

**NEW**

# Encoders

## Magnetic Encoders

**Features:**  
 32, 64, 128, 256 Lines per revolution  
 3 Channels  
 Digital output  
 Flex circuit

### HEM3-256-F

|   |                   |             |                  |
|---|-------------------|-------------|------------------|
| Signal output, square wave  |                   | 3           | channels         |
| Supply voltage <sup>1)</sup>  | V <sub>DD</sub>   | 3,0 ... 3,6 | V DC             |
| Supply voltage <sup>2)</sup>  | V <sub>DD</sub>   | 4,5 ... 5,5 | V DC             |
| Current consumption, typical (V <sub>DD</sub> = 3,3 or 5 V DC)      | I <sub>DD</sub>   | 16          | mA               |
| Output current, max. <sup>3)</sup> (V <sub>DD</sub> = 3,3 / 5 V DC) | I <sub>OUT</sub>  | 2 / 4       | mA               |
| Pulse width   | P                 | 180 ± 45    | °e               |
| Phase shift, channel A to B   | Φ                 | 90 ± 45     | °e               |
| Logic state width   | S                 | 90 ± 45     | °e               |
| Signal rise/fall time, max (C <sub>LOAD</sub> = 50 pF)              | tr/tf             | 0,1 / 0,1   | µs               |
| Rotational speed up to  | n <sub>max.</sub> | 30 000      | rpm              |
| Inertia of code disc  | J                 | 0,02        | gcm <sup>2</sup> |
| Operating temperature range   |                   | -30 ... +85 | °C               |

<sup>1)</sup> V<sub>DD</sub> = 3,3 V DC: Connect pin 4 and 5 to 3,3 V DC

<sup>2)</sup> V<sub>DD</sub> = 5 V DC: Connect pin 4 to 5 V DC, Do not connect pin 5

<sup>3)</sup> V<sub>DD</sub> = 5 V DC: Low logic level < 0,5 V, high logic level > 4,5 V: CMOS and TTL compatible

### Ordering information

|            | of channels | per revolution | for combination with:  |
|------------|-------------|----------------|--|
| HEM3-032-F | 3           | 32             | DC-Micromotors series<br>0816 ... S<br>1016 ... G, 1024 ... S<br>1224 ... SR |
| HEM3-064-F | 3           | 64             |  |
| HEM3-128-F | 3           | 128            |  |
| HEM3-256-F | 3           | 256            |  |

Note: Lines per revolution refers to pre-quadrature resolution and equals the cycles per revolution

### Features

These incremental shaft encoders in combination with the FAULHABER® DC-Micromotors are designed for indication and control of both shaft velocity and direction of rotation as well as for positioning.

Solid state sensors and a low inertia magnetic disc provide two channels with 90° phase shift and one index channel.

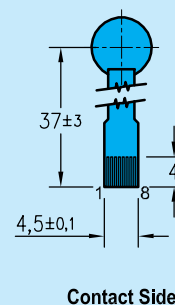
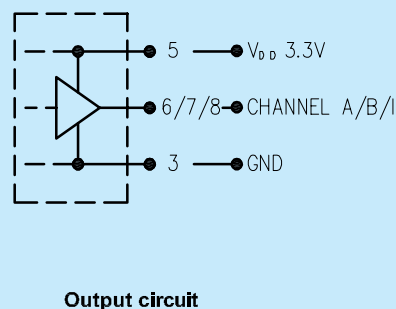
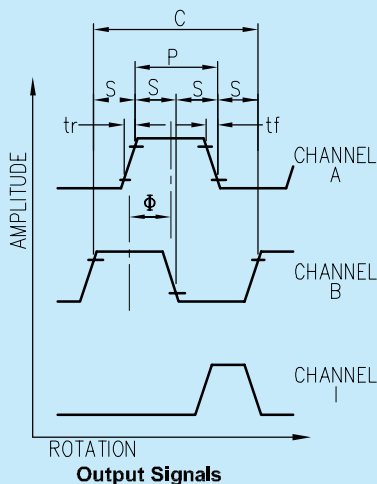
The nominal supply voltage for the encoder is selectable and either 3,3 VDC or 5,0 VDC.

The supply voltage for the encoder and the DC-Micromotor as well as the output signals are interfaced with a flexible printed circuit (FPC) for connection to an 8-pin 0,5 mm pitch Molex ZIF connector.

Details for the DC-Micromotors and suitable reduction gearheads are on separate catalog pages.

Optional interface board available for hook-up to encoder.

