

Brushless DC-Servomotors

4 Pole Technology

53 mNm
45 W

Series 3242 ... BX4

Values at 22°C and nominal voltage	3242 G	012 BX4	018 BX4	024 BX4	036 BX4	042 BX4	048 BX4	
1 Nominal voltage	U_N	12	18	24	36	42	48	V
2 Terminal resistance, phase-phase	R	0,92	2,01	3,67	8,96	11,7	15,1	Ω
3 Efficiency, max.	η_{max}	78	78	78	77	78	78	%
4 No-load speed	n_0	5 600	5 500	5 600	5 500	5 500	5 500	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 5 mm)	I_0	0,179	0,117	0,089	0,059	0,05	0,044	A
6 Stall torque	M_H	268,7	280	269,4	251	262	265	mNm
7 Friction torque, static	C_0	1,3	1,3	1,3	1,3	1,3	1,3	mNm
8 Friction torque, dynamic	C_V	$4,1 \cdot 10^{-4}$	$4,1 \cdot 10^{-4}$	$4,1 \cdot 10^{-4}$	$4,1 \cdot 10^{-4}$	$4,1 \cdot 10^{-4}$	$4,1 \cdot 10^{-4}$	mNm/min ⁻¹
9 Speed constant	k_n	461	304	231	152	130	114	min ⁻¹ /V
10 Back-EMF constant	k_E	2,168	3,285	4,335	6,571	7,666	8,762	mV/min ⁻¹
11 Torque constant	k_M	20,7	31,4	41,4	62,8	73,1	83,7	mNm/A
12 Current constant	k_I	0,048	0,032	0,024	0,016	0,014	0,012	A/mNm
13 Slope of n-M curve	$\Delta n / \Delta M$	20,5	19,5	20,4	21,7	20,8	20,6	min ⁻¹ /mNm
14 Terminal inductance, phase-phase	L	60	132	240	529	719	940	μ H
15 Mechanical time constant	τ_m	6,4	6,1	6,4	6,8	6,5	6,5	ms
16 Rotor inertia	J	30	30	30	30	30	30	gcm ²
17 Angular acceleration	α_{max}	90	93,2	90	83,6	87,2	88,3	$\cdot 10^3$ rad/s ²
18 Thermal resistance	R_{th1} / R_{th2}	2,3 / 11,6						K/W
19 Thermal time constant	τ_{w1} / τ_{w2}	13 / 880						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		5						mm
– radial at 3 000 min ⁻¹ (5 mm from mounting flange)		50						N
– axial at 3 000 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		179						g
26 Direction of rotation		electronically reversible						
27 Speed up to	n_{max}	17 000						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	41,8	43	41,8	40,7	41,6	41,8	mNm
32 Rated current (thermal limit)	I_N	2,43	1,64	1,21	0,78	0,68	0,6	A
33 Rated speed	n_N	4 600	4 580	4 600	4 480	4 520	4 530	min ⁻¹

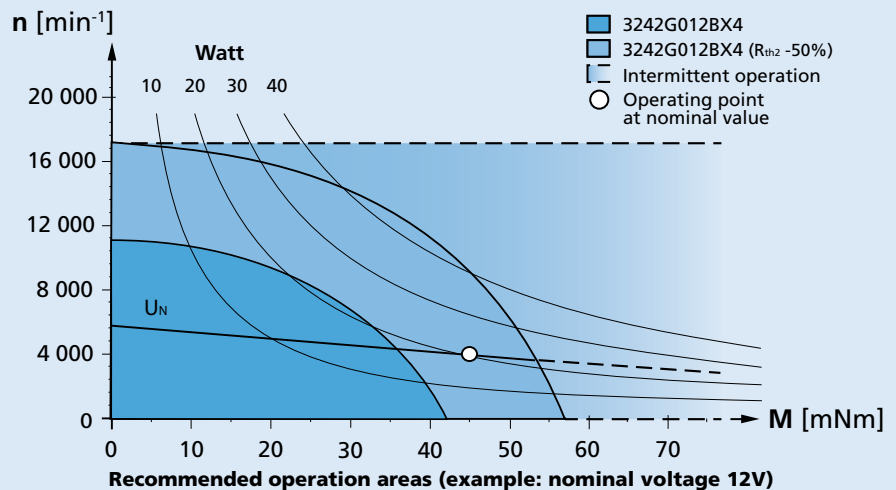
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

