

Series MAB22H / Hall Effect Absolute Encoder

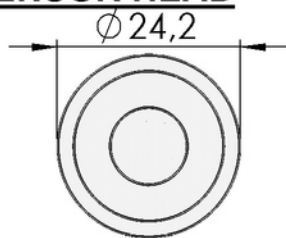
- Microcontroller Interface (SER)
- Synchronous Serial Interface (SSI)
- Serial Peripheral Interface (SPI)
- Angle range 360°
- Protection class IP67
- Wear- and frictionless by separate magnet holder
- Fine adjustment by a free rotatable clamp ring

The MAB22H is suited for applications in rough environs. It's space-saving and used for applications with a high demand on lifetime.

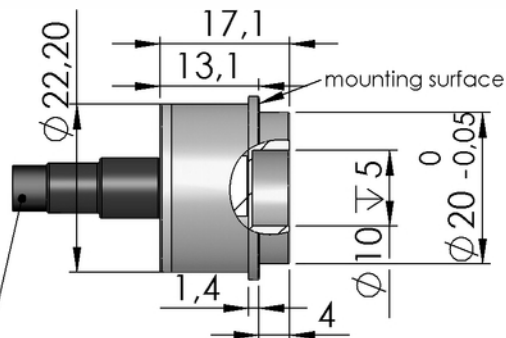


Drawing

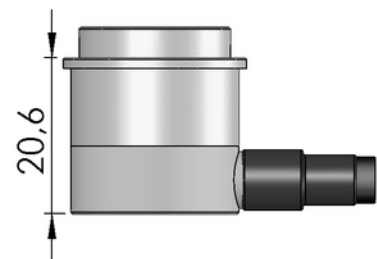
SENSOR HEAD



cable length $1 \pm 0,05$ m

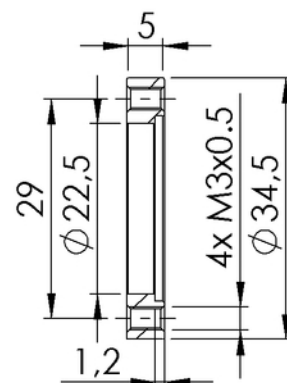
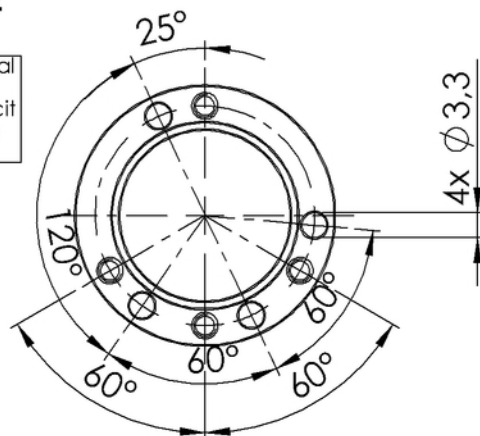


Option radial cable



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.



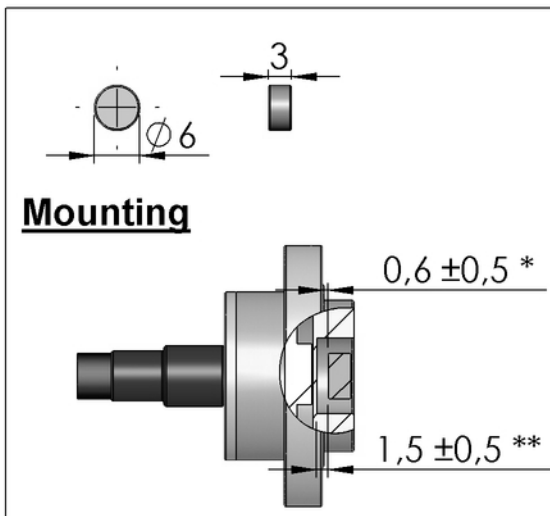
Series MAB22H / Hall Effect Absolute Encoder

Interface	black	red	green	orange	yellow	brown	blue	violet	grey	white
SER	GND	VSUP	CS	not connected	CLK	DO	-	-	-	-
SSI	GND	VSUP	DATA -	CLK -	DATA +	CLK +	-	-	-	-
SPI	GND	VSUP	not connected	CLK	SS	DATA	-	-	-	-
SPI redundant	GND 1	VSUP 1	DATA 1	CLK 1	SS 1	DATA 2	CLK 2	SS 2	GND 2	VSUP 2

