

Поворотные энкодеры ECN 1123S, EQN 1135S

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

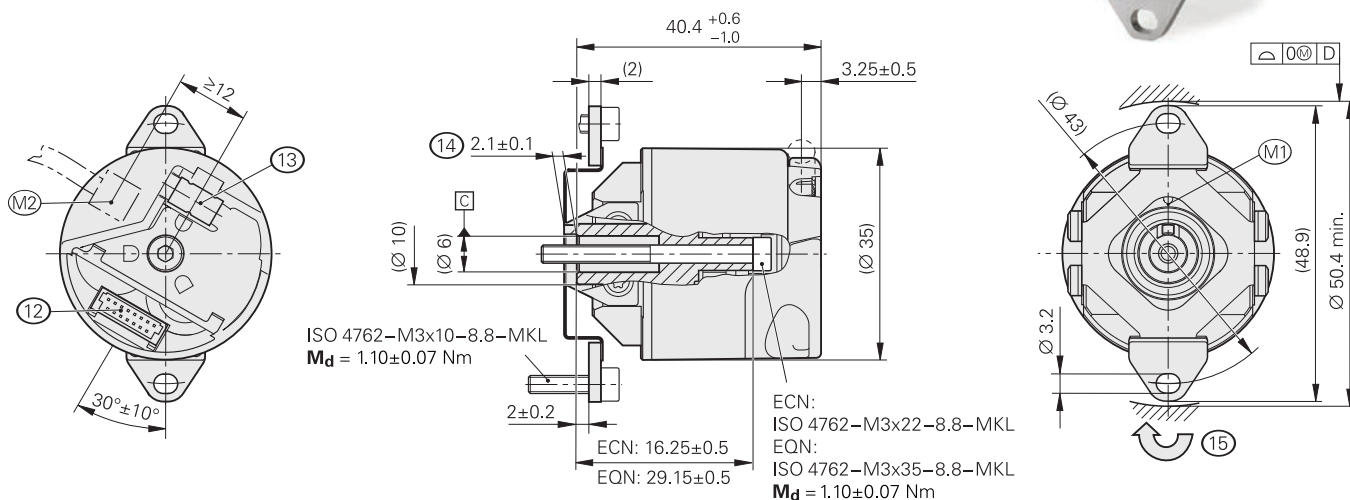
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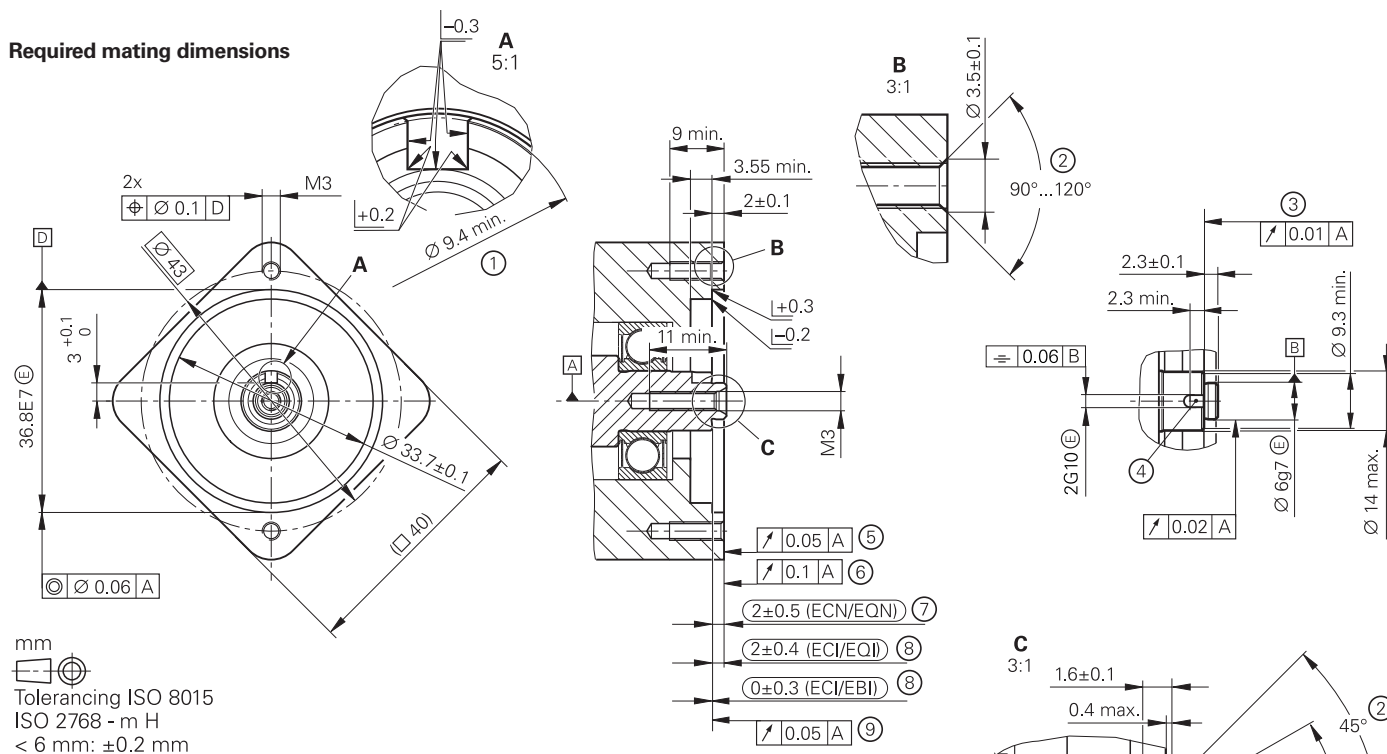
ECN 1123 S, EQN 1135 S

