

**NEW**

**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	$\Omega$
3	Efficiency, max.	$\eta_{max}$	91	91	%
4	No-load speed	$n_0$	21 000	21 100	min <sup>-1</sup>
5	No-load current, typ. (with shaft $\varnothing$ 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 <sup>-1</sup>
9	Speed constant	$k_n$	1 618	809	min <sup>-1</sup> /V
10	Back-EMF constant	$k_E$	0,618	1,236	mV/min <sup>-1</sup>
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 <sup>-1</sup> /mNm
14	Terminal inductance, phase-phase	$L$	6	24	$\mu$ H
15	Mechanical time constant	$\tau_m$	1,4	1,4	ms
16	Rotor inertia	$J$	9,2	9,2	gcm <sup>2</sup>
17	Angular acceleration	$\alpha_{max}$	1 424	1 424	$\cdot 10^3$ rad/s <sup>2</sup>
18	Thermal resistance	$R_{th1} / R_{th2}$	1,2 / 12		K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	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 <sup>-1</sup> (3 mm from mounting flange)		20		N
	– axial at 3 000 min <sup>-1</sup> (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 <sup>-1</sup>
28	Number of pole pairs		2		
29	Hall sensors		digital		
30	Magnet material		NdFeB		
<b>Rated values for continuous operation</b>					
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 <sup>-1</sup>

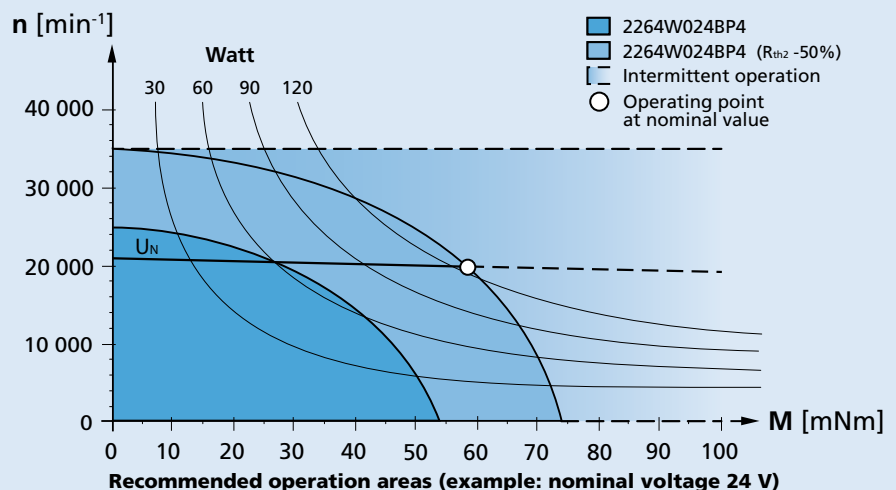
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 50%.

**Note:**

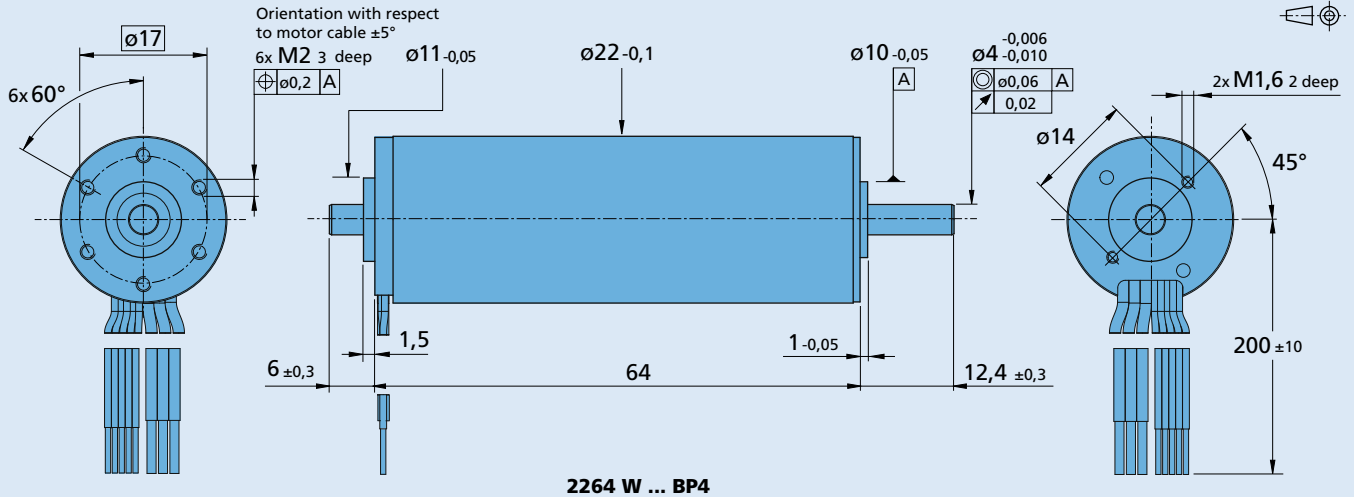
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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	
Y158	Shaft end	Motor without second shaft end	Function	Colour
3692	Controller combination	Analog Hall sensors for combination with Motion Controller MC 5010	Phase C	yellow
			Phase B	orange
			Phase A	brown
			GND	black
			U <sub>DD</sub> (+5V)	red
			Hall sensor C	grey
			Hall sensor B	blue
			Hall sensor A	green
			<b>Standard cable</b>	
			3 single wires, material PTFE, AWG 20, Phase A/B/C	
			5 single wires, material PTFE, AWG 26, Hall A/B/C, U <sub>DD</sub> , GND	
			<b>Note</b>	
			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
26/1 R 30/1 S 32A 32ALN 32/3 R BS22-1.5	IE3-1024 IE3-1024 L IERS3-500 IERS3-500 L IER3-10000 IER3-10000 L	SC 5008 S MC 5010 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.