Encoders

Magnetic Encoders

Features:
50 to 400 Lines per revolution
2 Channels
Digital output

Series IE2 – 400

		IE2 – 50	IE2 – 100	IE2 – 200	IE2 – 400	
Lines per revolution	N	50	100	200	400	
Signal output, square wave		2				channels
Supply voltage	V_{DD}	4,5 … 5,5				V DC
Current consumption, typical (V_{DD} = 5 V DC)	I_{DD}	typ. 6, max. 12				mA
Output current, max. [1]	I_{OUT}	5				mA
Phase shift, channel A to B	Φ	90 ± 45				°e
Signal rise/fall time, max. (C_{LOAD} = 50 pF)	tr/tf	0,1 / 0,1				µs
Frequency range [2], up to	f	20	40	80	160	kHz
Inertia of code disc	J	0,05				gcm²
Operating temperature range		– 25 … + 85				°C

[1] V_{DD} = 5 V DC: Low logic level < 0,5 V, high logic level > 4,5 V: CMOS and TTL compatible
[2] Velocity (rpm) = f (Hz) x 60/N

Ordering information

Encoder	number of channels	lines per revolution	in combination with:
IE2 – 50	2	50	DC-Micromotors
IE2 – 100	2	100	1319 ... SR,
IE2 – 200	2	200	1331 ... SR
IE2 – 400	2	400	

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.
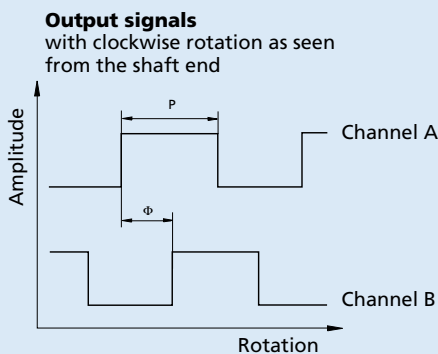
The encoder is integrated in the DC-Micromotors SR-Series and extends the overall length by only 1,7 mm!

Hybrid circuits with sensors and a low inertia magnetic disc provide two channels with 90° phase shift.

The supply voltage for the encoder and the DC-Micromotor as well as the two channel output signals are interfaced through a ribbon cable with connector.

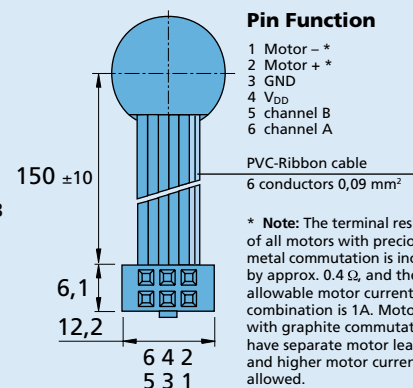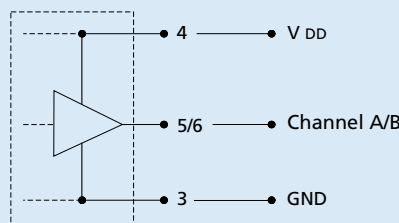Details for the DC-Micromotors and suitable reduction gearheads are on separate catalogue pages.

Output signals / Circuit diagram / Connector information

Output signals
with clockwise rotation as seen from the shaft end

Amplitude
P
Channel A
Φ
Channel B
Rotation

Admissible deviation of phase shift:

$$\Delta\Phi = \left| 90° - \frac{\Phi}{P} \ast 180° \right| \leq 45°$$

Output circuit

4 → V_{DD}
5/6 → Channel A/B
3 → GND

Pin Function
1 Motor – *
2 Motor + *
3 GND
4 V_{DD}
5 channel B
6 channel A

150 ±10

PVC-Ribbon cable
6 conductors 0,09 mm²

6,1
12,2

6 4 2
5 3 1

* **Note:** The terminal resistance of all motors with precious metal commutation is increased by approx. 0.4 Ω, and the max. allowable motor current in combination is 1A. Motors with graphite commutation have separate motor leads and higher motor current is allowed.

Connector
DIN-41651
grid 2,54 mm

For notes on technical data and lifetime performance refer to "Technical Information".

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DC-Micromotor 1319 T ... SR with Encoder IE2 – 50 ... 400

ø13 $^{0}_{-0,052}$ ø6 $^{0}_{-0,05}$ ø1,5 $^{-0,004}_{-0,009}$

A

⌾ ø0,05 | A

⌀ 0,02

11

2,7   1

19,2   8,1 ±0,3

150 ±10
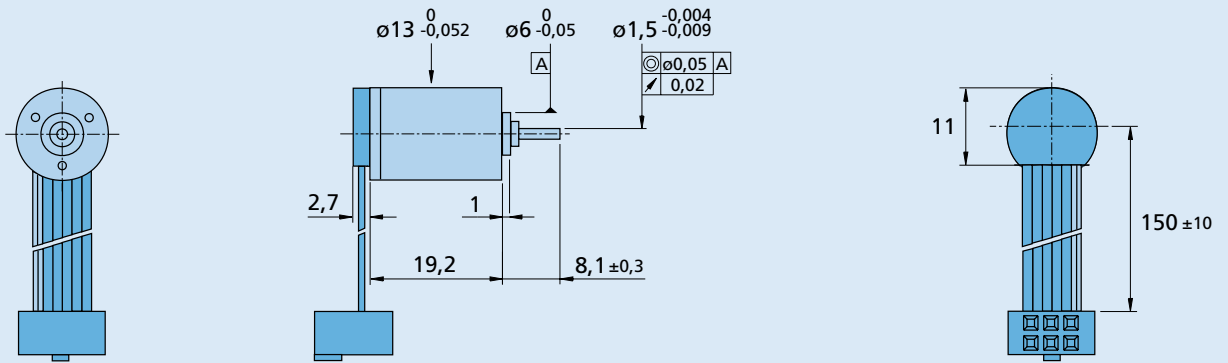
DC-Micromotor 1331 T ... SR with encoder   IE2 – 50 ... 400

ø13 $^{0}_{-0,052}$ ø6 $^{0}_{-0,05}$ ø1,5 $^{-0,004}_{-0,009}$

A   ø3,5

⌾ ø0,05 | A

⌀ 0,02

11

2,7   1

31,2   8,1 ±0,3

150 ±10

For notes on technical data and lifetime performance
refer to "Technical Information".
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