Brushless DC-Servomotors 10 mNm

4 Pole Technology

For combination with
Gearheads:
22F, 22/7, 26A
Encoders:
2232...BX4S + Encoder
Drive Electronics:
Speed Controller

Series 2232 ... BX4 S

		2232 S		012 BX4 S	024 BX4 S	
1	Nominal voltage	U_N		12	24	Volt
2	Terminal resistance, phase-phase	R		3,5	12,4	Ω
3	Output power [1]	$P_{2\ max.}$		3,8	3,9	W
4	Efficiency	$\eta_{max.}$		60,9	61,7	%
5	No-load speed	n_o		13 200	14 000	rpm
6	No-load current (with shaft ø 3,0 mm)	I_o		0,163	0,088	A
7	Stall torque	M_H		27,3	29,4	mNm
8	Friction torque, static	C_o		0,6	0,6	mNm
9	Friction torque, dynamic	C_v		$5,5 \cdot 10^{-5}$	$5,5 \cdot 10^{-5}$	mNm/rpm
10	Speed constant	k_n		1 173	616	rpm/V
11	Back-EMF constant	k_E		0,852	1,623	mV/rpm
12	Torque constant	k_M		8,14	15,50	mNm/A
13	Current constant	k_I		0,123	0,065	A/mNm
14	Slope of n-M curve	$\Delta n/\Delta M$		504	493	rpm/mNm
15	Terminal inductance, phase-phase	L		130	470	µH
16	Mechanical time constant	τ_m		22	22	ms
17	Rotor inertia	J		4,2	4,2	gcm^2
18	Angular acceleration	$\alpha_{max.}$		65	70	$\cdot 10^3 rad/s^2$
19	Thermal resistance	$R_{th\,1}$ / $R_{th\,2}$	2 / 17			K/W
20	Thermal time constant	τ_{w1} / τ_{w2}	4,1 / 360			s
21	Operating temperature range		– 40 ... + 100			°C
22	Shaft bearings		ball bearings, preloaded			
23	Shaft load max.:					
	– radial at 3 000 rpm (4 mm from mounting flange)		20			N
	– axial at 3 000 rpm		2			N
	– axial at standstill		20			N
24	Shaft play:					
	– radial	≤	0,015			mm
	– axial	=	0			mm
25	Housing material		stainless steel			
26	Weight		70			g
27	Direction of rotation		electronically reversible			
28	Number of pole pairs		2			
Recommended values - mathematically independent of each other						
29	Speed up to	$n_{e\ max.}$		34 000	34 000	rpm
30	Torque up to [1] [2]	$M_{e\ max.}$		6 / 10	6 / 10	mNm
31	Current up to [1] [2]	$I_{e\ max.}$		0,94 / 1,42	0,50 / 0,75	A

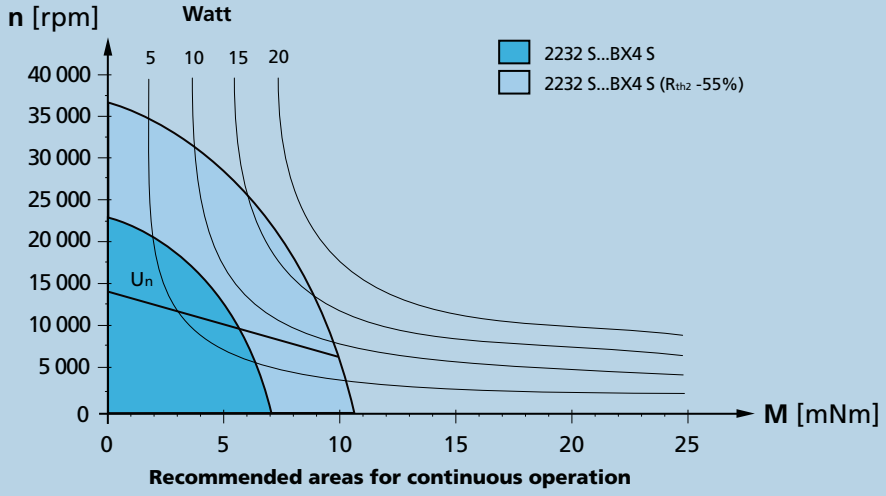
[1] at 5 000 rpm
[2] thermal resistance $R_{th\,2}$ not reduced / thermal resistance $R_{th\,2}$ by 55% reduced

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 ($R_{th\,2}$ 55% reduced).

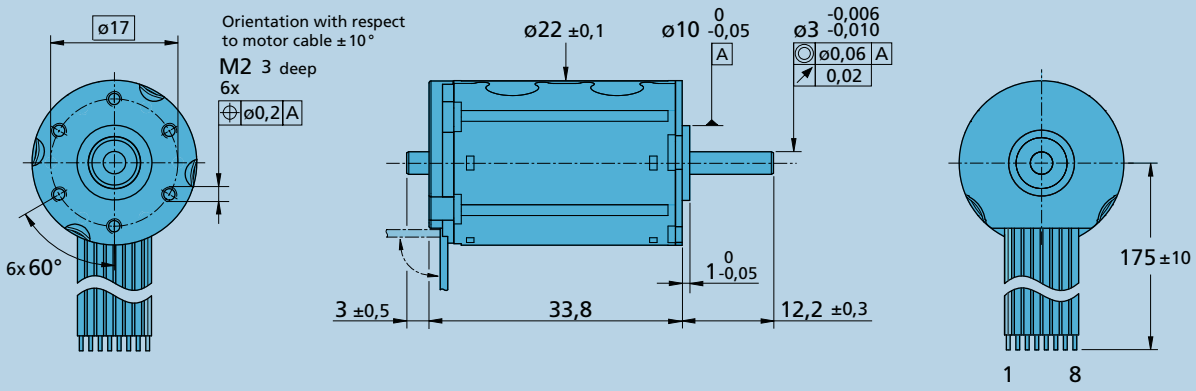
The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



For notes on technical data and lifetime performance refer to "Technical Information".
Edition 2011 May. 11

Dimensional drawing

M 1:1



2232 S ... BX4 S

Options

- Connector variant (Option no. 3830)

  Motor:
  AWG 26 / PVC ribbon cable
  with connector Micro-Fit

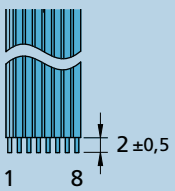
- Analog Hall sensors (Option no. 3692)

Full product description

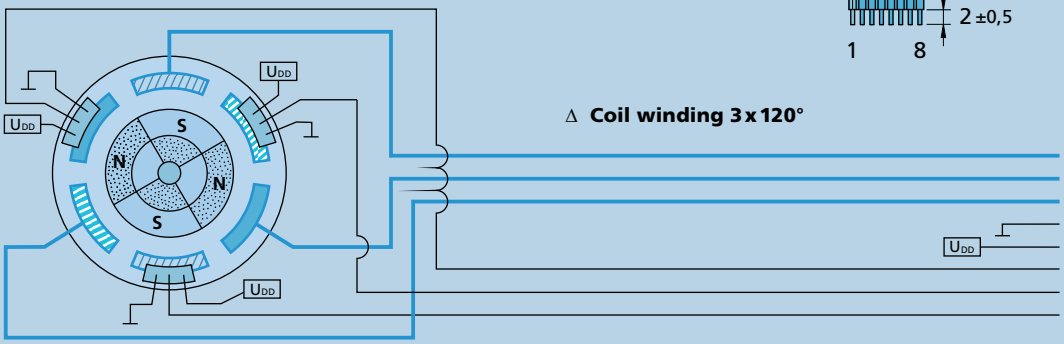
- Examples:

  2232S012BX4S

Cable and connection information



Cable
Jacket Material: PVC
8 conductors, AWG 26
grid 1,27 mm
wires tinned



Δ **Coil winding 3 x 120°**

Connection

No.	Function
1	Phase C
2	Phase B
3	Phase A
4	GND
5	UDD (2,2 ... 18V DC)
6	Hall sensor C
7	Hall sensor B
8	Hall sensor A