NEW

Encoders

magnetic Encoder, digital outputs,
3 channels, 16 - 4096 lines per revolution

FAULHABER

For combination with
Brushless DC-Motors

Series IEF3-4096

	IEF3	-16	-32	-64	-128	-256	-512	-1024	-2048	-4096	
Lines per revolution	N	16	32	64	128	256	512	1 024	2 048	4 096	
Frequency range, up to[1]	f	5	10	20	40	80	160	320	640	875	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. 25, max. 40									mA
Output current, max.[3]	I_{OUT}	2,5									mA
Index Pulse width[4]	P_0	90 ± 45							90 ± 65	90 ± 75	°e
Phase shift, channel A to B	Φ	90 ± 45							90 ± 65	90 ± 75	°e
Signal rise/fall time, max. (C_{LOAD} = 50 pF)	tr/tf	0,05 / 0,05									µs
Inertia of sensor magnet	J	1,57									gcm²
Operating temperature range		-40 ... +100									°C
Accuracy, typ.		0,5									°m
Repeatability, typ.		0,08									°m
Hysteresis		0,02									°m
Edge spacing, min.		225									ns
Mass, typ.		15,4									g

[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

For combination with Motor

Dimensional drawing A	**<L1 [mm]**
2214 ... BXT H	21,3

Dimensional drawing B	**<L1 [mm]**
3216 ... BXT H	23,3

Dimensional drawing C	**<L1 [mm]**
4221 ... BXT H	28,3

Characteristics

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

The encoder is integrated in the Brushless DC-Motors BXT H-Series and extends the overall length by only 6,2 mm.

A segmented magnetic disc provides a magnetic field which is detected and further processed by an angle sensor.

At the encoder outputs, two 90° phase-shifted square wave signals are available with up to 4096 impulses and an index impulse per motor revolution.
The encoder is available with different standard resolutions.

The supply voltage for the encoder and the output signals are interfaced through a ribbon cable, optional with connector.

Details for the Brushless DC-Motors and suitable reduction gearheads are on separate catalogue pages.

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

Circuit diagram / Output signals

Output circuit

UDD

A, B, I

GND
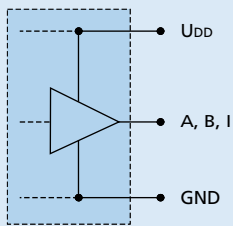
Output signals
with clockwise rotation as seen
from the shaft end

Amplitude

P

Φ

A

B

P₀

I

Angle
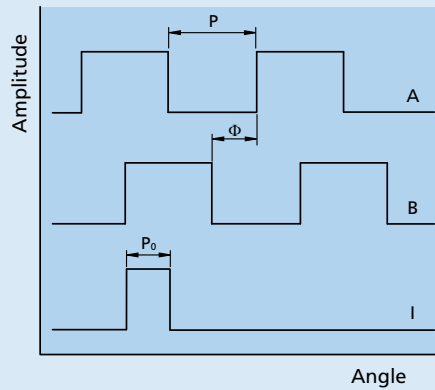
Connector information / Variants

No.	Function
1	N.C.
2	Channel I
3	GND
4	UDD
5	Channel B
6	Channel A

Caution:
Incorrect lead connection will damage the
motor electronics!

Connection Encoder

1   6

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

Option

Connector variants AWG 28 / PVC ribbon cable
with connector MOLEX Picoblade 51021-0600,
recommended mating connector 53047-0610.

Option no.: 3807 for combination with Brushless
DC-Flat Motors series BXT H or 3592 inclusive
motor connector 3830.

6   1

Full product description

Example:

2214S012BXTH IEF3-4096

Dimensional drawing A

Example of combination with 2214...BXTH

< 22

6,2

L1

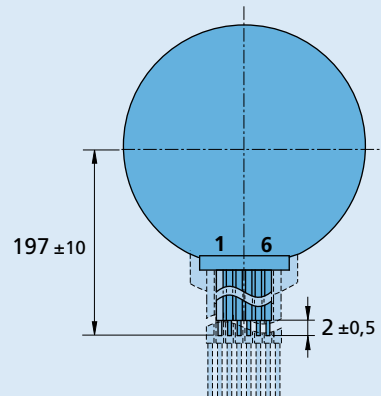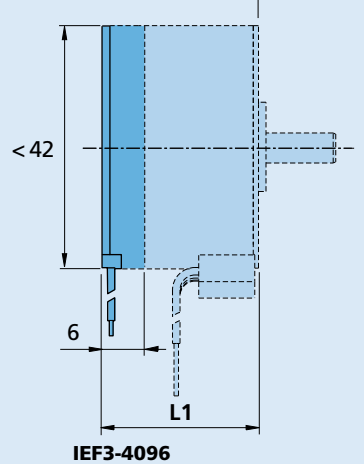**IEF3-4096**

187 ±10

1   6

2 ±0,5

For notes on technical data and lifetime performance
refer to "Technical Information".
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Specifications subject to change without notice.
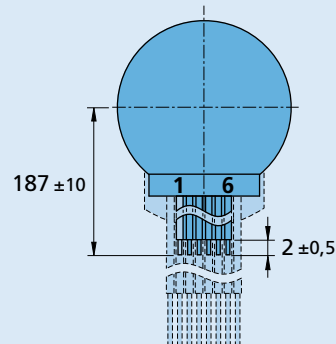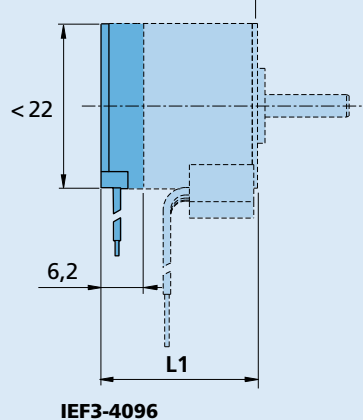
Dimensional drawing B

Example of combination with 3216...BXTH

< 32

6,2

L1

IEF3-4096

192 ±10

1   6

2 ±0,5
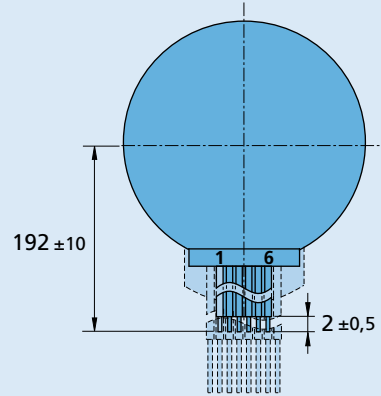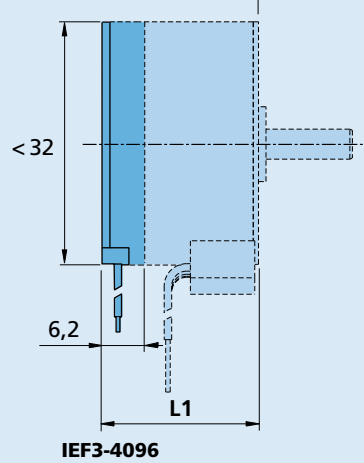
Dimensional drawing C

Scale reduced

Example of combination with 4221...BXTH

< 42

6

L1

IEF3-4096

197 ±10

1   6

2 ±0,5