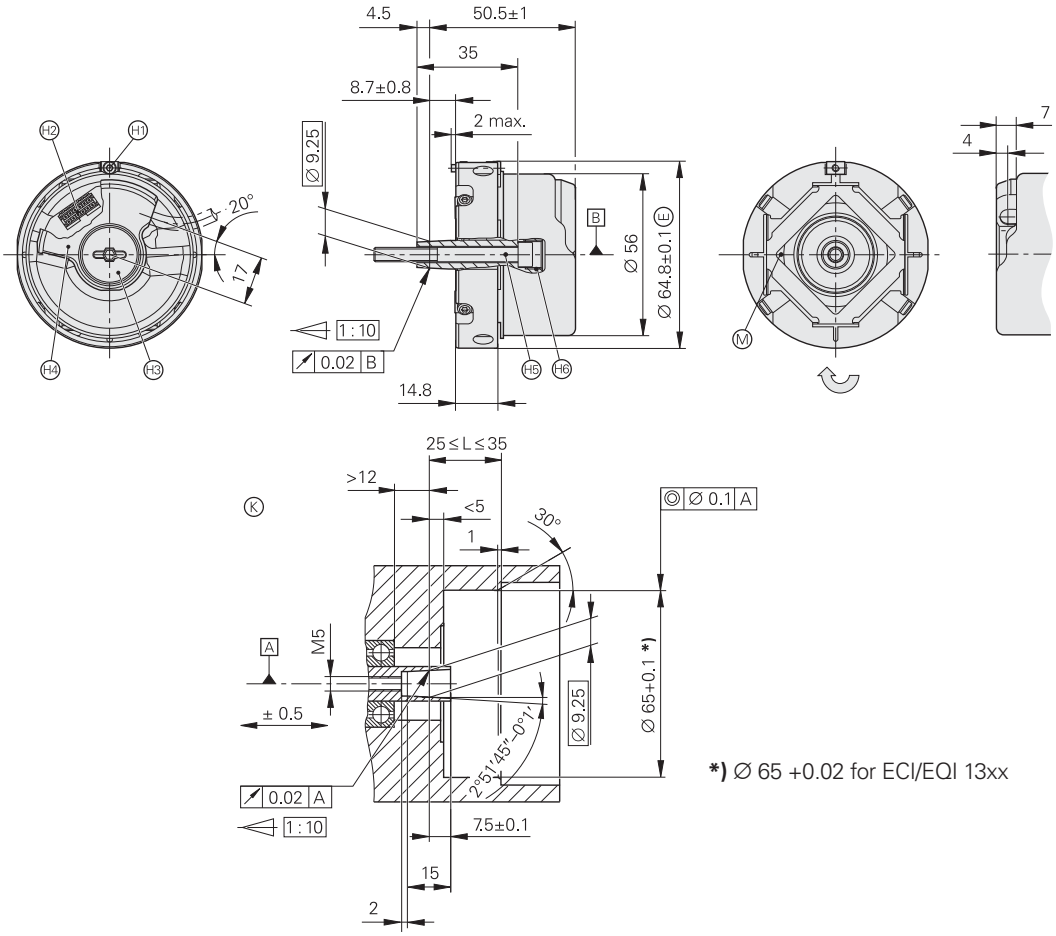
ECN/EQN 1300 Series

Rotary Encoders with Integral Bearings for Integration in Motors
- **Mounted stator coupling**
- **Installation diameter 65 mm**
- **Taper shaft**



***)** Ø 65 +0.02 for ECI/EQI 13xx

Dimensions in mm

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

A = Bearing of mating shaft
B = Bearing of encoder
K = Required mating dimensions
M = Measuring point for operating temperature
H1 = Clamping screw for coupling ring – width A/F 2; Tightening torque 1.25 Nm
H2 = ERN/ECN/EQN: Plug connector 12-pin (and 4 pins for temperature sensor, on ECN 1325/EQN 1337)
ERN with Z1 track: Plug connector 14-pin
ERN with block commutation: Plug connector 16-pin
H3 = Screw plug sizes 3 and 4; tightening torque 5 +0.5 Nm
H4 = Die-cast cover
H5 = Self-tightening screw M5 x 50 DIN 6912 width A/F 4; tightening torque 5 +0.5 Nm
H6 = Back-off thread M10
Direction of shaft rotation for output signals as per the interface description

