

Brushless DC-Servomotors

4 Pole Technology

18 mNm

23 W

Series 2232 ... BX4

Values at 22°C and nominal voltage		2232 S	006 BX4	012 BX4	015 BX4	018 BX4	024 BX4	
1	Nominal voltage	U_N	6	12	15	18	24	V
2	Terminal resistance, phase-phase	R	0,73	3,5	4,58	7,04	12,5	Ω
3	Efficiency, max.	η_{max}	74	74	74	73	74	%
4	No-load speed	n_0	7 100	6 700	7 100	7 100	7 100	min ⁻¹
5	No-load current, typ. (with shaft $\varnothing$ 3 mm)	I_0	0,16	0,072	0,06	0,053	0,039	A
6	Stall torque	M_H	64,7	58,7	64	60,7	61,7	mNm
7	Friction torque, static	C_0	0,46	0,46	0,46	0,46	0,46	mNm
8	Friction torque, dynamic	C_V	$1,1 \cdot 10^{-4}$	$1,1 \cdot 10^{-4}$	$1,1 \cdot 10^{-4}$	$1,1 \cdot 10^{-4}$	$1,1 \cdot 10^{-4}$	mNm/min ⁻¹
9	Speed constant	k_n	1 198	562	480	399	295	min ⁻¹ /V
10	Back-EMF constant	k_E	0,835	1,78	2,08	2,504	3,393	mV/min ⁻¹
11	Torque constant	k_M	7,97	17	19,9	23,9	32,4	mNm/A
12	Current constant	k_I	0,125	0,059	0,05	0,042	0,031	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	110	114	110	118	114	min ⁻¹ /mNm
14	Terminal inductance, phase-phase	L	25	115	156	225	410	μ H
15	Mechanical time constant	τ_m	5,9	6,1	5,9	6,3	6,1	ms
16	Rotor inertia	J	5,1	5,1	5,1	5,1	5,1	gcm ²
17	Angular acceleration	α_{max}	127	115	125	119	121	$\cdot 10^3$ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	3,9 / 18,8					K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	7,9 / 520					s
20	Operating temperature range:							
	– motor		-40 ... +100					°C
	– winding, max. permissible		+125					°C
21	Shaft bearings		ball bearings, preloaded					
22	Shaft load max.:							
	– with shaft diameter		3					mm
	– radial at 3 000 min ⁻¹ (5 mm from mounting flange)		20					N
	– axial at 3 000 min ⁻¹ (push / pull)		2					N
	– axial at standstill (push / pull)		20					N
23	Shaft play:							
	– radial	$\leq$	0,015					mm
	– axial	$=$	0					mm
24	Housing material		stainless steel					
25	Mass		65					g
26	Direction of rotation		electronically reversible					
27	Speed up to	n_{max}	29 000					min ⁻¹
28	Number of pole pairs		2					
29	Hall sensors		digital					
30	Magnet material		NdFeB					
Rated values for continuous operation								
31	Rated torque	M_N	14,8	14,7	14,8	14,3	14,6	mNm
32	Rated current (thermal limit)	I_N	2,22	1	0,89	0,72	0,54	A
33	Rated speed	n_N	5 030	4 450	5 040	4 930	4 840	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.



