

Brushless DC-Servomotors

4 Pole Technology

8,5 mNm
19 W

Series 2232 ... BX4 S

Values at 22°C and nominal voltage	2232 S	012 BX4 S	024 BX4 S	
1 Nominal voltage	U_N	12	24	V
2 Terminal resistance, phase-phase	R	3,5	12,5	Ω
3 Efficiency, max.	η_{max}	69	69	%
4 No-load speed	n_0	14 000	14 800	min^{-1}
5 No-load current, typ. (with shaft \varnothing 3 mm)	I_0	0,104	0,057	A
6 Stall torque	M_H	27,8	29	mNm
7 Friction torque, static	C_0	0,35	0,35	mNm
8 Friction torque, dynamic	C_V	$3,4 \cdot 10^{-5}$	$3,4 \cdot 10^{-5}$	$\text{mNm}/\text{min}^{-1}$
9 Speed constant	k_n	1 179	624	min^{-1}/V
10 Back-EMF constant	k_E	0,848	1,602	$\text{mV}/\text{min}^{-1}$
11 Torque constant	k_M	8,1	15,3	mNm/A
12 Current constant	k_I	0,124	0,065	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$	502	510	$\text{min}^{-1}/\text{mNm}$
14 Terminal inductance, phase-phase	L	125	440	μH
15 Mechanical time constant	τ_m	22	22	ms
16 Rotor inertia	J	4,2	4,2	gcm^2
17 Angular acceleration	α_{max}	66	69	$\cdot 10^3 \text{rad}/\text{s}^2$
18 Thermal resistance	R_{th1} / R_{th2}	3,7 / 18,8		K/W
19 Thermal time constant	τ_{w1} / τ_{w2}	7,5 / 520		s
20 Operating temperature range:				
– motor		-40 ... +100		$^{\circ}\text{C}$
– winding, max. permissible		+125		$^{\circ}\text{C}$
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		64		g
26 Direction of rotation		electronically reversible		
27 Speed up to	n_{max}	50 000		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	6,8	6,7	mNm
32 Rated current (thermal limit)	I_N	1,01	0,53	A
33 Rated speed	n_N	9 270	10 190	min^{-1}

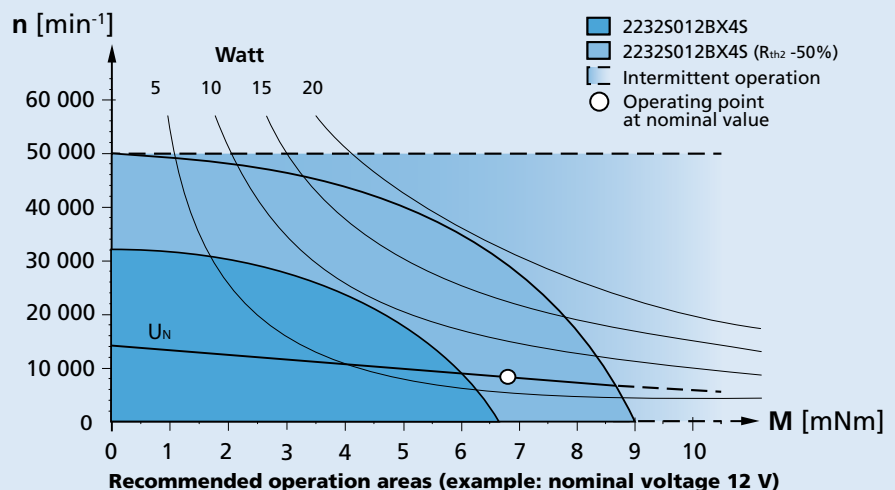
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

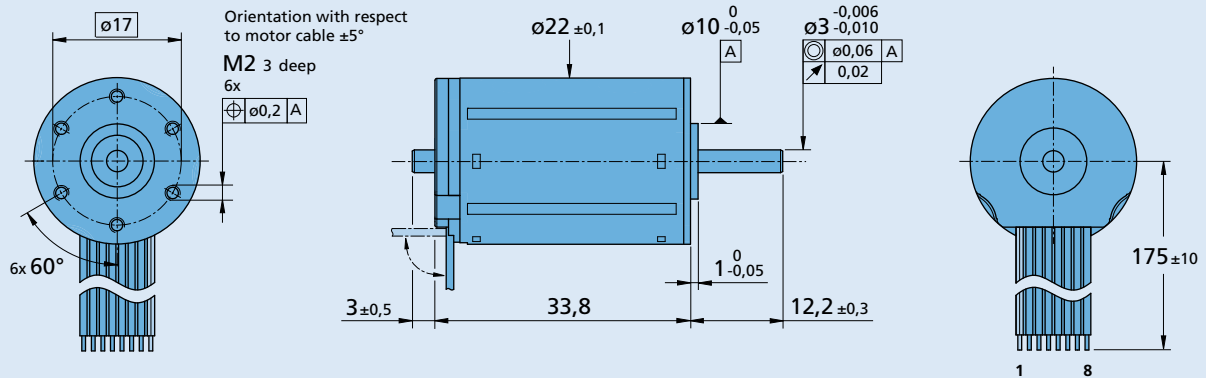
Note:

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

2232 S ... BX4 S
Option, cable and connection information

 Example product designation: **2232S012BX4S-3692**

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
4935	Single wires	Motor with single wires (PTFE), length 175 mm, AWG26	5	U _{DD} (+5V)	U _{DD} (+5V)	red
X4935	Single wires	Motor with single wires (PTFE), length 300 mm, AWG26	6	Hall sensor C	Hall sensor C	grey
Y4935	Single wires	Motor with single wires (PTFE), length 600 mm, AWG26	7	Hall sensor B	Hall sensor B	blue
Y158	Shaft end	Motor without second shaft end	8	Hall sensor A	Hall sensor A	green
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			

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
22F 22/7 26A BS22-1.5	IE3-1024 IE3-1024 L IER3-10000 IER3-10000 L AES-4096	SC 1801 SC 2402 SC 2804 SC 5004 SC 5008 MC 5004 MC 5005 MCBL 3002 MCBL 3003 MCBL 3006	MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter.