HEIDENHAIN

Incremental Rotary Encoders for Integration ERN 100

Rotary encoders of the ERN family feature an integral bearing and stator coupling, providing the **high dynamic performance** required by electrical drives.
HEIDENHAIN offers the ERN 100 series of encoders with shaft inside diameters of 20 mm, 25 mm, 38 mm, and 50 mm, characterised by their **very compact dimensions** (outside diameter 87 mm, height 45 mm or 50 mm).

Incremental rotary encoders for integration of the 100 series are ideal for position and speed detection on drives and in general automation tasks.
As with all ERN encoders, mounting is easy: the encoder is simply slid onto the shaft and clamped. On the stator side, the encoder is mounted on a flat surface without a centring flange.

The stator coupling permits **axial motion of the drive shaft up to ± 1.5 mm**.
The output signals are square-wave pulse trains (TTL or HTL compatible signal levels), or sinusoidal signals with levels of 1 V_{PP}.
Encoders of the ERN 100 series are available with **line counts from 1024 to 5000**.

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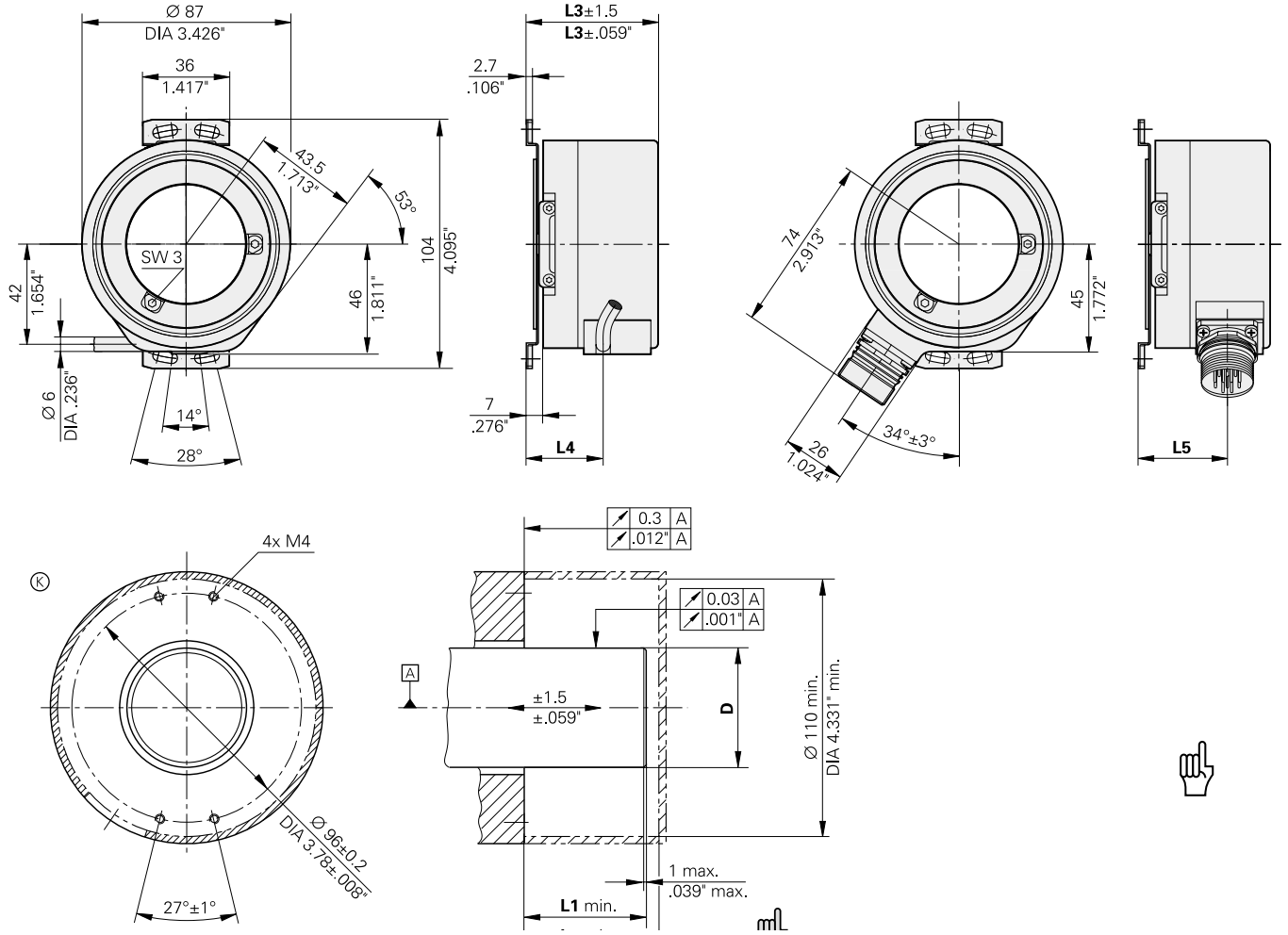
ERN 100 Series

