

Data Sheet for Angle Sensors

Hall-Effect Singleturn Rotary Kit Encoder with Incremental/PWM output

Series MKI



- Only 14.8 mm case diameter
 - Suitable for shaft diameters from 3 mm...6.35 mm
 - Mounting ring and magnet included in delivery
 - Operating voltage 4 to 16.5 VDC (nominal 5 V)
 - Output signal incremental (optionally also PWM)
- Integrated MOLEX connector

Extremely compact Hall Kit encoder complete package, consisting of encoder kit, mounting ring and matching slip-on magnet for the shaft. The MOLEX plug-in connection makes it easy to disconnect the signal line from the evaluation unit, which improves handling during assembly and service.

Electrical Data	Incremental	Incremental + PWM
Effective electrical angle of rotation 1.)	360°	
Output signal	5 V logic levels	
Resolution	1 to 8192 ppr	1 to 8192 ppr, 12 bit
Supply voltage	4 to 16.5 V	
Power consumption (no load)	17 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	18720 rev./min.
Operating temperature range	-40 °C up to +100 °C
Storage temperature range	-40 °C up to +100 °C
Vibration	(10 Hz to 2 kHz) 20 g
Housing diameter	14.8 mm
Housing depth	21.4 mm
Shaft diameter	3 to 6.35 mm
Shaft type	Push-on magnet for solid shafts
Shock (6 milliseconds, half-sine)	75
Max. Hub Moment of Inertia	0.07 g cm ²

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Mechanical and Environmental Data, Miscellaneous

Connection type	Molex plug on sensor: 5013300600
Connection position	Axial
Sensor mounting	Mounting ring
Mass	Magnet + magnet holder + kit encoder + mounting ring: app. 20 g
Included in delivery	Kit Encoder, mounting ring, push-on magnet and magnet holder 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 (IEC 61000-4-2)	±1 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

Pin assignment MKI

Function	PIN
GND	1
Index Z	2
Channel B	3
+4 to 16.5 VDC, Supply Voltage	4
Channel A	5
PWM	6

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Order Code

Description	Selection: standard=black/bold , possible options=grey/italic					
Series:	MKI					
Shaft diameter (bore hole):						
Ø3 mm		3				
Ø3.17 mm		3,17				
Ø4 mm		4				
Ø5 mm		5				
Ø6 mm		6				
Ø6.35 mm		6,35				
Resolution in pulses per revolution:						
1 ppr.			1			
2 ppr.			2			
4 ppr.			4			
8 ppr.			8			
16 ppr.			16			
32 ppr.			32			
64 ppr.			64			
128 ppr.			128			
256 ppr.			256			
512 ppr.			512			
1024 ppr.			1024			
2048 ppr.			2048			
4096 ppr.			4096			
8192 ppr.			8192			
Supply voltage: 4 to 16.5 V (nominal 5 V)				5		
Output signal: A+B+Z (TTL) A+B+Z (TTL) and PWM					BZ TTL PWM	

Order example MKI:

Requirement:

Shaft diameter 6.00 mm, VSUP=5 V, output 256 PPR, channels A+B+Z

Example for order code: MKI 6 256 5 BZ TTL

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

- Special connector and cable design

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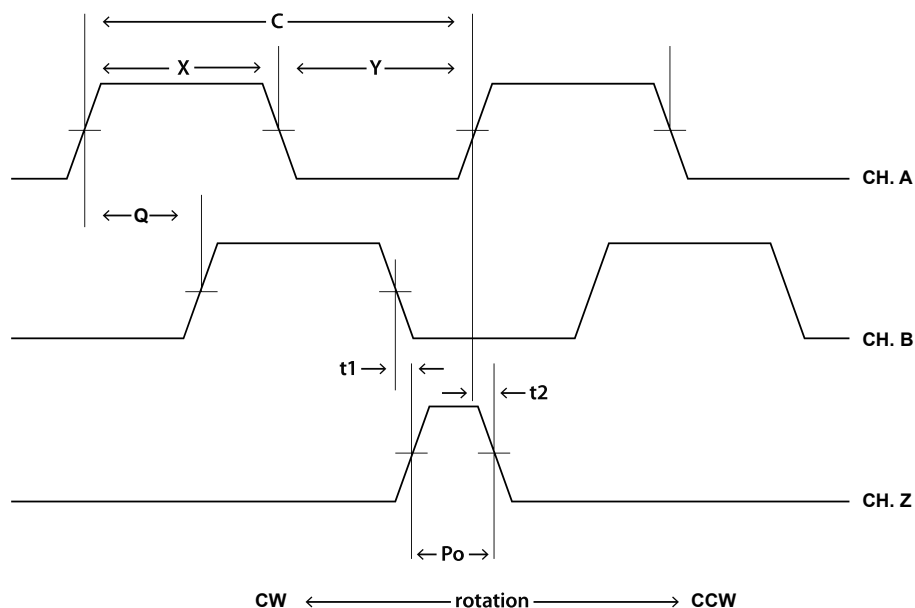
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Phase Relation

- The specifications apply to the entire operating temperature range
- They indicate the largest possible error over one full revolution

Parameter	Symbol	Min.	Typ.	Max.	Unit
Symmetry	X, Y		180		°e
Quadrature	Q		90		°e
Width of index pulse	Po		90		°e
Channel Z Rise time after fall of chan. A or B	t1		10		ns
Channel Z Fall time after fall of chan. A or B	t2		10		ns



Index (Z)

The index output goes high once per revolution, coinciding with the low states of channels A and B, nominally 1/4 of a cycle (90°).

