



Encoders

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

For combination with DC-Micromotors

Series IEX3-4096

	IEX3	-16	-32	-64	-128	-256	-512	-1024	-2048	-4096	
Lines per revolution ¹⁾	Ν	16	32	64	128	256	512	1 024	2 048	4 096	
Frequency range, up to ¹⁾	f	5	10	17	35	70	140	275	550	1 000	kHz
Signal output, square wave		2+1 Ind	lex								Channels
Supply voltage ²⁾	UDD	3,0 3	,6/4,5.	. 5,5							V
Current consumption, typical ³⁾	IDD	typ. 25,	max. 34	ţ							mA
Output current, max. ⁴⁾	Ιουτ	4									mA
Index Pulse width ⁵⁾	Po	90 ± 25							90 ± 45	i	°e
Phase shift, channel A to B ⁵⁾	Φ	90 ± 25							90 ± 45	;	°e
Signal rise/fall time, max. (CLOAD = 50 pF)	tr/tf	0,1/0,1	1								μs
Inertia of sensor magnet	J	0,03									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.		3,9									g

¹⁾ Velocity (min⁻¹) = $f(Hz) \ge 60/N$

 $^{\rm 2)}$ 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

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For combination with Moto	or	
Dimensional drawing A	<l1 [mm]<="" td=""><td></td></l1>	
1627 SXR	36,8	
1627 GXR	36,8	

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





Connector information / Variants

Example p	product designation:	Connection Encoder		
Option	Туре	Description	Standard	Option 7953
			No. Function	No. Function
7951	Ribbon Cable PVC	For combination with DC-Motors series SXR/GXR, encoder ribbon cable PVC,	1 N.C.	1 N.C.
		length 50 mm	2 GND	2 N.C.
X7951	Ribbon Cable PVC	For combination with DC-Motors series SXR/GXR, encoder ribbon cable PVC,	3 UDD	3 N.C.
		length 100 mm	4 Channel B	4 GND
7954	Ribbon cable FEP	For combination with DC-Motors series SXR/GXR, encoder ribbon cable FEP,	5 Channel A	5 Udd
		length 150 mm	6 Channel I	6 Channel B
7953	Connector	For combination with DC-Motors series SXR/GXR, connector variant with MOLEX Picoblade 51021-0800, recommended mating connector 51047-0800		7 Channel A 8 Channel I
7070	Tomorodium		6 1	8 1
/9/8	remperature range	For combination with DC-Motors series SXR/GXR, up to 125°C, with encoder ribbon		
7055	Single leads	Cable FEP, length 150 mm	Standard cable	
/955	Single leads	longth 150 mm	PVC-ribbon cable,	
			0-AVVG 28, 1,27 mm	
	Resolutions	Resolutions from 1 - 10 000 lines per revolution are available by request.	Caution: Incorrect lead connection v	vill damage the electronics!

Dimensional drawing A





For notes on technical data and lifetime performance refer to "Technical Information". Edition 2025 Mar. 10