

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 ø 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	4,1·10 ⁻⁴	4,1·10 ⁻⁴	4,1·10 ⁻⁴	4,1·10 ⁻⁴	4,1·10 ⁻⁴	4,1·10 ⁻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	·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	≤	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

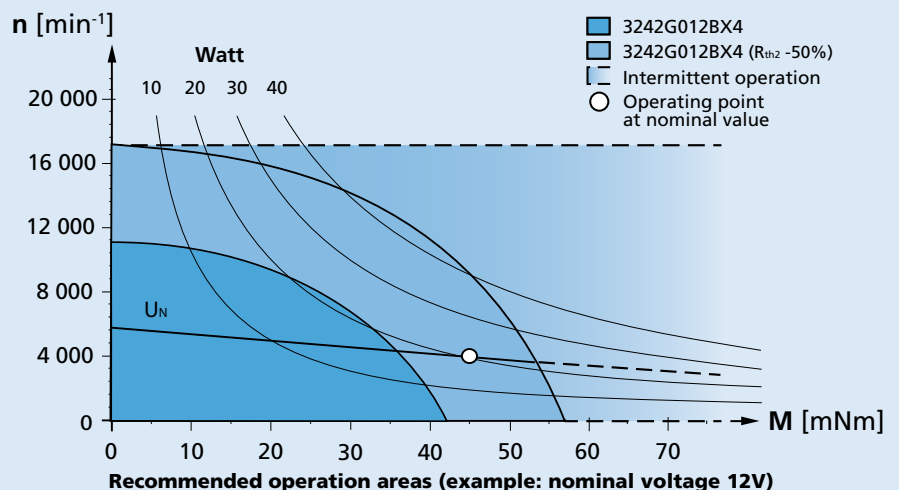
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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.

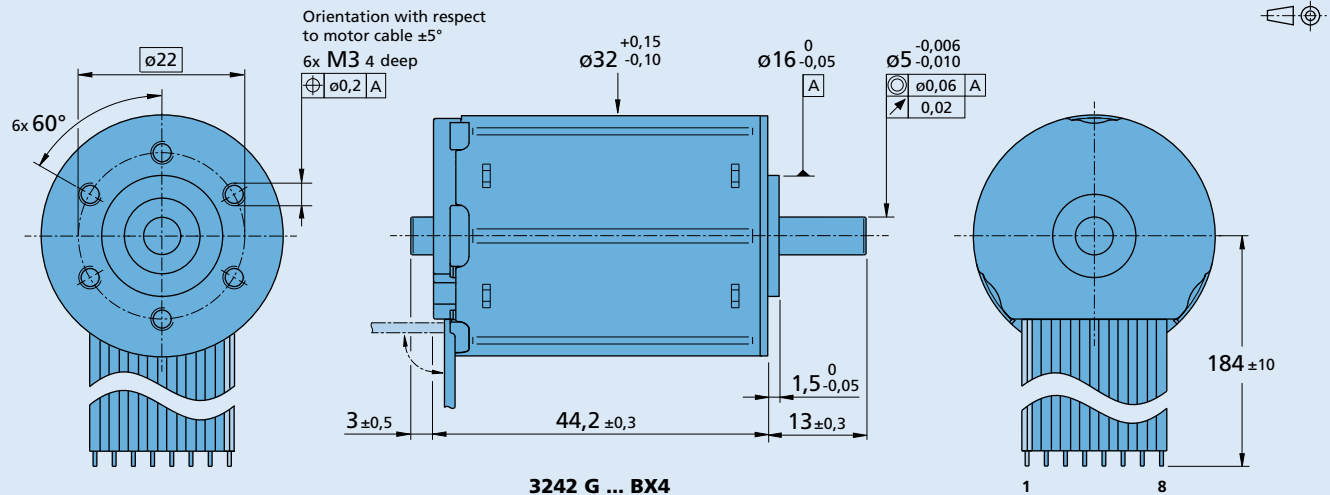
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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	Option: 4935/4747
			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 2 Phase B 3 Phase A 4 GND 5 U _{DD} (+5V) 6 Hall sensor C 7 Hall sensor B 8 Hall sensor A	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
4935	Single wires	Motor with single wires (PTFE), length 184 mm, AWG22	Standard cable Insulation: PVC 8 conductors, AWG 24 pitch 2,54 mm, wires tinned	Option: 5327
X4935	Single wires	Motor with single wires (PTFE), length 300 mm, AWG22		
Y4935	Single wires	Motor with single wires (PTFE), length 600 mm, AWG22		
4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 184 mm, AWG22		
X4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 300 mm, AWG22		
Y4747	Temperature range	Up to 150°C, winding max. 150°C, with single wires (PTFE), length 600 mm, AWG22		
Y158	Shaft end	Motor without second shaft end		
3692	Controller combination	Analog Hall sensors for combination with Speed Controller SC or Motion Controller MC V3.0		
5327	Controller combination	For SIN-COS sensor model with integrated temperature sensor		

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
32GPT 32/3R 38/1 38/1 S 38/2 38/2 S 42GPT 32L ... TL 32L ... ML 32L ... SB 32L ... PB	IE3-1024 IE3-1024 L IER3-10000 IER3-10000 L AEMT-12/16 L AES-4096 L	SC 2402 P SC 2804 S SC 5004 P SC 5008 S MC 3602 B MC 3603 S MC 3606 B MC 5004 P MC 5005 S MC 5010 S	PMB32 To view our large range of accessory parts, please refer to the "Accessories" chapter.