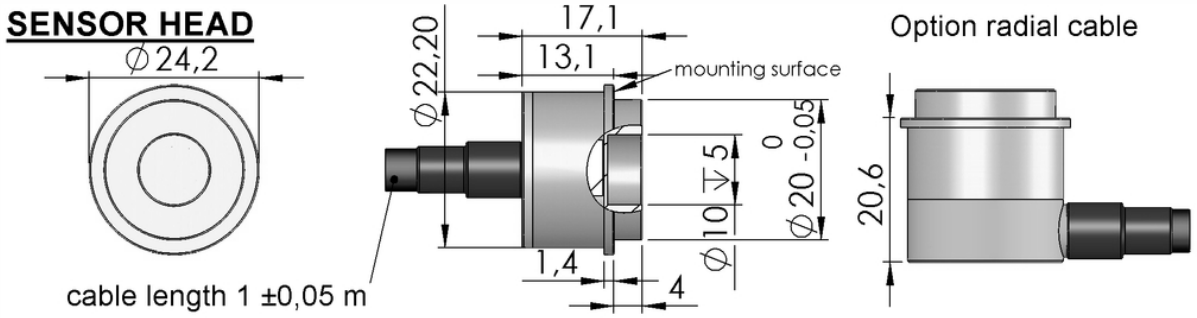
Series MAB22AH / Hall Effect Absolute Encoder with Hollow Shaft

- Angle range 360° (special angles on request)
- 12 Bit resolution
- Wear- and frictionless
- Fine adjustment by a free rotatable clamp ring
- Supply voltage: 5V, 9-30V
- Analog output: 0-5V ratiometric, 0-10V, 4-20mA, 0-20mA, PWM
- Various magnet holder as accessory

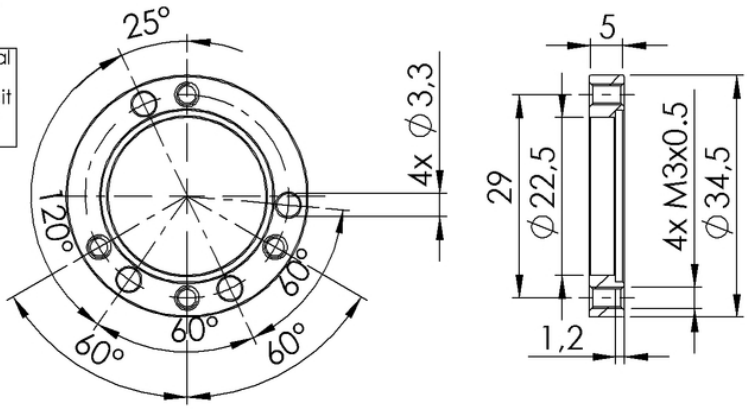
The MAB22AH is suited for applications in rough environs (IP67). It is space-saving and used for applications with a high demand on lifetime and low torque.

Drawing



MOUNTING RING (included in delivery)

Notice concerning the option radial cable. The mounting ring is not removable. Please mention it explicit if mounting without mounting ring is required.



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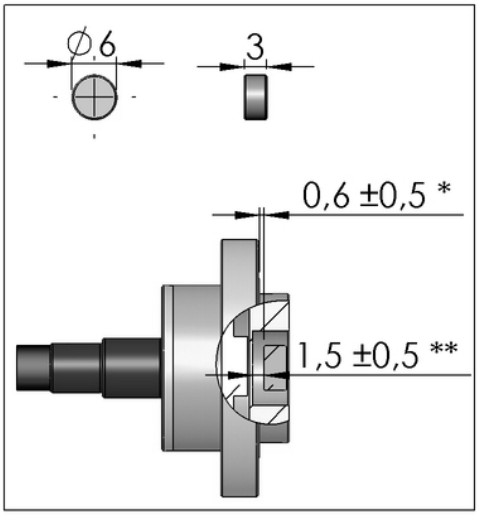
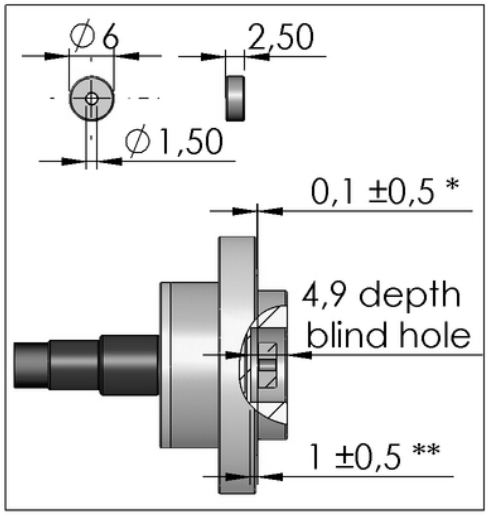
Magnet Mounting

