Brushless DC-Servomotors

4 Pole Technology

53 mNm

45 W

Series 3242 ... BX4

Values at 22°C and nominal voltage		3242 G		012 BX4	024 BX4	
1	Nominal voltage	U_N		12	24	V
2	Terminal resistance, phase-phase	R		0,92	3,67	Ω
3	Efficiency, max.	$\eta_{max.}$		78	78	%
4	No-load speed	n_0		5 600	5 600	min^{-1}
5	No-load current, typ. (with shaft ø 5 mm)	I_0		0,179	0,089	A
6	Stall torque	M_H		268,7	269,4	mNm
7	Friction torque, static	C_0		1,3	1,3	mNm
8	Friction torque, dynamic	C_V		$4{,}1 \cdot 10^{-4}$	$4{,}1 \cdot 10^{-4}$	mNm/min^{-1}
9	Speed constant	k_n		461	231	min^{-1}/V
10	Back-EMF constant	k_E		2,168	4,335	mV/min^{-1}
11	Torque constant	k_M		20,7	41,4	mNm/A
12	Current constant	k_I		0,048	0,024	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$		20,5	20,4	min^{-1}/mNm
14	Terminal inductance, phase-phase	L		60	240	µH
15	Mechanical time constant	τ_m		6,4	6,4	ms
16	Rotor inertia	J		30	30	gcm^2
17	Angular acceleration	$\alpha_{max.}$		90	90	$\cdot 10^3 rad/s^2$
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	≤	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	41,8	mNm
32	Rated current (thermal limit)	I_N		2,43	1,21	A
33	Rated speed	n_N		4 600	4 600	min^{-1}

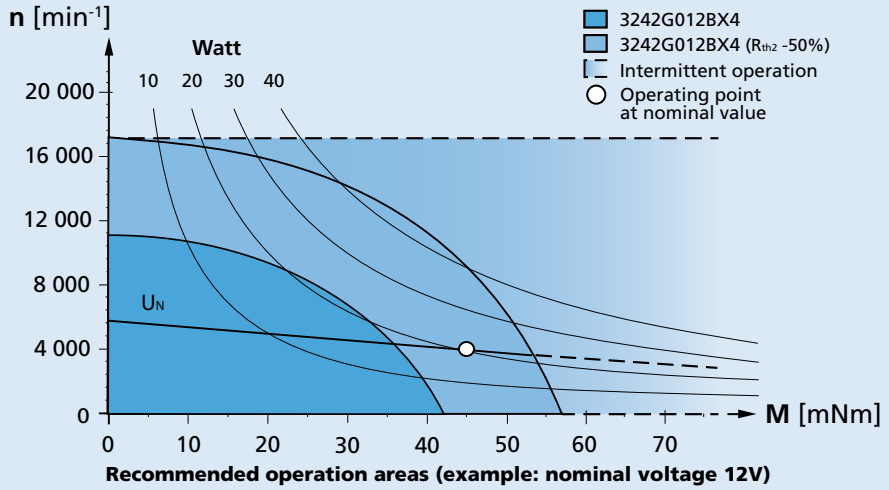
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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.

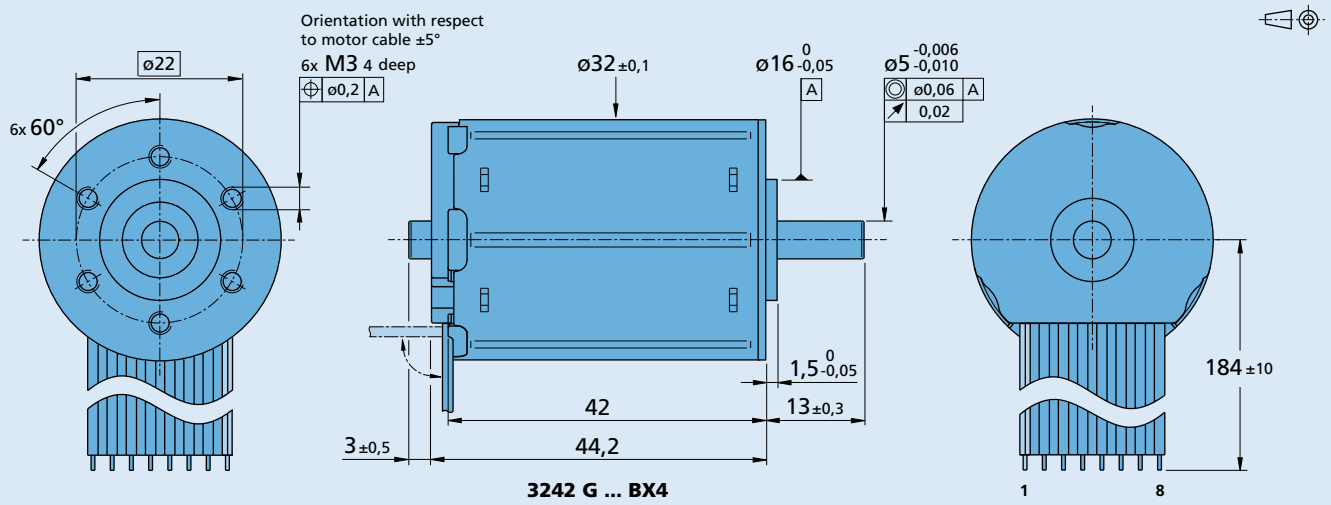
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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.



Recommended operation areas (example: nominal voltage 12V)

Dimensional drawing



3242 G ... BX4

Option, cable and connection information

Example product designation: **3242G012BX4-3692**

Option	Type	Description
3830	Connector	AWG 26 / PVC ribbon cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800
4935	Single wires	Motor with single wires (PTFE), length 184 mm, AWG22
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 Motion Controller MCBL

Connection standard

No.	Function	Option: 4935/4747 Function	Colour
1	Phase C	Phase C	yellow
2	Phase B	Phase B	orange
3	Phase A	Phase A	brown
4	GND	GND	black
5	U_{DD} (+5V)	U_{DD} (+5V)	red
6	Hall sensor C	Hall sensor C	grey
7	Hall sensor B	Hall sensor B	blue
8	Hall sensor A	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
32A	IE3-1024	SC 2402	MBZ
32ALN	IE3-1024 L	SC 2804	
32/3	IER3-10000	SC 5004	To view our large range of accessory parts, please refer to the “Accessories” chapter.
32/3 S	IER3-10000 L	SC 5008	
38/1	AES-4096	MC 5004	
38/1 S		MC 5005	
38/2		MC 5010	
38/2 S		MCBL 3002	
BS32-2.0		MCBL 3003	
		MCBL 3006	