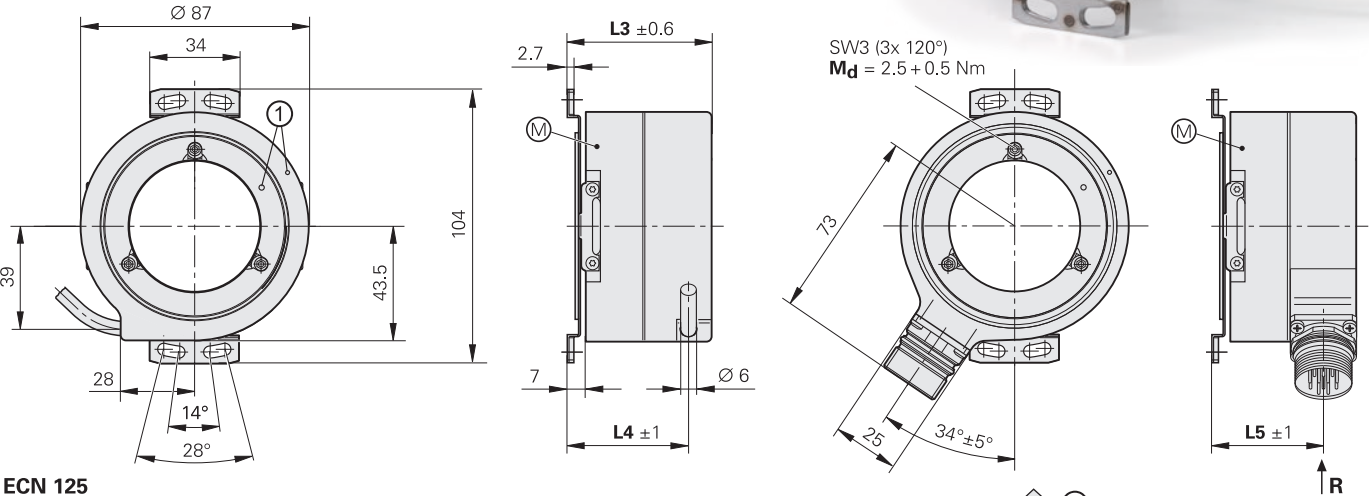


ECN/ERN 100 series

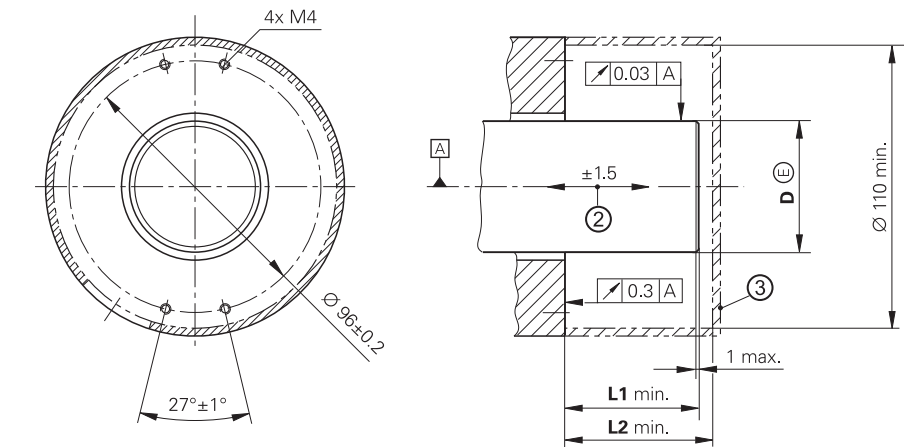
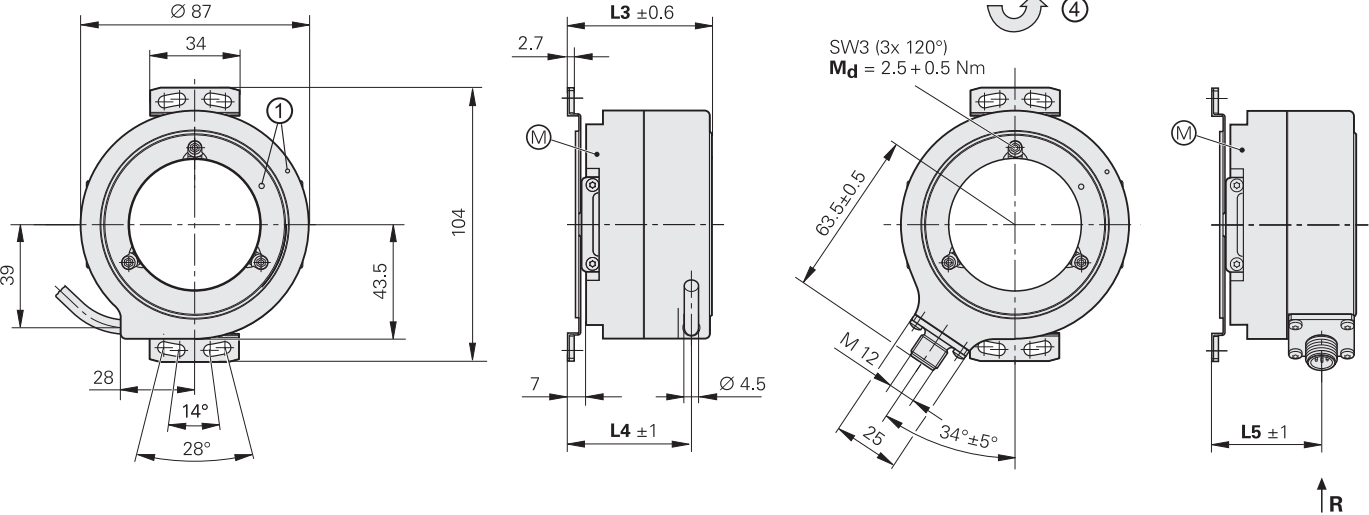
- Absolute and incremental rotary encoders
- Stator coupling for plane surface
 - Hollow through shaft



