Encoders
magnetic Encoder, digital outputs, 2 channels, 64 - 1024 lines per revolution

Series IE2-1024

<table>
<thead>
<tr>
<th>Lines per revolution</th>
<th>IE2-64</th>
<th>IE2-128</th>
<th>IE2-256</th>
<th>IE2-512</th>
<th>IE2-1024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range, up to (^{1})</td>
<td>(f)</td>
<td>20</td>
<td>40</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>Signal output, square wave</td>
<td>(U_{oo})</td>
<td>4,5 ... 5,5</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current consumption, typical (^{2})</td>
<td>(I_{cc})</td>
<td>typ. 9,5, max. 13</td>
<td>mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output current, max. (^{3})</td>
<td>(I_{o})</td>
<td>5</td>
<td>mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase shift, channel A to B</td>
<td>(\phi)</td>
<td>90 ± 45</td>
<td>°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal rise/fall time, max. ((C_{LOAD} = 50 \text{ pF}))</td>
<td>(t_{rr/\phi})</td>
<td>0,1 / 0,1</td>
<td>µs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inertia of sensor magnet (^{4})</td>
<td>(J)</td>
<td>0,09</td>
<td>gcm²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature range</td>
<td></td>
<td>-25 ... +85</td>
<td>°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For combination with DC-Micromotors
Brushless DC-Motors

Dimensions:
- For combination with Motor
  - Dimensional drawing A: 1336 ... CXR - 123, L1 = 47,5 [mm]
  - Dimensional drawing B: 1516 ... SR, L1 = 18,2 [mm]
  - Dimensional drawing C: 1727 ... CXR - 123, L1 = 38,2 [mm]
  - Dimensional drawing D: 1628 ... B - K313, L1 = 38,8 [mm]
- \(U_{oo} = 5 \text{ V: with unloaded outputs}\)
- \(U_{oo} = 5 \text{ V: low logic level < 0,5 V, high logic level > 4,5 V: CMOS- and TTL compatible}\)
- \(J = 0,14 \text{ gcm}^2\) for the brushless DC-Servomotors
- The inertia of sensor magnet is: \(J = 0,14 \text{ gcm}^2\)
- \(1) \quad \text{Velocity (min}^{-1} = f (\text{Hz}) \times 60/N\)
- \(2) \quad U_{oo} = 5 \text{ V: with unloaded outputs}\)
- \(3) \quad U_{oo} = 5 \text{ V: low logic level < 0,5 V, high logic level > 4,5 V: CMOS- and TTL compatible}\)
- \(4) \quad J = 0,14 \text{ gcm}^2\) for the brushless DC-Servomotors

Characteristics:
- These incremental shaft encoders in combination with the FAULHABER DC-Micromotors and Brushless DC-Servomotors are used for the indication and control of both shaft velocity and direction of rotation as well as for positioning.
- The encoder is integrated in the DC-Micromotors SR-Series and extends the overall length by only 1,4 mm. Built-on option for DC-Micromotors and Brushless DC-Servomotors.
- Hybrid circuits with sensors and a low inertia magnetic disc provide two channels with 90° phase shift.

The supply voltage for the encoder and the DC-Micromotor as well as the two channel output signals are interfaced through a ribbon cable with connector.

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

To view our large range of accessory parts, please refer to the “Accessories” chapter.

Circuit diagram / Output signals:
- Output circuit with clockwise rotation as seen from the shaft end
- Output signals
- \(U_{oo}\), A, B, GND
Connector information / Variants

<table>
<thead>
<tr>
<th>No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motor</td>
</tr>
<tr>
<td>2</td>
<td>Motor +</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
</tr>
<tr>
<td>4</td>
<td>Udo</td>
</tr>
<tr>
<td>5</td>
<td>Channel B</td>
</tr>
<tr>
<td>6</td>
<td>Channel A</td>
</tr>
</tbody>
</table>

*Note: The terminal resistance of all motors with precious metal commutation is increased by approx. 0.4 Ω, and the max. allowable motor current in combination is 1A, depending on the motor can also be lower. Motors with graphite commutation have separate motor leads and higher motor current is allowed.

Connection Encoder

Cable
PVC-ribbon cable
6-conductors, 0.09 mm²

Connector
DIN-41651
grid 2,54 mm

Full product description
Example:
1336U012CXR-123 IE2-1024
1516T006SR IE2-256

Dimensional drawing A

Example of combination with 1336...CXR

IE2-1024

Dimensional drawing B

Example of combination with 1516...SR

IE2-1024