HEIDENHAIN

Product Information

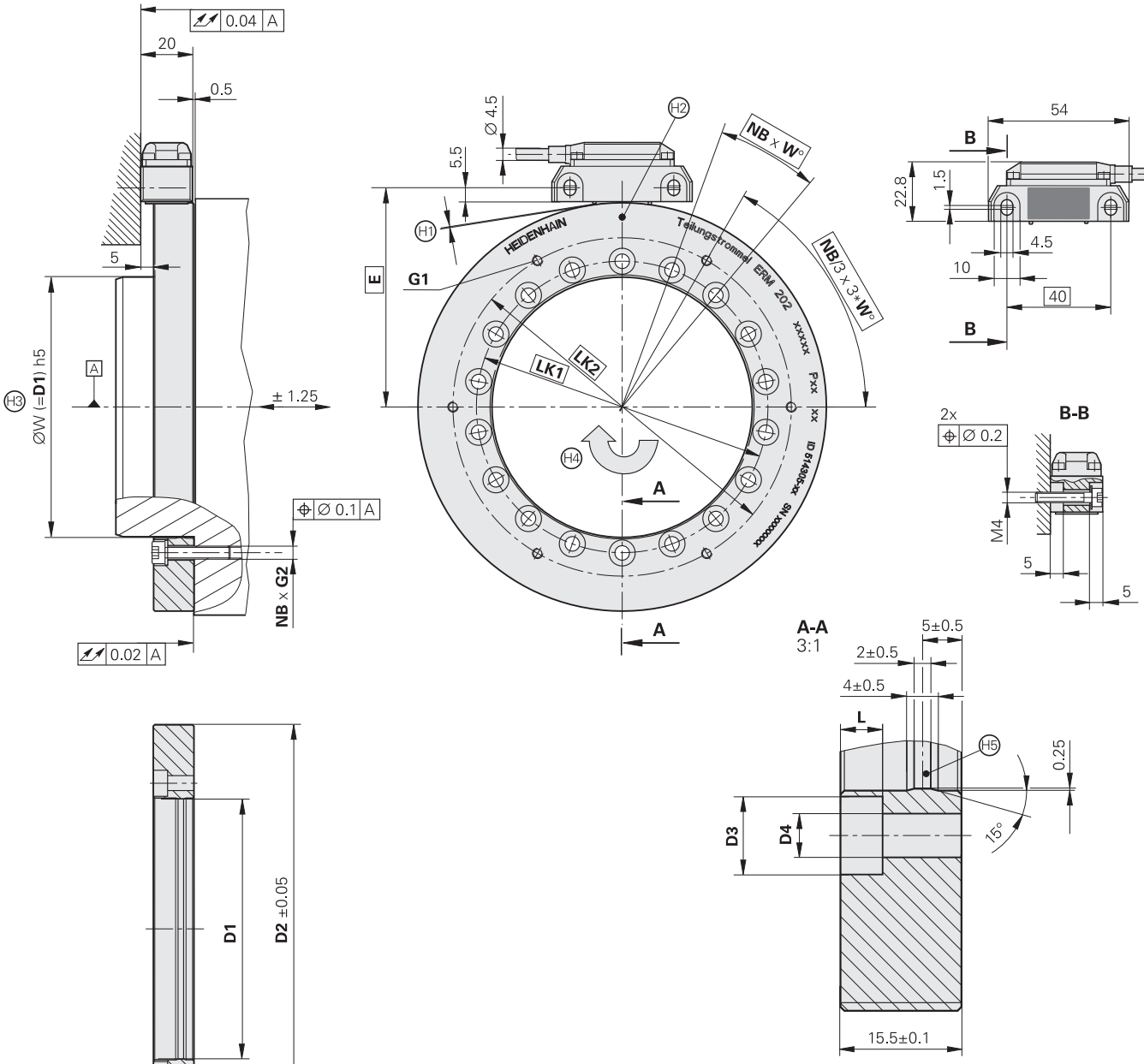
# ERM 282 C

Magnetic Modular Encoder

**February 2011**

# ERM 282C

**Modular rotary encoder**
- **For large hollow-shaft diameters**
- **Magnetic scanning principle**
- **Insensitive to contamination**




| D1 | D2 | LK1 | LK2 | G1 | G2 | NB | W | L | D3 | D4 | E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø 460 | Ø 559.26 | Ø 482 | Ø 512 | M6 | M8 | 48 | 7.5° | 8.2 | Ø 15 | Ø 9.3 | 285.3 |
| Ø 325 | Ø 414.41 | Ø 342 | Ø 371 | M6 | M8 | 36 | 10° | 8.2 | Ø 15 | Ø 9.3 | 212.9 |
| Ø 260 | Ø 341.99 | Ø 280 | Ø 306 | M6 | M8 | 36 | 10° | 8.2 | Ø 15 | Ø 9.3 | 176.7 |
| Ø 200 | Ø 273.59 | Ø 215 | Ø 237 | M5 | M6 | 48 | 7.5° | 6.2 | Ø 11 | Ø 7 | 142.5 |