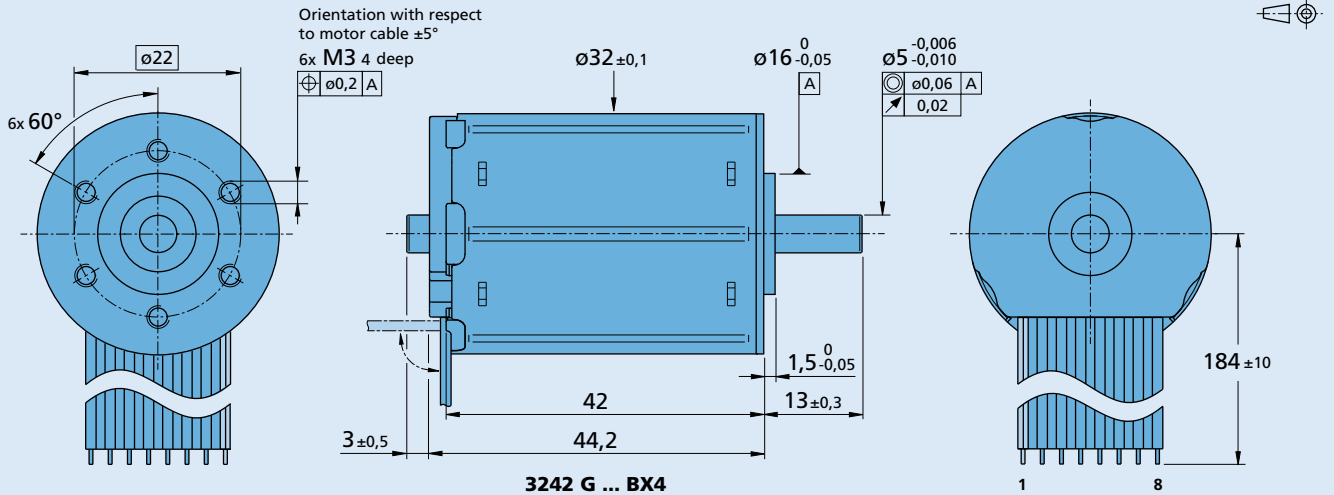
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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: **3242G012BX4-3692**

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	Option: 4935/4747	
4935	Single wires	Motor with single wires (PTFE), length 184 mm, AWG22	1	Phase C
X4935	Single wires	Motor with single wires (PTFE), length 300 mm, AWG22	2	Phase B
Y4935	Single wires	Motor with single wires (PTFE), length 600 mm, AWG22	3	Phase A
4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 184 mm, AWG22	4	GND
X4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 300 mm, AWG22	5	U _{DD} (+5V)
Y4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 600 mm, AWG22	6	Hall sensor C
Y158	Shaft end	Motor without second shaft end	7	Hall sensor B
3692	Controller combination	Analog Hall sensors for combination with Motion Controller MCBL	8	Hall sensor A
			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
32A 32ALN 32/3 32/3 R 38A 38/1 38/1 S 38/2 38/2 S BS32-2.0	IE3-1024 IE3-1024 L IER3-10000 IER3-10000 L AES-4096	SC 2402 P SC 2804 S SC 5004 P SC 5008 S MCBL 3002 P MCBL 3002 S MCBL 3003 P MCBL 3006 S MCBL 3002 P AES MCBL 3002 S AES MCBL 3003 P AES MCBL 3006 S AES MC 5004 P MC 5004 P STO MC 5005 S MC 5010 S	MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter.