

Brushless DC-Servomotors

4 Pole Technology

32 mNm
31 W

Series 2250 ... BX4

Values at 22°C and nominal voltage		2250 S	024 BX4	
1	Nominal voltage	U_N	24	V
2	Terminal resistance, phase-phase	R	5,9	Ω
3	Efficiency, max.	η_{max}	77	%
4	No-load speed	n_0	6 200	rpm
5	No-load current, typ. (with shaft \varnothing 3 mm)	I_0	0,066	A
6	Stall torque	M_H	151	mNm
7	Friction torque, static	C_0	0,8	mNm
8	Friction torque, dynamic	C_v	$2,6 \cdot 10^{-4}$	mNm/rpm
9	Speed constant	k_n	255	rpm/V
10	Back-EMF constant	k_E	3,927	mV/rpm
11	Torque constant	k_M	37,5	mNm/A
12	Current constant	k_I	0,027	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	40,3	rpm/mNm
14	Terminal inductance, phase-phase	L	250	μH
15	Mechanical time constant	τ_m	4,2	ms
16	Rotor inertia	J	10	gcm ²
17	Angular acceleration	α_{max}	151	$\cdot 10^3 \text{ rad/s}^2$
18	Thermal resistance	R_{th1} / R_{th2}	3,5 / 15	K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	12 / 660	s
20	Operating temperature range:			
	– motor		– 40 ... + 100	°C
	– winding, max. permissible		+ 125	°C
21	Shaft bearings		ball bearings, preloaded	
22	Shaft load, max. permissible:			
	– with shaft diameter		3	mm
	– radial at 3 000 rpm (5 mm from mounting flange)		20	N
	– axial at 3 000 rpm (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		105	g
26	Direction of rotation		electronically reversible	
27	Speed up to	n_{max}	20 000	rpm
28	Number of pole pairs		2	
29	Hall sensors		digital	
30	Magnet material		NdFeB	
Rated values for continuous operation				
31	Rated torque	M_N	26,2	mNm
32	Rated current (thermal limit)	I_N	0,85	A
33	Rated speed	n_N	4 870	rpm

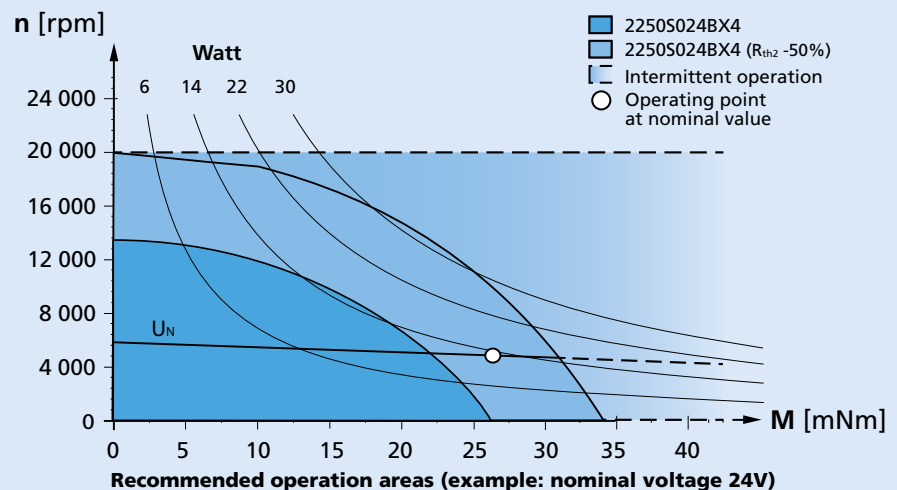
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

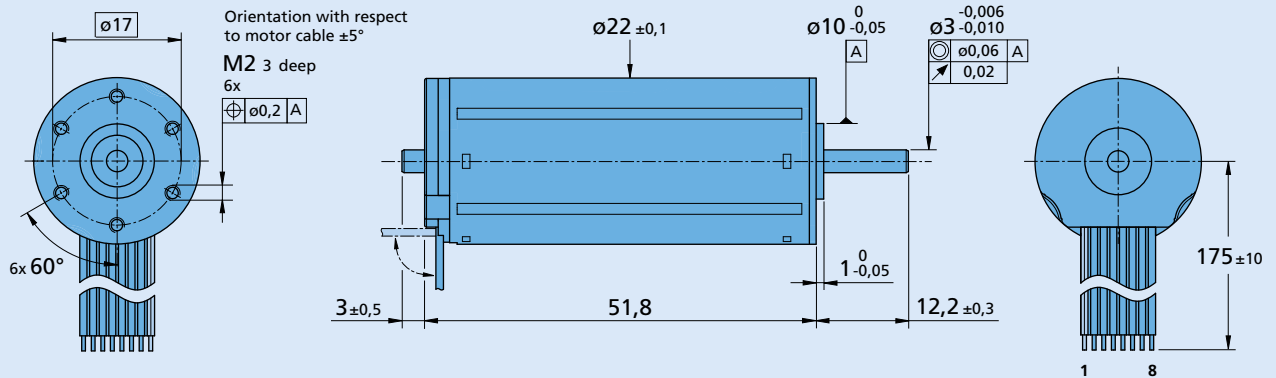
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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

Option, cable and connection information

Example product designation: **2250S024BX4-3692**

Option	Type	Description	Connection standard	
			No.	Function
3830	Connector	AWG 26 / PVC ribbon cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800	1	Phase C
4935	Single wires	Motor with single wires (PTFE), length 175 mm, AWG26	2	Phase B
X4935	Single wires	Motor with single wires (PTFE), length 300 mm, AWG26	3	Phase A
Y4935	Single wires	Motor with single wires (PTFE), length 600 mm, AWG26	4	GND
4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 175 mm, AWG26	5	U _{DD} (+5V)
X4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 300 mm, AWG26	6	Hall sensor C
Y4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 600 mm, AWG26	7	Hall sensor B
Y158	Shaft end	Motor without second shaft end	8	Hall sensor A
3692	Controller combination	Analog Hall sensors for combination with Motion Controller MCBL		
			Standard cable	
			Insulation: PVC	
			8 conductors, AWG 26	
			pitch 1,27 mm, wires tinned	
			Option: 4935/4747	
			Function	Colour
			Phase C	yellow
			Phase B	orange
			Phase A	brown
			GND	black
			U _{DD} (+5V)	red
			Hall sensor C	grey
			Hall sensor B	blue
			Hall sensor A	green

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
22/F	IE3-1024	SC 2402	6501.00085
22/7	IE3-1024L	SC 2804	Motor adapter for MCBL 3002 S (motor with connector 3830)
26A	AES-4096	SC 5004	6501.00086
BS22-1.5		SC 5008	Motor adapter for MCBL 3006 S / SC 2804 and 5008 (motor with connector 3830)
		MCBL 3002	6501.00141
		MCBL 3003	Extension cable, motor with connector 3830, 8 single wires, length 300 mm for combination with SC and MC
		MCBL 3006	6501.00142
			Extension cable, motor with connector 3830, 8 single wires, length 1000 mm for combination with SC and MC