



HEIDENHAIN



Product Information

ECN 413

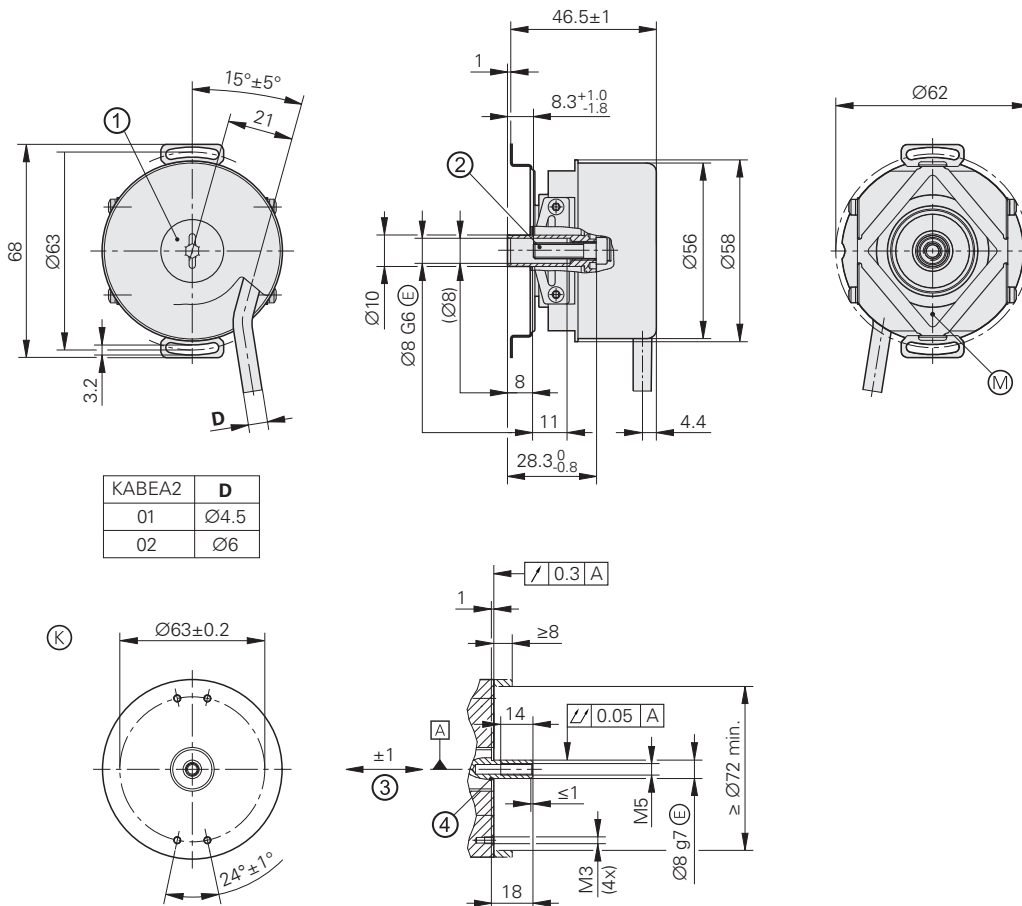
Absolute Rotary Encoders
with Integral Bearing

EnDat01

ECN 413 series

Absolute rotary encoders

- Stator coupling for plane surface
- Blind hollow shaft for axial clamping (diameter: 8 mm; depth: 19 mm)



mm

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

- ▣ = Bearing of mating shaft
- ⊙ = Required mating dimensions
- ⊙ = Measuring point for operating temperature
- 1 = Screw plug: widths A/F 3 and 4; tightening torque: 5 Nm +0.5 Nm
- 2 = Self-locking screw: DIN 6912 M5x20; width A/F 4; tightening torque: 5 Nm +0.5 Nm
- 3 = Compensation of mounting tolerances and thermal expansion; no dynamic motion
- 4 = Undercut

| Specifications | Singleturn ECN 413 | |
|--|--|--|
| Interface | EnDat 2.2 | |
| Ordering designation | EnDat01 | |
| Positions/revolution | 8192 (13 bits) | |
| Revolutions | – | |
| Code | Pure binary | |
| Elec. permiss. shaft speed Deviations ¹⁾ | ≤ 15000 rpm for (continuous position values) – | |
| Calculation time t_{cal} Clock frequency | ≤ 9 μs ≤ 2 MHz | |
| Incremental signals | ~ 1 V _{PP} ²⁾ | |
| Line count | 2048 | |
| Cutoff frequency –3 dB Output frequency | ≥ 400 kHz – | |
| System accuracy | ±20" | |
| Electrical connection* | Cable (4.0 m, PUR, Ø: 6 mm) with 15-pin 2-row D-sub connector (male), shield exposed twice | Cable (5.70 m, PUR, Ø: 6 mm) with 15-pin 3-row D-sub connector (male), shield exposed twice, and additional UL insulating tube (Ø: 8.65 mm) with 300 V electrical strength. Bending properties same as PUR cable (Ø: 6 mm) |
| Supply voltage | DC 3.6 V to 14 V | |
| Power consumption (maximum) | 3.6 V: ≤ 0.6 W 14 V: ≤ 0.7 W | |
| Current consumption (typical, without load) | 5 V: 85 mA | |
| Shaft | Blind hollow shaft for axial clamping; Ø: 8 mm | |
| Mech. permissible speed ³⁾ | ≤ 12000 rpm | |
| Starting torque (typical) at 20 °C | 0.01 Nm | |
| Moment of inertia of rotor | ≤ 2.4 · 10 ⁻⁶ kgm ² | |
| Permiss. axial motion of measured shaft | ±1 mm | |
| Vibration: 55 Hz to 2000 Hz Shock: 6 ms | ≤ 300 m/s ² (EN 60068-2-6) ≤ 2000 m/s ² (EN 60068-2-27) | |
| Max. operating temp. ³⁾ | 100 °C | |
| Min. operating temp. | Fixed cable: –30 °C; moving cable: –10 °C | |
| Protection EN 60529 | At housing: IP67 At shaft inlet: IP64 | |
| Mass | ≈ 0.3 kg | |
| ID number | 1065932-66 1065932-61 (collective packaging) | 1065932-81 |

* Please select when ordering

¹⁾ Speed-dependent deviations between absolute value and incremental signal

²⁾ Limited tolerances: signal amplitude: 0.8 V_{PP} to 1.2 V_{PP}

³⁾ For the relationship between the operating temperature and the shaft speed or supply voltage, see *General mechanical information* in the *Rotary Encoders* brochure


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This Product Information document supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is placed.



More information:

Comply with the requirements described in the following documents to ensure correct and intended operation:

- Operating Instructions

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