MAGNET
(included in delivery)

standard sensor



redudant sensor



Influence of an excentric position of the magnet relative to the housing to the signal of the sensor

Excentricity	Max. variance / 360°
<0,5 mm	<0,6°
<0,75 mm	<1,2°

*..related to mounting surface

**..related to bottom of blind hole

If the shaft is magnetical, it has to be a distance between magnet and shaft of ≥1mm.

Cable: UL/cUL-LIYCY Style 2464/1061

	standard electronic		**redundant electronic**	
Length	1 m		1 m	
Outer diameter	4.4 mm		5.2 mm	
Lead diameter	1.0 mm		1.0 mm	
Cross section	3 x AWG26		6 x AWG26	
Colour assignment	VSUP	red	VSUP1	red
	OPUT	brown	OUT1	brown
	GND	black	GND1	black
			VSUP2	yellow
			OUT2	green
			GND2	orange

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Series MAB22AH / Hall Effect Absolute Encoder with Hollow Shaft

Electrical Data

Electrical anlge	360° (other angles on request)
Independent linearity tolerance	±0,3 %
Resolution	4096 steps (12 Bit)
Update rate	1,0 ms Option High Speed 0,2 ms
Output signal	0-10 V, 0-5 V ratiometric
Supply voltage	15-30 VDC, 5 VDC ±10%
Supply current (no load)	<20 mA
Supply current redundant type (no load)	<40 mA
Signal load	>5k Ohm

Mechanical Data

maximum mechanical rotation speed	10.000 rpm

Other Data

Protection class	IP67
Operating temperature	-30 ... +80°C
Storage temperature	-40 ... +80°C
Housing material	chromed aluminium
Magnet holder material	brass
Weigth	approx. 35 g

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Series MAB22AH / Hall Effect Absolute Encoder with Hollow Shaft

Order Description Sensor including mounting ring and magnet

Series MAB22AH with single electronics	**MAB22AH**					
Update Rate / Supply voltage / Output signal						
High speed / 5 V / 0...5 V		12HS 0505 (*)				
Hight speed / 24 V (9..30 V) / 0...5 V		12HS 2405 (*)				
High speed / 24 V (15..30 V) / 0...10 V		**12HS 2410**				
Standard speed / 24 V (9..30 V) / 4...20 mA		**12 2442**				
Standard speed / 24 V (9..30 V) / 0...20 mA		12 2420 (*)				
Counterclockwise rising signal			CCW360 (*)			
Other electrical effective angle			C(C)Wxxx (*)			
Cable output						
Axial - 1 m					-	
Axial [m]					CVxx(*)	
Radial [m]					CVRxx(*)	
Series MAB22AH with redundant electronics	**MAB22AH**	**X**				
Update Rate / Supply voltage / Output signal						
High Speed / 5 V / 0...5 V			12HS 0505 (*)			
Hight Speed / 24 V (9..30 V) / 0...5 V			12HS DC05 (*)			
High Speed / 24 V (15..30 V) / 0...10 V			**12 2410**			
Counterclockwise rising signal at both channels			CCW360/CCW360 (*)			
Other electrical effective angle			C(C)Wxxx/C(C)Wxxx (*)			
Cable output						
Axial - 1 m						-
Axial [m]						CVxx(*)
Radial [m]						CVRxx(*)