Rotary encoders with hollow shaft to Ø 50 mm and stator coupling

Preferred model	ERN 120	ERN 130	ERN 180
Output signals	⊓⊔ TTL	⊓⊔ HTL	∿ 1 V_{PP}
Power supply	5 V	10 V to 30 V	5 V
Line count	1 024 5 000		
Shaft inside diameter	25 mm, 50 mm		
Electrical connection	Flange socket, radial		



Dimensions
in mm/Zoll

DIN ISO 8015
ISO 2768 - m H

Ⓐ = Bearing
Ⓚ = Required mating dimensions

D	L1	L2	L3	L4	L5
Ø20h7 DIA .78740"–.00083"	46 1.81102"	48.5 1.90945"	45 1.77165"	22.5 .88583"	27.5 1.08268"
Ø25h7 DIA .98425"–.00083"	46 1.81102"	48.5 1.90945"	45 1.77165"	22.5 .88583"	27.5 1.08268"
Ø38h7 DIA 1.49606"–.00098"	51 2.00787"	53.5 2.10630"	50 1.96850"	27 1.06299"	32 1.25984"
Ø50h7 DIA 1.96850"–.00098"	51 2.00787"	53.5 2.10630"	50 1.96850"	27 1.06299"	32 1.25984"

Available models	**ERN 120**	**ERN 130**	**ERN 180**
Output signals	⊓⊔ TTL	⊓⊔ HTL	∿ 1 V_{PP}
Power supply	5 V ± 10% Max. 150 mA (without load)	10 V to 30 V Max. 200 mA (without load) short-circuit proof	5 V ± 10% Max. 150 mA (without load)
Line counts	1024 2048 2500 3600 4096 5000		
Shaft inside diameter D	20 mm, 25 mm, 38 mm, 50 mm		
Protection (EN 60529)	IP 64		
Starting torque at 20 °C	≤ 0.2 Nm for D > 30 mm ≤ 0.15 Nm for D ≤ 30 mm		
Mech. perm. speed n	Max. 6000 rpm for D ≤ 30 mm Max. 4000 rpm for D > 30 mm		
Moment of inertia of rotor	Approx. 240 · 10^{-6} kgm^2 (D = 50 mm) Approx. 350 · 10^{-6} kgm^2 (D = 38 mm) Approx. 80 · 10^{-6} kgm^2 (D = 25 mm) Approx. 85 · 10^{-6} kgm^2 (D = 20 mm)		
Permissible axial motion of drive shaft	± 1.5 mm		
Weight	Approx. 0.6 kg to 0.9 kg depending on hollow shaft version		
Max. operating temperature	100 °C	85 °C (U_P ≤ 30 V) 100 °C (U_p ≤ 15 V)	100 °C
Min. operating temperature Moving cable Rigid cable	 –10 °C –30 °C		
Vibration (55 to 2000 Hz) **Shock** (6 ms)	≤ 100 m/s^2 (IEC 68-2-6) ≤ 1000 m/s^2 (IEC 68-2-27)		
Scanning frequency	Max. 300 kHz		–
Cutoff frequency (–3 dB)	–		≥ 200 kHz typ.
Electrical connection Cable	1 m / 3 m / 5 m, radial with or without coupling		
Flange socket	Radial		
Recmd. max. cable length to subsequent electronics	100 m	300 m	150 m

Refer to the **Incremental Rotary Encoders** catalog for the available accessories, a more detailed description of the output signals and the recommended input circuitry of the subsequent electronics.