

# Brushless DC-Servomotors

## 2 Pole Technology

2,6 mNm  
9,9 W

### Series 1226 ... B

Values at 22°C and nominal voltage		1226 S	006 B	012 B	024 B	
1	Nominal voltage	$U_N$	6	12	24	V
2	Terminal resistance, phase-phase	$R$	2,2	5,45	18,1	$\Omega$
3	Efficiency, max.	$\eta_{max}$	71	72	72	%
4	No-load speed	$n_0$	21 000	27 400	29 700	$\text{min}^{-1}$
5	No-load current, typ. (with shaft $\varnothing$ 1,2 mm)	$I_0$	0,07	0,054	0,031	A
6	Stall torque	$M_H$	7,24	8,99	10,2	mNm
7	Friction torque, static	$C_0$	0,073	0,073	0,073	mNm
8	Friction torque, dynamic	$C_V$	$5,3 \cdot 10^{-6}$	$5,3 \cdot 10^{-6}$	$5,3 \cdot 10^{-6}$	$\text{mNm}/\text{min}^{-1}$
9	Speed constant	$k_n$	3 563	2 318	1 237	$\text{min}^{-1}/\text{V}$
10	Back-EMF constant	$k_E$	0,281	0,431	0,808	$\text{mV}/\text{min}^{-1}$
11	Torque constant	$k_M$	2,68	4,12	7,72	$\text{mNm}/\text{A}$
12	Current constant	$k_I$	0,373	0,243	0,13	$\text{A}/\text{mNm}$
13	Slope of n-M curve	$\Delta n / \Delta M$	2 925	3 066	2 902	$\text{min}^{-1}/\text{mNm}$
14	Terminal inductance, phase-phase	$L$	36	85	307	$\mu\text{H}$
15	Mechanical time constant	$\tau_m$	4,4	4,7	4,6	ms
16	Rotor inertia	$J$	0,15	0,15	0,15	$\text{gcm}^2$
17	Angular acceleration	$\alpha_{max}$	499	621	677	$\cdot 10^3 \text{rad}/\text{s}^2$
18	Thermal resistance	$R_{th1} / R_{th2}$	7,3 / 36,6			K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	3,2 / 207			s
20	Operating temperature range:					
	– motor		-20 ... +100			$^{\circ}\text{C}$
	– winding, max. permissible		+125			$^{\circ}\text{C}$
21	Shaft bearings		ball bearings, preloaded			
22	Shaft load max.:					
	– with shaft diameter		1,2			mm
	– radial at 10 000 $\text{min}^{-1}$ (4 mm from mounting flange)		5			N
	– axial at 10 000 $\text{min}^{-1}$ (push only)		2,5			N
	– axial at standstill (push only)		11			N
23	Shaft play:					
	– radial	$\leq$	0,012			mm
	– axial	$=$	0			mm
24	Housing material		aluminium, black anodized			
25	Mass		13			g
26	Direction of rotation		electronically reversible			
27	Speed up to	$n_{max}$	79 000			$\text{min}^{-1}$
28	Number of pole pairs		1			
29	Hall sensors		digital			
30	Magnet material		NdFeB			
<b>Rated values for continuous operation</b>						
31	Rated torque	$M_N$	2,13	1,97	1,99	mNm
32	Rated current (thermal limit)	$I_N$	0,932	0,573	0,311	A
33	Rated speed	$n_N$	12 480	19 670	22 140	$\text{min}^{-1}$

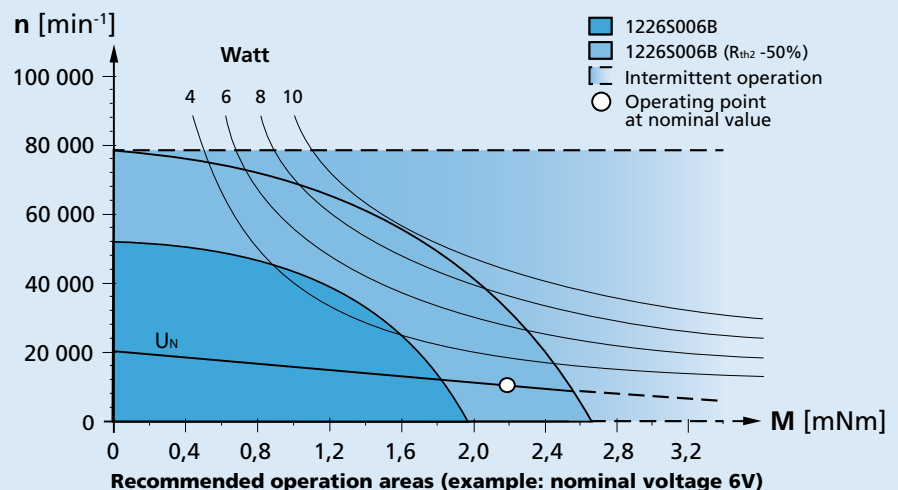
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

**Note:**

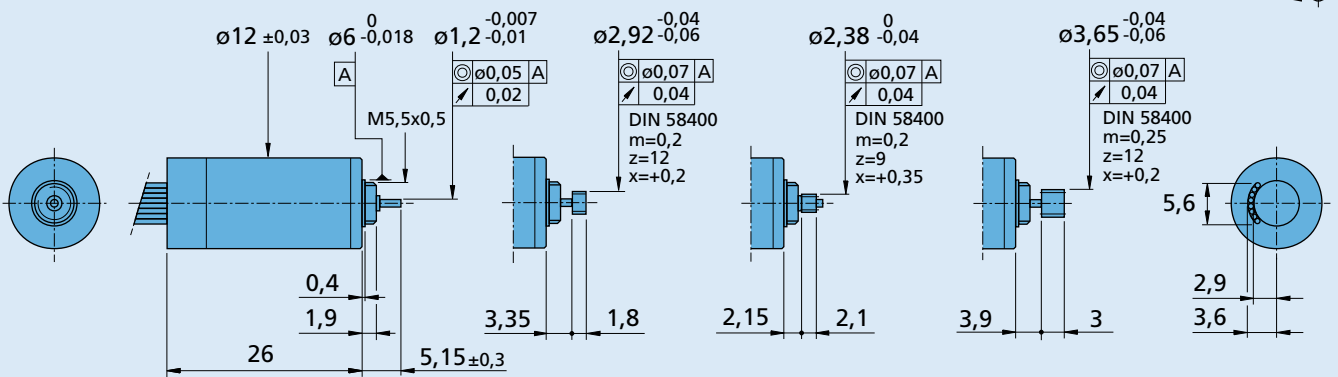
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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.



### Dimensional drawing



**1226 S ... B**

**1226 M ... B**  
for Gearheads 10/1

**1226 E ... B**  
for Gearheads 12/3, 12/5

**1226 A ... B**  
for Gearheads 12/4

### Option, cable and connection information

Example product designation: **1226S006B-K1855**

Option	Type	Description	Connection	
			Function	Colour
K1855	Controller combination	Analog Hall sensors for combination with Motion Controller MCBL	Phase C	yellow
K179	Bearing lubrication	For vacuum of $10^{-5}$ Pa @ 22°C	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>	
			Single wires, material PTFE	
			8 conductors, AWG 30	
			Length: 80 mm ±3 mm	

### Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
10/1 12/3 12/4 12/5		SC 1801 P SC 1801 S SC 2402 P SC 2804 S MCBL 3002 P MCBL 3002 S MCBL 3003 P MC 5004 P MC 5004 P STO	To view our large range of accessory parts, please refer to the "Accessories" chapter.