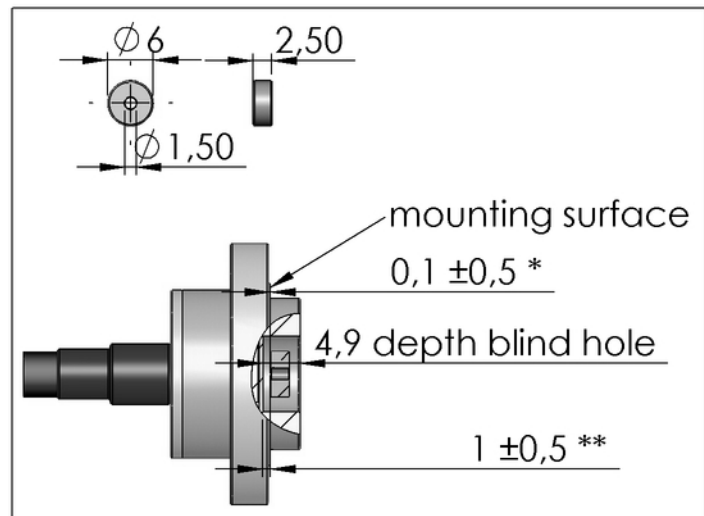
MAGNET **(included in delivery)**

standard sensor

redundant sensor



Mounting



* ..related to mounting surface

** ..related to bottom of blind hole

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

Electrical Data	SER Interface	SPI Interface	SSI Interface
Electrical angle	360°		
Independent linearity tolerance	$\pm 0,2$ %		
Resolution	1024 Steps (10 Bit) 4096 Steps (12 Bit)	16384 Steps (14 Bit)	4096 Steps (12 Bit)
Update rate	0,38 ms / 0,1 ms (HS)	2,5 ms / 0,6 ms (HS)	0,1 ms
Initial response	< 50 ms	< 16 ms	
Supply voltage	3,3 VDC ± 10 % 5 VDC ± 10 %	5 VDC ± 10 %	5 VDC ± 10 % 15-30 VDC
Supply current (no load)	< 20 mA	< 0 mA / < 20 mA (HS)	< 20 mA

Mechanical data

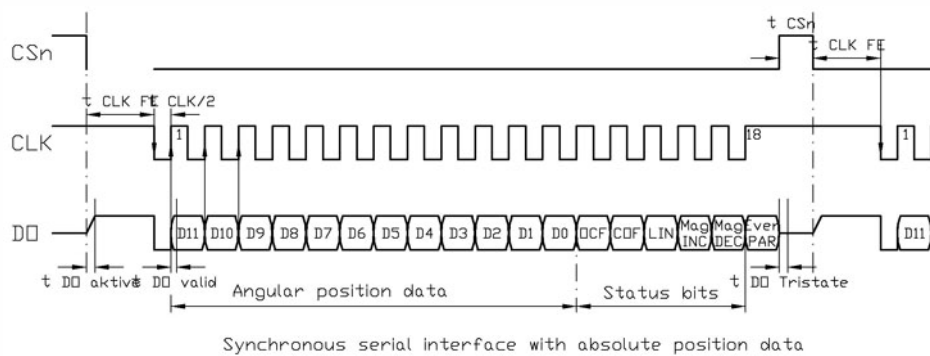
Maximum rotational speed	10.000 rpm
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Other Data

Protection class	IP67
Operating temperature	-30 ... +80 °C
Storage temperature	-40 ... +80 °C
Bearing	none
Housing material	chromed aluminium
Magent holder material	brass
Weighth	approx. 35 g

Timing Diagramm SER-Bus



Falling edge of CS triggers a measurement value

Signal timing:

