

Data Sheet for Angle Sensors

Hall-Effect Single-Turn Rotary Encoder with Analogue Output

Series MAB12AH



- Only 12.7 mm housing diameter
- Suitable for shaft diameters from 2 mm..6.35 mm
- Mounting ring and push on magnet are part of delivery
- Supply voltage 5 VDC
- Output signal analogue absolute or PWM
- Integrated MOLEX connector

Extreme compact Hall Kit Encoder delivered as complete ready to setup package. The Package consisting of the encoder a mounting ring and the matching magnet holder and magnet for the shaft.

With the MOLEX plug-in connection, the encoder could be easy 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.)}	± 0.14 % @ 25 °C		
Output signal	0...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

Mechanical angle of rotation ^{1.)}	360° without stop
Lifetime ^{2.)}	Mechanically unlimited
Max. operational speed	10.000 rev./min.
Operating temperature range	-40..+125 °C
Storage temperature range	-40..+125 °C
Vibration (IEC 68-2-6, Test Fc)	(5 Hz to 2 kHz) 20 g
Housing diameter	12.7 mm
Housing depth	13.9 mm
Shaft diameter	2..6.35 mm
Shaft type	Push on magnet for solid shafts

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Mechanical and Environmental Data, Miscellaneous

Connection type	Molex plug on sensor: 53398-0371
Connection position	Axial
Sensor mounting	Mounting ring
Mass	Magnet + magnet holder + kit encoder + mounting ring: app. 20 g
Fastening parts included in delivery	Kit Encoder, mounting ring, push on magnet Not included in delivery: 2 pcs. lens head screws 4-40 1/4" for mounting of the mounting ring
Fastening torque of the mounting screws for mounting ring	0.67 Nm
Material mounting ring	Plastic
Material housing	Plastic
Material magnet holder	Metal

Immunity

ESD	Human Body Model MIL-STD-883R, 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

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Order Code

Description

Selection: standard=black/bold, possible options=grey/cursive

Series:

MAB12AH

Shaft diameter:

Option Ø2 mm

2

Option Ø2.3 mm

2,3

Option Ø2.5 mm

2,5

Option Ø3 mm

3

Option Ø3.17 mm

3,17

Option Ø4 mm

4

Option Ø5 mm

5

Ø6 mm

6

Option Ø6.35 mm

6,35

Resolution:

Supply voltage / Output signal:

Standard: VSUP=5 V ±10 % / OUT=0...5 V

0505

(ratiometric resolution 10Bit)

Option: 1 VSUP=5 V ±10 % / PWM, Resolution 12 Bit

12 05PWM

Option: 2 VSUP=5 V ±10 % / PWM, Resolution 10 Bit

10 05PWM

Sense of rotation:

Standard: **CW** (output signal (analog) or duty cycle (PWM) increases clockwise)

CW

Electrical angle:

Standard: **360°**

360°

Electrical connection:

In sensor housing integrated Molex connector

K

Order example MAB12AH:

Requirement:

Shaft diameter 6.00 mm, VSUP=5 V, output signal OUT=0..5 V (ratiometric), sense of rotation CW, effective electrical angle 360°, electrical connection: integrated connector in sensor housing

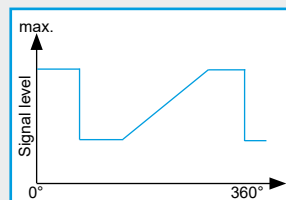
Example for order code: MAB12AH 6 0505 CW360 K

Additional options

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

For example:

- Special cable and connection design
- Sense of rotation CCW
- User defined electrical angle



Customized signal characteristic

For Example:

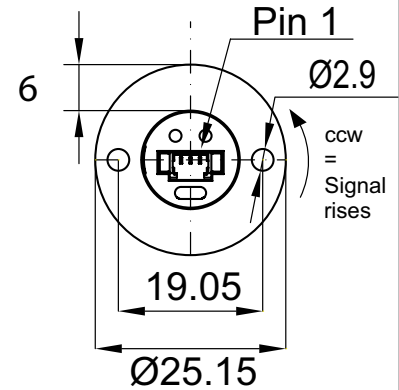
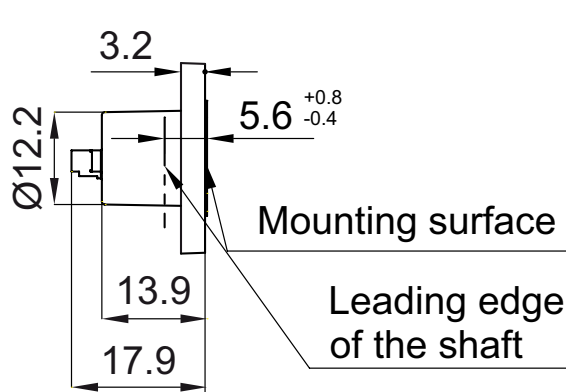
- minimum/maximum signal level
- signal plateaus

