

Data Sheet for Angle Sensors

Optical incremental Kit-Encoder

Series SPEH



- Flat design (11 mm)
- With push-on puls disk
- Up to 360 pulses per revolution
- Optional through-hole in the cover

This flat and reasonably priced sensor uses the bearing of the application. Thus, the encoder is completely wear-free. In addition this allows measurements at speeds up to 60,000 rpm.

Electrical Data	TTL	Line Driver
Output signal	5 V - A, B	differential 3,8 V - A, /A, B, /B
Number of pulses	100 - 360 ppr	
Output high voltage	$\geq 2,4 \text{ V @ } -8 \text{ mA load}$	
Output low voltage	$\leq 0,4 \text{ V @ } 8 \text{ mA load}$	
Differential output voltage		$\geq 3,0 \text{ V @ } R_L = 100 \Omega$
Supply voltage	5 VDC $\pm 5 \%$	
Power consumption (no load)	$\leq 32 \text{ mA (typ. } 27 \text{ mA)}$	

Mechanische Daten, Umgebungsbedingungen, Sonstiges	
Max. operational speed	$\leq \frac{6.000.000 \text{ rpm}}{\text{Number of pulses}}$ and $\leq 60.000 \text{ rpm}$
Max. acceleration	250.000 rad/s ²
Permitted axial play	$\pm 0,25 \text{ mm}$
Permitted shaft runout (TIR)	0,05 mm
Shaft to mounting surface perpendicularity	$90 \pm 1^\circ$
Screw bolt circle diameter	14,88 mm $\pm 0,1 \text{ mm}$
Minimum shaft length incl. axial play	7 mm
Maximum shaft length incl. axial play	10 mm
Operating temperature range	-20..+100 °C
Storage temperature range	-20..+100 °C
Protection grade (IEC 60529)	IP40
Vibration	20 g / 20 bis 2000 Hz / sinusoidal
Shock	75 g / 6 ms / half-sine
Mass	approx. 5 g
Fastening parts included in delivery	2 screws M2,5 x 4 mm per encoder, one centering tool and one spacer tool per delivery
Fastening torque mounting screws	$\leq 0,3 \text{ Nm}$
Material housing	Plastic
Electrostatic Discharge, Human Body Model (MIL-STD-883, Method 3015.8)	$\pm 12 \text{ kV}$

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Order code						
Description		Options				
Series SPEH	SPEH					
Shaft diameter						
1,5 mm (*)		1,5 (*)				
2 mm (*)		2 (*)				
2,3 mm (*)		2,3 (*)				
2,5 mm (*)		2,5 (*)				
3 mm (*)		3 (*)				
3,175 mm (*)		3,175 (*)				
4 mm		4 (*)				
5 mm (*)		5 (*)				
6 mm		6 (*)				
6,35 mm (1/4") (*)		6,35 (*)				
Resolution [pulses per revolution]						
100			100			
108 (*)			108 (*)			
120 (*)			120 (*)			
125 (*)			125 (*)			
128 (*)			128 (*)			
200 (*)			200 (*)			
250 (*)			250 (*)			
256 (*)			256 (*)			
300 (*)			300 (*)			
360			360			
5 V supply voltage and 2 channels without index				5 B		
Electronic						
TTL 5 V						
Line Driver differential (*)					TTL	
					N (*)	
Housing						
Without through hole						A
With through hole (*)						B (*)

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

bold print = standard option

(*) = on request available for projects

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

For example:

- Other number of pulses
- Special shaft
- Other operational torques

For technical advice, projects, samples, questions about pricing, delivery times and availability please contact us

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export@megatron.de

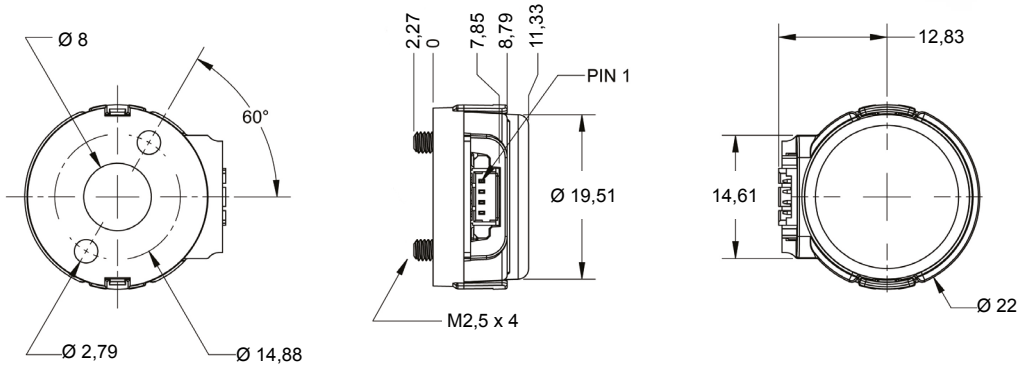
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Optical incremental Kit-Encoder

