

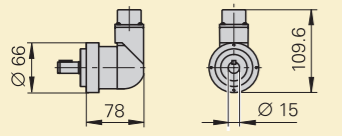
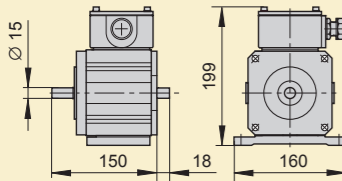
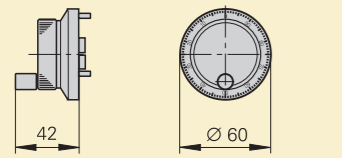
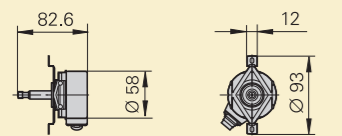
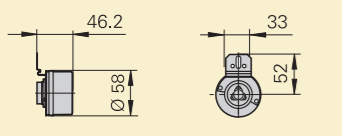


HEIDENHAIN



Rotary Encoders

Rotary encoders for special applications

Rotary encoders	Absolute Singletum		Multitum 4096 revolutions		Incremental			
	Interface	EnDat	SSI	EnDat	SSI	□TTL	□HTL	~ 1V _{pp}
For high bearing loads								
ROD 600 	-	-	-	-	-	ROD 620 512 to 5000 lines	ROD 630 512 to 5000 lines	-
ROD 1930 	-	-	-	-	-	-	ROD 1930 600 to 2400 lines	-
Electronic handwheel								
HR 1120 	-	-	-	-	-	ERN 421 1024 lines	ERN 431 1024 lines	-
For Siemens asynchronous motors								
ERN 401 series 	-	-	-	-	-	HR 1120 100 lines	-	-
EQN/ERN 400 series 	-	-	EQN 425 Positions/rev: 13 bits EnDat 2.1/01	EQN 425 Positions/rev: 13 bits	ERN 420 1024 lines	ERN 430 1024 lines	-	-



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For more information, please refer to the respective Product Information document



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For more information, please refer to the respective Product Information document



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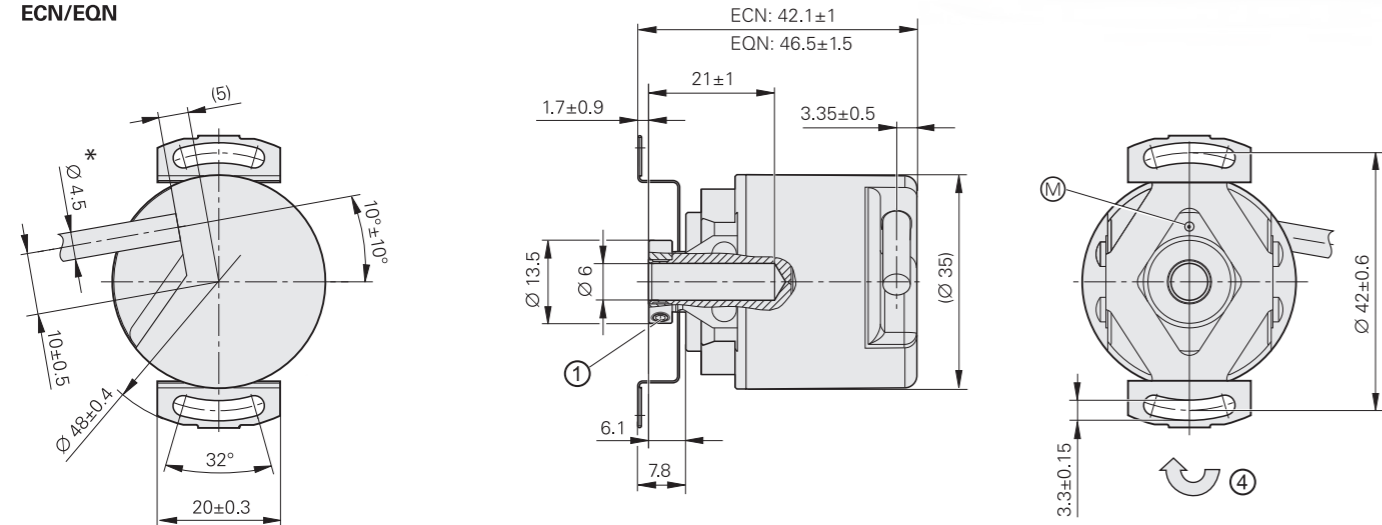
ECN/EQN/ERN 1000 series

