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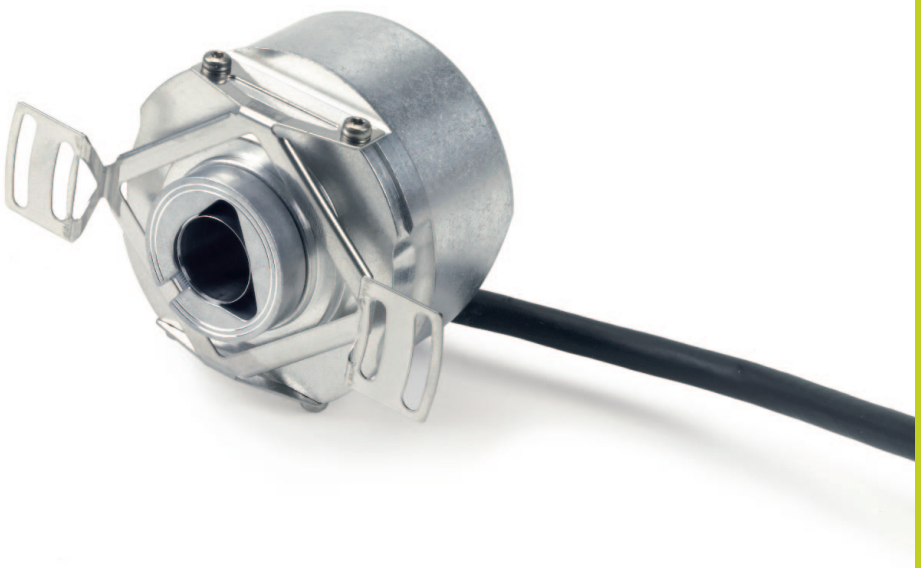


