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

For combination with
DC-Micromotors
Brushless DC-Motors

<table>
<thead>
<tr>
<th>Series IE2-1024</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>Lines per revolution</td>
<td>N</td>
<td>64</td>
<td>128</td>
<td>256</td>
<td>512</td>
</tr>
<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_{orr})</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) pF</td>
<td>(tr/tf)</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>

\(^1\) Velocity (min⁻¹) = \(f\) (Hz) x \(60/N\)
\(^2\) \(U_{oo}\) = 5 V: with unloaded outputs
\(^3\) \(U_{oo}\) = 5 V: low logic level < 0,5 V, high logic level > 4,5 V: CMOS- and TTL compatible
\(^4\) For the brushless DC-Servomotors the inertia of sensor magnet is: \(J = 0,14\) gcm²

For combination with Motor

**For combination with Motor**

**Dimensional drawing A**
1336 ... CXR - 123 47,5

**Dimensional drawing B**
1516 ... SR 18,2
1524 ... SR 26,2
1717 ... SR 19,4
1724 ... SR 26,4
2224 ... SR 26,6
2232 ... SR 34,6

**Dimensional drawing C**
1727 ... CXR - 123 38,2
1741 ... CXR - 123 52,2

**Dimensional drawing D**
1628 ... B - K313 38,8
2036 ... B - K313 46,8
2057 ... B - K313 68,3

**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

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>UDD</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. Brushless DC-Servomotors and DC-Micromotors series CXR have separate motor leads and higher motor current is allowed.

Cable
PVC-ribbon cable
6-conductors, 0,09 mm²

Connector
EN 60603-13 / 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

Dimensional drawing C

Example of combination with 1727...CXR

IE2-1024

Dimensional drawing D

Example of combination with 1628...B

IE2-1024