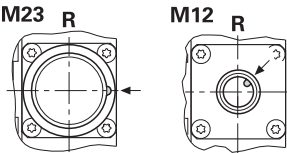
ERN 1x0/ECN 113



ECN 125



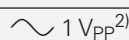
Connector coding
R = Radial



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

mm
Tolerancing ISO 8015
ISO 2768:1989-mH
≤ 6 mm: ±0.2 mm

- Radial cable (can also be used axially)
- ▢ = Bearing
 - ⊙ = Measuring point for operating temperature
 - 1 = ERN: reference mark position ±15°; ECN: zero position ±15°
 - 2 = Compensation of mounting tolerances and thermal expansion; no dynamic motion permitted
 - 3 = Ensure protection against contact (EN 60529)
 - 4 = Incremental rotary encoders: direction of shaft rotation for output signals as per interface description
Absolute rotary encoders: direction of shaft rotation for ascending position values

	Absolute Singletum		Incremental		
	ECN 125	ECN 113	ERN 120	ERN 130	ERN 180
Interface	EnDat 2.2	EnDat 2.2			
Ordering designation	EnDat22	EnDat01	–		
Positions/revolution	33554432 (25 bits)	8192 (13 bits)	–		
Code	Pure binary		–		
Elec. permissible speed Deviations ¹⁾	n _{max} for continuous position value	≤ 600 rpm/n _{max} ±1 LSB/±50 LSB	–		
Calculation time <i>t</i> _{cal} Clock frequency	≤ 7 μs ≤ 16 MHz	≤ 9 μs ≤ 2 MHz	–		
Incremental signals	Without				
Line counts*	–	2048	1000 1024 2048 2500 3600 5000		
Reference mark	–	–	One		
Cutoff frequency –3 dB	–	≥ 400 kHz (typ.)	–		≥ 180 kHz (typ.)
Output frequency	–	–	≤ 300 kHz		–
Edge separation <i>a</i>	–	–	≥ 0.39 μs		–
System accuracy	±20″		1/20 of grating period		
Electrical connection*	• M12 flange socket, radial • Cable (1 m/5 m) with M12 coupling	• M23 flange socket, radial • Cable (1 m/5 m) with or without M23 coupling	• M23 flange socket, radial • Cable (1 m/5 m) with or without M23 coupling		
Supply voltage	DC 3.6 V to 14 V		DC 5 V ±0.5 V	DC 10 V to 30 V	DC 5 V ±0.5 V
Power consumption (max.)	3.6 V: ≤ 620 mW/14 V: ≤ 720 mW		–		
Current consumption without load	5 V: ≤ 85 mA (typical)		≤ 120 mA	≤ 150 mA	≤ 120 mA
Shaft*	Hollow through shaft (Ø 20 mm, Ø 25 mm , Ø 38 mm, Ø 50 mm)				
Mech. permiss. speed ³⁾	Ø > 30 mm: ≤ 4000 rpm; Ø ≤ 30 mm: ≤ 6000 rpm				
Starting torque (typical) at 20 °C	Ø > 30 mm: 0.2 Nm Ø ≤ 30 mm: 0.15 Nm				
Moment of inertia of rotor/ angular acceleration ⁴⁾	Ø 50 mm: 220 · 10 ^{–6} kgm ² /≤ 5 · 10 ⁴ rad/s ² ; Ø 38 mm: 350 · 10 ^{–6} kgm ² /≤ 2 · 10 ⁴ rad/s ² Ø 25 mm: 96 · 10 ^{–6} kgm ² /≤ 3 · 10 ⁴ rad/s ² ; Ø 20 mm: 100 · 10 ^{–6} kgm ² /≤ 3 · 10 ⁴ rad/s ²				
Permiss. axial motion of measured shaft	±1.5 mm				
Vibration: 55 Hz to 2000 Hz Shock: 6 ms	≤ 200 m/s ² ; flange-socket version: ≤ 100 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² (EN 60068-2-27)				
Max. operating temp. ³⁾	100 °C (85 °C with ERN 130)				
Min. operating temp.	Flange socket or fixed cable: –40 °C; moving cable: –10 °C				
Protection EN 60529	IP64				
Mass	0.6 kg to 0.9 kg, depending on the hollow-shaft version				
Valid for ID	810801-xx	810800-xx	589611-xx	589612-xx	589614-xx

Bold: This preferred version is available on short notice. *Please select when ordering

¹⁾ Speed-dependent deviations between absolute value and incremental signal ²⁾ Limited tolerances: signal amplitude: 0.8V_{PP} to 1.2V_{PP}

³⁾ For the relationship between shaft speed and operating temperature, see "General mechanical information"

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