Absolute and incremental rotary encoders

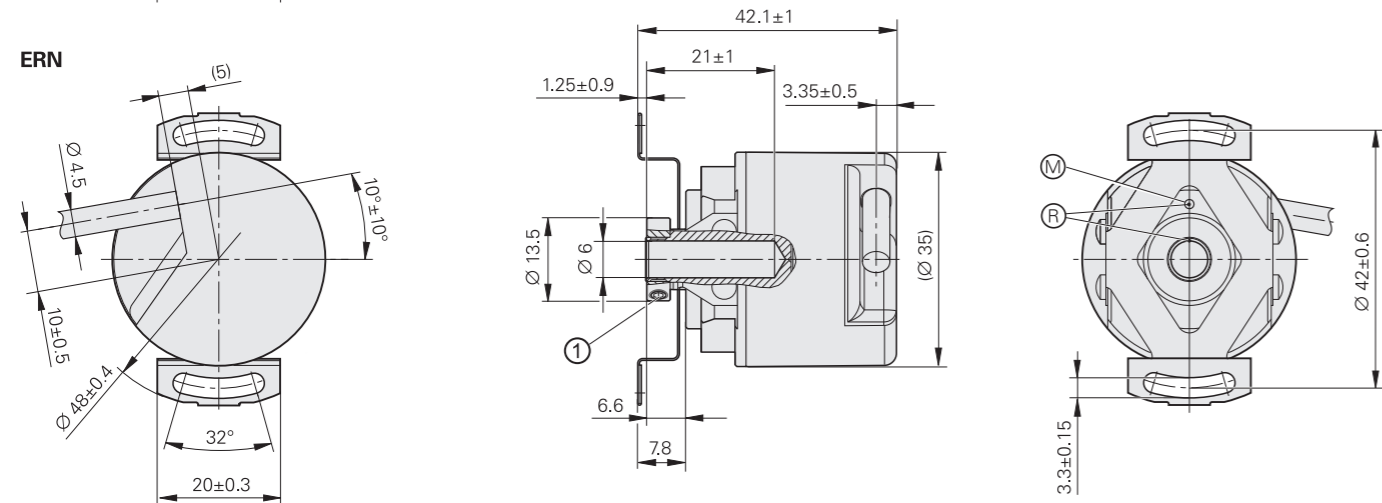
- Stator coupling for plane surface
- Blind hollow shaft



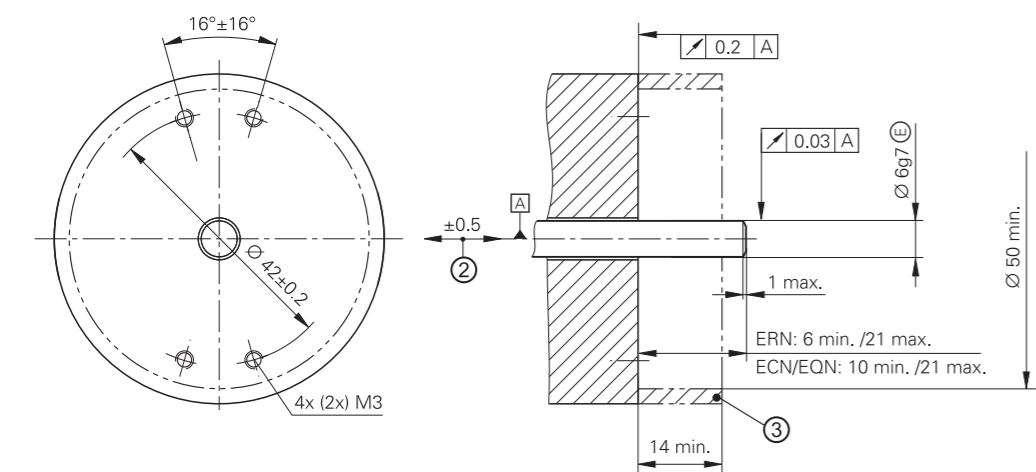
ECN/EQN



ERN



Required mating dimensions



mm

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

* = Ø 3.7 mm for encoders with the DRIVE-CLiQ interface

⊠ = Bearing of mating shaft

⊙ = Measuring point for operating temperature

⊕ = Reference mark position ±20°

1 = Two screws in clamping ring; tightening torque: 0.6 Nm ±0.1 Nm; width A/F: 1.5

2 = Compensation of mounting tolerances and thermal expansion; no dynamic motion permitted

3 = Ensure protection against contact (EN 60529)

4 = Direction of shaft rotation for output signals as per the interface description

	Incremental			
	ERN 1020	ERN 1030	ERN 1080	ERN 1070
Interface			$\sim 1 V_{PP}^{1)}$	
Line counts*	100 1000	200 1024	250 360 400 500 720 900 2048 2500 3600	1000 2500 3600
Reference mark	One			
Integrated interpolation*	-		5-fold	10-fold
Cutoff frequency -3 dB	-	-	≥ 180 kHz	-
Scanning frequency	≤ 300 kHz	≤ 160 kHz	-	≤ 100 kHz
Edge separation a	≥ 0.39 μs	≥ 0.76 μs	-	≥ 0.47 μs
System accuracy	1/20 of grating period			
Electrical connection*	Cable (1 m/5 m) with or without M23 coupling			Cable (5 m), free cable end
Supply voltage	DC 5 V ±0.5 V	DC 10 V to 30 V	DC 5 V ±0.5 V	DC 5 V ±0.25 V
Current consumption without load	≤ 120 mA	≤ 150 mA	≤ 120 mA	≤ 155 mA
Shaft	Blind hollow shaft Ø 6 mm			
Mech. permiss. shaft speed n	≤ 12000 rpm			
Starting torque (typical)	0.001 Nm (at 20 °C)			
Moment of inertia of rotor	≤ 0.5 · 10 ⁻⁶ kgm ²			
Permissible axial motion of measured shaft	±0.5 mm			
Vibration 55 Hz to 2000 Hz	≤ 100 m/s ² (EN 60068-2-6)			
Shock 6 ms	≤ 1000 m/s ² (EN 60068-2-27)			
Max. operating temp. ²⁾	100 °C	70 °C	100 °C	70 °C
Min. operating temp.	Fixed cable: -30 °C; moving cable: -10 °C			
Protection EN 60529	IP64			
Mass	≈ 0.1 kg			
Valid for ID	534909-xx	534911-xx	534913-xx	534912-xx

Bold: This preferred version is available on short notice.

* Please select when ordering

1) Limited tolerances: signal amplitude: 0.8 V_{PP} to 1.2 V_{PP}

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