

Brushless DC-Servomotors

4 Pole Technology

59 mNm
133 W

Series 2264 ... BP4

Values at 22°C and nominal voltage	2264 W	012 BP4	024 BP4	048 BP4	
1 Nominal voltage	U_N	12	24	48	V
2 Terminal resistance, phase-phase	R	0,05	0,22	0,881	Ω
3 Efficiency, max.	η_{max}	91	91	90	%
4 No-load speed	n_0	21 000	21 100	21 100	min^{-1}
5 No-load current, typ. (with shaft \varnothing 4 mm)	I_0	0,521	0,261	0,13	A
6 Stall torque	M_H	1 311	1 311	1 280	mNm
7 Friction torque, static	C_0	0,41	0,41	0,407	mNm
8 Friction torque, dynamic	C_V	$1,15 \cdot 10^{-4}$	$1,15 \cdot 10^{-4}$	$1,15 \cdot 10^{-4}$	$\text{mNm}/\text{min}^{-1}$
9 Speed constant	k_n	1 618	809	404	min^{-1}/V
10 Back-EMF constant	k_E	0,618	1,236	2,48	$\text{mV}/\text{min}^{-1}$
11 Torque constant	k_M	5,9	11,8	23,6	mNm/A
12 Current constant	k_I	0,169	0,085	0,0423	A/mNm
13 Slope of n-M curve	$\Delta n / \Delta M$	14,8	14,8	15,1	$\text{min}^{-1}/\text{mNm}$
14 Terminal inductance, phase-phase	L	6	24	91,3	μH
15 Mechanical time constant	τ_m	1,4	1,4	1,45	ms
16 Rotor inertia	J	9,2	9,2	9,21	gcm^2
17 Angular acceleration	α_{max}	1 424	1 424	1 400	$\cdot 10^3 \text{rad}/\text{s}^2$
18 Thermal resistance	R_{th1} / R_{th2}	1,2 / 12			K/W
19 Thermal time constant	τ_{w1} / τ_{w2}	7 / 693			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		4			mm
– radial at 3 000 min^{-1} (3 mm from mounting flange)		20			N
– axial at 3 000 min^{-1} (push / pull)		2			N
– axial at standstill (push / pull)		20			N
23 Shaft play:					
– radial	\leq	0,015			mm
– axial	$=$	0			mm
24 Housing material		stainless steel			
25 Mass		140			g
26 Direction of rotation		electronically reversible			
27 Speed up to	n_{max}	34 500			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	59	59	57,9	mNm
32 Rated current (thermal limit)	I_N	11,9	6	2,94	A
33 Rated speed	n_N	20 460	20 490	20 500	min^{-1}

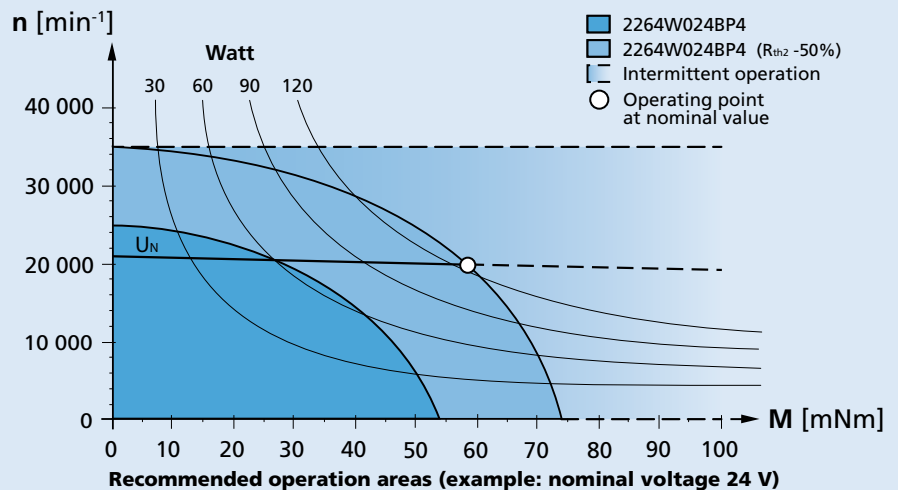
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 50%.

Note:

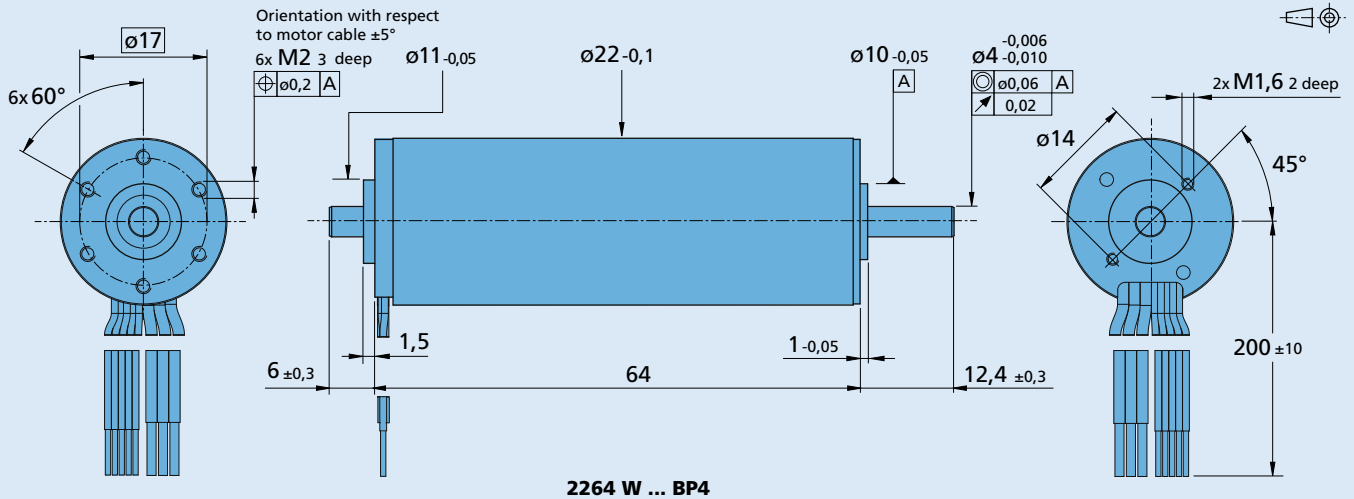
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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: **2264W024BP4-3692**

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 PTFE, AWG 20, Phase A/B/C	
			5 single wires, material PTFE, AWG 26, Hall A/B/C, U _{DD} , GND	
			Note	
			With the connection cable the terminal resistance is increased typ. by 0,008 Ω.	

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
22GPT 26/1R 32GPT 32/3R 22L ... ML 22L ... PB 22L ... SB 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	To view our large range of accessory parts, please refer to the "Accessories" chapter.