

# Brushless DC-Servomotors

## 4 Pole Technology

96 mNm  
62 W

### Series 3268 ... BX4

Values at 22°C and nominal voltage	3268 G	018 BX4	024 BX4	030 BX4	036 BX4	042 BX4	048 BX4	
1 Nominal voltage	$U_N$	18	24	30	36	42	48	V
2 Terminal resistance, phase-phase	$R$	0,92	1,47	2,08	3,23	4,83	6,06	$\Omega$
3 Efficiency, max.	$\eta_{max}$	80	81	80	80	80	79	%
4 No-load speed	$n_0$	5 100	5 500	5 700	5 500	5 300	5 500	$\text{min}^{-1}$
5 No-load current, typ. (with shaft $\varnothing$ 5 mm)	$I_0$	0,22	0,183	0,162	0,124	0,101	0,093	A
6 Stall torque	$M_H$	670	705	742	716	670	678	mNm
7 Friction torque, static	$C_0$	1,6	1,6	1,6	1,6	1,6	1,6	mNm
8 Friction torque, dynamic	$C_V$	$1,1 \cdot 10^3$	$1,1 \cdot 10^3$	$1,1 \cdot 10^3$	$1,1 \cdot 10^3$	$1,1 \cdot 10^3$	$1,1 \cdot 10^3$	$\text{mNm}/\text{min}^{-1}$
9 Speed constant	$k_n$	278	220	185	148	124	111	$\text{min}^{-1}/\text{V}$
10 Back-EMF constant	$k_E$	3,595	4,534	5,392	6,741	8,088	8,987	$\text{mV}/\text{min}^{-1}$
11 Torque constant	$k_M$	34,3	43,5	51,5	64,4	77,2	85,8	$\text{mNm}/\text{A}$
12 Current constant	$k_I$	0,029	0,023	0,019	0,015	0,013	0,012	$\text{A}/\text{mNm}$
13 Slope of n-M curve	$\Delta n/\Delta M$	7,45	7,5	7,48	7,44	7,73	7,85	$\text{min}^{-1}/\text{mNm}$
14 Terminal inductance, phase-phase	$L$	67,6	110	152	238	342	423	$\mu\text{H}$
15 Mechanical time constant	$\tau_m$	4,9	4,9	4,9	4,9	5,1	5,2	ms
16 Rotor inertia	$J$	63	63	63	63	63	63	$\text{gcm}^2$
17 Angular acceleration	$\alpha_{max}$	106	112	118	114	106	108	$\cdot 10^3 \text{rad}/\text{s}^2$
18 Thermal resistance	$R_{th1} / R_{th2}$	1,7 / 8,8						K/W
19 Thermal time constant	$\tau_{w1} / \tau_{w2}$	16 / 1 080						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		5						mm
– radial at 3 000 $\text{min}^{-1}$ (5 mm from mounting flange)		50						N
– axial at 3 000 $\text{min}^{-1}$ (push / pull)		5						N
– axial at standstill (push / pull)		50						N
23 Shaft play:								
– radial	$\leq$	0,015						mm
– axial	$=$	0						mm
24 Housing material		stainless steel						
25 Mass		290						g
26 Direction of rotation		electronically reversible						
27 Speed up to	$n_{max}$	12 000						$\text{min}^{-1}$
28 Number of pole pairs		2						
29 Hall sensors		digital						
30 Magnet material		NdFeB						
<b>Rated values for continuous operation</b>								
31 Rated torque	$M_N$	74,5	72	69,8	71,9	71,7	70	mNm
32 Rated current (thermal limit)	$I_N$	2,63	2	1,66	1,36	1,13	1	A
33 Rated speed	$n_N$	4 550	4 890	5 210	4 950	4 750	4 920	$\text{min}^{-1}$

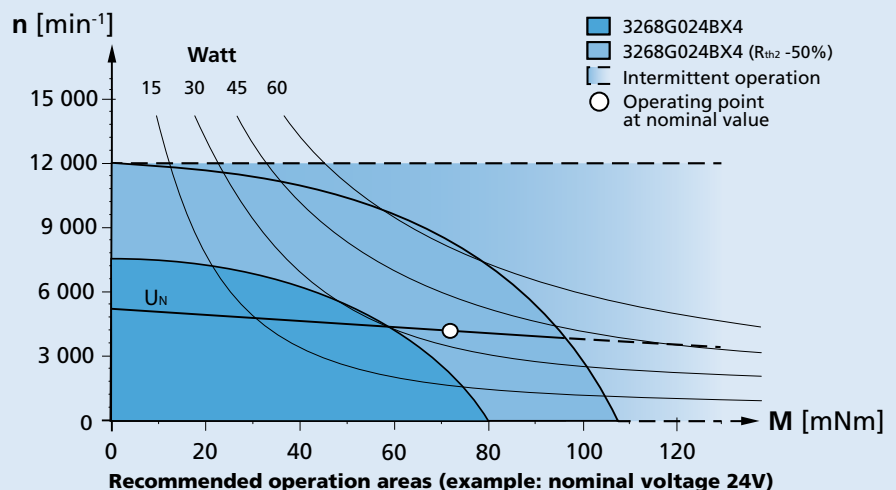
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

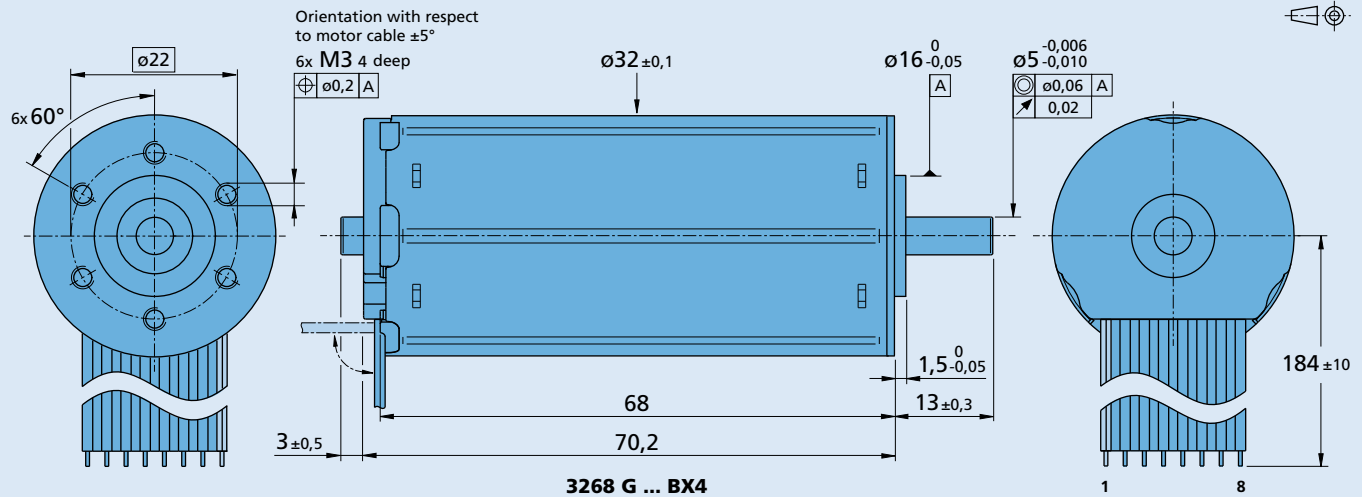
**Note:**

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**

**Option, cable and connection information**

 Example product designation: **3268G024BX4-3692**

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 184 mm, AWG22	2	Phase B
X4935	Single wires	Motor with single wires (PTFE), length 300 mm, AWG22	3	Phase A
Y4935	Single wires	Motor with single wires (PTFE), length 600 mm, AWG22	4	GND
4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 184 mm, AWG22	5	U <sub>DD</sub> (+5V)
X4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 300 mm, AWG22	6	Hall sensor C
Y4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 600 mm, AWG22	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 <sub>DD</sub> (+5V)	red	
Hall sensor C	grey	
Hall sensor B	blue	
Hall sensor A	green	

Standard cable	
Insulation: PVC	
8 conductors, AWG 24	
pitch 2,54 mm, wires tinned	

**Product combination**

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
32GPT 32/3 32/3R 38/1 38/1 S 38/2 38/2 S 42GPT	IE3-1024 IE3-1024 L IER3-10000 IER3-10000 L AEMT-12/16 L AES-4096 L	SC 2804 S SC 5004 P SC 5008 S MCBL 3003 P MCBL 3006 S MCBL 3003 P AES MCBL 3006 S AES MC 5004 P MC 5004 P STO MC 5005 S MC 5010 S	MBZ Brake MBZ is available in combination with analog Hall sensors only.  To view our large range of accessory parts, please refer to the "Accessories" chapter.