Rotary encoders for absolute position values with safe singleturn information

- 75A mounted stator coupling
- Blind hollow shaft (Ø 6 mm) for axial clamping (1KA)



Required mating dimensions



- ▣ = Bearing of mating shaft
 - M1 = Measuring point for operating temperature
 - M2 = Measuring point for vibration
 - 1 = Contact surface of slot
 - 2 = Chamfer at start of thread is mandatory for material bonding anti-rotation lock
 - 3 = Shaft surface; ensure full-surface contact!
 - 4 = Slot required only for ECN/EQN and ECI/EQI with WELLA1 = 1KA
 - 5 = ECI/EQI FS flange surface: ensure full-surface contact!
 - 6 = Coupling surface of ECN/EQN
 - 7 = Maximum permissible deviation between the shaft surface and coupling surface; compensation of mounting tolerances and thermal expansion, of which ± 0.15 mm of dynamic axial motion is permitted
 - 8 = Maximum permissible deviation between the shaft surface and flange surface; compensation of mounting tolerances and thermal expansion
 - 9 = ECI/EBI flange surface; ensure full-surface contact!
 - 10 = Undercut
 - 11 = Possible centering hole
 - 12 = 15-pin PCB connector
 - 13 = Cable fastener with crimp sleeve; diameter: $4.3 \text{ mm} \pm 0.1 \text{ mm}$; length: 7 mm
 - 14 = Positive locking element; ensure correct engagement in Slot 4 (e.g., by measuring the device overhang)
 - 15 = Direction of shaft rotation for ascending position values
 - 16 = Uncoated; shaft coating not permitted

Specifications	ECN 1123 S singletum		EQN 1135 S multitum
Functional safety for applications with up to	As a single-encoder system for monitoring functions and closed-loop functions • SIL 2 as per EN 61508 (further basis for testing: EN 61800-5-2) • Category 3, PL d as per EN ISO 13849-1:2015 Safe in singletum operation		
PFH ¹⁾	≤ 27 · 10 ^{−9} (probability of dangerous failure per hour)		
Safe position ²⁾	<i>Encoder</i> : ±1.76° (safety-related measuring step SM = 0.7°) <i>Mechanical coupling</i> : ±2° (fault exclusion for the loosening of the shaft coupling and stator coupling, designed for accelerations ≤ 300 m/s ²)		
Interface/ordering designation	DRIVE-CLiQ / DQ01		
Firmware	01.32.26.53		
Siemens software ³⁾ Firmware 01.32.26.53	SINAMICS, SIMOTION: ≥ V4.4 HF4; SINUMERIK with safety: ≥ V4.4 SP2; SINUMERIK without safety: ≥ V4.4 SP1 HF3		
Position values per revolution	8388608 (23 bits)		
Revolutions	–	4096 (12 bits)	
Calc. time TIME_MAX_ACTVAL ⁴⁾	≤ 8 μs		
System accuracy	±60"		
Electrical connection	15-pin PCB connector (with connection for external temperature sensor ⁵⁾)		
Cable length	≤ 40 m (see <i>Cable lengths</i> in the <i>Cables and Connectors</i> brochure)		
Supply voltage	DC 24 V (10 V to 28.8 V); up to DC 36.0 V possible without compromising functional safety		
Power consumption (max.)	At 10 V: ≤ 850 mW; at 28.8 V: ≤ 900 mW	At 10 V: ≤ 950 mW; at 28.8 V: ≤ 1000 mW	
Current consumption (typical)	At 24 V: 32 mA (without load)	At 24 V: 35 mA (without load)	
Shaft	Blind hollow shaft (Ø 6 mm) with positive-locking element (1KA)		
Speed ⁶⁾	≤ 12000 rpm		
Starting torque (typical)	0.001 Nm (at 20 °C)	0.002 Nm (at 20 °C)	
Moment of inertia of rotor	0.4 · 10 ^{−6} kgm ²		
Angular acceleration of rotor	≤ 1.0 · 10 ⁵ rad/s ²		
Axial motion of measured shaft	≤ ±0.5 mm		
Natural frequency of stator coupling	≥ 1000 Hz		
Vibration 55 Hz to 2000 Hz Shock 6 ms	≤ 200 m/s ² (EN 60068-2-6); 10 Hz to 55 Hz, 3.2 mm constant peak to peak ≤ 2000 m/s ² (EN 60068-2-27)		
Operating temperature	−40 °C to 95 °C		
Trigger threshold for exceeded temperature error message	125 °C (measurement accuracy of the internal temperature sensor: ±7 K at 125 °C)		
Relative humidity	≤ 93 % (40 °C/21 d as per EN 60068-2-78), without condensation		
Protection EN 60529	IP40 (read about insulation under <i>Electrical safety</i> in the <i>Interfaces of HEIDENHAIN Encoders</i> brochure; contamination from the ingress of liquid must be prevented)		
Mass	≈ 0.1 kg		
ID number	1211015-02	1211017-02	

