

Brushless DC-Servomotors

2 Pole Technology, sensorless

0,13 mNm

0,44 W

Series 0515 ... B

Values at 22°C and nominal voltage		0515 G	006 B	
1	Nominal voltage	U_N	6	V
2	Terminal resistance, phase-phase	R	16,1	Ω
3	Efficiency, max.	η_{max}	39	%
4	No-load speed	n_0	43 000	min ⁻¹
5	No-load current, typ. (with shaft $\varnothing$ 0,8 mm)	I_0	0,056	A
6	Stall torque	M_H	0,4	mNm
7	Friction torque, static	C_0	0,033	mNm
8	Friction torque, dynamic	C_v	$6,5 \cdot 10^{-7}$	mNm/min ⁻¹
9	Speed constant	k_n	8 282	min ⁻¹ /V
10	Back-EMF constant	k_E	0,121	mV/min ⁻¹
11	Torque constant	k_M	1,15	mNm/A
12	Current constant	k_I	0,867	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	115 600	min ⁻¹ /mNm
14	Terminal inductance, phase-phase	L	140	μ H
15	Mechanical time constant	τ_m	2,4	ms
16	Rotor inertia	J	0,002	gcm ²
17	Angular acceleration	α_{max}	1 983	$\cdot 10^3$ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	21 / 140	K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	1,9 / 89	s
20	Operating temperature range:			
	– motor	-30 ... +80		°C
	– winding, max. permissible	+80		°C
21	Shaft bearings	sintered bearings		
22	Shaft load max.:			
	– with shaft diameter	0,8		mm
	– radial at 3 000 min ⁻¹ (1 mm from mounting flange)	0,2		N
	– axial at 3 000 min ⁻¹ (push only)	0,2		N
	– axial at standstill (push only)	2		N
23	Shaft play:			
	– radial	≤ 0,03		mm
	– axial	≤ 0,15		mm
24	Housing material	steel, nickel plated		
25	Mass	1,6		g
26	Direction of rotation	electronically reversible		
27	Speed up to	n_{max}	77 000	min ⁻¹
28	Number of pole pairs	1		
29	Hall sensors	without		
30	Magnet material	NdFeB		
Rated values for continuous operation				
31	Rated torque	M_N	0,084	mNm
32	Rated current (thermal limit)	I_N	0,127	A
33	Rated speed	n_N	30 880	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.



