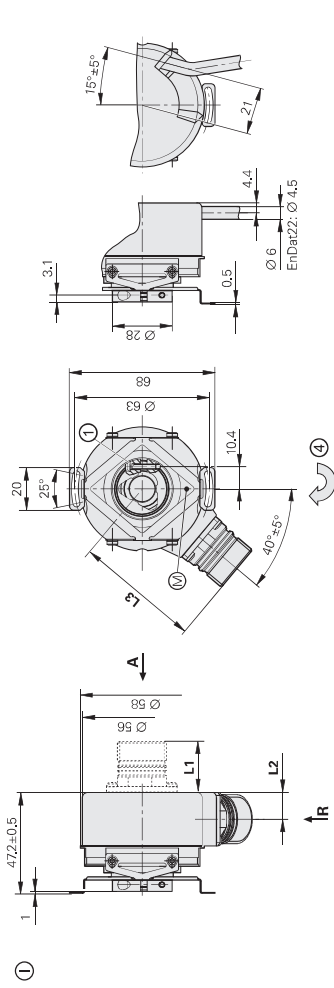


# ECN/EQN/ERN 400 series

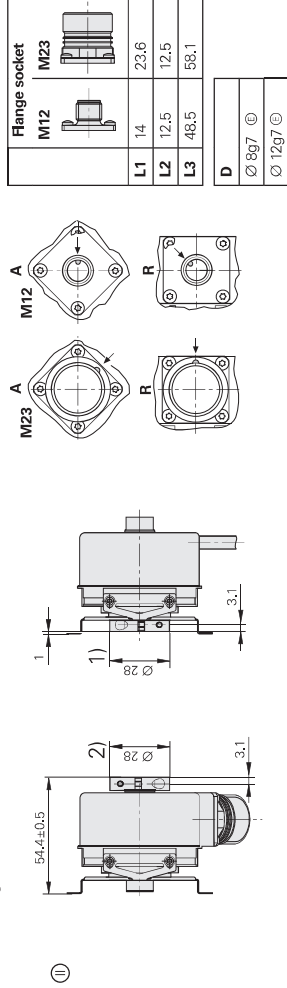
Absolute and incremental rotary encoders

- Stator coupling for plane surface
- Blind hollow shaft or hollow through shaft

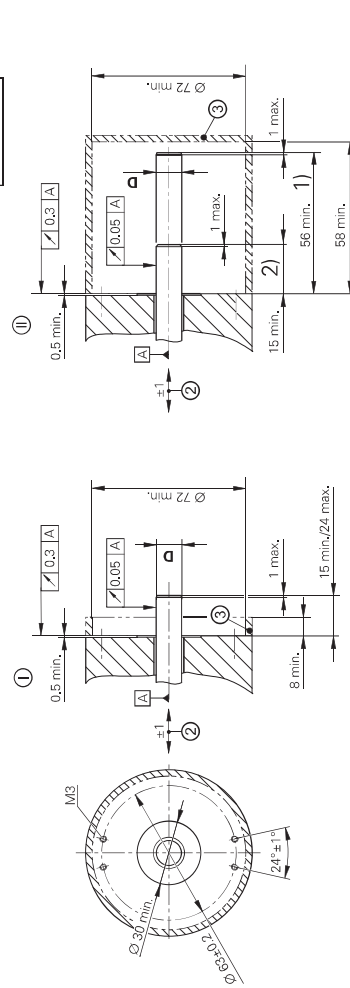
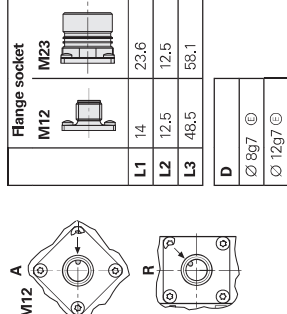
## Blind hollow shaft



## Hollow through shaft



Connector coding  
A = Axial, R = Radial



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

- Radial cable (can also be used axially)
- ⊕ = Bearing of mating shaft
  - ⊙ = Measuring point for operating temperature
  - 1 = Clamping screw with X8 hexabulbar socket
  - 2 = Compensation of mounting tolerances and thermal expansion; no dynamic motion permissible
  - 3 = Ensure protection against contact (EN 60529)
  - 4 = Incremental rotary encoders: Direction of shaft rotation for output signals according to interface description
- Absolute rotary encoders: Direction of shaft rotation for ascending position values
- 1) = Clamping ring on housing side (delivery condition)
  - 2) = Clamping ring on coupling side (optionally mountable)

	Incremental	ERN 420	ERN 460	ERN 430	ERN 480
Interface		HTTL		HTL	1 V <sub>pp</sub> <sup>1)</sup>
Line counts*		250 500			-
Reference mark		One			
Cutoff frequency -3 dB		≤ 300 kHz			≥ 180 kHz
Output frequency		≥ 0.39 μs			-
Edge separation a					-
System accuracy		1/20 of grating period			
Electrical connection*		• M23 flange socket, radial and axial (with blind hollow shaft) • Cable (1 m), free cable end			
Supply voltage		DC 5 V ±0.5 V	DC 10 V to 30 V	DC 10 V to 30 V	DC 5 V ±0.5 V
Current consumption without load		≤ 120 mA	≤ 100 mA	≤ 150 mA	≤ 120 mA
Shaft*		Blind hollow shaft or hollow through shaft; (both available in Ø 8 mm or Ø 12 mm)			
Mach. perm. shaft speed <i>n</i> <sup>2)</sup>		≤ 6000 rpm/≤ 12000 rpm <sup>3)</sup>			
Starting torque (typical) at 20 °C		Blind hollow shaft: 0.01 Nm Hollow through shaft: 0.025 Nm (with IP66: 0.075 Nm)			
Moment of inertia of rotor		≤ 4.3 · 10 <sup>-6</sup> kgm <sup>2</sup>			
Permiss. axial motion of measured shaft		±1 mm			
Vibration: 55 Hz to 2000 Hz		≤ 300 m/s <sup>2</sup> ; flange socket version: 150 m/s <sup>2</sup> (EN 60068-2-6); higher values upon request			
Shock: 6 ms		≤ 2000 m/s <sup>2</sup> (EN 60068-2-27)			
Max. operating temp. <sup>2)</sup>		100 °C	70 °C	100 °C <sup>4)</sup>	
Min. operating temp.		Flange socket or fixed cable: -40 °C; moving cable: -10 °C			
Protection EN 60529		At housing: IP67 (IP66 with hollow through shaft) At shaft inlet: IP64 (with Ø 12 mm; IP66 upon request)			
Mass		≈ 0.3 kg			
Valid for ID		385420-xx	385460-xx	385430-xx	385480-xx <sup>5)</sup>

**Bold:** This preferred version is available on short notice.

\* Please select when ordering

<sup>1)</sup> Limited tolerances: signal amplitude: 0.8 V<sub>pp</sub> to 1.2 V<sub>pp</sub>

<sup>2)</sup> For the relationship of operating temperature to shaft speed and supply voltage, see *General mechanical information*

<sup>3)</sup> With two shaft dampings (only with hollow through shaft)

<sup>4)</sup> 80 °C for ERN 480 with 4096 or 5000 lines

<sup>5)</sup> Available with mechanical fault exclusion; for deviating specifications and special mounting information, see the *Fault Exclusion Customer Information document*