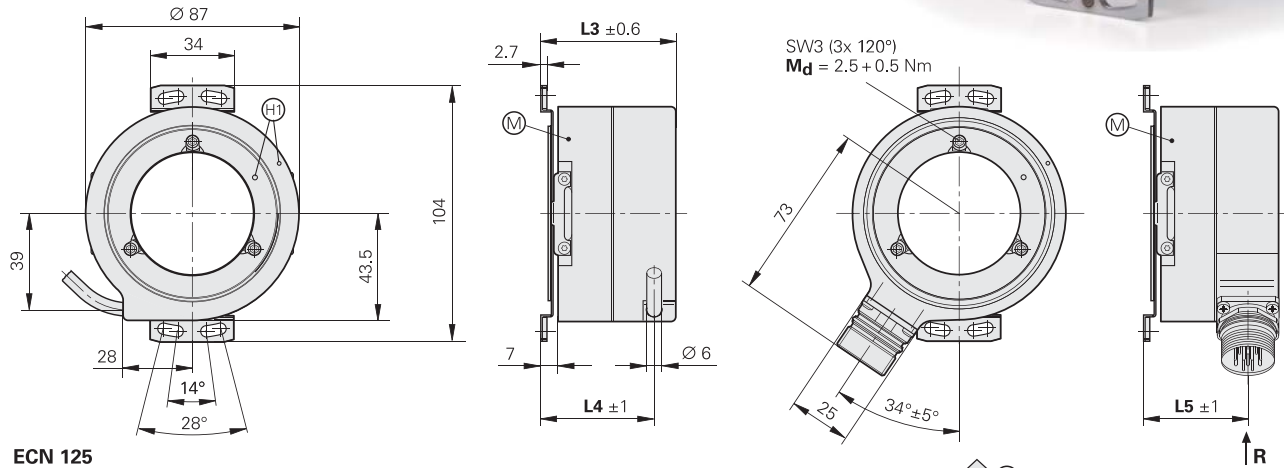


ECN/ERN 100 Series

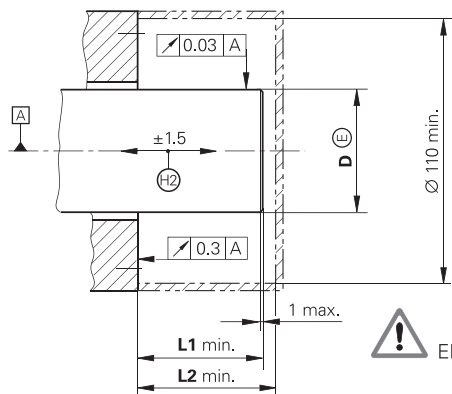
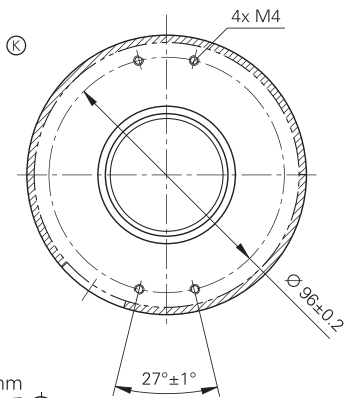
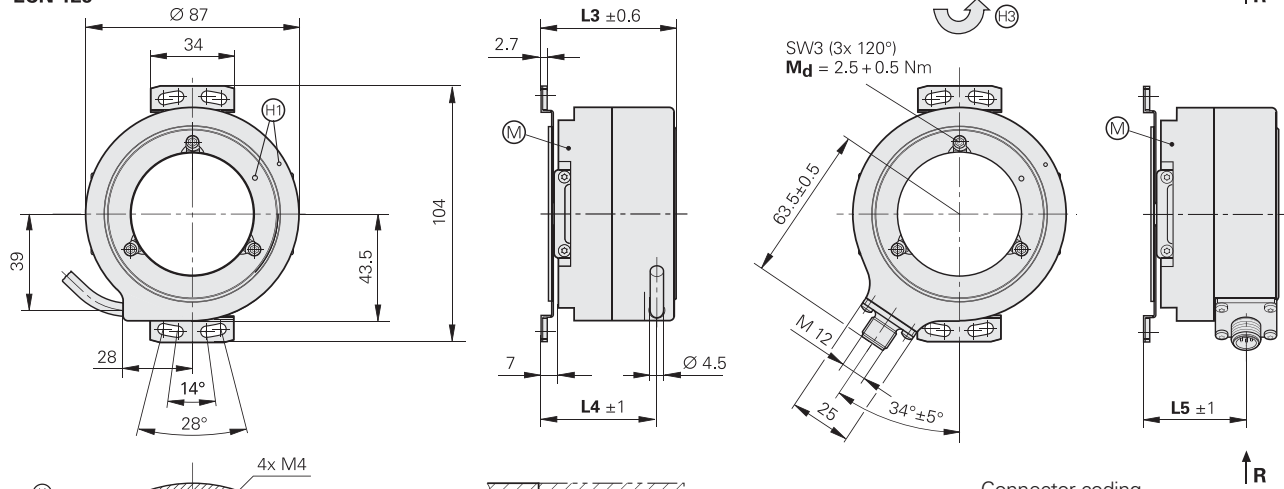
- Rotary encoders with mounted stator coupling
- Hollow through shaft up to $\varnothing 50$ mm