Product information

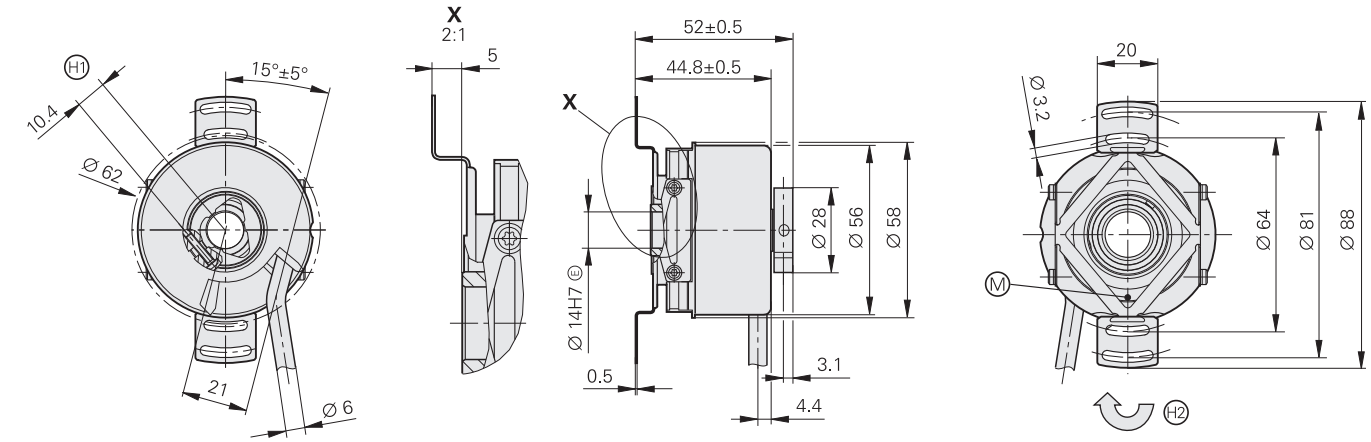
ECN 413
EQN 425

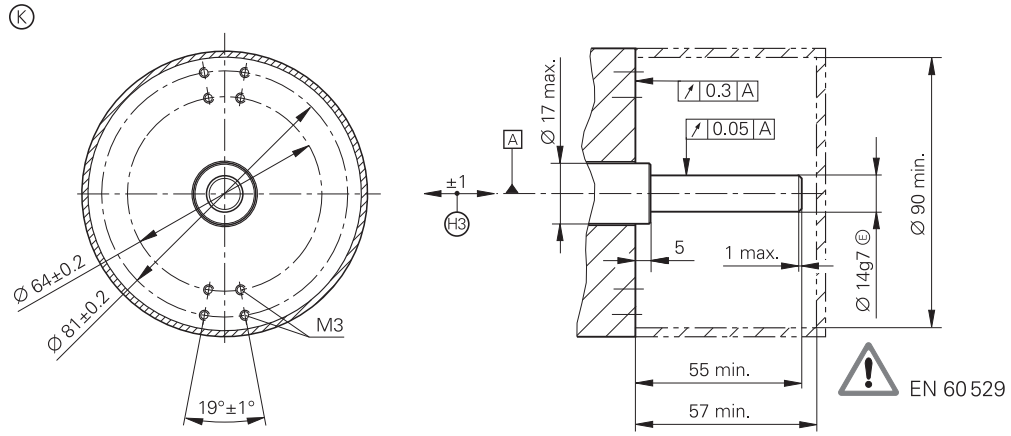
Absolute Encoders –
Leroy Somer

April 2012

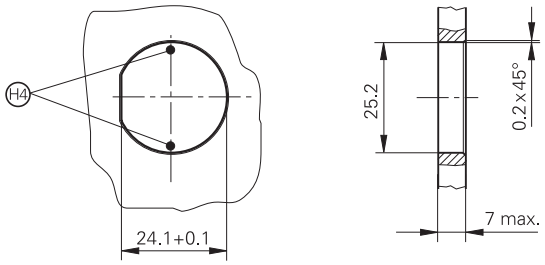
Serie ECN 413/EQN 425

- **Rotary encoders with mounted stator coupling**
- **Hollow through shaft**





Customer's cutout for mounting the coupling



mm

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

A = Bearing of mating shaft
K = Required mating dimensions
M = Measuring point for operating temperature
H1 = Clamping screw with hexalobular socket X8, tightening torque: 1.1 ± 0.1 Nm
H2 = Direction of shaft rotation for output signals according to interface description
H3 = Compensation of mounting tolerances and thermal expansion, no dynamic motion permitted
H4 = Possible positions for polarizing key

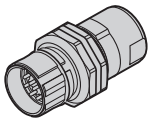
	Singleturn **ECN 413**		**Multiturn** **EQN 425**	
Absolute position values*	EnDat 2.2	SSI	EnDat 2.2	SSI
Order designation	EnDat 01	–	EnDat 01	–
Positions per revolution	8192 (13 bits)			
Revolutions	–		4096	
Code	Dual	Gray	Dual	Gray
Elec. permissible speed/ Deviations[1]	*512 lines:* 5000 rpm/± 1 LSB 12000 rpm/± 100 LSB *2048 lines:* 1500 rpm/± 1 LSB 12000 rpm/± 50 LSB	≤ 12000 rpm/± 12 LSB	*512 lines:* 5000 rpm/± 1 LSB 10000 rpm/± 100 LSB *2048 lines:* 1500 rpm/± 1 LSB 10000 rpm/± 50 LSB	≤ 12000 rpm/± 12 LSB
Incremental signals	~ 1 V_{PP}[2]			
Line counts*	512 2048	512	512 2048	512
Cut-off frequency –3 dB	*512 lines:* ≥ 130 kHz; *2048 lines:* ≥ 400 kHz			
Power supply	3.6 to 14 V DC	10 to 30 V DC	3.6 to 14 V DC	10 to 30 V DC
Power consumption[3] (maximum)	*3.6 V:* ≤ 600 mW *14 V:* ≤ 700 mW	*10 V:* ≤ 650 mW *30 V:* ≤ 1000 mW	*3.6 V:* ≤ 700 mW *14 V:* ≤ 800 mW	*10 V:* ≤ 750 mW *30 V:* ≤ 1100 mW
Current consumption (typical; without load)	*5 V:* 85 mA	*5 V:* 90 mA *24 V:* 24 mA	*5 V:* 105 mA	*5 V:* 120 mA *24 V:* 28 mA
Electrical connection*	Cable 0.35 m, 0.45 m or 1 m with coupling (male) with central nut			
Shaft	Hollow through shaft; D = 14 mm			
Mech. perm. speed *n*	≤ 6000 rpm			
Starting torque at 20 °C	≤ 0.025 Nm			
Moment of inertia of rotor	$4.3 \cdot 10^{-6}$ kgm^2			
Permissible axial motion of measured shaft	± 1 mm			
Vibration 55 to 2000 Hz **Shock** 6 ms	≤ 300 m/s^2 (IEC 60068-2-6) ≤ 1000 m/s^2 (IEC 60068-2-27)			
Max. operating temperatur[4]	U_P = *5 V:* 100 °C U_P = *10 to 30 V:* 85 °C			
Min. operating temperatur	*Fixed cable:* –40 °C *Moving cable:* –10 °C			
Protection IEC 60529	IP 67 at housing; IP 64 at shaft inlet			
Weight	Approx. 0.3 kg			

* Please indicate when ordering.
[1] Velocity-dependent deviations between the absolute value and incremental signal.
[2] Restricted tolerances: Signal amplitude 0.8 to 1.2 V_{PP}.
[3] See General Electrical Information in the *Rotary Encoders* catalog or at *www.heidenhain.de*
[4] Please refer to *Rotary Encoders catalog, General Mechanical Information*.

Electrical Connection

Pin layout

17-pin
HEIDENHAIN coupling



	Power supply					Incremental signals				Other signals	
	7	**1**	**10**	**4**	**11**	**15**	**16**	**12**	**13**	**3**	**2**
	U_P	**Sensor** U_P	**0 V**	**Sensor** 0 V	**Internal shield**	**A+**	**A–**	**B+**	**B–**	**Vacant**	**Vacant**
	Brown/ Green	Blue	White/ Green	White	/	Green/ Black	Yellow/ Black	Blue/ Black	Red/ Black	Red	Black

	Absolute position values					
	14	**17**	**8**	**9**	**5**	**6**
	DATA	**$\overline{\text{DATA}}$**	**CLOCK**	**$\overline{\text{CLOCK}}$**	**Vacant**	**Vacant**
	Gray	Pink	Violet	Yellow	Green	Brown

Shield on housing; **U_P** = power supply voltage
Sensor: The sensor line is connected internally with the corresponding power line.
Vacant pins or wires must not be used!

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Fore more Information see
- Catalog *Rotary encoders*

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