One cycle (C)

360 electrical degrees (°). Each cycle can be decoded into 1, 2 or 4 states, which is called multiplication of resolution x1, x2 or x4.

Quadrature (Q)

The phase shift between channels in degrees, nominally 90°.

Symmetry

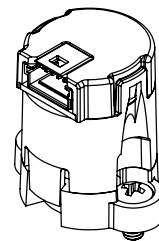
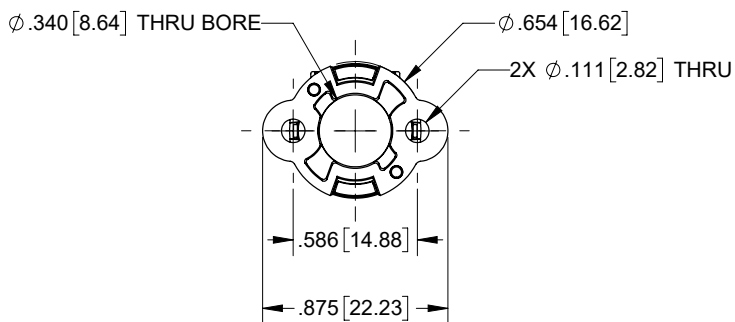
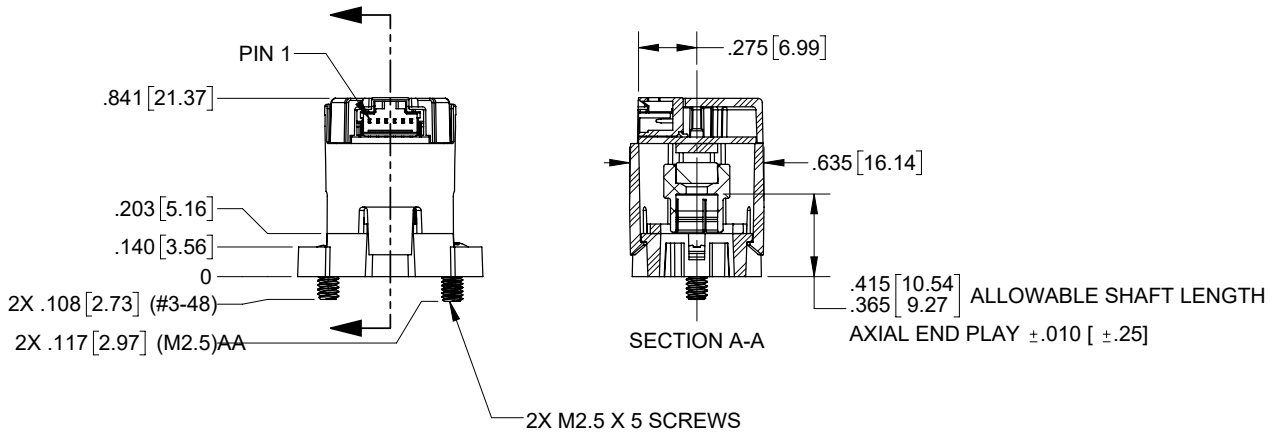
A measure of the relationship between (X) and (Y) in electrical degrees, nominally 180°.

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Drawing



Dimension in Inch [MM]

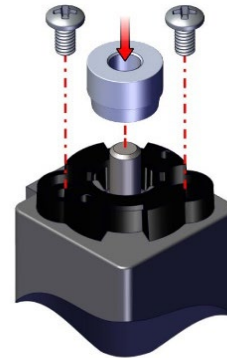
Assembly instructions

The ESD guidelines must be observed during transport, storage, assembly and operation.

Please Note: The MKI is designed for one-time installation.

Step 1:

Place the encoder base onto mounting surface. Slip centering tool over the shaft and into the center hole of the base. While applying pressure on the centering tool, tighten mounting screws to the specified torque (see data sheet). Remove centering tool.



Step 2:

Press push-on magnetic hub over the shaft and firmly push down until the hub fully seats on the end of the shaft.



Step 3:

Place sensor over the hub assembly and snap onto the base, ensuring the locating pins are aligned with the base. Press down ensuring the snaps are fully engaged on both sides.

The encoder is now installed and ready to operate.

