HEIDENHAIN

Product Information

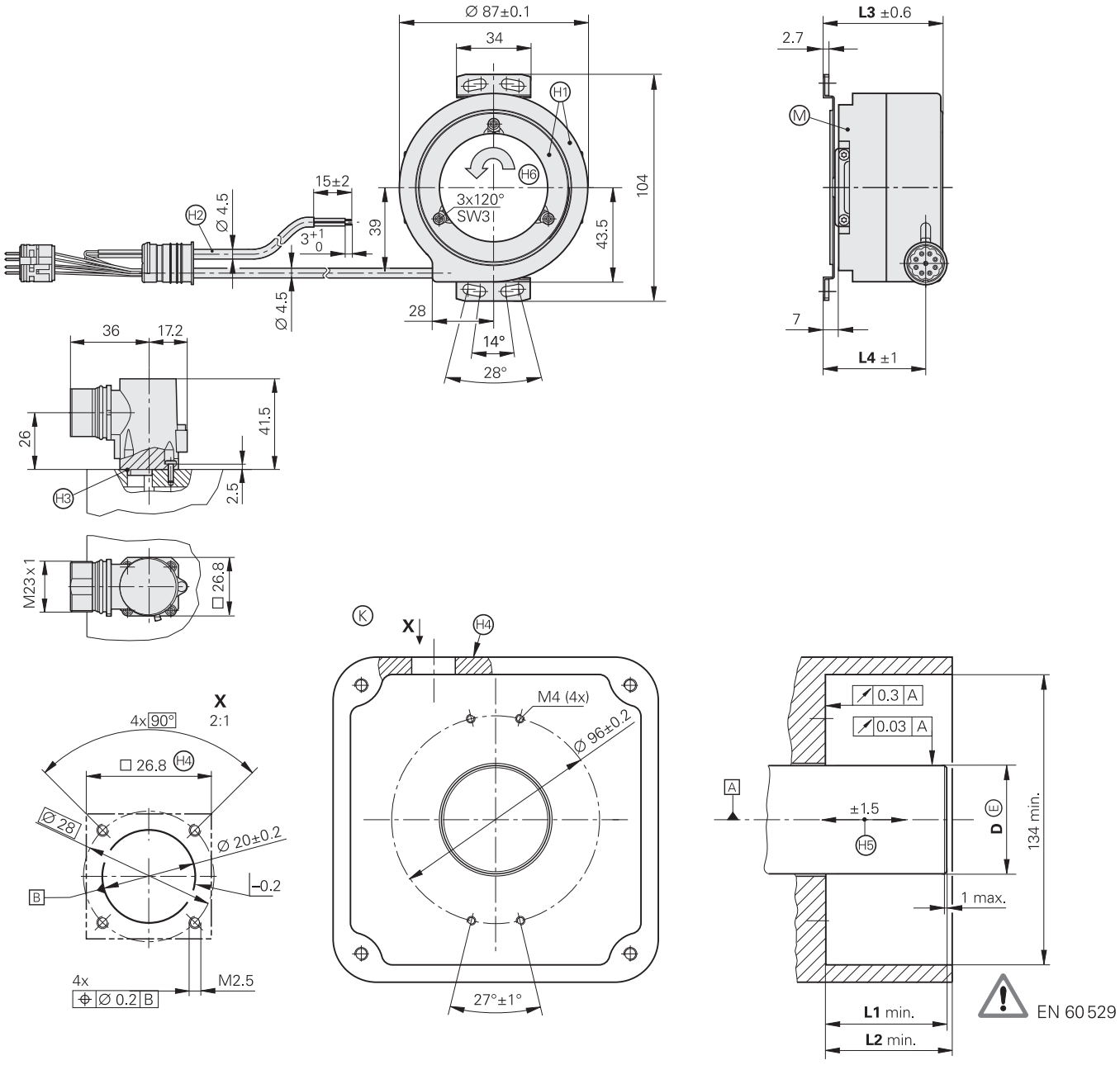
ECN 125

Absolute Modular Rotary Encoder with Right-Angle Flange Socket

April 2012

ECN 125

- **Rotary encoder with mounted stator coupling**
- **Hollow through shaft up to Ø 50 mm**
- **Version with right-angle flange socket**
- **Evaluation of an internal and external temperature sensor possible**



