NEW

Encoders

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} = 5 V: with unloaded outputs
[3] U_{DD} = 5 V: low logic level < 0,4 V, high logic level > 4,5 V: CMOS- and TTL compatible
[4] at 5 000 rpm

For combination with motor	
Dimensional drawing A	**<L1** [mm]
0824...B	24,1
Dimensional drawing B	**<L1** [mm]
1028...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.

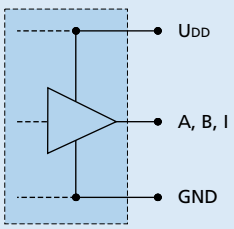
A permanent magnet on the shaft creates a moving magnetic field which is captured using a single-chip angular sensor and further processed. At the encoder outputs, two 90° phase-shifted rectangular signals are available with up to 1024 impulses and an index impulse per motor revolution.

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

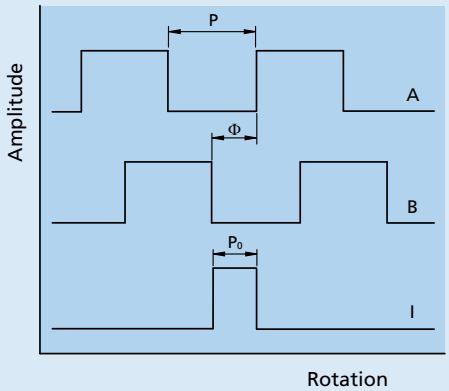
Motor and encoder are connected via a common flexboard.

Circuit diagram / Output signals

Output circuit



Output signals
with clockwise rotation as seen from the shaft end



Admissible deviation of phase shift:

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

Admissible deviation of Index pulse:

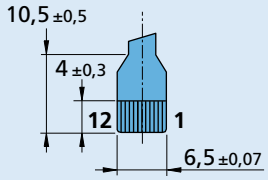
$$\Delta P_0 = \left| 90° - \frac{P_0}{P} * 180° \right|$$

Connector information / Variants

No.	Function
1	Phase C
2	Phase B
3	Phase A
4	GND
5	U_{DD}
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

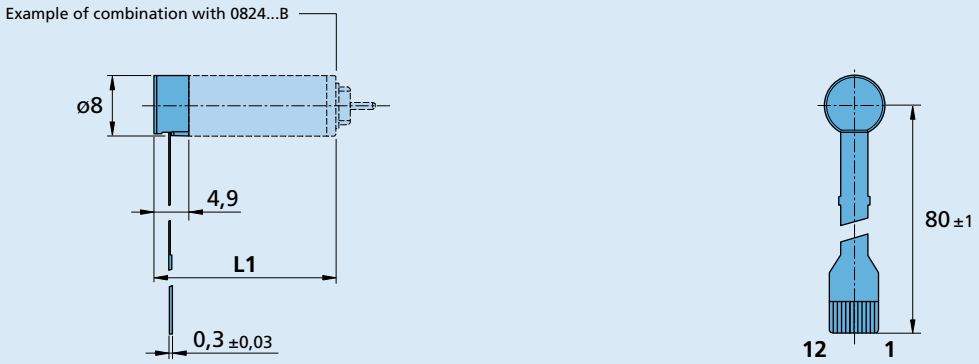
Options

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

Full product description

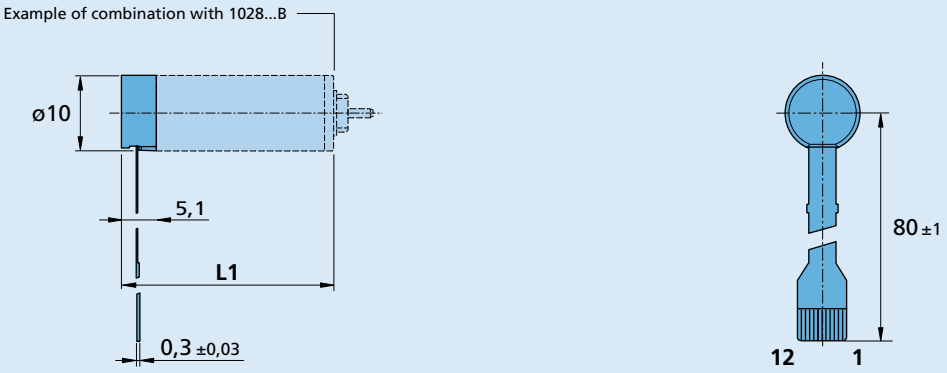
- Examples:
  0824K006B IEM3-1024
  1028S012B IEM3-1024

Dimensional drawing A



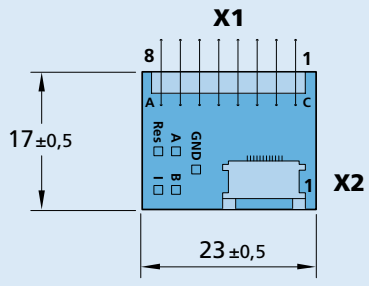
IEM3 – 1024

Dimensional drawing B



IEM3 – 1024

Interface board for SC 1801 S



Interface Board IEM3 – 1024
Part. No.: 6501.00163

Connection

Pin	Connection X1
1	Phase C
2	Phase B
3	Phase A
4	GND
5	U_{DD}
6	Hall Sensor C
7	Hall Sensor B
8	Hall Sensor A

Pin	Connection X2
1	Phase C
2	Phase B
3	Phase A
4	GND
5	U_{DD}
6	Hall Sensor C
7	Hall Sensor B
8	Hall Sensor A
9	Channel B
10	Channel A
11	Channel I
12	Res.