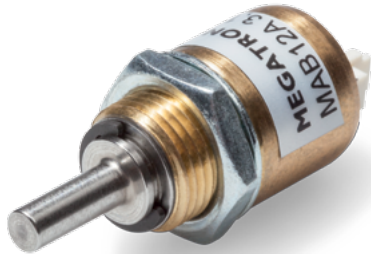


# Data Sheet for Angle Sensors

Hall-Effect Single-Turn Rotary Encoder with Analogue Output

Series MAB12A



- Only 12.2 mm housing diameter
- Sleeve bearing or ball bearing
- 6 mm, 6.35mm or 3.175mm shaft diameter
- Supply voltage 5 VDC
- Output signal analogue absolute or PWM
- Integrated MOLEX coupling

Very compact magnetic absolute encoder. Easy to mount by central thread with hex nut. With the MOLEX plug-in connection, the encoder could be easily connected to the evaluation unit. This improves the handling during installation and service.

Electrical Data	Analogue	PWM	
Effective electrical angle of rotation 1.)	360°		
Independent linearity (best straight line) 1.)	±0.28 % @ 25°C		
Output signal	0 to 5 V analogue	5 V PWM	
Resolution	10 Bit	10 Bit	12 Bit
Update rate	0.38 ms	1 ms	4,1 ms
Supply voltage	5 V ±10 %		
Power consumption (no load)	≤ 20 mA		
Output load	≥ 10 kOhm		

Mechanical and environmental data, Miscellaneous	Sleeve bearing low torque	Sleeve Bearing increased torque	Ball bearing very low torque
Mechanical angle of rotation 1.)	360° without stop		
Lifetime 2.)	> 1 Mio. shaft revolutions	> 1 Mio. shaft revolution	$L_{10} = (81.44/F_r)^3$ Where L10 = bearing life in millions of revs, and Fr = radial shaft loading in Newtons
Bearing	Sleeve bearing	Sleeve bearing	Ball bearing
Max. operational speed	100 rev./min	100 rev./min	15000 rev./min
Operational torque /@ RT 1.) 2.)	< 0.3 Ncm	< 0.35 ±0.2 Ncm	< 0.035 Ncm
Operating temperature range	-40 °C to +125 °C		
Storage temperature range	-40 °C to +125 °C		
Protection grade shaft side (IEC 60529)	IP40		
Vibration (IEC 68-2-6, Test Fc)	(5 Hz to 2 kHz) 20 g		
Housing diameter	12.2 mm		
Housing depth	10.6 mm		
Shaft diameter	3.17 mm, 6 mm, 6.35 mm		3.17 mm
Shaft type	Solid shaft		
Max. allowed radial load	10 N		5 N
Max. allowed axial load	< 1 N		

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Mechanical and Environmental Data, Miscellaneous	Sleeve bearing low torque	Sleeve Bearing increased torque	Ball bearing very low torque
Connection type	Molex connector: 53398-0371		
Connection position	Axial		
Sensor mounting	Bushing		
Mass	app. 14 g		app. 11 g
Fastening parts included in delivery	Hex nut and tooth washer		
Fastening torque mounting nut	< 2.25 Nm		
Material shaft	Stainless steel		Brass
Material housing	Brass		

## Immunity

ESD	Human Body Model MIL-STD-883E, Method 3015.7 ± 2 kV
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1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

# Data Sheet for Angle Sensors

Hall-Effect Single-Turn Rotary Encoder with Analogue Output

Series MAB12A

## Order Code

Description	Selection: <b>standard=black/bold</b> , possible <i>options=grey/italic</i>					
<b>Series</b>	<b>MAB12A</b>					
<b>Shaft diameter / shaft length:</b> <b>Standard: Ø6 x 17.1 mm</b> (not available in combination with ball bearing) <i>Option: Ø6.35 x 17.1 mm</i> (not available in combination with ball bearing) <i>Option: Ø3.17 x 17.1 mm length with sleeve bearing</i> <i>Option: Ø3.17 x 17.3 mm length with ball bearing</i> <i>Option: user defined shaft length [mm] (*)</i>	<b>6x17,1</b> <i>6,35x17,1</i> <i>3,17x17,1</i> <i>3,17x17,3</i> <i>XxXX</i>					
<b>Supply voltage / Output signal:</b> <b>Standard: VSUP=5 V ±10 % / OUT=0...5 V</b> (ratiometric resolution 10Bit) <i>Option: 1 VSUP=5 V ±10 % / PWM, Resolution 12 Bit</i> <i>Option: 2 VSUP=5 V ±10 % / PWM, Resolution 10 Bit</i>	<b>0505</b> <i>12 05PWM</i> <i>10 05PWM</i>					
<b>Sense of rotation:</b> <b>Standard: CW</b> (output signal (analogue) or duty cycle (PWM) increases clockwise)				<b>CW</b>		
<b>Electrical angle:</b> <b>Standard: 360°</b>					<b>360°</b>	
<b>Bearing:</b> <b>Standard: Sleeve bearing low torque</b> <i>Option: Sleeve bearing increased torque</i> <i>Option: Ball bearing very low torque</i> (not available with Ø6 mm or Ø6.35 mm shaft, only available with Ø3.17 mm shaft)						<b>LT</b> <i>MT</i> <i>KL</i>
<b>Electrical connection:</b> <b>In sensor housing integrated Molex connector</b>						<b>K</b>

