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	
1	Nominal voltage	U_N	12	24	V
2	Terminal resistance, phase-phase	R	0,05	0,22	Ω
3	Efficiency, max.	$\eta_{max.}$	91	91	%
4	No-load speed	n_0	21 000	21 100	min⁻¹
5	No-load current, typ. (with shaft ø 4 mm)	I_0	0,521	0,261	A
6	Stall torque	M_H	1 311	1 311	mNm
7	Friction torque, static	C_0	0,41	0,41	mNm
8	Friction torque, dynamic	C_V	$1{,}15 \cdot 10^{-4}$	$1{,}15 \cdot 10^{-4}$	mNm/min⁻¹
9	Speed constant	k_n	1 618	809	min⁻¹/V
10	Back-EMF constant	k_E	0,618	1,236	mV/min⁻¹
11	Torque constant	k_M	5,9	11,8	mNm/A
12	Current constant	k_I	0,169	0,085	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	14,8	14,8	min⁻¹/mNm
14	Terminal inductance, phase-phase	L	6	24	µH
15	Mechanical time constant	τ_m	1,4	1,4	ms
16	Rotor inertia	J	9,2	9,2	gcm²
17	Angular acceleration	$\alpha_{max.}$	1 424	1 424	$\cdot 10^3$rad/s²
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		°C
	– winding, max. permissible		+150		°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	≤	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	mNm
32	Rated current (thermal limit)	I_N	11,9	6	A
33	Rated speed	n_N	20 460	20 490	min⁻¹

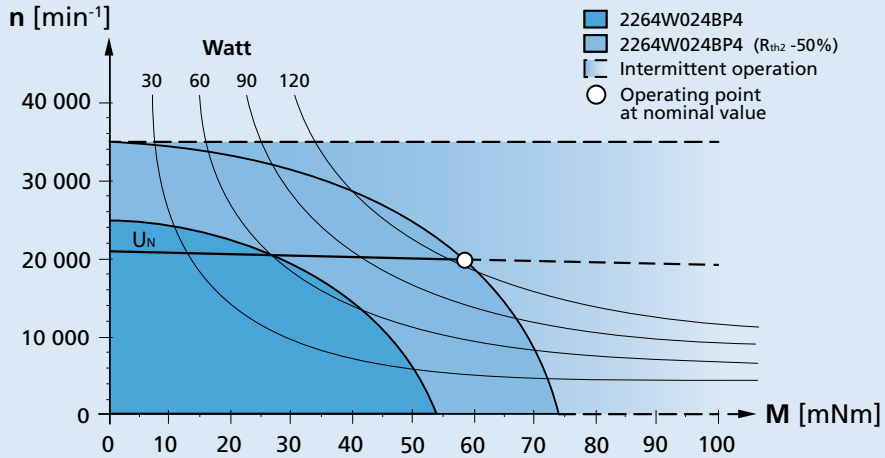
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 50%.

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).

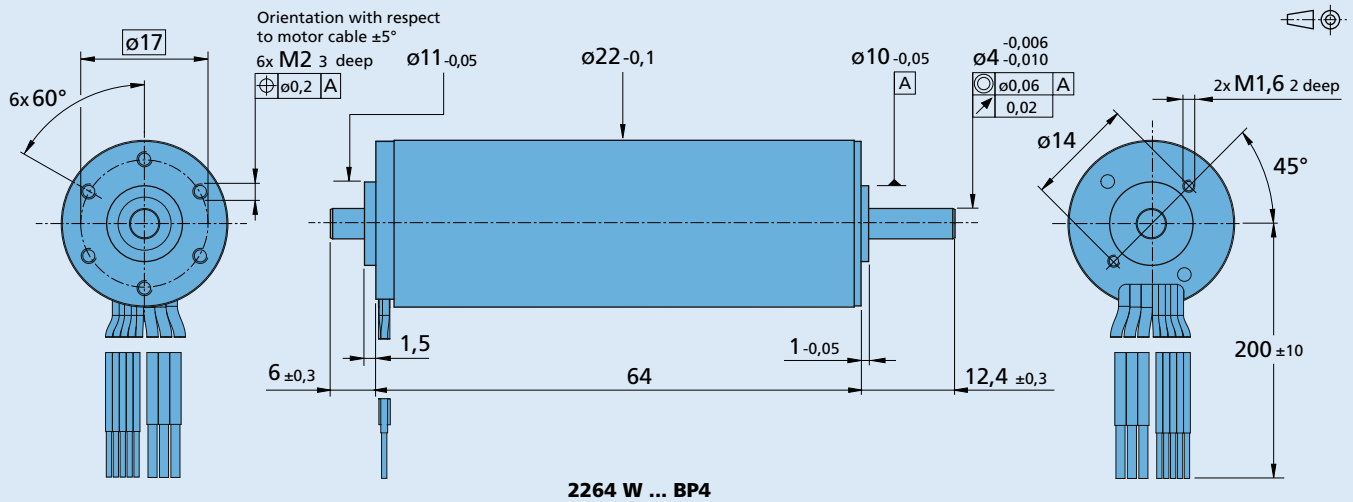
The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



Recommended operation areas (example: nominal voltage 24 V)

For notes on technical data and lifetime performance refer to "Technical Information".

Dimensional drawing



2264 W ... BP4

Option, cable and connection information

Example product designation: **2264W024BP4-3692**

Option	Type	Description
Y158	Shaft end	Motor without second shaft end
3692	Controller combination	Analog Hall sensors for combination with Motion Controller MC 5010

Connection

Function	Colour
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

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 32A 32ALN 32GPT 32/3R BS22-1.5	IE3-1024 IE3-1024 L IERS3-500 IERS3-500 L IER3-10000 IER3-10000 L AES-4096 L	SC 5008 S MC 5010 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.