

NEW

Encoders

Magnetic Encoders

Features:
 32 to 256 Lines per revolution
 3 Channels
 Digital output

Series IE3 – 256

		IE3 – 32	IE3 – 64	IE3 – 128	IE3 – 256	
Lines per revolution	N	32	64	128	256	
Frequency range ¹⁾ , up to	f	15	30	60	120	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. 21				mA
Output current, max. ³⁾	I _{OUT}	4				mA
Pulse width	P	90 ± 45				°e
Phase shift, channel A to B ⁴⁾	Φ	90 ± 45				°e
Signal rise/fall time, max. (C _{LOAD} = 50 pF)	tr/tf	0,1 / 0,1				µs
Inertia of encoder magnet	J	0,08				gcm ²
Operating temperature range		- 40 ... + 100				°C

¹⁾ velocity (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

Ordering information

Encoder	number of channels	lines per revolution	in combination with:
IE3 – 32	2+1	32	DC-Micromotors series 2342 ... CR, 2642 ... CR, 2657 ... CR 3242 ... CR, 3257 ... CR, 2237 ... CXR
IE3 – 64	2+1	64	
IE3 – 128	2+1	128	
IE3 – 256	2+1	256	

Features

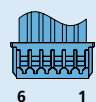
These incremental shaft encoders in combination with the FAULHABER DC-Micromotors are used for the indication and control of both shaft velocity and direction of rotation as well as for positioning.

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 256 impulses and an index impulse per motor revolution.

The encoder is available with various impulse figures. The motor and encoder are connected via separate ribbon cables.

Options

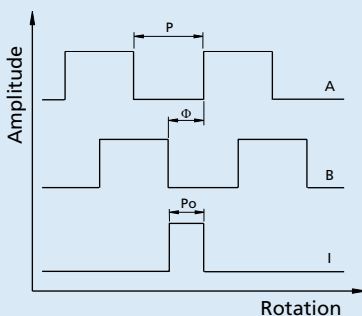
- Connector: AWG 28 / PVC ribbon cable (6-conductors), with connector PicoBlade (pitch 1,25 mm)



Output signals / Circuit diagram / Connector information

Output signals

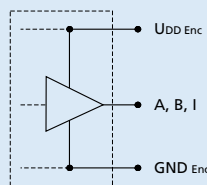
with clockwise rotation as seen from the shaft end



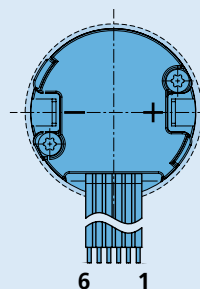
Admissible deviation of phase shift:

$$\Delta\Phi = \left| 90^\circ - \frac{\Phi}{P} * 180^\circ \right| \leq 45^\circ \quad \Delta P_0 = \left| 90^\circ - \frac{P_0}{P} * 180^\circ \right| \leq 45^\circ$$

Output circuit



Connection Encoder




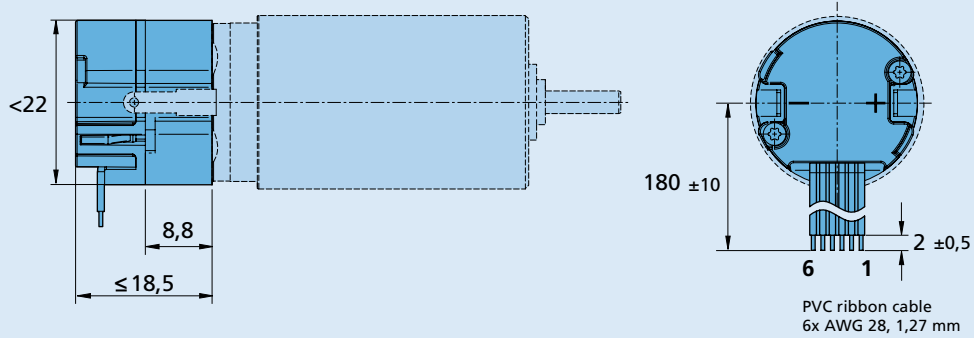
No.	Function
1	n.c.
2	Channel I (Index)
3	GND Enc
4	U _{DD} Enc
5	Channel B
6	Channel A

Caution:

Incorrect lead connection will damage the motor electronics!
 When using the encoder at low temperature is important to keep the cable unmoved.

DC-Micromotors 23xx ... CR up to 32xx ... CR with encoder IE3 – 32 ... 256

M 1:1 



DC-Micromotors 2237...CXR with encoder IE3 – 32 ... 256

M 1:1 