Encoders

optical Encoder, digital outputs,
3 channels, 1000 - 10000 lines per revolution

For combination with
DC-Micromotors
Brushless DC-Motors

Series IER3-10000

<table>
<thead>
<tr>
<th>Lines per revolution</th>
<th>Frequency range, up to 1)</th>
<th>Signal output, square wave</th>
<th>Supply voltage</th>
<th>Current consumption 2)</th>
<th>Output current, max. 3)</th>
<th>Index Pulse width</th>
<th>Phase shift A to B</th>
<th>Signal rise/fall time (CLOAD = 50 pF)</th>
<th>Inertia of code disc</th>
<th>Operating temperature range</th>
<th>Accuracy</th>
<th>Repeatability</th>
<th>Hysteresis</th>
<th>Edge spacing, min.</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>f</td>
<td>2+1 Index</td>
<td>Uio</td>
<td>io</td>
<td>iout</td>
<td>P0</td>
<td>90 ± 15</td>
<td>tr/ft &lt; 0,1 / typ. &lt; 0,1</td>
<td>J</td>
<td>−20 ... +85°C</td>
<td>typ. 0,3</td>
<td>typ. 0,3</td>
<td>&lt; 0,05</td>
<td>125</td>
<td>typ. 13,5</td>
</tr>
</tbody>
</table>

1) Velocity (min−1) = f (Hz) x 60/N
2) Uio = 5 V: with unloaded outputs
3) Uio = 5 V: low logic level < 0,4 V, high logic level > 2,4 V: TTL compatible

Product combination IER3

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2233 ... CXR</td>
<td>52,5</td>
<td>52,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>A</td>
</tr>
<tr>
<td>2234 ... BP4</td>
<td>90,5</td>
<td>90,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>A</td>
</tr>
<tr>
<td>2342 ... CR</td>
<td>60,5</td>
<td>60,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>2642 ... CXR</td>
<td>60,5</td>
<td>60,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>2642 ... CR</td>
<td>60,5</td>
<td>60,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>2657 ... CXR</td>
<td>75,5</td>
<td>75,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>2657 ... CR</td>
<td>75,5</td>
<td>75,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>2668 ... CR</td>
<td>86,5</td>
<td>86,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>3242 ... CR</td>
<td>60,5</td>
<td>60,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>3257 ... CR</td>
<td>75,5</td>
<td>75,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>3272 ... CR</td>
<td>90,5</td>
<td>90,5</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>B</td>
</tr>
<tr>
<td>3863 ... CR - 2016</td>
<td>82,6</td>
<td>82,6</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>C</td>
</tr>
<tr>
<td>3890 ... CR - 2016</td>
<td>108,6</td>
<td>108,6</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>C</td>
</tr>
<tr>
<td>2232 ... BX4</td>
<td>50,2</td>
<td>50,2</td>
<td>50,2</td>
<td>−</td>
<td>−</td>
<td>D</td>
</tr>
<tr>
<td>2232 ... BX4</td>
<td>50,2</td>
<td>50,2</td>
<td>50,2</td>
<td>−</td>
<td>−</td>
<td>D</td>
</tr>
<tr>
<td>2250 ... BX4S</td>
<td>68,2</td>
<td>68,2</td>
<td>68,2</td>
<td>−</td>
<td>−</td>
<td>D</td>
</tr>
<tr>
<td>3242 ... BX4</td>
<td>60,0</td>
<td>60,0</td>
<td>60,0</td>
<td>60,0</td>
<td>−</td>
<td>E</td>
</tr>
<tr>
<td>3268 ... BX4</td>
<td>86,0</td>
<td>86,0</td>
<td>86,0</td>
<td>86,0</td>
<td>−</td>
<td>E</td>
</tr>
</tbody>
</table>

Characteristics

These incremental encoders with 3 output channels, in combination with the FAULHABER Motors, are used for the indication and control of both shaft velocity and direction of rotation as well as for positioning.

With a reflective code disc two square wave signals with 90° phase shift and one index impulse per motor revolution are generated.

The optical measurement principle allows high accuracy and repeatability for positioning applications. The high resolution encoder provides up to 4096 lines per revolution. In combination with the brushless DC-Servomotors BX4 with diameter 22 mm up to 6800 lines per revolution are available.

In combination with the brushless DC-Servomotors BX4 with diameter 32 mm up to 10000 lines per revolution are available.

The encoder is connected via a ribbon cable. The pins are compatible to the FAULHABER Encoder IE3.

To view our large range of accessory parts, please refer to the “Accessories” chapter.
Option no.: 3807 for combination with DC-Micromotors series CXR, CR and with brushless DC-Servomotor series 3274...BP4.

Option no.: 3592 for combination with Brushless DC-servomotors series BX4.

Note: inclusive motor connector 3830.

**Cable**

PVC-ribbon cable 6-AWG 28, 1.27 mm

**Connection Encoder**

<table>
<thead>
<tr>
<th>No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N.C.</td>
</tr>
<tr>
<td>2</td>
<td>Channel I</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
</tr>
<tr>
<td>4</td>
<td>Uoo</td>
</tr>
<tr>
<td>5</td>
<td>Channel B</td>
</tr>
<tr>
<td>6</td>
<td>Channel A</td>
</tr>
</tbody>
</table>

**Output signals**

with clockwise rotation as seen from the shaft end

- **I**
- **B**
- **P**
- **A**

**Example:**

- 2237S012CXR IER3-1024
- 2232S024BX4 IER3-6800 3592

**Caution:**

Incorrect lead connection will damage the motor electronics!

**Full product description**

- Example:
  - 2237S012CXR IER3-1024
  - 2232S024BX4 IER3-6800 3592

**Dimensional drawing A**

Example of combination with 2237...CXR

- L1
- \(\leq 15.5\)
- \(< 22\)
- 180 ±10
- 6 ±0.5
- 2 ±0.5

IER3-1000...4096
Dimensional drawing B

Example of combination with 2342...CR

IER3-1000...4096

Dimensional drawing C

Example of combination with 3863...CR

IER3-1000...4096

Dimensional drawing D

Example of combination with 2232...BX4

IER3-1000...6800

Connection Encoder

Connection Motor

For notes on technical data and lifetime performance refer to "Technical Information".
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Example of combination with 3242...BX4

Connection Encoder

Connection Motor

Dimensional drawing E

IER3-1000...10000

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