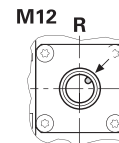
ERN 1x0/ECN 113



ECN 125



Connector coding
R = radial



mm
Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ± 0.2 mm



Cable radial, also usable axially

- ▣ = Bearing
- ⊙ = Required mating dimensions
- ⊙ = Measuring point for operating temperature
- ⊙ = ERN: reference-mark position ± 15°; ECN: zero position ± 15°
- ⊙ = Compensation of mounting tolerances and thermal expansion, no dynamic motion
- ⊙ = Direction of shaft rotation for output signals as per the interface description

D	L1	L2	L3	L4	L5
∅ 20h7	41	43.5	40	32	26.5
∅ 25h7	41	43.5	40	32	26.5
∅ 38h7	56	58.5	55	47	41.5
∅ 50h7	56	58.5	55	47	41.5

	Absolute Singleturn		Incremental		
	ECN 125	ECN 113	ERN 120	ERN 130	ERN 180
Absolute position values*	EnDat 2.2	EnDat 2.2	–		
Ordering designation	EnDat 22	EnDat 01			
Positions per revolution	33554432 (25 bits)	8192 (13 bits)	–		
Code	Pure binary		–		
Elec. permissible speed Deviations ¹⁾	n_{\max} for continuous position value	$\leq 600 \text{ min}^{-1}/n_{\max}$ $\pm 1 \text{ LSB}/\pm 50 \text{ LSB}$	–		
Calculation time t_{cal}	$\leq 5 \mu\text{s}$	$\leq 0.25 \mu\text{s}$	–		
Incremental signals	Without	$\sim 1 V_{\text{PP}}^{2)}$	\square TTL	\square HTL	$\sim 1 V_{\text{PP}}^{2)}$
Line counts*	–	2048	1000 1024 2048 2500 3600 5000		
Reference mark	–	–	One		
Cutoff frequency –3 dB	–	Typically $\geq 200 \text{ kHz}$	–		Typ. $\geq 180 \text{ kHz}$
Scanning frequency	–	–	$\leq 300 \text{ kHz}$		–
Edge separation a	–	–	$\geq 0.39 \mu\text{s}$		–
System accuracy	$\pm 20''$		1/20 of grating period		
Power supply	3.6 to 5.25 V DC	5 V DC $\pm 5\%$	5 V DC $\pm 10\%$	10 to 30 V DC	5 V DC $\pm 10\%$
Current consumption without load	$\leq 200 \text{ mA}$	$\leq 180 \text{ mA}$	$\leq 120 \text{ mA}$	$\leq 150 \text{ mA}$	$\leq 120 \text{ mA}$
Electrical connection*	<ul style="list-style-type: none"> • Flange socket M12, radial • Cable 1 m/5m, with M12 coupling 	<ul style="list-style-type: none"> • Flange socket M23, radial • Cable 1 m/5 m, with or without coupling M23 			
Shaft*	Hollow through shaft D = 20 mm, 25 mm , 38 mm, 50 mm				
Mech. perm. speed $n^{3)}$	$D > 30 \text{ mm}: \leq 4000 \text{ min}^{-1}$ $D \leq 30 \text{ mm}: \leq 6000 \text{ min}^{-1}$				
Starting torque at 20 °C	$D > 30 \text{ mm}: \leq 0.2 \text{ Nm}$ $D \leq 30 \text{ mm}: \leq 0.15 \text{ Nm}$				
Moment of inertia of rotor/ angle acceleration ⁴⁾	$D = 50 \text{ mm} \quad 220 \cdot 10^{-6} \text{ kgm}^2 / \leq 5 \cdot 10^4 \text{ rad/s}^2$ $D = 38 \text{ mm} \quad 350 \cdot 10^{-6} \text{ kgm}^2 / \leq 2 \cdot 10^4 \text{ rad/s}^2$ $D = 25 \text{ mm} \quad 96 \cdot 10^{-6} \text{ kgm}^2 / \leq 3 \cdot 10^4 \text{ rad/s}^2$ $D = 20 \text{ mm} \quad 100 \cdot 10^{-6} \text{ kgm}^2 / \leq 3 \cdot 10^4 \text{ rad/s}^2$				
Permissible axial motion of measured shaft	$\pm 1.5 \text{ mm}$				
Vibration 55 Hz to 2000 Hz Shock 6 ms	$\leq 200 \text{ m/s}^2; \leq 100 \text{ m/s}^2$ with flange-socket version (EN 60068-2-6) $\leq 1000 \text{ m/s}^2$ (EN 60068-2-27)				
Max. operating temp. ³⁾	100 °C		85 °C (100 °C at $U_P < 15 \text{ V}$)		100 °C
Min. operating temp.	Flange socket or fixed cable: –40 °C; Moving cable: –10 °C				
Protection ³⁾ EN 60529	IP 64				
Weight	0.6 kg to 0.9 kg depending on the hollow shaft version				

Bold: These preferred versions are available on short notice

* Please select when ordering

¹⁾ Velocity-dependent deviations between the absolute value and incremental signal

²⁾ Restricted tolerances: Signal amplitude 0.8 to 1.2 V_{PP}

³⁾ For the correlation between the protection class, shaft speed and operating temperature, see *General Mechanical Information*

⁴⁾ At room temperature, calculated; material of mating shaft: 1.4104

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