic field are caused by rising temperatures. The main part of these attenuations arises when the temperature is reached for the first time. Therefore, it is recommended that when using magnets in high temperatures, they are heated up only once to the operating temperature or to around 20 °C above the operating temperature, provided that the respective magnet specification allows this.

Please refer to Micro-Epsilon TechNote T016 for further details.



A pressure housing is a method of protecting a magnet from high pressure or aggressive media. This is made from robust stainless steel and resists pressures up to 400 bar.