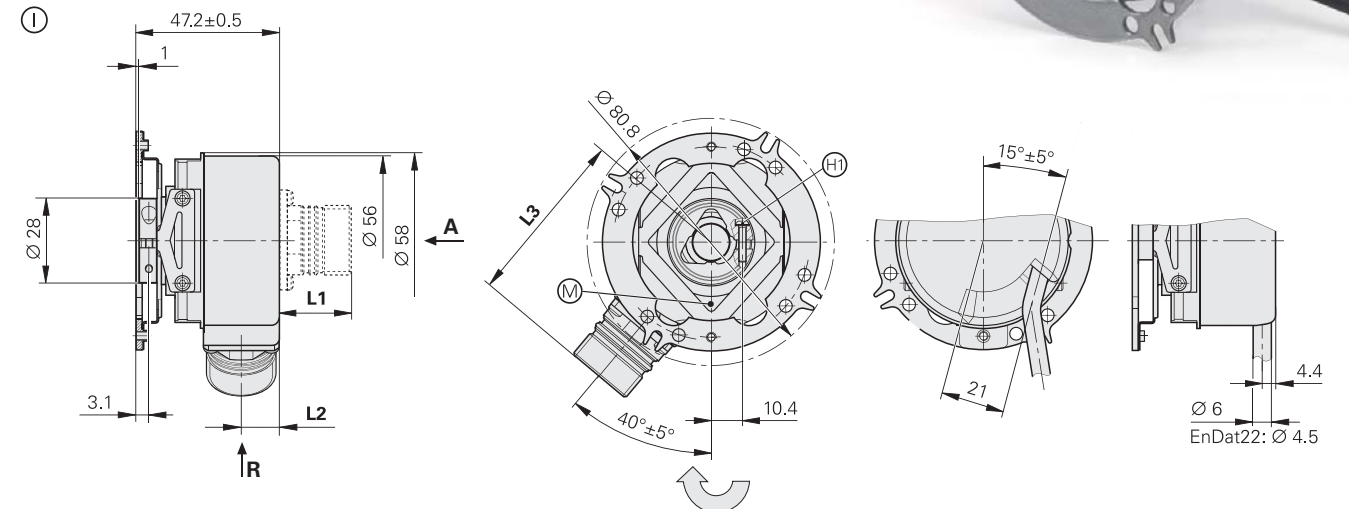


ECN, EQN, ERN 400 Series

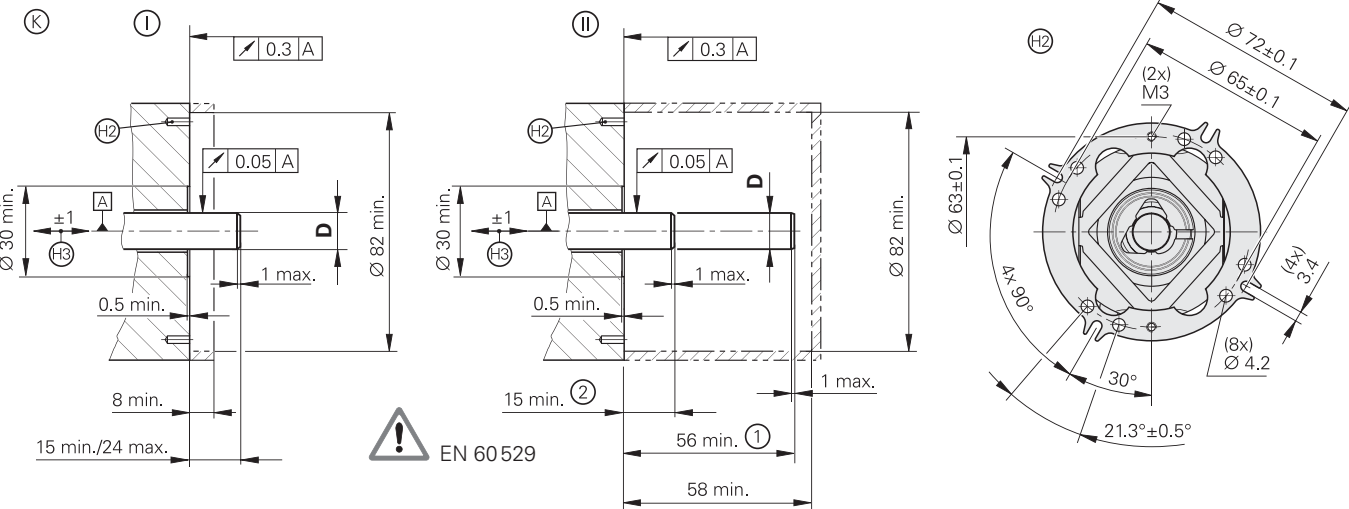
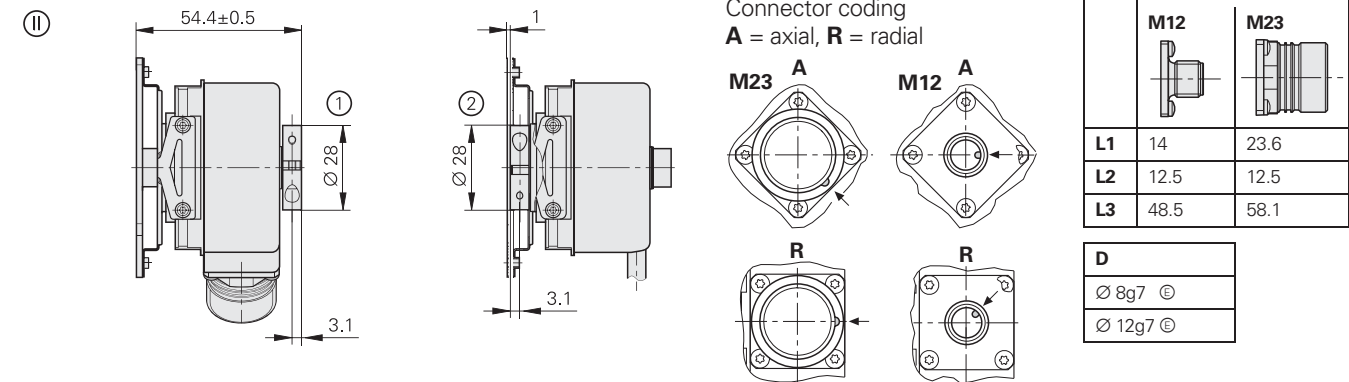
- Rotary encoders with mounted universal stator coupling
- Blind hollow shaft or hollow through shaft



Blind hollow shaft



Hollow through shaft



Dimensions in mm



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

Cable radial, also usable axially

- Ⓐ = Bearing
- Ⓑ = Bearing of encoder
- Ⓜ = Measuring point for operating temperature
- Ⓢ = Required mating dimensions
- Ⓣ = Clamping screw with X8 hexalobular socket
- Ⓤ = Hole circle for fastening, see coupling
- Ⓦ = Compensation of mounting tolerances and thermal expansion, no dynamic motion permitted
- ① = Clamping ring on housing side (condition upon delivery)
- ② = Clamping ring on coupling side (optionally mountable)
- ↻ = Direction of shaft rotation for output signals as per the interface description