### Output signals / Circuit diagram / Connector information

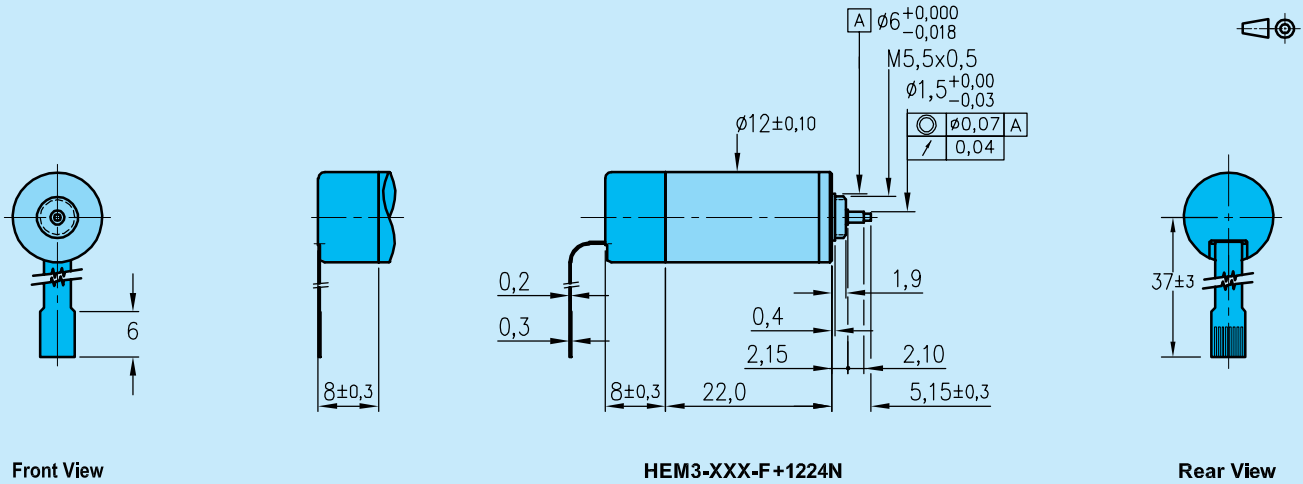


| PIN | FUNCTION |
|-----|----------|
| 1   | MOT -    |
| 2   | MOT +    |
| 3   | GND      |
| 4   | VDD_5V   |
| 5   | VDD_3.3V |
| 6   | A        |
| 7   | B        |
| 8   | INDEX    |

**Suggested Connector:**  
 Molex 52745 series  
 PITCH 0,5mm  
 FPC/FFC, 8 circuits



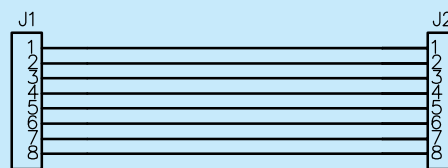
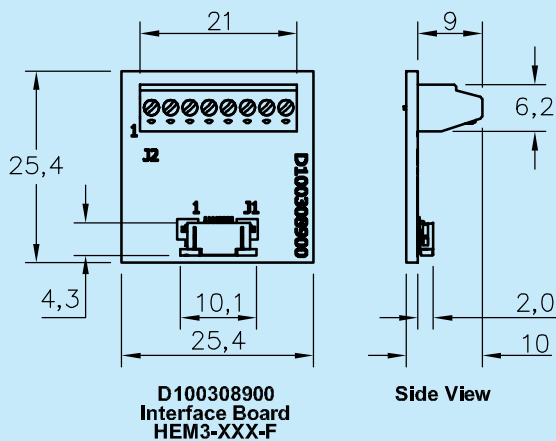
DC Micromotor 1224 N ... SR - K1707 with Encoder HEM3-XXX-F



## How to Order a HEM3-256-F

| Part number | Description                                 | Stocked items |
|-------------|---|---------------|
| HEM3-032-F  | 3 channel, 32 line encoder with flex cable  | yes           |
| HEM3-064-F  | 3 channel, 64 line encoder with flex cable  | yes           |
| HEM3-128-F  | 3 channel, 128 line encoder with flex cable | yes           |
| HEM3-256-F  | 3 channel, 256 line encoder with flex cable | yes           |
| D100308900  | Interface board for hook-up to encoder      | yes           |

### Optional interface board D100308900



| CONNECTION |          |
|------------|----------|
| PIN        | FUNCTION |
| 1          | MOT -    |
| 2          | MOT +    |
| 3          | Gnd      |
| 4          | Vdd_5v   |
| 5          | Vdd_3.3v |
| 6          | Chan A   |
| 7          | Chan B   |
| 8          | Index    |

Connector:  
 J1 - Molex 52745-0896  
 J2 - Phoenix 1725711