"bold print = standard option"
short-term stock types can be found on: http://www.megatron.de/en/stocklists/angle-sensors/lagerliste.html
(*) = on request available for projects

23.02.2015

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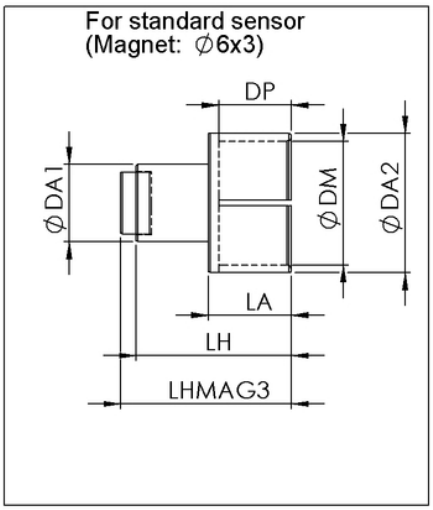
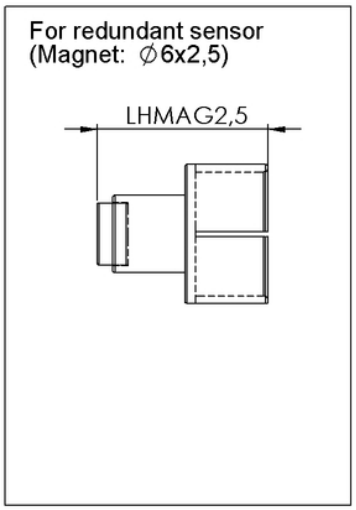
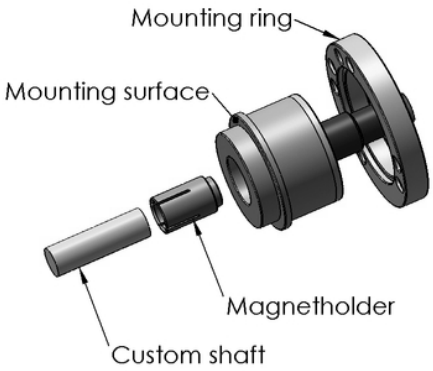
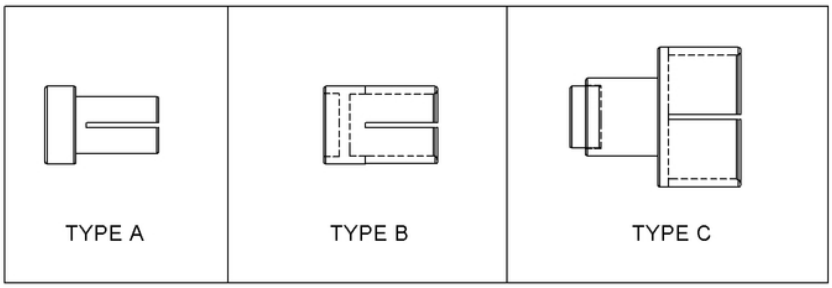
Magnet Holder (Accessory: please order separately)

ACCESSORY PUSH-ON-MAGNETHOLDER









TYPE	DM	DA1	DA2	LH	LA	DP	LHMAG3 analog standard	LHMAG 2,5 analog redundant	shaft diameter =DM (h9)
A	3	7,5	4,5	11	---	8,5	12,5	12	3 +0/-0,030
	3,175	7,5	4,5	11	---	8,5	12,5	12	3,175 +0/-0,030
	4	7,5	5,5	11	---	8,5	12,5	12	4 +0/-0,030
B	6	7,5	7,5	11	---	8,5	12,5	12	6 +0/-0,030
	6,35	7,5	7,5	11	---	8,5	12,5	12	6,35 +0/-0,036
	8	9,5	9,5	11	---	8,5	12,5	12	8 +0/-0,036
	10	11,5	11,5	11	---	8,5	12,5	12	10 +0/-0,036
C	12	7,5	13,5	15	8	7	16,5	12	12 +0/-0,043

If the shaft is magnetical, it has to be a distance between magnet and shaft of ≥1mm.