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Drawing



Dimensions in mm

Terminal lay-out and connector

Pin 1 +5VDC

Pin 2 Analog Out

Pin 3 GND

Connector in the sensor: Molex # 53398-0371

Counter connector housing: Molex # 51021-0300

Crimp pins for counter conn.: Molex # 50079-8100

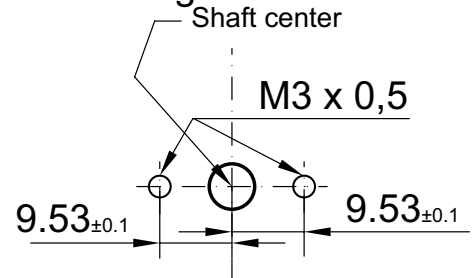
Crimp tools: Molex # 50079

Please take care !

That the max. allowed axial mounting tolerances from the leading edge of the shaft to the mounting surface are $5.6^{+0.8/-0.4}$ mm

Leaving the tolerance band lead to signal loss and malfunction of the encoder.

Mounting sketch



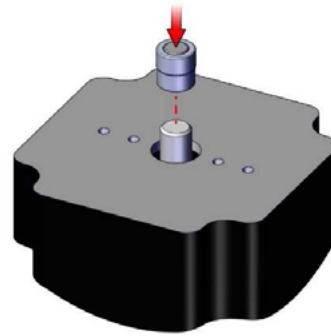
Radial mounting tolerance:
Eccentricity max. failure / 360°
< 0.25 mm approx. 0.2°
< 0.5 mm approx. 0.6°
< 0.75 mm approx. 1.2°

Mounting Instruction

During transport, storage, assembly and operation, it must be followed the ESD guidelines.

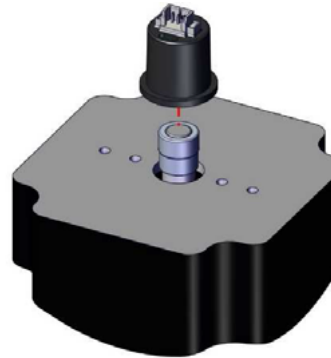
Step 1:

Slip push-on magnetic hub over shaft and firmly press down until top of shaft fills cavity of hub.



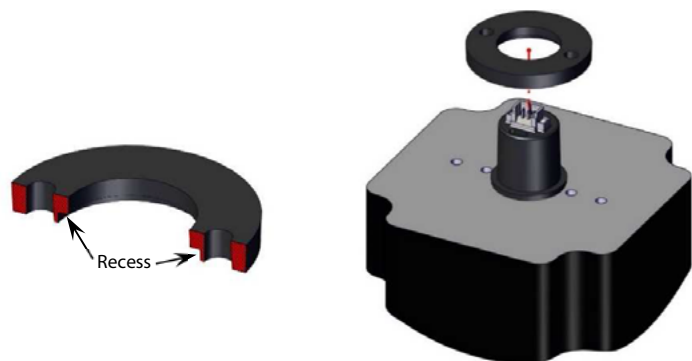
Step 2:

Place encoder body over shaft assembly so that it sits on mounting surface.



Step 3:

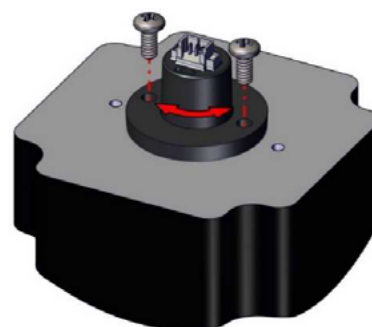
With recess in base facing towards mounting surface, place base over encoder body so that flange of body fits into recess of base.



Step 4:

Secure base to mounting surface with two screws (#4 recommended, sold separately).

Zero positioning: Prior to fully tightening screws, encoder can be powered and rotated by hand to set absolute zero position, if desired.



Recommendation for mounting screws: 4-40 1/4"
Max. allowed tightening torque 0.67 Nm.