	Absolute			
	ECN 1313	**ECN 1325**	**EQN 1325**	**EQN 1337**
Incremental signals	∿ V_{PP} [1]	–	∿ V_{PP} [1]	–
Line count*/ System accuracy	512/± 60" 2048/± 20"	2048/± 20"	512/± 60" 2048/± 20"	2048/± 20"
Cutoff frequency –3dB	*2048 lines:* ≥ 200 kHz *512 lines:* ≥ 100 kHz	–	*2048 lines:* ≥ 200 kHz *512 lines:* ≥ 100 kHz	–
Absolute position values	EnDat 2.2			
Ordering designation	EnDat 01	EnDat 22	EnDat 01	EnDat 22
Position values/rev	8192 (13 bits)	33554432 (25 bits)	8192 (13 bits)	33554432 (25 bits)
Revolutions	–		4096 (12 bits)	
Elec. permissible speed/ System accuracy	*512 lines:* 5000 rpm/± 1 LSB 12000 rpm/± 100 LSB *2048 lines:* 1500 rpm/± 1 LSB 12000 rpm/± 50 LSB	12000 rpm (for continuous position value)	*512 lines:* 5000 rpm/± 1 LSB 12000 rpm/± 100 LSB *2048 lines:* 1500 rpm/± 1 LSB 12000 rpm/± 50 LSB	12000 rpm (for continuous position value)
Calculation time t_{cal}	≤ 0.25 µs	≤ 5 µs	≤ 0.25 µs	≤ 5 µs
Power supply	5 V ± 5%	3.6 to 5.25 V	5 V ± 5%	3.6 to 5.25 V
Current consumption (without load)	≤ 160 mA	≤ 150 mA	≤ 200 mA	≤ 180 mA
Electrical connection via PCB connector	12-pin	*Rotary encoder:* 12-pin *Temperature sensor*[2]*:* 4-pin	12-pin	*Rotary encoder:* 12-pin *Temperature sensor*[2]*:* 4-pin
Shaft	Taper shaft Ø 9.25 mm; taper 1:10			
Mech. perm. speed n	≤ 15000 rpm		≤ 12000 rpm	
Starting torque at 20 °C	≤ 0.01 Nm			
Moment of inertia of rotor	$2.6 \cdot 10^{-6}$ kgm^2			
Natural frequency of stator coupling	≥ 1800 Hz			
Permissible axial motion of measured shaft	± 0.5 mm			
Vibration 55 to 2000 Hz **Shock** 6 ms	≤ 300 m/s^2 [3] (IEC 60068-2-6) ≤ 1000 m/s^2 / ≤ 2000 m/s^2 (IEC 60068-2-27)		≤ 150 m/s^2 (IEC 60068-2-6) ≤ 1000 m/s^2 / ≤ 2000 m/s^2 (IEC 60068-2-27)	
Max. operating temp.	115 °C			
Min. operating temp.	–40 °C			
Protection IEC 60529	IP 40 when mounted			
Weight (approx.)	0.25 kg			

***** Please indicate when ordering

[1] Restricted tolerances
Signal amplitude 0.75 to 1.2 V_{PP}
Asymmetry: 0.05
Amplitude ratio: 0.9 to 1.1
Phase angle: 90° ± 5° elec.
Signal-to-noise ratio E, F: 100 mV

[2] Evaluation optimized for KTY 84
Only use sensors with double or reinforced insulation. Ensure that the lines are routed inside the motor housing.

[3] As per standard for room temperature, the following applies for operating temperature Up to 100 °C: ≤ 300 m/s^2
Up to 115 °C: ≤ 150 m/s^2