

# Brushless DC-Servomotors

2 Pole Technology, sensorless

18  $\mu\text{Nm}$

0,065 W

## Series 0308 ... B

Values at 22°C and nominal voltage		0308 H	003 B	
1	Nominal voltage	$U_N$	3	V
2	Terminal resistance, phase-phase	$R$	34	$\Omega$
3	Efficiency, max.	$\eta_{max}$	20	%
4	No-load speed	$n_0$	61 000	$\text{min}^{-1}$
5	No-load current, typ. (with shaft $\varnothing$ 0,6 mm)	$I_0$	0,027	A
6	Stall torque	$M_H$	0,026	mNm
7	Friction torque, static	$C_0$	$1,77 \cdot 10^{-3}$	mNm
8	Friction torque, dynamic	$C_V$	$1,09 \cdot 10^{-7}$	$\text{mNm}/\text{min}^{-1}$
9	Speed constant	$k_n$	29 800	$\text{min}^{-1}/\text{V}$
10	Back-EMF constant	$k_E$	0,033	$\text{mV}/\text{min}^{-1}$
11	Torque constant	$k_M$	0,32	$\text{mNm}/\text{A}$
12	Current constant	$k_I$	3,12	$\text{A}/\text{mNm}$
13	Slope of n-M curve	$\Delta n / \Delta M$	$3,2 \cdot 10^6$	$\text{min}^{-1}/\text{mNm}$
14	Terminal inductance, phase-phase	$L$	60	$\mu\text{H}$
15	Mechanical time constant	$\tau_m$	7	ms
16	Rotor inertia	$J$	$2 \cdot 10^{-4}$	$\text{gcm}^2$
17	Angular acceleration	$\alpha_{max}$	1 323	$\cdot 10^3 \text{rad}/\text{s}^2$
18	Thermal resistance	$R_{th1} / R_{th2}$	60 / 300	K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	0,5 / 45	s
20	Operating temperature range:			
	– motor		-30 ... +60	$^{\circ}\text{C}$
	– winding, max. permissible		+60	$^{\circ}\text{C}$
21	Shaft bearings		jewel bearings	
22	Shaft load max.:			
	– with shaft diameter		0,6	mm
	– radial at 3 000 $\text{min}^{-1}$ (1 mm from mounting flange)		0,2	N
	– axial at 3 000 $\text{min}^{-1}$ (push only)		0,2	N
	– axial at standstill (push only)		2	N
23	Shaft play:			
	– radial	$\leq$	0,03	mm
	– axial	$\leq$	0,15	mm
24	Housing material		Nickel alloy	
25	Mass		0,35	g
26	Direction of rotation		electronically reversible	
27	Speed up to	$n_{max}$	96 000	$\text{min}^{-1}$
28	Number of pole pairs		1	
29	Hall sensors		without	
30	Magnet material		NdFeB	
<b>Rated values for continuous operation</b>				
31	Rated torque	$M_N$	0,013	mNm
32	Rated current (thermal limit)	$I_N$	0,056	A
33	Rated speed	$n_N$	24 820	$\text{min}^{-1}$

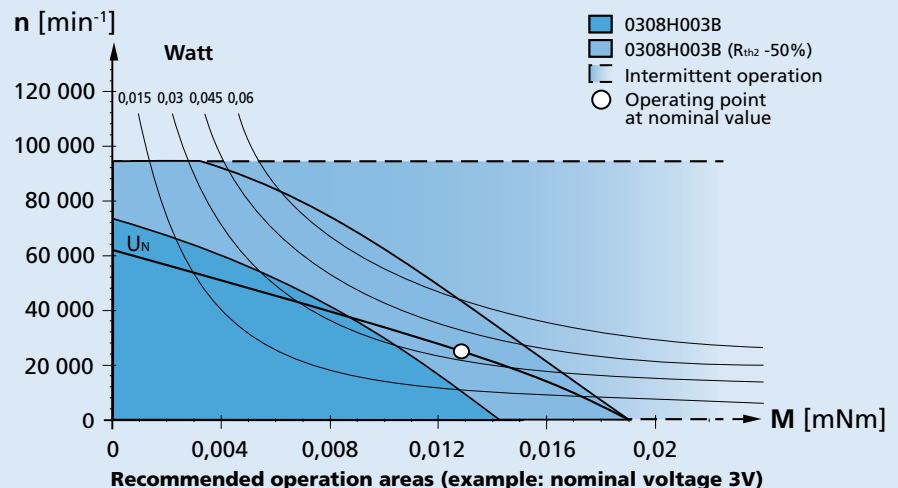
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

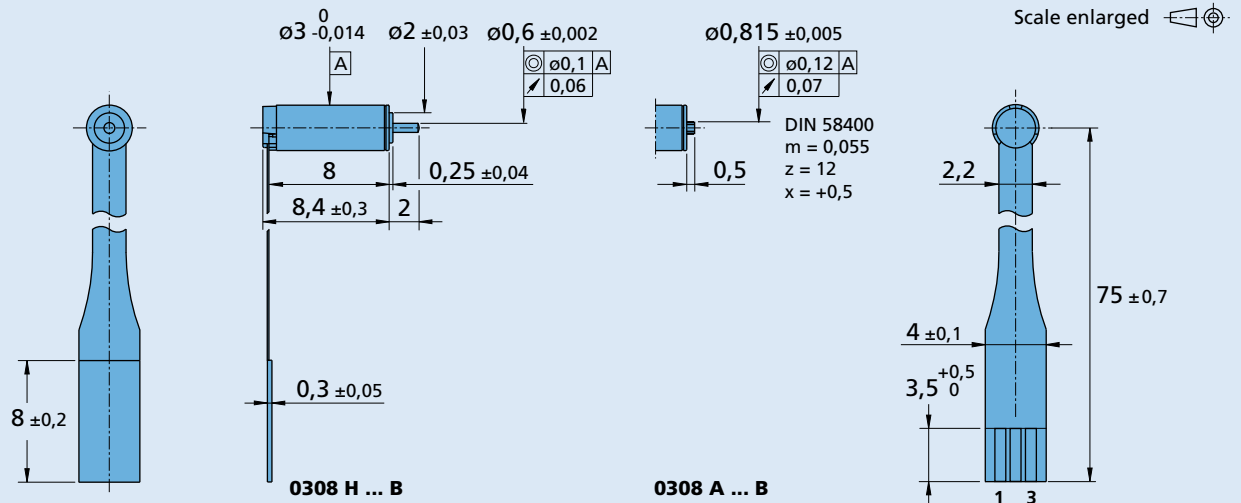
**Note:**

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: **0308H003B**

Option	Type	Description	Connection								
			<table border="1"> <thead> <tr> <th>No.</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Phase A</td> </tr> <tr> <td>2</td> <td>Phase B</td> </tr> <tr> <td>3</td> <td>Phase C</td> </tr> </tbody> </table>	No.	Function	1	Phase A	2	Phase B	3	Phase C
No.	Function										
1	Phase A										
2	Phase B										
3	Phase C										
			<b>Flex Print connector</b> 3-pole; 1mm pitch, e.g.: Molex 52207-0333								

**Product combination**

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
03A		SC 1801	To view our large range of accessory parts, please refer to the "Accessories" chapter.