

**NEW**

# Encoders

## Magnetic Encoders with Line Driver

- Features:**  
 32 to 256 Lines per revolution  
 3 Channels + complementary outputs  
 Digital output

### Series IE3 – 256 L

		IE3 – 32 L	IE3 – 64 L	IE3 – 128 L	IE3 – 256 L	
Lines per revolution	N	32	64	128	256	
Frequency range <sup>1)</sup> , up to	f	15	30	60	120	kHz
Signal output, square wave		2+1 index and complementary outputs				channels
Supply voltage	U <sub>DD</sub>	4,5 ... 5,5				V DC
Current consumption, typical <sup>2)</sup>	I <sub>DD</sub>	typ. 17, max. 25				mA
Index Pulse width <sup>3)</sup>	P	90 ± 45				°e
Phase shift, channel A to B <sup>3)</sup>	Φ	90 ± 45				°e
Inertia of encoder magnet	J	0,08				gcm <sup>2</sup>
Operating temperature range		– 40 ... + 85				°C

<sup>1)</sup> velocity (rpm) = f (Hz) x 60/N

<sup>2)</sup> U<sub>DD Enc</sub> = 5 V: with unloaded outputs

<sup>3)</sup> at 5 000 rpm

Notes: The output signals are TIA-422 compatible.

Examples of Line driver Receivers: ST26C32ABD (STM), ST26C32IP16 (EXAR), DS26C32AT (NSC).

#### Ordering information

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

#### Features

These incremental encoders have 3 output channels, 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.

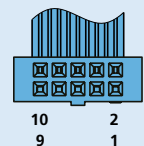
The Line Driver version has differential signal outputs according to TIA-422. With this symmetrical interface, synchronism faults can be

suppressed and longer leads are possible. On the connection side, these differential signals must be brought together again with a receiver module.

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

#### Options

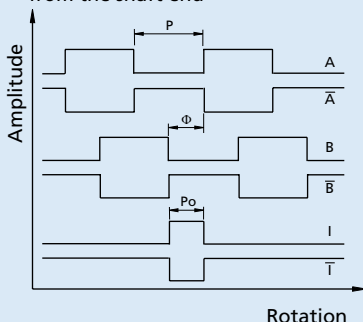
- Connector. AWG 28 / PVC ribbon cable (10-conductors), with connector DIN-41651 (pitch 2,54 mm)



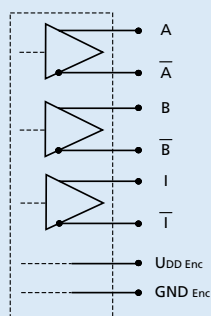
#### Output signals / Circuit diagram / Connector information

##### Output signals

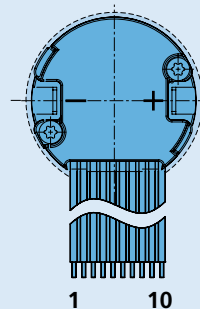
with clockwise rotation as seen from the shaft end



##### Output circuit



##### Connection Encoder




No.	Function
1	n.c.
2	U <sub>DD</sub> Enc
3	GND Enc
4	n.c.
5	Channel Ā
6	Channel A
7	Channel B̄
8	Channel B
9	Channel Ī (Index)
10	Channel I (Index)

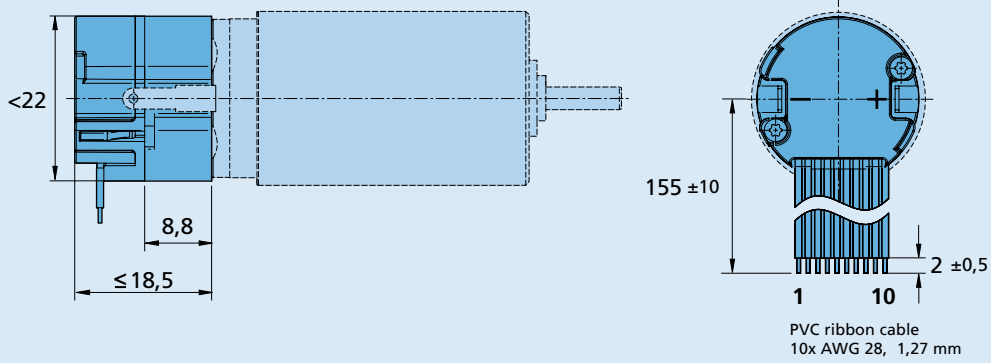
#### Caution:

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 L

M 1:1 



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

M 1:1 