Dimensions in mm

mm

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

A = Bearing
H1 = Mounting distance of 0.15 mm set with spacer foil
H2 = Reference mark position
H3 = Shaft tolerance
H4 = Direction of shaft rotation for output signals as per the interface description
H5 = Centering collar

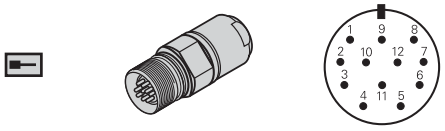
| | ERM 282C | | | |
|---|---|---|---|---|
| **Incremental signals** | ∿ 1 $V_{PP}$ | | | |
| Cutoff frequency –3dB | ≥ 300 kHz | | | |
| **Reference marks** | Distance-coded | | | |
| Number | 32 | | | |
| Nominal increment in signal periods | 136 | 170 | 206 | 278 |
| **Power supply** | 5 V ± 10 % | | | |
| **Current consumption** | ≤ 150 mA (without load) | | | |
| **Electrical connection** | Cable 1 m with coupling | | | |
| **Cable length** | ≤ 150 m with HEIDENHAIN cable | | | |
| **Drum inside diameter*** | 200 mm | 260 mm | 325 mm | 460 mm |
| **Drum outside diameter*** | 273.59 mm | 341.99 mm | 414.41 mm | 559.26 mm |
| **Line count** | 2176 | 2720 | 3296 | 4448 |
| **System accuracy**[1] | ± 10" | ± 8" | ± 7" | ± 5" |
| **Accuracy of the graduation**[2] | ± 4" | ± 3" | ± 3" | ± 2" |
| **Shaft speed** | ≤ 2500 $min^{-1}$ | ≤ 2500 $min^{-1}$ | ≤ 2000 $min^{-1}$ | ≤ 1500 $min^{-1}$ |
| **Moment of inertia of the rotor** | 42.3 · $10^{-3}$ $kgm^2$ | 95.1 · $10^{-3}$ $kgm^2$ | 197 · $10^{-3}$ $kgm^2$ | 575 · $10^{-3}$ $kgm^2$ |
| **Perm. axial movement** | ± 1.25 mm | | | |
| **Vibration** 55 to 2000 Hz<br>**Shock** 6 ms | ≤ 400 $m/s^2$ (EN 60068-2-6)<br>≤ 1000 $m/s^2$ (EN 60068-2-27) | | | |
| **Max. operating temperature** | 100 °C | | | |
| **Min. operating temperature** | –10 °C | | | |
| **Protection** EN 60529 | IP 67 | | | |
| **Weight (approx.)** | | | | |
| Scale drum | 2.9 kg | 4.0 kg | 5.6 kg | 8.7 kg |
| Scanning head with cable | 0.15 kg | | | |

***** Please indicate when ordering
[1] Without installation. Additional errors caused by mounting and the bearing of the measured shaft are not included.
[2] For other errors, see *Measuring Accuracy* in the *ERM 200 Series Product Information*

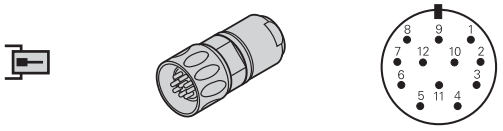
# Electrical Connection

## Pin layout

**12-pin M23 coupling**



**12-pin M23 connector**



| | Power supply | | | | Incremental signals | | | | | | Other signals | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **2** | **10** | **11** | **5** | **6** | **8** | **1** | **3** | **4** | **7/9** | **/** | **/** |
| | **$U_P$** | **Sensor** $U_P$ | **0 V** | **Sensor** 0 V | **A+** | **A–** | **B+** | **B–** | **R+** | **R–** | **Free** | **Free** | **Free** |
| | Brown/ Green | Blue | White/ Green | White | Brown | Green | Gray | Pink | Red | Black | / | Violet | Yellow |

**Shield** is on housing; **$U_P$** = power supply
**Sensor:** The sensor line is connected internally to the respective power supply
Vacant pins or wires must not be used!

## PUR connecting cables

| **12-pin:** [4(2 × 0.14 mm²) + (4 × 0.5 mm²)] **Ø 8 mm** | | |
|---|---|---|
| **Complete** with M23 connector (female) and 12-pin M23 coupling (male) |  | 298401-xx |
| **Complete** with M23 connector (female) and 12-pin M23 connector (male) |  | 298399-xx |
| **Complete** with 12-pin M23 connector (female) and 15-pin D-sub connector (female) for IK 220 |  | 310199-xx |
| **With one connector** 12-pin M23 (female) |  | 309777-xx |


HEIDENHAIN

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**For more information**
- See the *Magnetic Modular Encoders* catalog