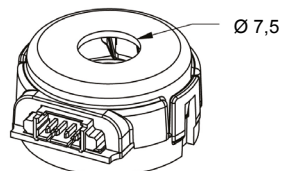
Series SPEH

Drawing

TTL 5 V - Output



Housing with through hole



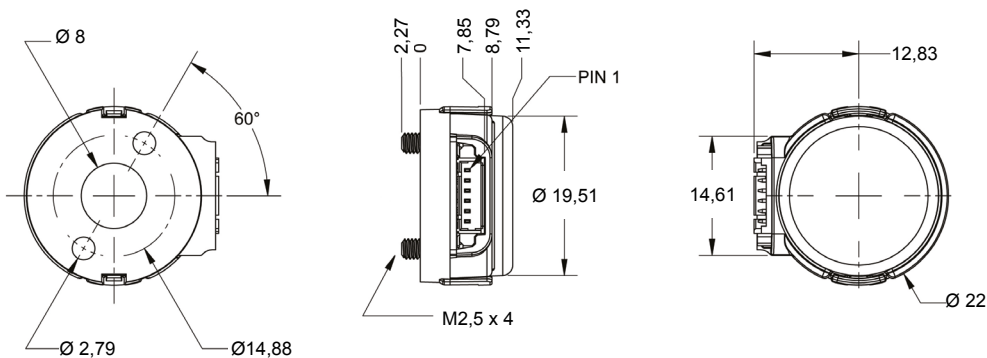
Mating connector

Housing: Molex # 51021-0400
Pins: Molex # 50079-8100

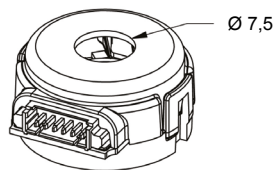
Accessory - not included in delivery:

Articleno. 119641 - Mating connector with 500 mm AWG28 leads

Line Driver Output differential



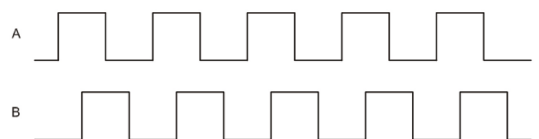
Housing with through hole



Mating connector

Housing: Molex # 51021-0600
Pins: Molex # 50079-8100

Pulse sequence:



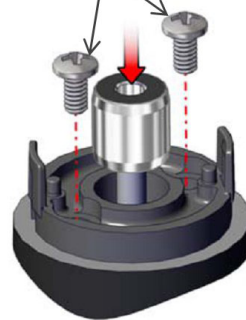
A leads B for clockwise shaft rotation (view from the cover side)

Dimensions in [mm]

Step 1:

Place the base over the shaft and onto the mounting surface. Slide the centering tool onto the shaft so that it contacts and aligns the base. While applying light pressure to the centering tool, secure the base to the mounting surface using two screws.

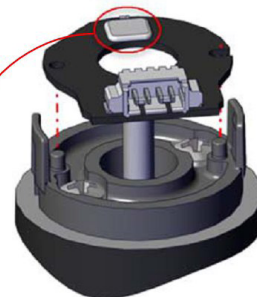
Mounting Screws:
 $\leq 0,3 \text{ Nm}$



Step 2:

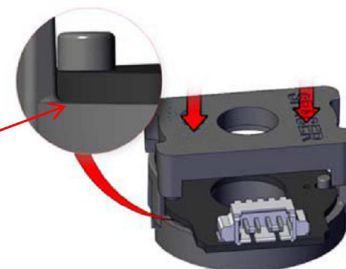
Remove the centering tool and place the PCB onto the base, aligning the hole and slot to the two pins on the base. Note that the base is symmetrical allowing the connector to exit out either side.

Caution: When handling the PCB it is best to avoid directly touching the optical sensor.



Step 3:

Using the spacer tool, very firmly press down on the PCB in order to push it over the alignment pins and completely onto the base surface. Check to make sure that the PCB is fully seated against the base. If it is not, use the spacer tool to press it again, recheck that it is fully seated.



Step 4:

Place the hubdisk onto the shaft with the longer end of hub toward the base. Position the spacer tool onto the hub such that the notches are aligned with the latches of the base. Press down firmly until the tool bottoms out on the PCB. Verify that this action has pressed the PCB flush against the base.

Caution: While installing the hubdisk ensure that the hub bore is parallel to the shaft. Forcing the hub onto the shaft at an angle may cause permanent damage to the hub.



Step 5:

Remove the spacer tool and snap the cover down onto the base, (1). With your thumb and finger, squeeze the base latches together to ensure they are fully engaged with the cover, (2).

