

Brushless DC-Servomotors

4 Pole Technology

158 mNm
152 W

Series 3274 ... BP4

Values at 22°C and nominal voltage	3274 G	012 BP4	018 BP4	024 BP4	036 BP4	048 BP4		
1 Nominal voltage	U_N		12	18	24	36	48	V
2 Terminal resistance, phase-phase	R		0,063	0,139	0,253	0,557	1,01	Ω
3 Efficiency, max.	η_{max}		88	88	88	88	88	%
4 No-load speed	n_0		8 820	9 090	8 820	9 090	8 820	min^{-1}
5 No-load current, typ. (with shaft \varnothing 5 mm)	I_0		0,76	0,534	0,38	0,267	0,19	A
6 Stall torque	M_H		2 660	2 650	2 650	2 640	2 650	mNm
7 Friction torque, static	C_0		2,04	2,04	2,04	2,04	2,04	mNm
8 Friction torque, dynamic	C_V		$9,24 \cdot 10^{-4}$	$9,24 \cdot 10^{-4}$	$9,24 \cdot 10^{-4}$	$9,24 \cdot 10^{-4}$	$9,24 \cdot 10^{-4}$	$\text{mNm}/\text{min}^{-1}$
9 Speed constant	k_n		680	465	340	233	170	min^{-1}/V
10 Back-EMF constant	k_E		1,47	2,15	2,94	4,3	5,88	$\text{mV}/\text{min}^{-1}$
11 Torque constant	k_M		14	20,5	28,1	41,1	56,2	mNm/A
12 Current constant	k_I		0,071	0,049	0,036	0,024	0,018	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$		3,05	3,15	3,06	3,16	3,06	$\text{min}^{-1}/\text{mNm}$
14 Terminal inductance, phase-phase	L		16	34,3	64,2	137,1	257	μH
15 Mechanical time constant	τ_m		1,53	1,58	1,54	1,59	1,54	ms
16 Rotor inertia	J		48	48	48	48	48	gcm^2
17 Angular acceleration	α_{max}		555	552	553	550	553	$\cdot 10^3 \text{rad}/\text{s}^2$
18 Thermal resistance	R_{th1} / R_{th2}		1,1 / 7,9					K/W
19 Thermal time constant	τ_{w1} / τ_{w2}		22 / 1 100					s
20 Operating temperature range:								
– motor			-40 ... +125					$^{\circ}\text{C}$
– winding, max. permissible			+150					$^{\circ}\text{C}$
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			325					g
26 Direction of rotation			electronically reversible					
27 Speed up to	n_{max}		16 000					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		158	153	158	153	158	mNm
32 Rated current (thermal limit)	I_N		13,8	9,18	6,88	4,58	3,44	A
33 Rated speed	n_N		8 420	8 660	8 420	8 660	8 420	min^{-1}

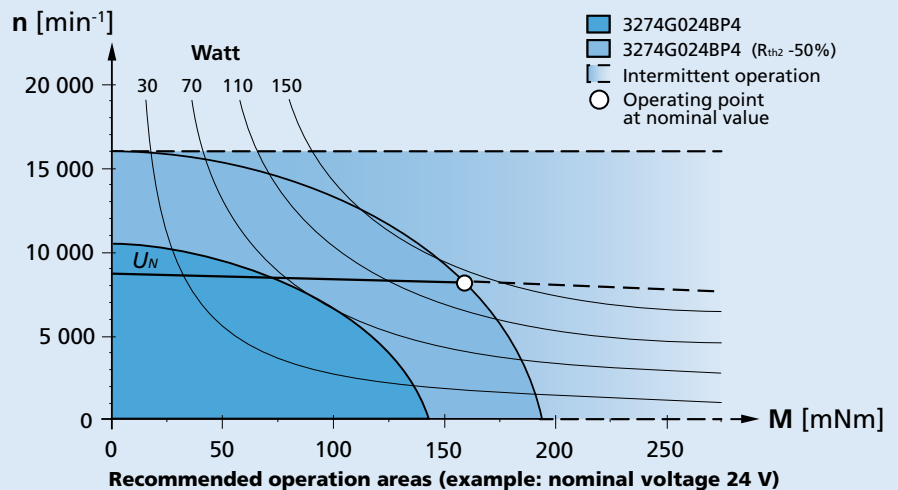
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 50%.

Note:

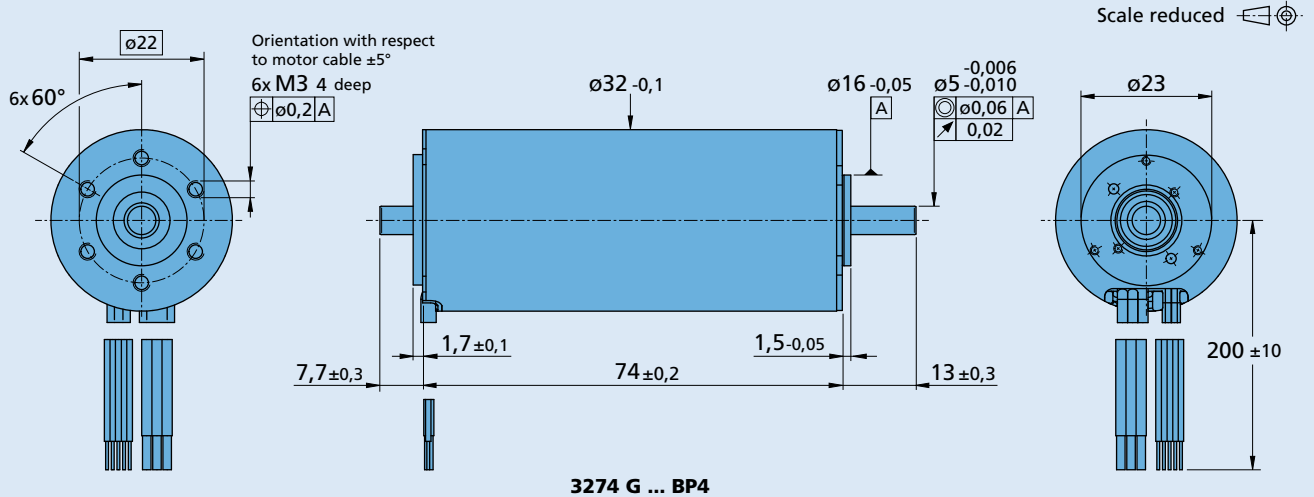
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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: **3274G024BP4-3692**

Option	Type	Description	Connection	
			Function	Colour
Y158	Shaft end	Motor without second shaft end	Phase C	yellow
3692	Controller combination	Analog Hall sensors for combination with Motion Controller MC 5010	Phase B	orange
6356	Encoder combination	Motor without Hall sensors cable for combination with Encoder AEMTL	Phase A	brown
			GND	black
			U _{DD} (+5V)	red
			Hall sensor C	grey
			Hall sensor B	blue
			Hall sensor A	green
			Standard cable	
			3 single wires, material FEP, AWG 18, Phase A/B/C	
			5 single wires, material PTFE, AWG 26, Hall A/B/C, U _{DD} , GND	

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 32L ... ML 32L ... PB 32L ... SB 32L ... TL	IE3-1024 IE3-1024 L IERS3-500 IERS3-500 L IER3-10000 IER3-10000 L AEMT-12/16 L AES-4096 L	SC 5008 S MC 5010 S	MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter.