Encoders

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

For combination with
Brushless DC-Motors

Series IEM3-1024

		IEM3-32	IEM3-64	IEM3-128	IEM3-256	IEM3-512	IEM3-1024	
Lines per revolution	*N*	32	64	128	256	512	1 024	
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
Current consumption, typical [2]	I_{DD}	typ. 16, max. 23						mA
Output current, max. [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
Inertia of sensor magnet [5]	*J*	0,007						gcm²
Operating temperature range		-30 ... +100						°C

[1] Velocity (min^{-1}) = *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 min^{-1}
[5] No additional inertia for series 0824...B and 1028...B

For combination with Motor

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

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

Dimensional drawing C	**<L1 [mm]**
1645 ... BHS	45,0
1660 ... BHS	60,0
1660 ... BHT	60,0

Characteristics

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 an angular sensor and further processed. At the encoder outputs, two 90° phase-shifted square wave signals are available with up to 1024 impulses and an index impulse per motor revolution.

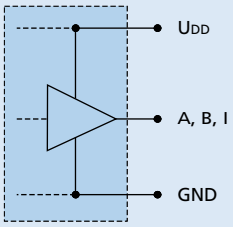
The encoder is available in a variety of different resolutions and is suitable for speed control and positioning applications.

In case of 0824...B and 1028...B motors and encoders are connected via a common flexboard.
In case of the brushless DC-Servomotors series BHx Hall signals and encoders are connected via a common flat cable, but the motor phases A,B and C have separate single wires.

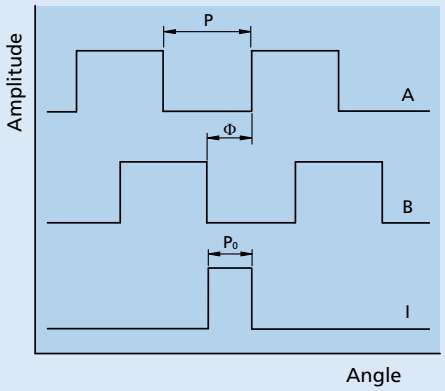
To view our large range of accessory parts, please refer to the "Accessories" chapter.

Circuit diagram / Output signals

Output circuit



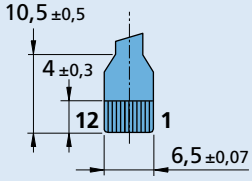
Output signals
with clockwise rotation as seen from the shaft end



Connector information / Variants

Connection Encoder and Motor see dimensional drawing A and B

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

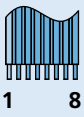


Flexboard
12 circuits, 0,5 mm pitch

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

Connection Encoder and Motor see dimensional drawing C

No.	Function
1	GND
2	UDD
3	Hall sensor C
4	Hall sensor B
5	Hall sensor A
6	Channel B
7	Channel A
8	Channel I



Cable
PVC-ribbon cable
8-AWG 28, 1,27 mm

Options

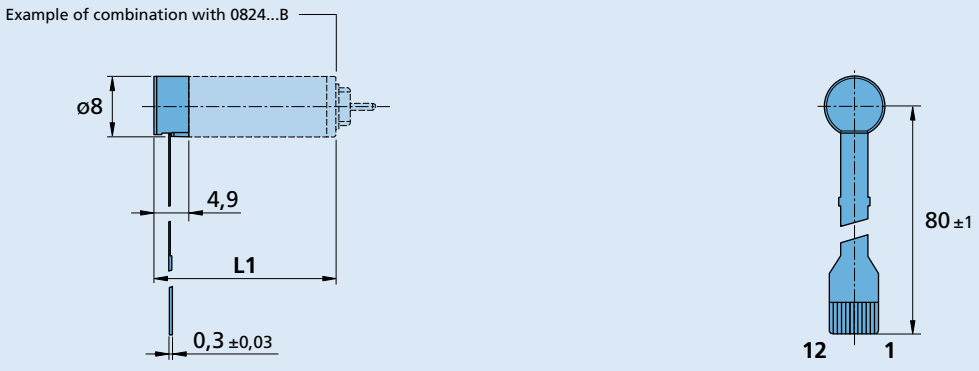
- Resolutions from 1 - 127 lines per revolution are available on request.

Full product description

- Examples:
  0824K006B IEM3-1024
  1660S024BHT IEM3-1024

Caution:
Incorrect lead connection will damage the motor electronics!

Dimensional drawing A



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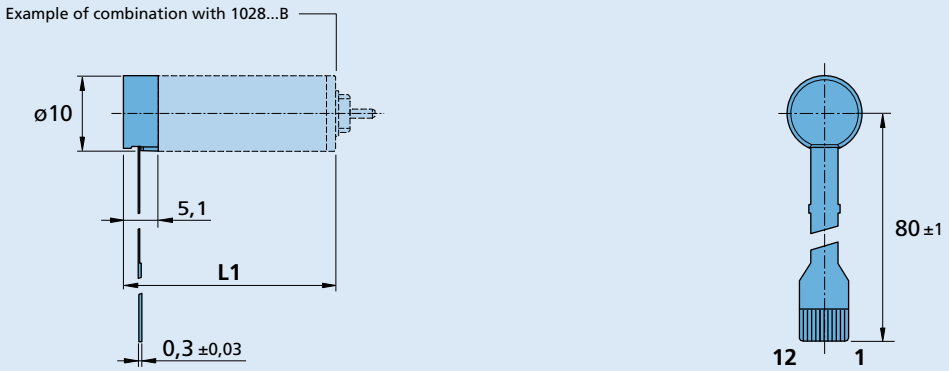
Dimensional drawing B



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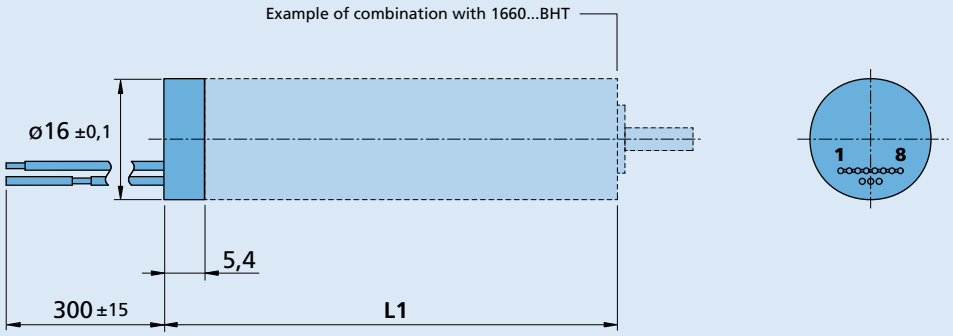
Dimensional drawing C



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