$t_{CSn} > 500\text{ns}$

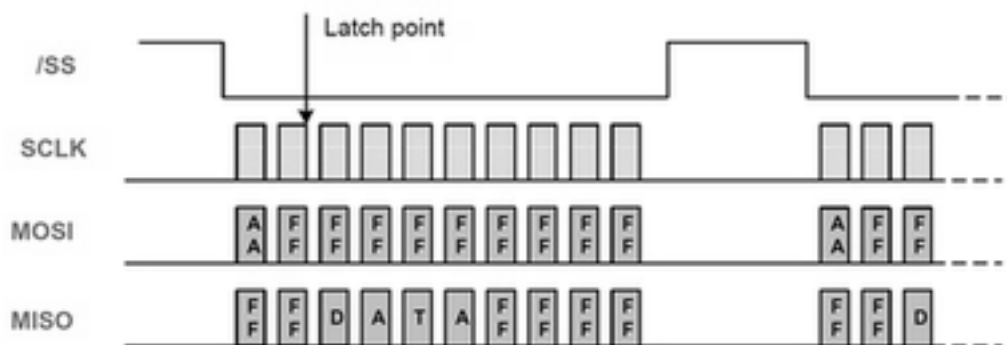
$t_{CLKFE} > 500\text{ns}$

$CLK < 1\text{MHz}$

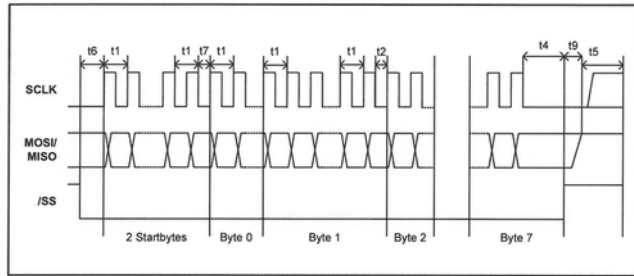
Remark: Above signal timing apply to 10 Bit and 12 Bit version.

Please find the exact specifications of the output signals in the datasheets and applications notes (AS5040 and AS5045) of Austria Microsystems. www.austriamicrosystems.com

Timing SPI- Bus



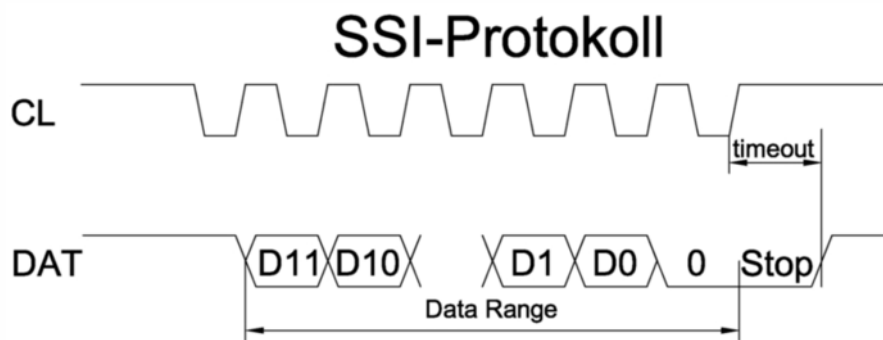
Timing SPI- Bus



- t1 > 6,9 μ s / 2,3 μ s (HS) = Minimum clock period for any bits within a byte
- t2 > 37,5 μ s / 12,5 μ s (HS) = Minimum time between any other byte
- t4 > 6,9 μ s / 2,3 μ s (HS) = Time between last clock and /SS=high = chip de-selection
- t5 > 1500 μ s / 300 μ s (HS) = Minimum /SS=high time where it's guaranteed that a frame resynchronisation will be started. t6 > 6,9 μ s / 2,3 μ s (HS) = Minimum time between /SS=low and the first clock edge
- t7 > 45 μ s / 15 μ s (HS) Minimum time between the StartByte and the Byte 0
- t9 < 1 μ s = Maximum time between /SS=high and MISO Bus High-Impedance

Please find the exact specifications of the output signals in the datasheets and application notes of Melexis (MLX90316): www.melexis.com

Timing SSI- Interface



Please find the exact specifications of the output signals in the datasheets and application notes of iC-Haus (iC-MH): www.ichaus.de

Series MAB22H / Hall Effect Absolute Encoder

Order description and Options

Series MAB22H	MAB22H					
<u>Resolution / Supply voltage / Output signal</u>						
12 bit High Speed / 3,3 V / SER				12HS 3,3 SER (*)		
12 bit High Speed / 5 V / SER				12HS 5 SER (*)		
14 bit High Speed / 5 V / SPI				14HS 5 SPI (*)		
redundant 14 bit / 5 V / SPI		X (*)		14HS 5 SPI (*)		
12 bit / 5 V / SSI				12 5 SSI (*)		
12 bit / 24 V / SSI				12 24 SSI		
<u>Counter-clockwise rising signal</u>						
					CCW360 (*)	
<u>Other electrical effective angle</u>						
					C(C)Wxxx (*)	
<u>Cable output</u>						
Axial - 1 m						-
Axial [m]						CVxx(*)
Radial [m]						CVRxx(*)