## Order example MAB12A:

### Requirement:

Shaft Ø 6.00 mm / shaft length 17.1 mm, VSUP=5 V / OUT=0...5 V, resolution 10 Bit, absolute output signal 0...5 V, sense of rotation CW, effective electrical angle 360°, sleeve bearing low torque, electrical connection: integrated connector in sensor housing

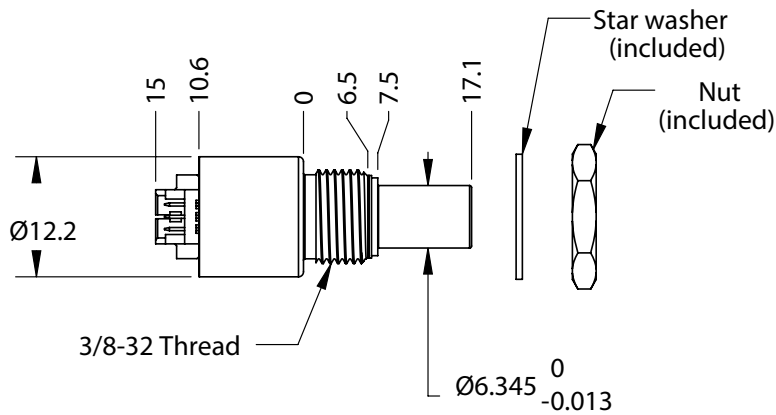
**Example for order code:** MAB12A 6x17,1 0505 CW360 LT K

**For higher quantities or on-going demand, additional options are available as described below**

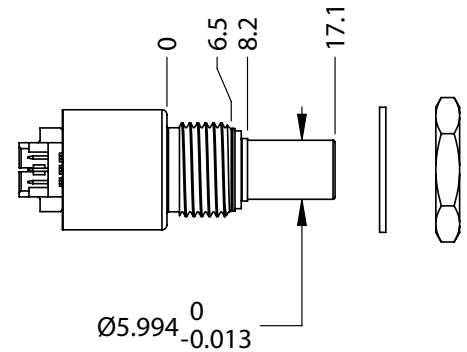
- Special connector and cable design

### Drawing

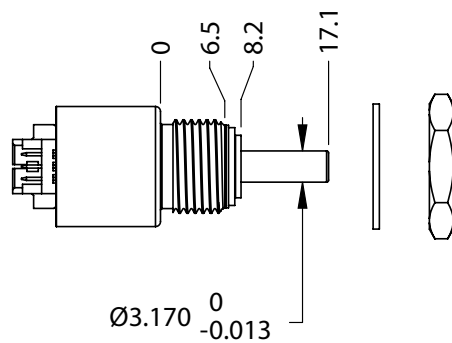
Ø6,35 mm (1/4") sleeve bearing



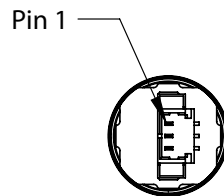
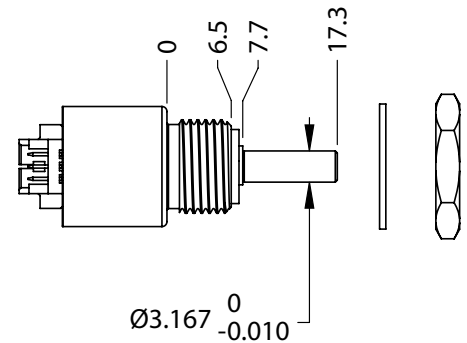
Ø6 mm sleeve bearing



Ø3,17 mm (1/8") sleeve bearing



Ø3,17 mm (1/8") ball bearing



Pin	Analog Output:	PWM Output:
1	+5VDC power	+5VDC power
2	Analog output	PWM output
3	Ground	Ground

Connector in the sensor: Molex # 53398-0371  
 Counter connector housing: Molex # 51021-0300  
 Crimp pins for counter conn.: Molex # 50079-8100  
 Crimp tools: Molex # 50079