¹⁾ For use at: $\leq 1000 \text{ m}$ above sea level

²⁾ Further tolerances may arise in subsequent electronics after position value comparison (contact mfr. of subsequent electronics)

³⁾ Information from Siemens as per the document "Certified encoders with DRIVE-CLiQ Dependencies on SIMOTION / SINUMERIK and SINAMICS Hardware and Software versions" (version: 12/2018)

⁴⁾ The calculation time TIME_MAX_ACTVAL specifies the time after which a data transfer from the encoder to the control can start within the current-regulator clock time.

⁵⁾ See *Temperature measurement in motors* in the *Encoders for Servo Drives* brochure.

⁶⁾ At ≥ 2 position requests per revolution

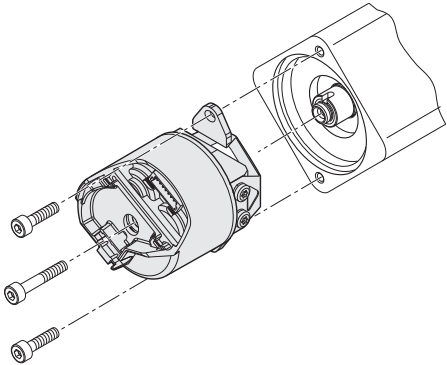
Mounting

The blind hollow shaft of the rotary encoder is seated onto the measured shaft and fastened with a central screw. It is particularly important to ensure that the positive-locking element of the rotary encoder shaft securely engages the corresponding slot in the measured shaft. Mounting on the stator side is performed without a centering collar on a flat surface with two clamping screws. Use screws with material bonding anti-rotation lock (see *Mounting accessories*).

For the customer-side mounting design, the material properties and conditions in accordance with the *General mechanical information* in the *Encoders for Servo Drives* brochure must be complied with. The materials specifications for aluminum and steel apply both to the customer-side shaft and stator.

For the design of the mechanical fault exclusion for the shaft connection, the following maximum torque $M_{\max}$ must be taken into account:
 $M_{\max} = 1.0 \text{ Nm}$

The customer's mechanical design must ensure that the maximum torque $M_{\max}$ occurring in the application can be transmitted.



Mounting accessories

Screws

Screws (central screw, mounting screws) are not included in delivery and can be ordered separately.

	Screws ¹⁾		Quantity
Central screw for ECN 1123	ISO 4762-M3×22-8.8-MKL	ID 202264-65	10 or 100
Central screw for EQN 1135	ISO 4762-M3×35-8.8-MKL	ID 202264-66	
Fastening screw for flange	ISO 4762-M3×10-8.8-MKL	ID 202264-87	20 or 200

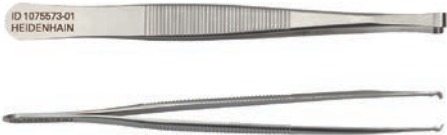
¹⁾ With coating for material bonding anti-rotation lock

Please note the information on screws from HEIDENHAIN in the *Encoders for Servo Drives* brochure, under *Screws with material bonding anti-rotation lock* in the chapter *General mechanical information*.

Mounting aid

To avoid damage to the cable, use the mounting aid to connect and disconnect the cable assembly. The pulling force must be applied only to the connector and not to the wires.

ID 1075573-01



Mounting aid

The mounting aid allows the shaft of the rotary encoder to be turned from the rear of the device, making it easy to find the positive-locking connection between the encoder shaft and the measured shaft.

ID 821017-03



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