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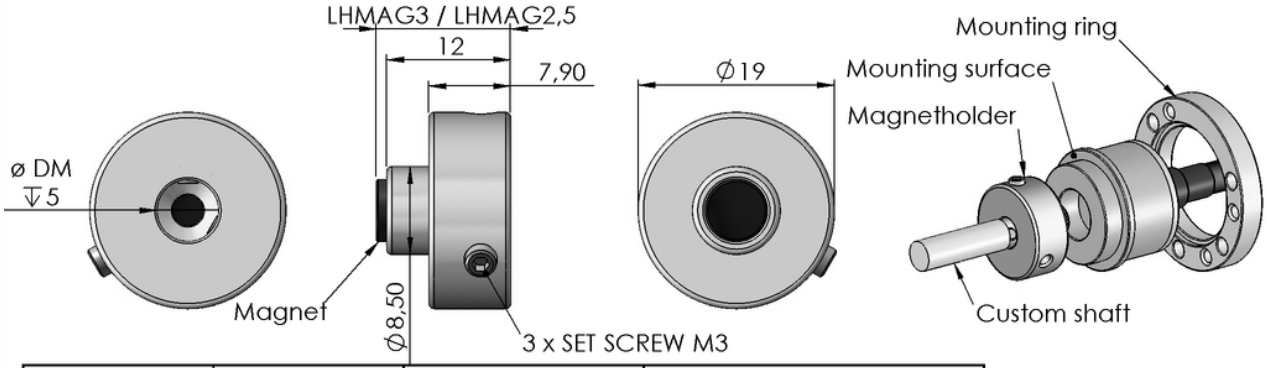
Magnet Holder (Accessory: please order separately)

ACCESSORY MAGNETHOLDER WITH SET SCREWS



DM	LHMAG3 standard	LHMAG2,5 redundant	shaft diameter = DM (h9)
4	13	12,5	3 +0/-0,030
6	13	12,5	4 +0/-0,030
6,35	13	12,5	5 +0/-0,036
8	13	12,5	6 +0/-0,036

If the shaft is magnetical, it has to be a distance between magnet and shaft of ≥1mm.

Order Description Magnet Holder (not included in delivery)

Type	**Shaft Diameter**	**Magnet**	Remark
Push-On	DM3 / 3.175 / 4 / 6 /6.35 / 8 / 10 / 12	MAG6x3	Standard Electronic
Push-On	DM3 / 3.175 / 4 / 6 /6.35 / 8 / 10 / 12	MAG6x2,5X1,5	Redundant
Set-Screw	DM3 / 3.175 / 4 / 6 /6.35 / 8 / 10 / 12	MAG6x3	Standard Electronic
Set-Screw	DM3 / 3.175 / 4 / 6 /6.35 / 8 / 10 / 12	MAG6x2,5x1,5	Redundant

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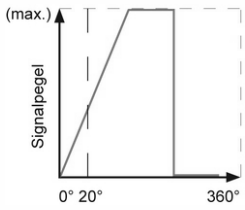
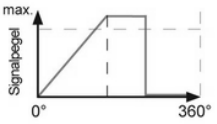
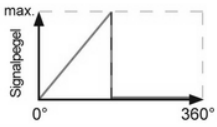
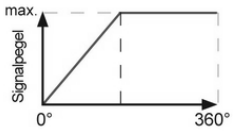
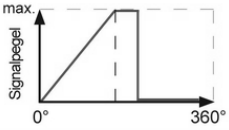
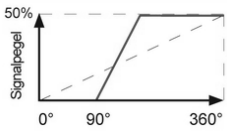
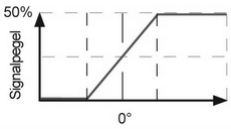
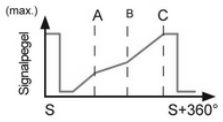
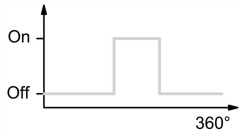
Electrical Options

