## Encoders

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

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 | 1024 | 2048 | 4096 |  |
| Frequency range, up to ${ }^{1)}$ | $f$ | 5 | 10 | 20 | 40 | 80 | 160 | 320 | 640 | 875 | kHz |
| Signal output, square wave |  | 2+1 |  |  |  |  |  |  |  |  | Channels |
| Supply voltage | UDD | 4,5 |  |  |  |  |  |  |  |  | V |
| Current consumption, typical ${ }^{2}$ | IDD | typ. | max |  |  |  |  |  |  |  | mA |
| Output current, max. ${ }^{3)}$ | lout | 2,5 |  |  |  |  |  |  |  |  | mA |
| Index Pulse width ${ }^{4}$ | Po | $90 \pm$ |  |  |  |  |  | $90 \pm 65$ | $90 \pm 75$ |  | ${ }^{\circ} \mathrm{e}$ |
| Phase shift, channel A to B | $\Phi$ | $90 \pm$ |  |  |  |  |  | $90 \pm 65$ | $90 \pm 75$ |  | ${ }^{\circ} \mathrm{e}$ |
| Signal rise/fall time, max. ( $\mathrm{Cload}^{\text {a }} 50 \mathrm{pF}$ ) | $t r / t f$ | 0,05 |  |  |  |  |  |  |  |  | $\mu \mathrm{s}$ |
| Inertia of sensor magnet | J | 1,57 |  |  |  |  |  |  |  |  | $\mathrm{gcm}{ }^{2}$ |
| Operating temperature range |  | -40 | 100 |  |  |  |  |  |  |  | ${ }^{\circ} \mathrm{C}$ |
| Accuracy, typ. |  | 0,5 |  |  |  |  |  |  |  |  | ${ }^{\circ} \mathrm{m}$ |
| Repeatability, typ. |  | 0,08 |  |  |  |  |  |  |  |  | ${ }^{\circ} \mathrm{m}$ |
| Hysteresis |  | 0,02 |  |  |  |  |  |  |  |  | ${ }^{\circ} \mathrm{m}$ |
| Edge spacing, min. |  | 225 |  |  |  |  |  |  |  |  | ns |
| Mass, typ. |  | 15,4 |  |  |  |  |  |  |  |  | g |
|  |  |  |  |  |  |  |  |  |  |  |  |
| ${ }^{1)}$ Velocity $\left(\mathrm{min}^{-1}\right)=f(\mathrm{~Hz}) \times 60 / \mathrm{N}$ |  |  |  |  |  |  |  |  |  |  |  |
| 2) $U_{D D}=5 \mathrm{~V}$ : with unloaded outputs |  |  |  |  |  |  |  |  |  |  |  |
| ${ }^{3)} U_{D D}=5 \mathrm{~V}$ : low logic level $<0,4 \mathrm{~V}$, high logic level $>4,5 \mathrm{~V}$ : CMOS- and TTL compatible |  |  |  |  |  |  |  |  |  |  |  |
| ${ }^{4)}$ At $5000 \mathrm{~min}^{-1}$ |  |  |  |  |  |  |  |  |  |  |  |



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 $6,2 \mathrm{~mm}$.

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

At the encoder outputs, two $90^{\circ}$ 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.


## Connector information/Variants



Dimensional drawing A


## FAULHABER

Dimensional drawing B


Dimensional drawing C


