

NEW

Encoder

magnetic Encoder, digital outputs
3 channels, 32 - 1024 lines per revolution

For combination with
Brushless DC-Servomotors

Series IEM3 – 1024

		IEM3 – 32	IEM3 – 64	IEM3 – 128	IEM3 – 256	IEM3 – 512	IEM3 – 1024	
Lines per revolution	N	32	64	128	256	512	1024	
Frequency range, up to ¹⁾	f	64	128	256	500	500	500	kHz
Signal output, square wave		2+1 Index						channels
Supply voltage	U _{DD}	4,5 ... 5,5						V DC
Current consumption, typical ²⁾	I _{DD}	typ. 16, max. 23						mA
Output current, max. allowable ³⁾	I _{OUT}	4						mA
Index Pulse width ⁴⁾	P ₀	90 ± 45				90 ± 75		°e
Phase shift, channel A to B ⁴⁾	Φ	90 ± 45				90 ± 75		°e
Signal rise/fall time, max. (C _{LOAD} = 50 pF)	tr/tf	0,1 / 0,1						µs
Operating temperature range		– 20 ... + 100						°C

¹⁾ speed (rpm) = f (Hz) x 60/N

²⁾ U_{DD Enc} = 5V: with unloaded outputs

³⁾ U_{DD Enc} = 5V: low logic level < 0,4V, high logic level > 4,5V: CMOS- and TTL compatible

⁴⁾ at 5 000 rpm

For combination with motor

Dimensional drawing A L1 [mm]
0824K...B 24,1

Dimensional drawing B L1 [mm]
1028S...B 28,1

Features

These incremental encoders in combination with the FAULHABER motors are used for the indication and control of both velocity and direction of rotation as well as for positioning.

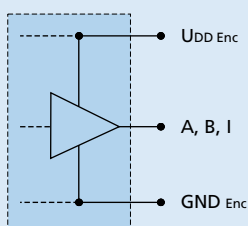
The encoder is available in a variety of different resolutions and is suitable for speed control and positioning applications.

A permanent magnet on the shaft creates a moving magnetic field which is captured using a single-chip angular sensor and further processed. At the encoder outputs, two 90° phase-shifted rectangular signals are available with up to 1024 impulses and an index impulse per motor revolution.

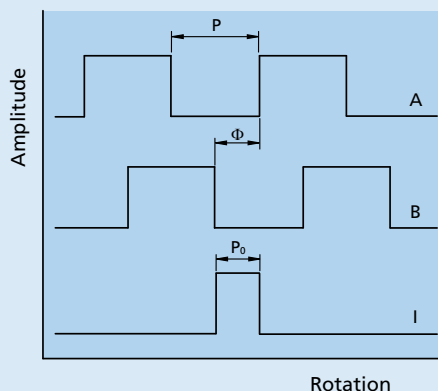
Motor and encoder are connected via a common flexboard.

Circuit diagram / Output signals

Output circuit



Output signals with clockwise rotation as seen from the shaft end



Admissible deviation of phase shift:

$$\Delta\Phi = \left| 90^\circ - \frac{\Phi}{P} * 180^\circ \right|$$

Admissible deviation of Index pulse:

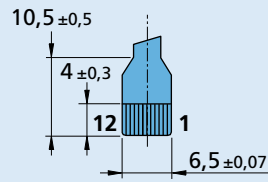
$$\Delta P_0 = \left| 90^\circ - \frac{P_0}{P} * 180^\circ \right|$$

Connector information / Variants

No.	Function
1	Phase C
2	Phase B
3	Phase A
4	GND Enc
5	UDD Enc
6	Hall sensor C
7	Hall sensor B
8	Hall sensor A
9	Channel B
10	Channel A
11	Channel I
12	Reserved

Caution:
Incorrect lead connection will damage the motor electronics!

Connection Encoder and Motor



Flexboard

12 circuits, 0,5 mm pitch

Recommended connector

Top contact style
12 circuits, 0,5 mm pitch, e.g.:
Molex: 52745-1296/1297

Options

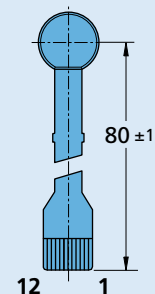
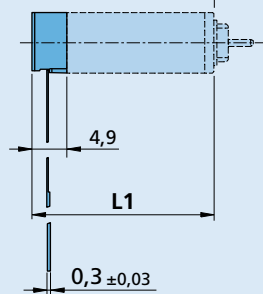
- Resolutions from 1 - 127 lines per revolution are available on request.

Full product description

- Examples:
0824K006B IEM3-1024
1028S012B IEM3-1024

Dimensional drawing A

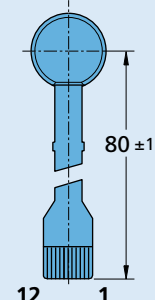
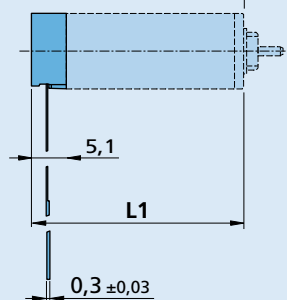
Example of combination with 0824...B



IEM3 - 1024

Dimensional drawing B

Example of combination with 1028...B



IEM3 - 1024