

Поворотные энкодеры ECI 4010, 4090S, EBI 4010

Технические характеристики

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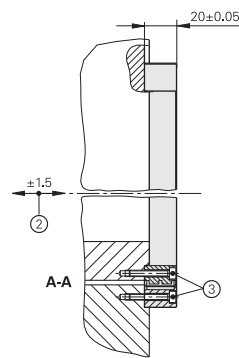
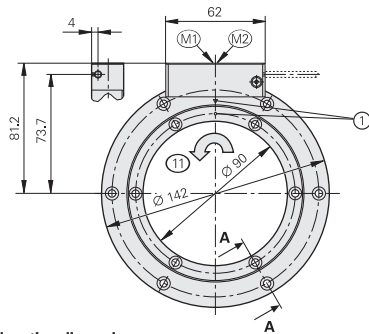
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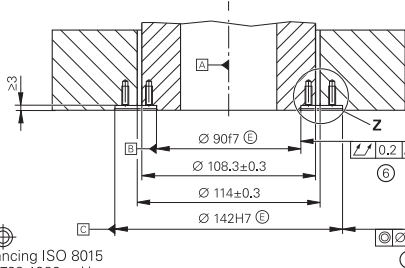
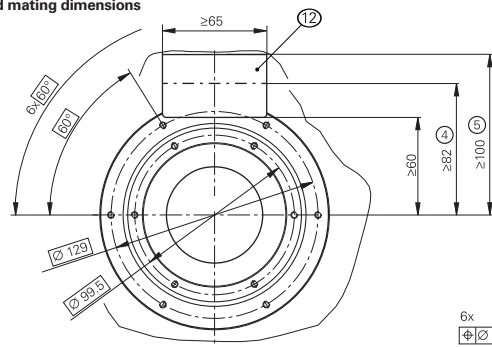
ECI 4010, EBI 4010, ECI 4090S

Rotary encoders for absolute position values

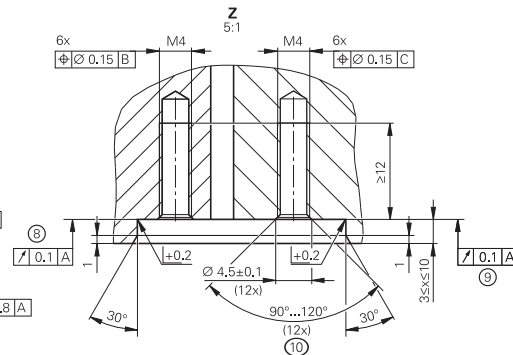
- Robust inductive scanning principle
- Hollow through shaft (Ø 90 mm)
- **EBI 4010:** multiturn functionality through battery-buffered revolution counter
- Consists of a scanning unit and scale drum



Required mating dimensions



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



- A = Bearing of mating shaft
 M1 = Measuring point for operating temperature on housing
 M2 = Measuring point for vibration on housing
 1 = Position of zero point ±5°
 2 = Maximum permissible axial deviation between the shaft surface and flange surface; compensation of mounting tolerances and thermal expansion; dynamic motion permitted over entire range

- 3 = Use screws with material bonding anti-rotation lock: ISO 4762 – M4 x 25 – 8.8 – MKL as per DIN 267-27 (not included in delivery, ID 202264-88); tightening torque 2.2 Nm ±0.13 Nm
 4 = Space required when encoder cover is closed
 5 = Space required for opening the encoder cover
 6 = Total runout of mating shaft
 7 = Coaxiality of stator mating surface
 8 = Bearing surface of rotor
 9 = Bearing surface of stator
 10 = Chamfer at start of thread is mandatory for material bonding anti-rotation lock
 11 = Direction of shaft rotation for ascending position values
 12 = This area of the mating surface does not need to be fully covered by the scanning unit

Specifications	ECI 4010 singletum 	EBI 4010 multitum 	ECI 4090S singletum 
Interface/ordering designation	EnDat 2.2 / EnDat22		DRIVE-CLiQ / DQ01
Position values per revolution	1048576 (20 bits)		
Revolutions	–	65536 (16 bits)	–
Calculation time t_{cal} /clock frequency	≤ 5 µs/≤ 16 MHz		≤ 11 µs ¹⁾
System accuracy	±25"		
Electrical connection	15-pin with connection for temperature sensor ²⁾		
Cable length	≤ 100 m		≤ 40 m ³⁾
Supply voltage	DC 3.6 V to 14 V	Rotary encoder U_P : DC 3.6 V to 14 V Buffer battery U_{Bat} : DC 3.6 to 5.25 V	DC 24 V (10 V to 28.8 V); up to 36 V possible without impairing the functional safety
Power consumption ⁴⁾ (maximum)	3.6 V: ≤ 0.63 W; 14 V: ≤ 0.7 W		10 V: ≤ 1.1 W; 28.8 V: ≤ 1.25 W
Current consumption (typical)	5 V: 95 mA (without load)	Normal operation at 5 V: 95 mA (without load) Buffer mode ⁵⁾ : 220 µA (rotating shaft) 25 µA (shaft at standstill)	24 V: 40 mA (without load)
Shaft	Hollow through shaft (Ø 90 mm)		
Shaft speed	≤ 6000 rpm		
Moment of inertia of rotor	4.26 · 10 ⁻⁴ kgm ² (without screws)		
Angular acceleration of rotor	≤ 2 · 10 ⁴ rad/s ²		
Axial motion of measured shaft	≤ ±1.5 mm		
Vibration 55 Hz to 2000 Hz Shock 6 ms	AE scanning unit: ≤ 400 m/s ² ; TTR scale drum: ≤ 600 m/s ² (EN 60068-2-6) ≤ 2000 m/s ² (EN 60068-2-27)		
Operating temperature	–40 °C to 115 °C (at the measuring point and on the entire scale drum)		–40 °C to 100 °C (at the measuring point and on the entire scale drum)
Trigger threshold for exceeded temperature error message	130 °C (measuring accuracy of the internal temperature sensor: ±1 K)		120 °C (measuring accuracy of the internal temperature sensor: ±1 K)
Protection EN 60529	Complete encoder, mounted: IP20 ⁶⁾ ; scanning unit: IP40 (read about insulation under <i>Electrical safety</i> in the <i>Interfaces of HEIDENHAIN Encoders</i> brochure)		
Mass	AE scanning unit: ≈ 0.27 kg; TTR scale drum: ≈ 0.17 kg		
ID number	AE ECI4010 scanning unit: ID 1130167-xx	AE EBI4010 scanning unit: ID 1130173-xx	AE ECI4090S scanning unit: ID 1130171-xx
	TTR EXI4000 scale drum: ID 1130175-xx		

¹⁾ Calculation time TIME_MAX_ACTUAL

²⁾ Evaluation optimized for the KTY 84-130, with DQ01 also for the PT 1000 (see *Temperature measurement in motors*)

³⁾ At an output cable length (inside motor) ≤ 1 m

⁴⁾ See *General electrical information* in the *Interfaces of HEIDENHAIN Encoders* brochure

⁵⁾ At T = 25 °C; U_{BAT} = 3.6 V

⁶⁾ The encoder must be protected from abrasive and harmful media in the application; use an appropriate enclosure as needed.

For dimensions and specifications of encoders with functional safety, see the Product Information document.

DRIVE-CLiQ is a registered trademark of Siemens AG.

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