Modified effective electrical angle Electrical zeropoint is at the begining of the signal rise without reference of housing and shaft. The electrical measuring range can be programmed from 0-20° to 0-360°. The mechanical angle is always larger or equal to the electrical angle. In the electrical basic type with stop, the zeropoint is always at CCW position. For non-effective electrical travel the options EA1a - EA1d are selectable. If it is not specified by the customer, the signal level is programmed according EA1A. On request it is also possible to set the zeropoint at CW position.	CWxxx / CCWxxx	
Electrically non effective angle - Delta 1/2 If the electrical effective angle is programmed below 360°, the remaining electrically non effective angle is divided in two equal parts: High level & Low level (Delta ½).	EA1a	
Electrically non effective angle - Low-Level At electrically effective angle below 360°, after reaching the maximum the signal level falls to low level and remains at this.	EA1b	
Electrically non effective angle - High-Level If the electrically effective angle is programmed below 360°, the signal level remains high after reaching the full level.	EA1C	
Electrically non effective angle - Variable Level If the electrically effective angle is programmed below 360°, the remaining electrically non effective angle can be divided into high and low level in any ratio according to customer request.	EA1d	
Zero point positioning The mechanical zero point is established when the shaft marking is aligned with the marking on the sensor housing. The electrical zero point can be alligned to the mechanical zero point. Nevertheless the zero point can be programmed at any offset according to customer requirement. Offset 0° = Standard option N	EA2	
Center position The center of the effective electrical angle can be aligned with the mechanical zeropoint. The centre position gives equal effective electrical angles on both sides with reference to the shaft position against marking on the housing. (Example: For 120°, centre positioning will give 0° at center , and angle 60° CW and CCW). The center point can be programmed at any offset according to customer requirement	EA3	
Multipoint programming This option allows an output characteristic which consists of 3 to 6 rising or horizontal linear segments. The minimum and maximum signal level can be defined within the total electrical angle. The first and last linear segment (minimun/maximum) is always horizontal. The first segment can start at the zeropoint or at a specified offset, and rise to maximum. Within maximum and minimum position, 1 to 3 calibration points can be set according to customer request	EA4	
Software switching function Possible for housing Ø bigger than 28 Switching funktion can be assigned to any angular position by one potential free relay output (open/close, max. Voltage 60V, max. current 0,2A). For housing Ø bigger than 36 e.g. MAB36, a second switching function is also possible. For each switching function the rising and falling edge can be configurated to any angular position. Example: MAB22A.... EA5 On: CW40° Off: CW85° MAB36A.... EA5 On1: CW40° Off1: CW85° On2: CW55° Off2: CW70°	EA5	

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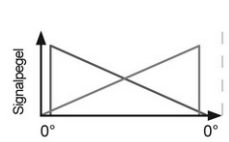
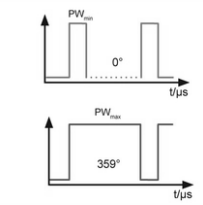
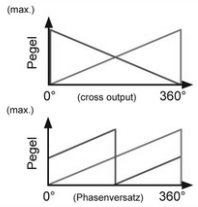
Rotational direction The standard direction of rotation is Clockwise (CW). It is also possible with this option to change the direction from Clockwise(CW) to Counterclockwise (CCW).	CCW	
PWM - Pulse width modulation For housing Ø bigger than 22 e.g. MAB22 possible PWM provides a constant carrier frequency which defines high to how ratio. The ratio between high and low responds to the signal characteristics. It is in a fixed relation to the angle. The Standard electrical Options EA1 -EA4 can also be integrated in this version. Generally for further signal processing, no A/D converter is required because many microcontrollers already have PWM input. Basic type: Frequency 244 Hz - Duty cycle min. = 10% = approx. 0,4 ms - Duty cycle max. = 90% = approx. 3,6 ms - Duty cycle increases with clockwise rotation.	PWM	
With this option custom specific PWM signals can be provided. You can choose the Frequency (100 Hz...1 kHz) and the minimum and maximum duty cycle.	EA7	
2-channel-output This is made up of a hall sensor Chip consisting of 2 galvanically insulated sensing elements. One magnet provides magnetic field simultaneously for both elements. If both elements are programmed identically, redundancy is provided. Channel 2 can also be programmed completeley different than channel 1.	MAB...X	

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