mm

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

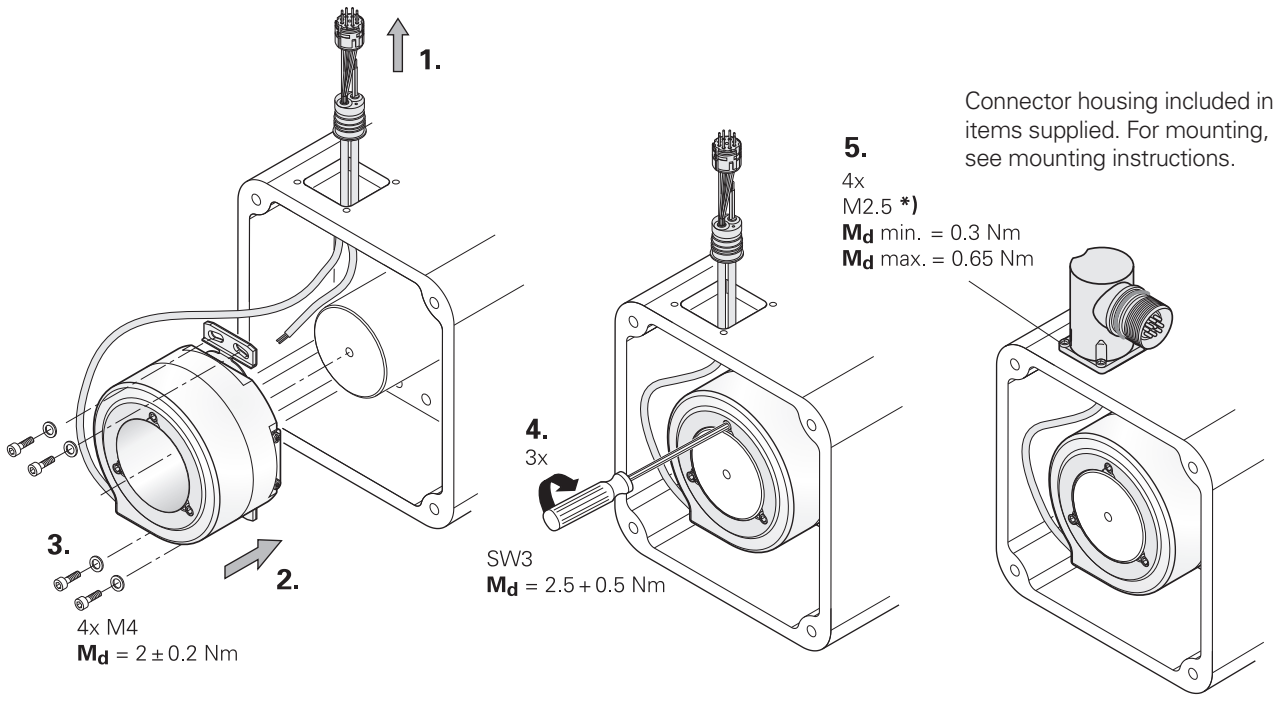
A = Bearing
K = Required mating dimensions
M = Measuring point for operating temperature
H1 = Zero position ± 15°
H2 = RADOX sensor cable 2x 0.25 mm^2
H3 = Sealing ring
H4 = Sealing surface, flatness 0.05 / Ra3.2
H5 = Max. permissible motion of motor shaft
H6= Direction of shaft rotation for output signals as per the interface description

D	L1	L2	L3	L4
Ø 20h7	41	43.5	40	32
Ø 25h7	41	43.5	40	32
Ø 38h7	56	58.5	55	47
Ø 50h7	56	58.5	55	47