"bold print = standard option"

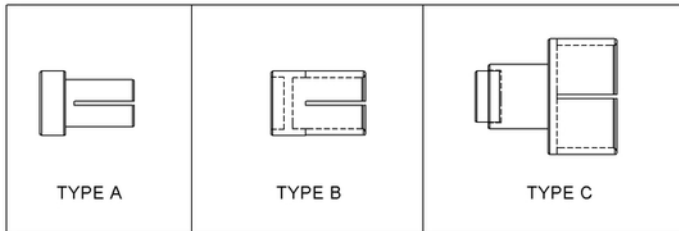
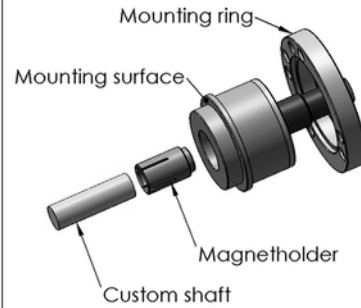
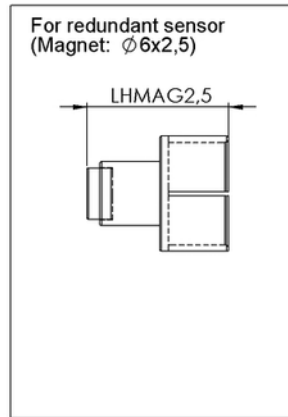
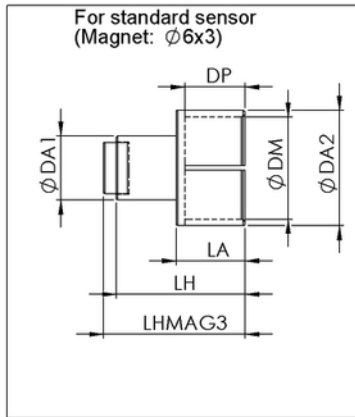
short-term stock types can be found on: <http://www.megatron.de/en/stocklists/angle-sensors/lagerliste.html>

(*) = on request available for projects

23.02.2015

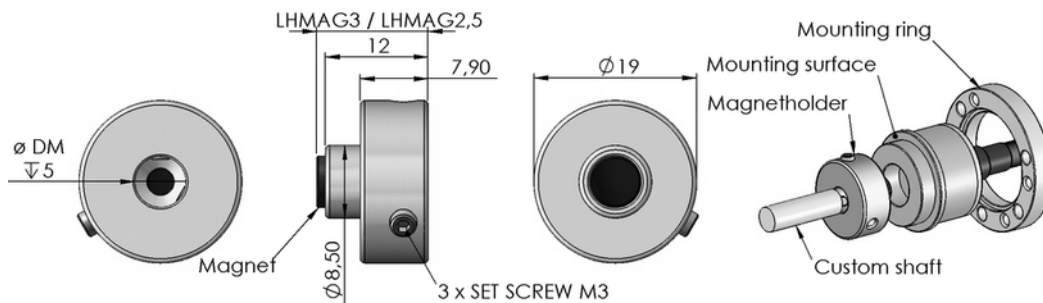
Accessory (please order separately)

ACCESSORY PUSH-ON-MAGNEHOLDER



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

ACCESSORY MAGNEHOLDER 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

Series MAB22H / Hall Effect Absolute Encoder

Order description

Type	Shaft Ø	Magnet	Comment
Push on magnet holder	3 / 3,175 / 4 / 6 / 6,35 / 8 / 10 / 12	MAG6x3	Standard
Push on magnet holder	3 / 3,175 / 4 / 6 / 6,35 / 8 / 10 / 12	MAG6x2,5x1,5	Redundant Sensor
Magnet holder with set screws	3 / 3,175 / 4 / 6 / 6,35 / 8 / 10 / 12	MAG6x3	Standard
Magnet holder with set screws	3 / 3,175 / 4 / 6 / 6,35 / 8 / 10 / 12	MAG6x2,5x1,5	Redundant Sensor

Our speciality are customs solutions, economically priced on small series.

On serial demand we offer:

Special magnet holder and other mechanical parts, assembling of cables and connectors and more. Please contact us.