

Brushless DC-Servomotors

4 Pole Technology

18 mNm
23 W

Series 2232 ... BX4

Values at 22°C and nominal voltage		2232 S	012 BX4	024 BX4	
1	Nominal voltage	U_N	12	24	V
2	Terminal resistance, phase-phase	R	3,5	12,5	Ω
3	Efficiency, max.	η_{max}	74	74	%
4	No-load speed	n_0	6 700	7 100	min^{-1}
5	No-load current, typ. (with shaft \varnothing 3 mm)	I_0	0,072	0,039	A
6	Stall torque	M_H	58,7	61,7	mNm
7	Friction torque, static	C_0	0,46	0,46	mNm
8	Friction torque, dynamic	C_V	$1,1 \cdot 10^{-4}$	$1,1 \cdot 10^{-4}$	$\text{mNm}/\text{min}^{-1}$
9	Speed constant	k_n	562	295	min^{-1}/V
10	Back-EMF constant	k_E	1,78	3,393	$\text{mV}/\text{min}^{-1}$
11	Torque constant	k_M	17	32,4	mNm/A
12	Current constant	k_I	0,059	0,031	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	114	114	$\text{min}^{-1}/\text{mNm}$
14	Terminal inductance, phase-phase	L	115	410	μH
15	Mechanical time constant	τ_m	6,1	6,1	ms
16	Rotor inertia	J	5,1	5,1	gcm^2
17	Angular acceleration	α_{max}	115	121	$\cdot 10^3 \text{rad}/\text{s}^2$
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		$^{\circ}\text{C}$
	– 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		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	14,7	14,6	mNm
32	Rated current (thermal limit)	I_N	1	0,54	A
33	Rated speed	n_N	4 450	4 840	min^{-1}

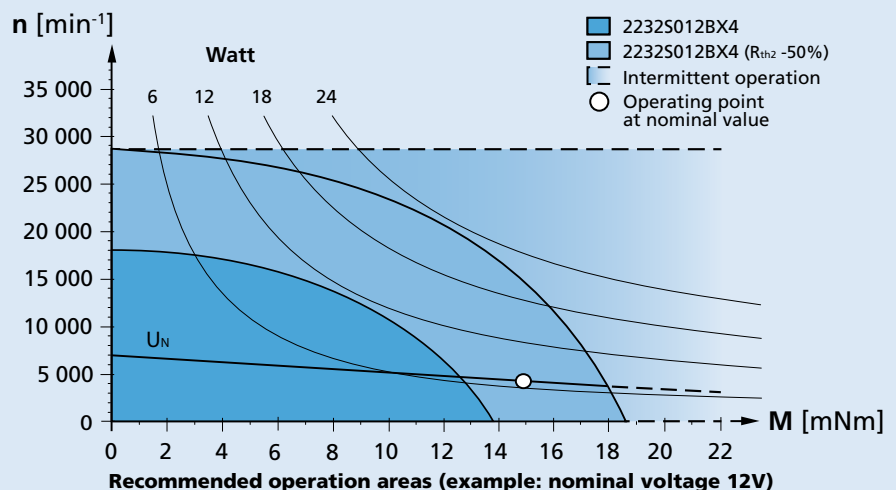
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

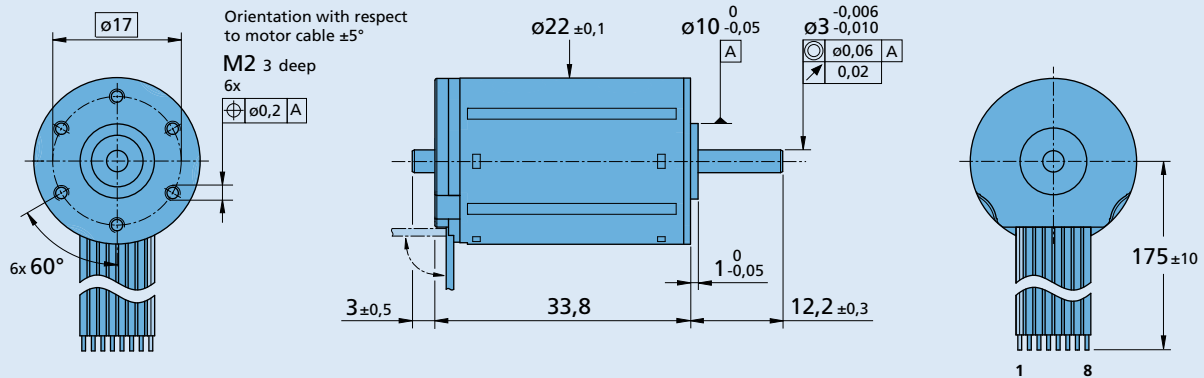
Note:

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.



Dimensional drawing

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

 Example product designation: **2232S012BX4-3692**

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		

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	

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.