

Brushless DC-Servomotors

2 Pole Technology

1,1 mNm
5,8 W

Series 0824 ... B

Values at 22°C and nominal voltage		0824 K	006 B	012 B	
1	Nominal voltage	U_N	6	12	V
2	Terminal resistance, phase-phase	R	2,91	10,7	Ω
3	Efficiency, max.	η_{max}	70	70	%
4	No-load speed	n_0	35 100	37 500	min^{-1}
5	No-load current, typ. (with shaft \varnothing 1 mm)	I_0	0,055	0,031	A
6	Stall torque	M_H	3,28	3,34	mNm
7	Friction torque, static	C_0	0,021	0,021	mNm
8	Friction torque, dynamic	C_V	$1,89 \cdot 10^{-6}$	$1,89 \cdot 10^{-6}$	$\text{mNm}/\text{min}^{-1}$
9	Speed constant	k_n	5 968	3 183	min^{-1}/V
10	Back-EMF constant	k_E	0,168	0,314	$\text{mV}/\text{min}^{-1}$
11	Torque constant	k_M	1,6	3	mNm/A
12	Current constant	k_I	0,625	0,333	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	10 855	11 353	$\text{min}^{-1}/\text{mNm}$
14	Terminal inductance, phase-phase	L	30	107	μH
15	Mechanical time constant	τ_m	2,4	2,5	ms
16	Rotor inertia	J	0,0285	0,0285	gcm^2
17	Angular acceleration	α_{max}	1 561	1 592	$\cdot 10^3 \text{rad}/\text{s}^2$
18	Thermal resistance	R_{th1} / R_{th2}	11,2 / 55,2		K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	3,5 / 112		s
20	Operating temperature range:				
	– motor		-20 ... +100		$^{\circ}\text{C}$
	– winding, max. permissible		+125		$^{\circ}\text{C}$
21	Shaft bearings		ball bearings, preloaded		
22	Shaft load max.:				
	– with shaft diameter		1		mm
	– radial at 10 000 min^{-1} (4 mm from mounting flange)		1,5		N
	– axial at 10 000 min^{-1} (push only)		0,4		N
	– axial at standstill (push only)		10		N
23	Shaft play:				
	– radial	\leq	0,012		mm
	– axial	$=$	0		mm
24	Housing material		aluminium, black anodized		
25	Mass		5,2		g
26	Direction of rotation		electronically reversible		
27	Speed up to	n_{max}	90 000		min^{-1}
28	Number of pole pairs		1		
29	Hall sensors		digital		
30	Magnet material		NdFeB		
Rated values for continuous operation					
31	Rated torque	M_N	0,89	0,86	mNm
32	Rated current (thermal limit)	I_N	0,66	0,341	A
33	Rated speed	n_N	22 120	24 560	min^{-1}

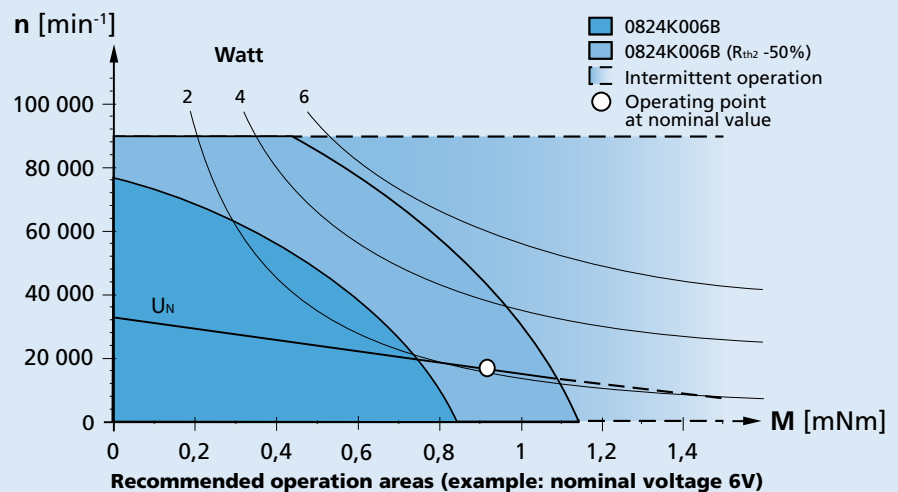
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

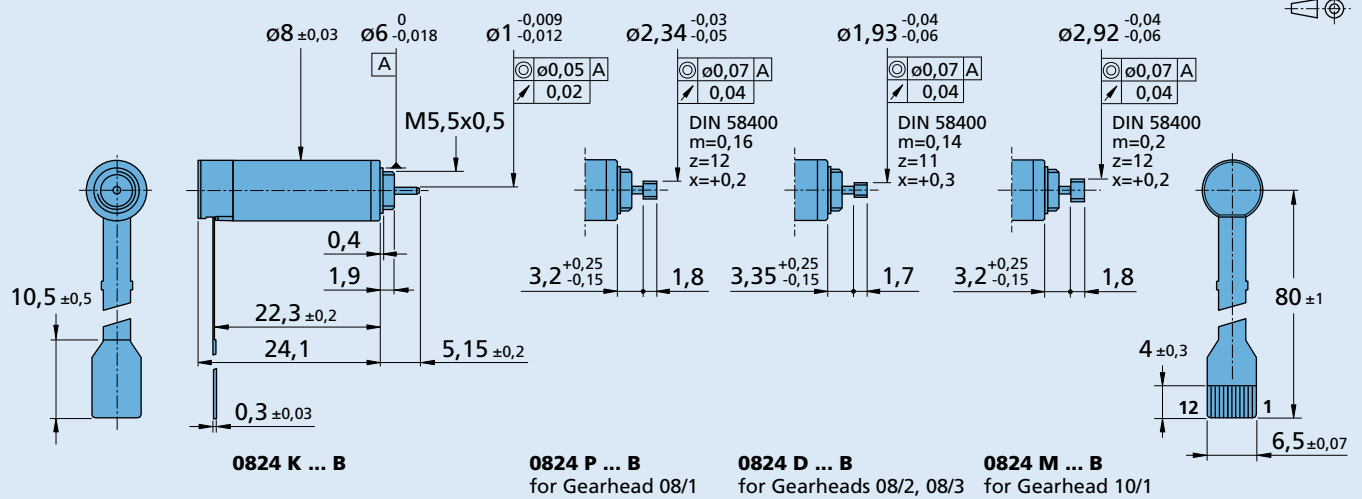
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



Dimensional drawing



Option, cable and connection information

Example product designation: **0824K006B-K179**

Option	Type	Description	Connection																										
K179	Bearing lubrication	For vacuum of 10^{-5} Pa @ 22°C	<table border="1"> <thead> <tr> <th>No.</th> <th>Function</th> </tr> </thead> <tbody> <tr><td>1</td><td>Phase C</td></tr> <tr><td>2</td><td>Phase B</td></tr> <tr><td>3</td><td>Phase A</td></tr> <tr><td>4</td><td>GND</td></tr> <tr><td>5</td><td>U_{DD} (+5V)</td></tr> <tr><td>6</td><td>Hall sensor C</td></tr> <tr><td>7</td><td>Hall sensor B</td></tr> <tr><td>8</td><td>Hall sensor A</td></tr> <tr><td>9</td><td>Hall sensor \bar{B}</td></tr> <tr><td>10</td><td>Hall sensor \bar{A}</td></tr> <tr><td>11</td><td>Hall sensor \bar{C}</td></tr> <tr><td>12</td><td>Reserved</td></tr> </tbody> </table> <p>Standard flexboard 12 pole, 0,5 mm pitch Recommended connector Molex - ZIF Connector, No. 52745-1297.</p>	No.	Function	1	Phase C	2	Phase B	3	Phase A	4	GND	5	U _{DD} (+5V)	6	Hall sensor C	7	Hall sensor B	8	Hall sensor A	9	Hall sensor \bar{B}	10	Hall sensor \bar{A}	11	Hall sensor \bar{C}	12	Reserved
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Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
08/1 08/2 08/3 10/1 08L ... SL 08L ... HL 10L ... SL	IEM3-1024 AESM-4096	SC 1801 P SC 1801 S SC 2402 P SC 2804 S MC 3001 B MC 3001 P	To view our large range of accessory parts, please refer to the "Accessories" chapter.