Encoders
magnetic absolute Encoder, SSI Interface with BISS-C Protocol, 4096 steps per revolution

For combination with Brushless DC-Motors

### Series AESM-4096

<table>
<thead>
<tr>
<th>Parameter</th>
<th>AESM-4096</th>
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<tbody>
<tr>
<td>Steps per revolution</td>
<td>4 096</td>
</tr>
<tr>
<td>Resolution</td>
<td>12 Bit</td>
</tr>
<tr>
<td>Signal output</td>
<td>SSI Interface with BISS-C Protocol</td>
</tr>
<tr>
<td>Supply voltage, typical</td>
<td>( U_{DC} ) typical 16, max. 23 mA</td>
</tr>
<tr>
<td>Current consumption, typical 1)</td>
<td>( I_{CC} ) typ. ( U_{DC} )</td>
</tr>
<tr>
<td>Output current, max. (DATA) 2)</td>
<td>( I_{CC} ) typ. 0,8 mA</td>
</tr>
<tr>
<td>Clock Frequency, max. (CLK)</td>
<td>( f_{CLK} ) typ. 2 MHz</td>
</tr>
<tr>
<td>Input low level (CLK)</td>
<td>0 ... 0,8 V</td>
</tr>
<tr>
<td>Setup time after power on, max. ( t_{SETUP} )</td>
<td>4 ms</td>
</tr>
<tr>
<td>Timeout</td>
<td>( t_{TO} ) typ. 16 µs</td>
</tr>
<tr>
<td>Inertia of sensor magnet ( J )</td>
<td>0,007 gcm²</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-30 ... +100 °C</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td></td>
</tr>
</tbody>
</table>

1) \( U_{DC} = 5 \) V: with unloaded outputs
2) \( U_{DC} = 5 \) V: low logic level < 0,4 V, high logic level > 4,6 V: CMOS- and TTL compatible

### For combination with Motor

<table>
<thead>
<tr>
<th>Dimensional drawing A &lt;L1 [mm]</th>
<th>0824 ... B 24,1</th>
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<tr>
<td>Dimensional drawing B &lt;L1 [mm]</td>
<td>1028 ... B 28,1</td>
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</table>

### Characteristics

The absolute encoder in combination with the FAULHABER motors is ideal for commutation, speed and position control. It can also be used to create a sinusoidal commutation signal.

In the AESM version, absolute position information is provided with a resolution of up to 4096 steps per revolution at the signal outputs and communicated via a SSI Interface with BISS-C Protocol.

Absolute means, that each shaft position is assigned to an unique angular value within one revolution. This value is already available directly after power-on. The advantages are a reduced torque ripple, a higher efficiency, and reduced electrical noise generation.

Motor and encoder are connected via a common flexboard.

To view our large range of accessory parts, please refer to the “Accessories” chapter.
Circuit diagram / Output signals

Output circuit

Interface Protocol BISS-C

Angle position values are ascending for clockwise rotation.
Clockwise rotation as seen from the shaft end.

Connector information / Variants

No. | Function
---|---
1 | Phase C
2 | Phase B
3 | Phase A
4 | GND
5 | Uso
6 | CLK
7 | N.C.
8 | DATA

Connection Encoder and Motor

8,8±0,5

Flexboard

8 circuits, 0,5 mm pitch

Recommended connector

Top contact style
8 circuits, 0,5 mm pitch, e.g.:
Molex: 52745-0896/0897

Full product description

Examples:

0824K006B AESM-4096
1028S012B AESM-4096

Dimensional drawing A

Example of combination with 0824...8

AESM-4096