

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 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.

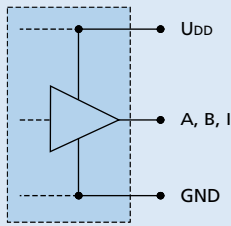
At the encoder outputs, two 90° phase-shifted square wave signals are available with up to 4.096 impulses as standard and up to 10.000 impulses per request and an index impulse per motor revolution.

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

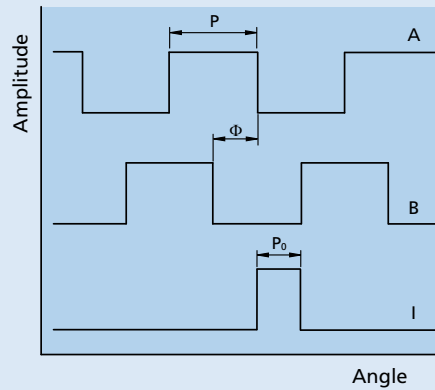
The encoder is connected with a ribbon cable. To view our large range of accessory parts, please refer to the "Accessories" chapter.

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
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

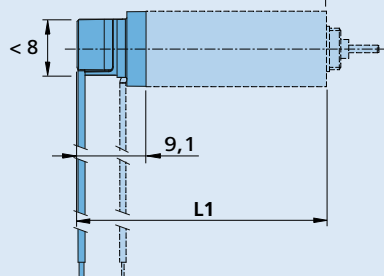
Standard		Option K4456	
No.	Function	No.	Function
1	GND	1	N.C.
2	U _{DD}	2	N.C.
3	Channel B	3	N.C.
4	Channel A	4	GND
5	Channel I	5	U _{DD}
		6	Channel B
		7	Channel A
		8	Channel I

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

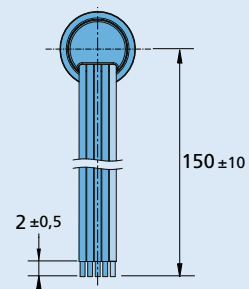
Caution:
Incorrect lead connection will damage the electronics!

Dimensional drawing A

Example of combination with 1024...SR

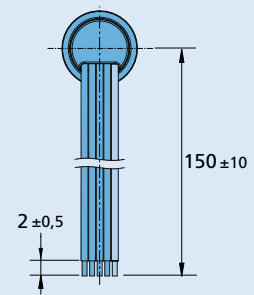
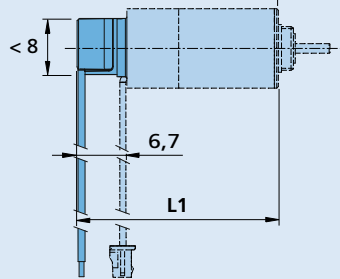


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Dimensional drawing B

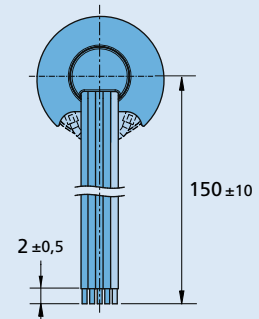
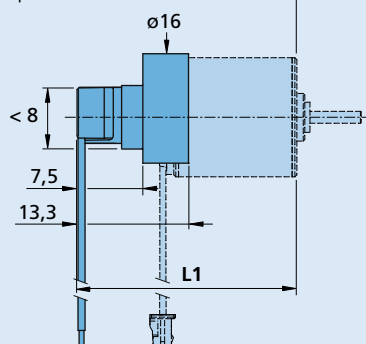
Example of combination with AM1020



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Dimensional drawing C

Example of combination with AM1524



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