



# HEIDENHAIN



**Special Product**  
— only on request —

Product Information

## **ERN 1185**

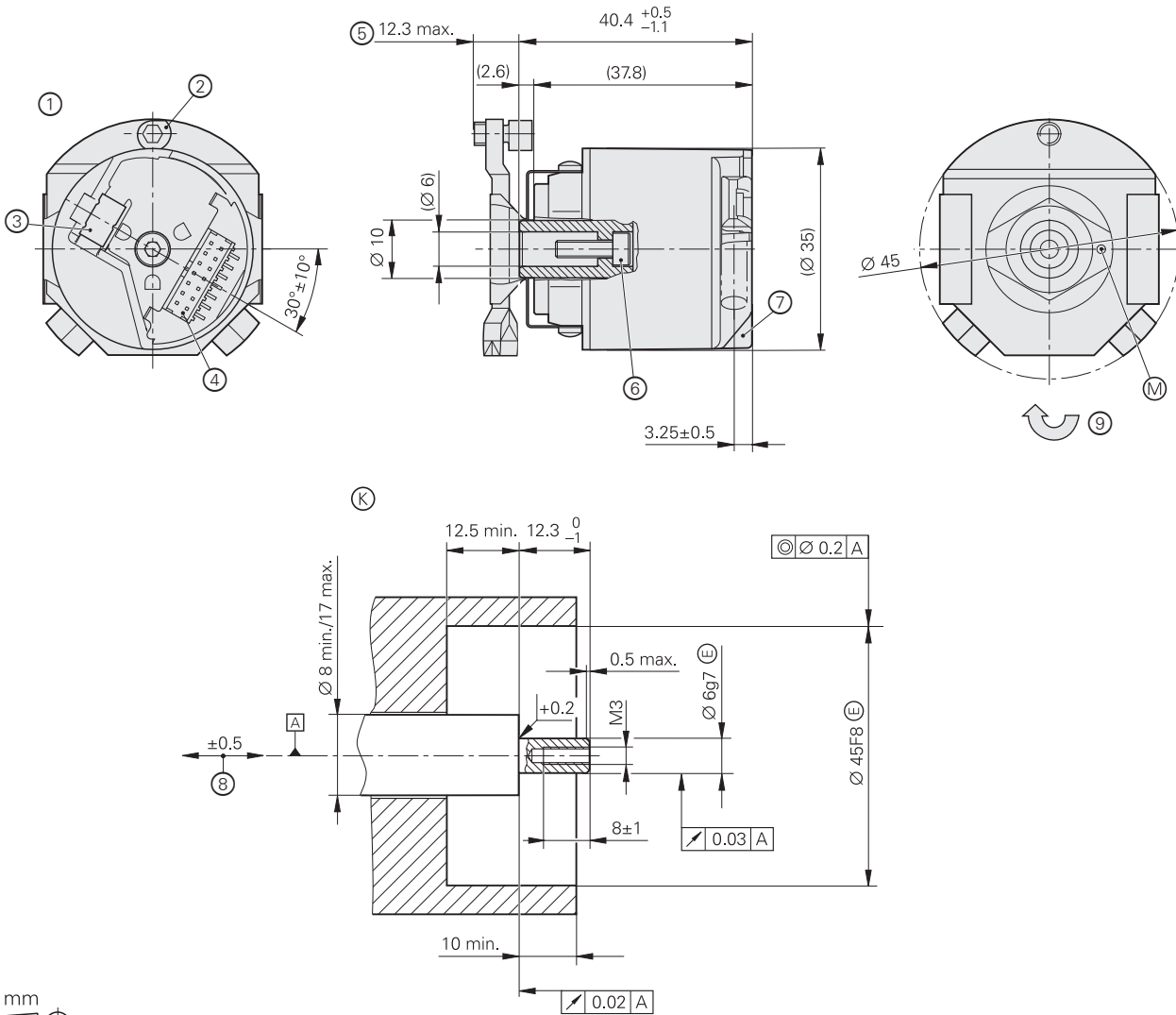
Incremental Rotary Encoder  
with Z1 Track

