

NEW

Encoders

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

For combination with
DC-Micromotors
Stepper Motors

Series IEP3-4096

	IEP3	-16	-32	-64	-128	-256	-512	-1024	-2048	-4096	
Lines per revolution ¹⁾	<i>N</i>	16	32	64	128	256	512	1 024	2 048	4 096	
Frequency range, up to ¹⁾	<i>f</i>	5	10	17	35	70	140	275	550	1 000	kHz
Signal output, square wave		2+1 Index									Channels
Supply voltage ²⁾	<i>U_{DD}</i>	3,0 ... 3,6 / 4,5 ... 5,5									V
Current consumption, typical ³⁾	<i>I_{DD}</i>	typ. 25, max. 34									mA
Output current, max. ⁴⁾	<i>I_{OUT}</i>	4									mA
Index Pulse width ⁵⁾	<i>P₀</i>	90 ± 25							90 ± 45		°e
Phase shift, channel A to B ⁵⁾	<i>Φ</i>	90 ± 25							90 ± 45		°e
Signal rise/fall time, max. (<i>C_{LOAD}</i> = 50 pF)	<i>tr/tf</i>	0,1 / 0,1									µs
Inertia of sensor magnet	<i>J</i>	0,01									gcm ²
Operating temperature range		-40 ... +100									°C
Accuracy, typ.		0,3									°m
Repeatability, typ.		0,05									°m
Hysteresis		0,08							0,04		°m
Edge spacing, min.		125									ns
Mass, typ.		2,3									g

1) Velocity (min⁻¹) = *f* (Hz) x 60/*N*

2) Encoder supports both voltage ranges 3,0 ... 3,6 V and 4,5 ... 5,5 V

3) *U_{DD}* = 3,3 or 5 V: with unloaded outputs

4) *U_{DD}* = 3,3 / 5 V: low logic level < 0,4 / 0,4 V, high logic level > 2,8 / 4,5 V: CMOS and TTL compatible

5) At 5 000 min⁻¹

For combination with Motor

Dimensional drawing A	<L1 [mm]		
0816 ... SR - K4180	25,3		
1016 ... SR - K4180	25,3		
1024 ... SR - K4180	33,3		
Dimensional drawing B	<L1 [mm]		
AM0820	24,0		
AM1020	26,1		
Dimensional drawing C	<L1 [mm]		
AM1524	27,3		

Characteristics

These incremental encoders with 3 output channels, in combination with the FAULHABER Motors, 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 an angular sensor and further processed.

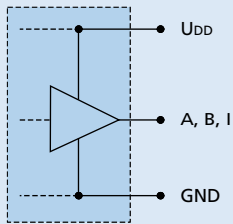
At the encoder outputs, two 90° phase-shifted square wave signals are available with up to 4.096 impulses as standard and up to 10.000 impulses per request and an index impulse per motor revolution.

The encoder has a high accuracy and a high repeatability for positioning applications.

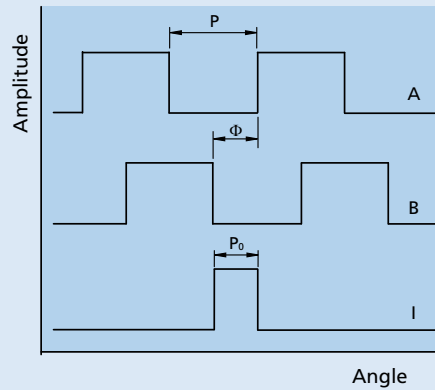
The encoder is connected with a ribbon cable. To view our large range of accessory parts, please refer to the "Accessories" chapter.

Circuit diagram / Output signals

Output circuit



Output signals with clockwise rotation as seen from the shaft end



Connector information / Variants

Example product designation: 0816K012SR K4180 IEP3-4096 K4453

Option	Type	Description
K4453	Ribbon cable PVC	For combination with DC-Motors series SR, encoder ribbon cable PVC and motor single leads PVC, length 50 mm
K4454	Ribbon cable PVC	For combination with DC-Motors series SR, encoder ribbon cable PVC and motor single leads PVC, length 100 mm
K4455	Ribbon cable FEP	For combination with DC-Motors series SR, encoder ribbon cable FEP and motor single leads PTFE, length 150 mm
K4502	Ribbon cable FEP	For combination with stepper motors, encoder ribbon cable FEP, length 150mm (an additional motor cable is mandatory)
K4456	Connector	For combination with DC-Motors series SR, connector variant with MOLEX Picoblade 51021-0800, recommended mating connector 51047-0800
K4483	Temperature range	For combination with DC-Motors series SR, up to 125°C, with encoder ribbon cable FEP and motor single leads PTFE, length 150 mm
	Resolutions	Resolutions from 1 - 10000 lines per revolution are available by request.

Connection Encoder

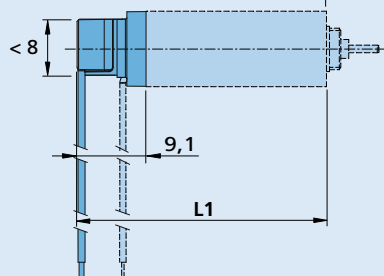
Standard		Option K4456	
No.	Function	No.	Function
1	GND	1	N.C.
2	U _{DD}	2	N.C.
3	Channel B	3	N.C.
4	Channel A	4	GND
5	Channel I	5	U _{DD}
		6	Channel B
		7	Channel A
		8	Channel I

Standard cable
PVC-ribbon cable, 5-AWG 28, 1 mm

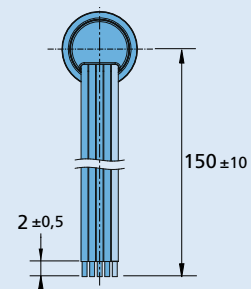
Caution:
Incorrect lead connection will damage the electronics!

Dimensional drawing A

Example of combination with 1024...SR

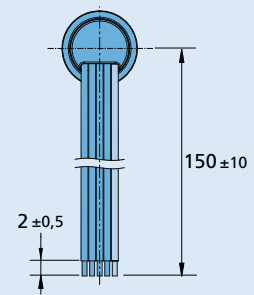
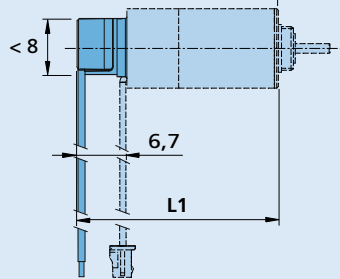


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Dimensional drawing B

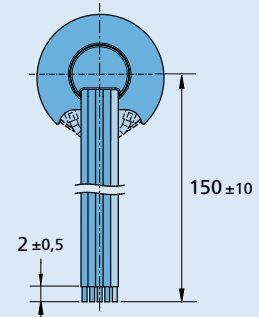
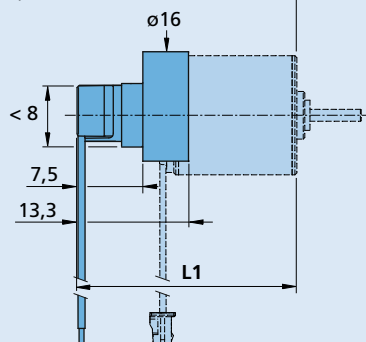
Example of combination with AM1020



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Dimensional drawing C

Example of combination with AM1524



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