

Brushless DC-Servomotors

4 Pole Technology

32 mNm
31 W

Series 2250 ... BX4

Values at 22°C and nominal voltage		2250 S	012 BX4	018 BX4	024 BX4	
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}	76	76	77	%
4	No-load speed	n_0	6 000	6 400	6 200	min ⁻¹
5	No-load current, typ. (with shaft \varnothing 3 mm)	I_0	0,128	0,094	0,066	A
6	Stall torque	M_H	147	152	151	mNm
7	Friction torque, static	C_0	0,8	0,8	0,8	mNm
8	Friction torque, dynamic	C_V	$2,6 \cdot 10^{-4}$	$2,6 \cdot 10^{-4}$	$2,6 \cdot 10^{-4}$	mNm/min ⁻¹
9	Speed constant	k_n	502	354	255	min ⁻¹ /V
10	Back-EMF constant	k_E	1,994	2,825	3,927	mV/min ⁻¹
11	Torque constant	k_M	19	27	37,5	mNm/A
12	Current constant	k_I	0,053	0,037	0,027	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	40,8	41,6	40,3	min ⁻¹ /mNm
14	Terminal inductance, phase-phase	L	62,8	126	250	μ H
15	Mechanical time constant	τ_m	4,3	4,3	4,2	ms
16	Rotor inertia	J	10	10	10	gcm ²
17	Angular acceleration	α_{max}	147	152	151	$\cdot 10^3$ 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.:					
	– 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		105			g
26	Direction of rotation		electronically reversible			
27	Speed up to	n_{max}	20 000			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	26,2	25,5	26,2	mNm
32	Rated current (thermal limit)	I_N	1,66	1,15	0,85	A
33	Rated speed	n_N	4 740	5 140	4 870	min ⁻¹

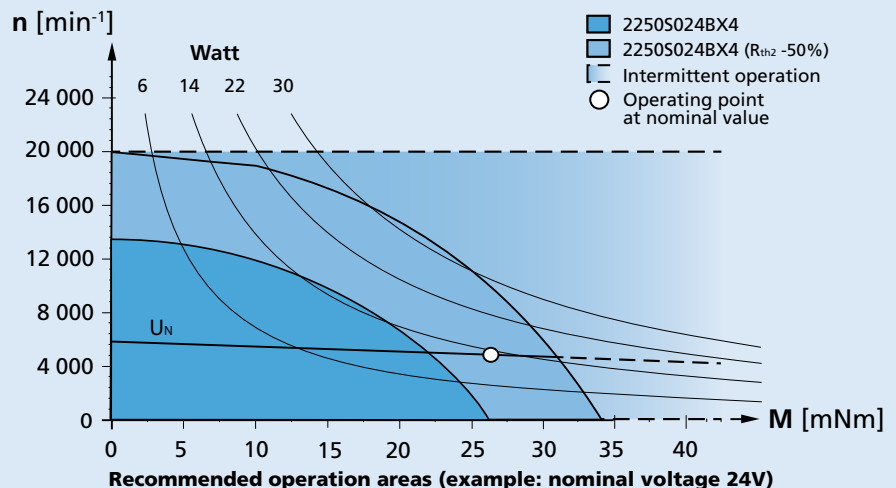
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

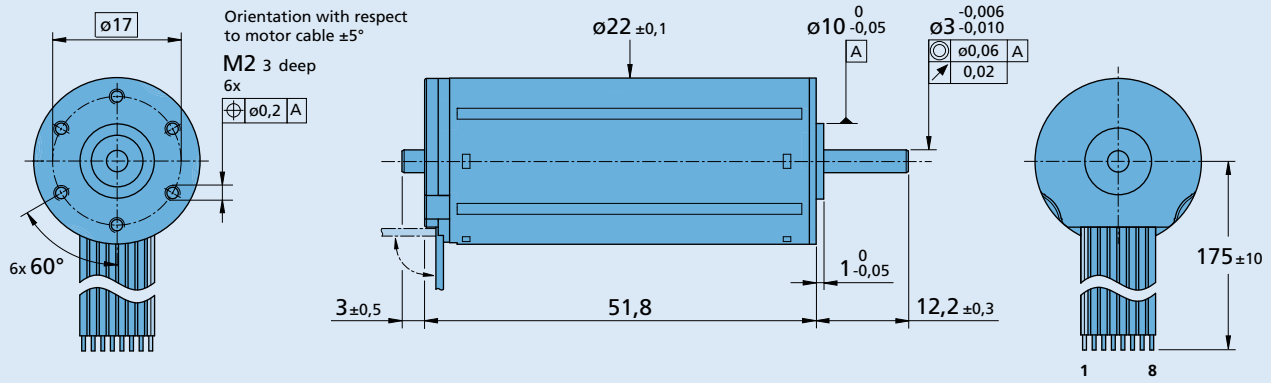
Note:

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
Option, cable and connection information

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

Option	Type	Description	Connection standard		Option: 4935/4747	
			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
4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 175 mm, AWG26	Standard cable			
X4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 300 mm, AWG26	Insulation: PVC			
Y4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 600 mm, AWG26	8 conductors,			
Y158	Shaft end	Motor without second shaft end	AWG 26,			
3692	Controller combination	Analog Hall sensors for combination with Motion Controller MCBL	pitch 1,27 mm ,			
5327	Controller combination	For SIN-COS sensor model with integrated temperature sensor and combination with MC V3.0	wires tinned.			
			Option: 5327			
			1	Phase C		
			2	Phase B		
			3	Phase A		
			4	GND		
			5	U _{DD} (+5V)		
			6	NTC		
			7	SIN		
			8	COS		

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
22GPT 22/7 26A 32GPT 22L ... ML 22L ... SB 22L ... PB 32L ... TL 32L ... ML 32L ... SB 32L ... PB	IE3-1024 IE3-1024 L IER3-10000 IER3-10000 L AEMT-12/16 L AES-4096 L	SC 2402 P SC 2804 S SC 5004 P SC 5008 S MCBL 3002 P MCBL 3002 S MCBL 3003 P MCBL 3006 S MC 3001 B MC 3001 P MC 3603 S MC 5004 P MC 5005 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.