07/2020

# ERN 1185



Rotary encoder with integral bearing for integration in motors

- Mounted stator coupling  $\varnothing 45$  mm
- Compact dimensions
- Blind hollow shaft



mm  
 Tolerancing ISO 8015  
 ISO 2768 - m H  
 $\leq 6$  mm:  $\pm 0.2$  mm

- ▣ = Bearing of mating shaft
- ⊗ = Required mating dimensions
- ⊙ = Measuring point for operating temperature
- 1 = Encoder shown without cover
- 2 = In order to fasten the coupling, turn the eccentric screw (M4) to the right by  $90^\circ$ . Tightening torque:  $2 \text{ Nm} \pm 0.1 \text{ Nm}$
- 3 = Cable gland with crimp sleeve,  $\varnothing 4.3 \text{ mm} \pm 0.1 \text{ mm}$ , length: 7 mm
- 4 = 14-pin PCB connector
- 5 = Variable depending on the coupling
- 6 = Screw: ISO 4762 – M3x10 – width A/F 2.5, with patch coating; tightening torque:  $1.2 \text{ Nm} \pm 0.1 \text{ Nm}$
- 7 = Removable cover
- 8 = Compensation of mounting tolerances and thermal expansion; no dynamic motion permitted
- 9 = Direction of shaft rotation for ascending position values

		<b>Incremental</b>
		<b>ERN 1185</b>
<b>Incremental signals</b>		 $V_{pp}^{1)}$
Line count*/system accuracy		512/±60" 2048/±40"
Reference mark		One
Cutoff frequency	-3 dB	512 lines: ≥ 100 kHz 2048 lines: ≥ 350 kHz
<b>Absolute position values</b>		 $V_{pp}^{1)}$
Position values per revolution		Z1 track <sup>2)</sup>
<b>Electrical connection</b>		14-pin PCB connector
Supply voltage		DC 5 V ±0.5 V
Current consumption (without load)		≤ 120 mA
<b>Shaft</b>		Blind hollow shaft Ø 6 mm
Mechanically permissible speed		12000 rpm
Starting torque		≤ 0.001 Nm (at +20 °C)
Moment of inertia of rotor		≈ 0.3 · 10 <sup>-6</sup> kgm <sup>2</sup>
Natural frequency of the stator coupling		≥ 1500 Hz
Permiss. axial motion of measured shaft		±0.5 mm
<b>Vibration</b> 55 Hz to 2000 Hz		≤ 100 m/s <sup>2</sup> (EN 60068-2-6)
<b>Shock</b> 6 ms		≤ 1000 m/s <sup>2</sup> (EN 60068-2-27)
<b>Operating temperature</b>		-30 °C to 115 °C
<b>Protection</b> EN 60529		IP40 when mounted
<b>Mass</b>		≈ 0.1 kg

\* Please select when ordering

<sup>1)</sup> Deviating tolerances

Signal amplitude:	0.75 $V_{pp}$ to 1.2 $V_{pp}$
Asymmetry:	0.05
Amplitude ratio:	0.9 to 1.1
Phase angle:	90° elec. ±5° elec.
Signal-to-noise ratio E, F:	100 mV

<sup>2)</sup> For sine commutation: one sine and one cosine signal per revolution

# Electrical connection

## Pin layout

14-pin PCB connector											
Power supply					Incremental signals						
	<b>1b</b>	<b>7a</b>	<b>5b</b>	<b>3a</b>	/	<b>6b</b>	<b>2a</b>	<b>3b</b>	<b>5a</b>	<b>4b</b>	<b>4a</b>
	Brown/ Green	Blue	White/ Green	White	/	Green/ Black	Yellow/ Black	Blue/Black	Red/Black	Red	Black
	<b>U<sub>P</sub></b>	<b>Sensor</b> U <sub>P</sub>	<b>0V</b>	<b>Sensor</b> 0V	<b>Internal shield</b>	<b>A+</b>	<b>A-</b>	<b>B+</b>	<b>B-</b>	<b>R+</b>	<b>R-</b>

Other signals				
	<b>7b</b>	<b>1a</b>	<b>2b</b>	<b>6a</b>
	Gray	Pink	Yellow	Violet
	<b>C+</b>	<b>C-</b>	<b>D+</b>	<b>D-</b>

**U<sub>P</sub>** = Power supply

**Sensor:** The sense line is connected internally with the corresponding power line.

Output cable inside the motor $\varnothing$ 4.5 mm with crimp sleeve $\varnothing$ 4.3 mm; EPG 16 x 0.057 mm <sup>2</sup>		
14-pin PCB connector, without connecting element		317900-xx

Unused wires must not be assigned.

## HEIDENHAIN

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This Product Information document supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is made.



### Further information:

Comply with the requirements described in the following documents to ensure the correct operation of the encoder:

- Brochure: *Encoders for Servo Drives* 208922-xx
- Brochure: *Interfaces of HEIDENHAIN Encoders* 1078628-xx
- Brochure: *Cables and Connectors* 1206103-xx

For brochures and Product Information documents, visit [www.heidenhain.de](http://www.heidenhain.de).