

Brushless DC-Servomotors

4 Pole Technology

18 mNm

23 W

Series 2250 ... BX4 S

Values at 22°C and nominal voltage		2250 S	012 BX4 S	018 BX4 S	024 BX4 S	
1	Nominal voltage	U_N	12	18	24	V
2	Terminal resistance, phase-phase	R	1,55	3,17	5,9	Ω
3	Efficiency, max.	η_{max}	71	71	72	%
4	No-load speed	n_0	10 700	11 400	10 900	min ⁻¹
5	No-load current, typ. (with shaft ø 3 mm)	I_0	0,188	0,139	0,095	A
6	Stall torque	M_H	82,6	85,8	85,7	mNm
7	Friction torque, static	C_0	0,54	0,54	0,54	mNm
8	Friction torque, dynamic	C_V	1,3·10 ⁻⁴	1,3·10 ⁻⁴	1,3·10 ⁻⁴	mNm/min ⁻¹
9	Speed constant	k_n	890	628	448	min ⁻¹ /V
10	Back-EMF constant	k_E	1,124	1,593	2,231	mV/min ⁻¹
11	Torque constant	k_M	10,7	15,2	21,3	mNm/A
12	Current constant	k_I	0,093	0,066	0,047	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	128	131	124,8	min ⁻¹ /mNm
14	Terminal inductance, phase-phase	L	64,3	129	250	μH
15	Mechanical time constant	τ_m	6,9	7	6,7	ms
16	Rotor inertia	J	5,1	5,1	5,1	gcm ²
17	Angular acceleration	α_{max}	162	168	168	·10 ³ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	3,7 / 15,1			K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	13 / 550			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	≤	0,015			mm
	– axial	=	0			mm
24	Housing material		stainless steel			
25	Mass		88			g
26	Direction of rotation		electronically reversible			
27	Speed up to	n_{max}	26 000			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	13,6	13	13,7	mNm
32	Rated current (thermal limit)	I_N	1,59	1,09	0,81	A
33	Rated speed	n_N	8 580	9 310	8 720	min ⁻¹

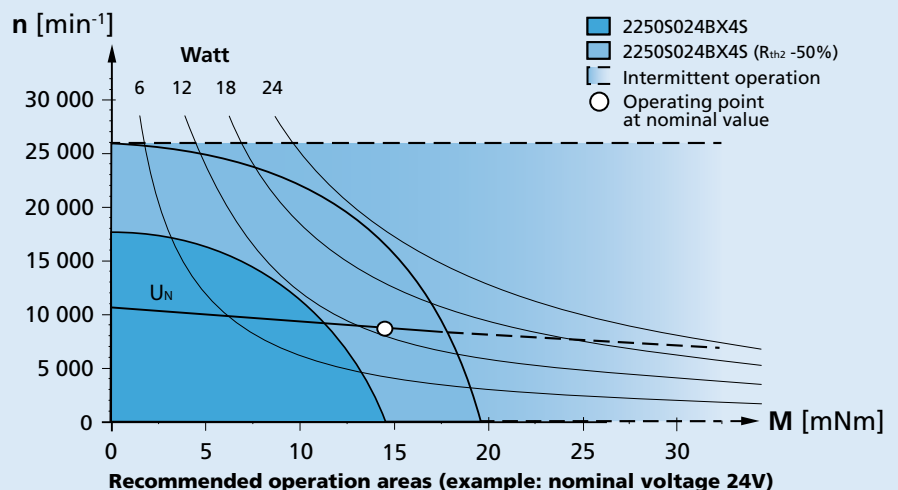
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

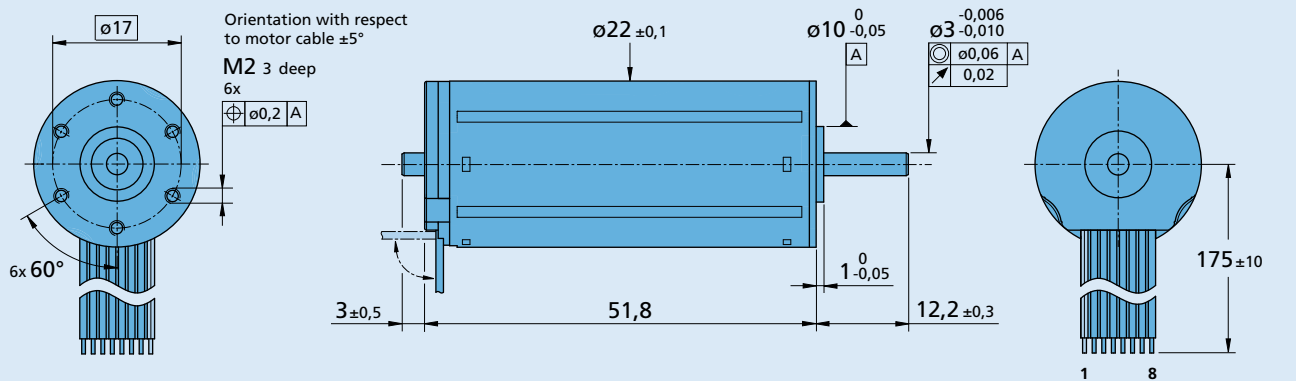
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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



2250 S ... BX4 S

Option, cable and connection information

Example product designation: 2250S024BX4S-3830

Option	Type	Description	Connection standard		Option: 4935	
			No.	Function	Function	Colour
3830	Connector	AWG 26 / PVC ribbon cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800	1	Phase C	Phase C	yellow
			2	Phase B	Phase B	orange
			3	Phase A	Phase A	brown
			4	GND	GND	black
			5	U _{DD} (+5V)	U _{DD} (+5V)	red
4935	Single wires	Motor with single wires (PTFE), length 175 mm, AWG26	6	Hall sensor C	Hall sensor C	grey
X4935	Single wires	Motor with single wires (PTFE), length 300 mm, AWG26	7	Hall sensor B	Hall sensor B	blue
Y4935	Single wires	Motor with single wires (PTFE), length 600 mm, AWG26	8	Hall sensor A	Hall sensor A	green
Y158	Shaft end	Motor without second shaft end	Standard cable			
			Insulation: PVC			
			8 conductors, AWG 26			
			pitch 1,27 mm, wires tinned			

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
22F 22/7 26A	IE3-1024 IE3-1024 L IER3-10000 IER3-10000 L AES-4096 AES-4096 L	SC 2402 P SC 2804 S SC 5004 P SC 5008 S MC 5004 P MC 5004 P STO MC 5005 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.