	ECN 125
Absolute position values	**EnDat 2.2**
Order designation	EnDat 22
Positions per revolution	33 554 432 (25 bits)
Code	Pure binary
Elec. permissible speed	n_{max} for continuous position value
Calculation time t_{cal}	≤ 5 µs
System accuracy	± 20″
Power supply **Current consumption** without load	3.6 to 5.25 V DC ≤ 200 mA
Electrical connection	*Rotary encoder:* Cable 0.14 m (other lengths upon request) with M23 modular right-angle flange socket and mounting base *External temperature sensor*[1)]*:* 2 Radox wires via M23 right-angle flange socket
Shaft*	Hollow through shaft D = 20 mm, **25 mm,** 38 mm, **50 mm**
Mech. permissible speed n[2)]	*D > 30 mm:* ≤ 4000 min^{-1} *D ≤ 30 mm:* ≤ 6000 min^{-1}
Starting torque at 20 °C	*D > 30 mm:* ≤ 0.2 Nm *D ≤ 30 mm:* ≤ 0.15 Nm
Moment of inertia of rotor/ **Angular acceleration**[3)]	*D = 50 mm:* 220 · 10^{-6} kgm^2/ ≤ 5 · 10^4 rad/s^2 *D = 38 mm:* 350 · 10^{-6} kgm^2/ ≤ 2 · 10^4 rad/s^2 *D = 25 mm:* 96 · 10^{-6} kgm^2/ ≤ 3 · 10^4 rad/s^2 *D = 20 mm:* 100 · 10^{-6} kgm^2/ ≤ 3 · 10^4 rad/s^2
Permissible axial motion of measured shaft	± 1.5 mm
Vibration 55 to 2000 Hz **Shock** 6 ms	≤ 200 m/s^2 (EN 60 068-2-6) ≤ 1000 m/s^2 (EN 60 068-2-27)
Max. operating temperature[2)]	100 °C
Min. operating temperature	*For fixed cable:* –40 °C
Protection class[2)] EN 60 529	IP 40
Weight	0.6 kg to 0.9 kg depending on the hollow-shaft version

Bold: These preferred versions are available on short notice
***** Please select when ordering
1) Evaluation optimized for KTY 84 (Only use sensors with double or reinforced insulation. Ensure that the lines are routed inside the motor housing.)
2) For information on the relationship between the protection class, shaft speed and operating temperature, see the *General mechanical information* in the *Rotary Encoders* brochure
3) At room temperature, calculated; material of mating shaft: 1.4104

Mounting



*) Minimum tensile strength of the screws: 800 N/mm^2.

Electrical connection

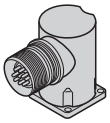
Cables

PUR connecting cable ∅ 6 mm **8-pin:** [(4 × 0.14 mm²) + (4 × 0.34 mm²)]		M12 connector, 8-pin	M23 connector, 9-pin
Complete with connector (female) and 8-pin M12 coupling (male)		368330-xx	745796-xx
Complete with 8-pin M12 connector (female) and 15-pin D-sub connector (female)		533627-xx	–
Complete with 8-pin M12 connector (female) and 15-pin D-sub connector (male)		524599-xx	–
With one M12 connector (female) 8-pin		634265-xx[1]	–

[1] Connecting element must be suitable for the maximum clock frequency used

Pin layout

9-pin
flange socket
M23



M23	Power supply				Absolute position values				Other signals[1]			
	3	**7**	**4**	**8**	**5**	**6**	**1**	**2**	**/**	**/**	**/**	**/**
	U_P	**Sensor** U_P	**0 V**	**Sensor** 0 V	**DATA**	**$\overline{\text{DATA}}$**	**CLOCK**	**$\overline{\text{CLOCK}}$**	**T+**	**T–**	**T+**[2]	**T–**[2]
	Brown/ Green	Blue	White/ Green	White	Gray	Pink	Violet	Yellow	Brown	Green	Brown	White

Cable shield connected to housing; **U_P** = power supply voltage; **T** = temperature
Sensor: The sensor line is connected in the encoder with the corresponding power line.
Vacant pins or wires must not be used!

[1] Only for encoder cable inside the motor housing.
[2] Connections for external temperature sensor; connection in the M23 flange socket

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For more information
- Brochure: *Position Encoders for Servo Drives*
- Brochure: *Rotary Encoders*