	Incremental			
	ERN 420	ERN 460	ERN 430	ERN 480
Incremental signals	 TTL		 HTL	 1 V _{PP} ¹⁾
Line counts*	250 500			–
	1000 1024 1250 2000 2048 2500 3600 4096 5000			
Cutoff frequency –3 dB Scanning frequency Edge separation a	– ≤ 300 kHz ≥ 0.39 μs			≥ 180 kHz – –
System accuracy	1/20 of grating period			
Power supply Current consumption without load	5 V ± 10 % 120 mA	10 to 30 V 100 mA	10 to 30 V 150 mA	5 V ± 10 % 120 mA
Electrical connection*	• Flange socket M23, radial and axial (with blind hollow shaft) • Cable 1 m, without connecting element			
Shaft*	Blind hollow shaft or hollow through shaft ; D = 8 mm or D = 12 mm			
Mech. permissible speed n ²⁾	≤ 6000 min ^{–1} /≤ 12000 min ^{–1} ³⁾			
Starting torque at 20 °C below –20 °C	<i>Blind hollow shaft:</i> ≤ 0.01 Nm <i>Hollow through shaft:</i> ≤ 0.025 Nm ≤ 1 Nm			
Moment of inertia of rotor	≤ 4.3 · 10 ^{–6} kgm ²			
Permissible axial motion of measured shaft	± 1 mm			
Vibration 55 to 2000 Hz Shock 6 ms/2 ms	≤ 300 m/s ² ; <i>flange socket version:</i> 150 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² /≤ 2000 m/s ² (EN 60068-2-27)			
Max. operating temp. ²⁾	100 °C	70 °C	100 °C ⁴⁾	
Min. operating temp.	<i>Flange socket or fixed cable:</i> –40 °C <i>For frequent flexing:</i> –10 °C			
Protection EN 60529	<i>At housing:</i> IP 67 (IP 66 for hollow through shaft) <i>At shaft inlet:</i> IP 64 (IP 66 upon request)			
Weight	Approx. 0.3 kg			

Bold: These preferred versions are available on short notice

* Please select when ordering

¹⁾ Restricted tolerances: Signal amplitude 0.8 to 1.2 V_{PP}

²⁾ For the correlation between the operating temperature and the shaft speed or supply voltage, see *General Mechanical Information*

³⁾ With two shaft clamps (only for hollow through shaft)

⁴⁾ 80° for ERN 480 with 4096 or 5000 lines

	Absolute		
	Singletum		
	ECN 425	ECN 413	ECN 413
Absolute position values*	EnDat 2.2	EnDat 2.2	SSI
Ordering designation	EnDat 22	EnDat 01	39r1
Positions per revolution	33554432 (25 bits)	8192 (13 bits)	
Revolutions	–		
Code	Pure binary		Gray
Elec. permissible speed Deviations ¹⁾	≤ 12000 min ^{–1} for continuous position value	512 lines: ≤ 5000/12000 min ^{–1} ± 1 LSB/± 100 LSB 2048 lines: ≤ 1500/12000 min ^{–1} ± 1 LSB/± 50 LSB	≤ 12000 min ^{–1} ± 12 LSB
Calculation time t _{cal}	≤ 5 μs		≤ 0.5 μs ⁵⁾
Incremental signals	None	~ 1 V _{PP} ²⁾	
Line counts*	–	512 2048	512
Cutoff frequency –3 dB Scanning frequency Edge separation a	– – –	512 lines: ≥ 130 kHz; 2048 lines: ≥ 400 kHz – –	
System accuracy	± 20"	512 lines: ± 60"; 2048 lines: ± 20"	
Power supply* Current consumption without load	3.6 to 14 V ≤ 110 mA ⁶⁾	3.6 to 14 V ≤ 110 mA ⁶⁾	5 V ± 5 % or 10 to 30 V ≤ 100 mA or ≤ 45 mA
Electrical connection*	• Flange socket M12, radial • Cable 1 m, with M12 coupling	• Flange socket M23, radial • Cable 1 m, with M23 coupling or without connecting element	
Shaft*	Blind hollow shaft or hollow through shaft; D = 8 mm or D = 12 mm		
Mech. permissible speed n ³⁾	≤ 6000 min ^{–1} /≤ 12000 min ^{–1} 4)		
Starting torque at 20 °C below –20 °C	Blind hollow shaft: ≤ 0.01 Nm Hollow through shaft: ≤ 0.025 Nm ≤ 1 Nm		
Moment of inertia of rotor	≤ 4.3 · 10 ^{–6} kgm ²		
Permissible axial motion of measured shaft	± 1 mm		
Vibration 55 to 2000 Hz Shock 6 ms/2 ms	≤ 300 m/s ² ; flange socket version: 150 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² /≤ 2000 m/s ² (EN 60068-2-27)		
Max. operating temp. ³⁾	100 °C		
Min. operating temp.	Flange socket or fixed cable: –40 °C For frequent flexing: –10 °C		
Protection EN 60529	IP 67 at housing, IP 64 at shaft end (IP 66 available on request)		
Weight	Approx. 0.3 kg		

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}

