Brushless DC-Servomotors

2 Pole Technology

2,2 mNm

8,7 W

Series 1028 ... B

Values at 22°C and nominal voltage		1028 S	006 B	012 B	
1	Nominal voltage	U_N	6	12	V
2	Terminal resistance, phase-phase	R	1,08	4,37	Ω
3	Efficiency, max.	$\eta_{max.}$	73	72	%
4	No-load speed	n_0	32 300	33 600	min^{-1}
5	No-load current, typ. (with shaft ø 1,2 mm)	I_0	0,121	0,065	A
6	Stall torque	M_H	9,72	9,22	mNm
7	Friction torque, static	C_0	0,06	0,06	mNm
8	Friction torque, dynamic	C_V	4,62·10^{-6}	4,62·10^{-6}	mNm/min^{-1}
9	Speed constant	k_n	5 426	2 825	min^{-1}/V
10	Back-EMF constant	k_E	0,184	0,354	mV/min^{-1}
11	Torque constant	k_M	1,76	3,38	mNm/A
12	Current constant	k_I	0,568	0,296	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	3 329	3 653	min^{-1}/mNm
14	Terminal inductance, phase-phase	L	24	87	µH
15	Mechanical time constant	τ_m	1,9	2,1	ms
16	Rotor inertia	J	0,0622	0,0622	gcm²
17	Angular acceleration	$\alpha_{max.}$	1 803	1 711	·10³rad/s²
18	Thermal resistance	R_{th1} / R_{th2}	6,6 / 42,4		K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	4,2 / 152		s
20	Operating temperature range:				
	– motor		-20 ... +100		°C
	– winding, max. permissible		+125		°C
21	Shaft bearings		ball bearings, preloaded		
22	Shaft load max.:				
	– with shaft diameter		1,2		mm
	– radial at 10 000 min^{-1} (4 mm from mounting flange)		2,5		N
	– axial at 10 000 min^{-1} (push only)		1,3		N
	– axial at standstill (push only)		11		N
23	Shaft play:				
	– radial	≤	0,012		mm
	– axial	=	0		mm
24	Housing material		aluminium, black anodized		
25	Mass		9,4		g
26	Direction of rotation		electronically reversible		
27	Speed up to	$n_{max.}$	79 000		min^{-1}
28	Number of pole pairs		1		
29	Hall sensors		digital		
30	Magnet material		NdFeB		
Rated values for continuous operation					
31	Rated torque	M_N	1,68	1,57	mNm
32	Rated current (thermal limit)	I_N	1,16	0,57	A
33	Rated speed	n_N	25 660	26 800	min^{-1}

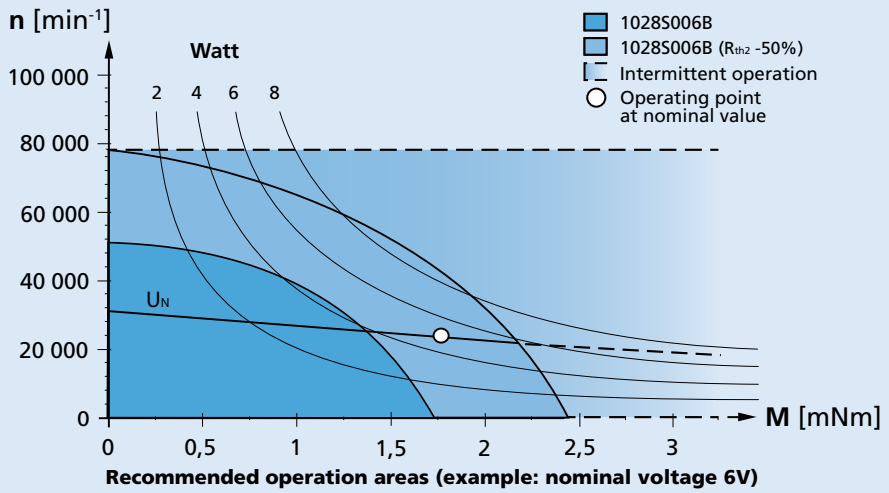
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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.

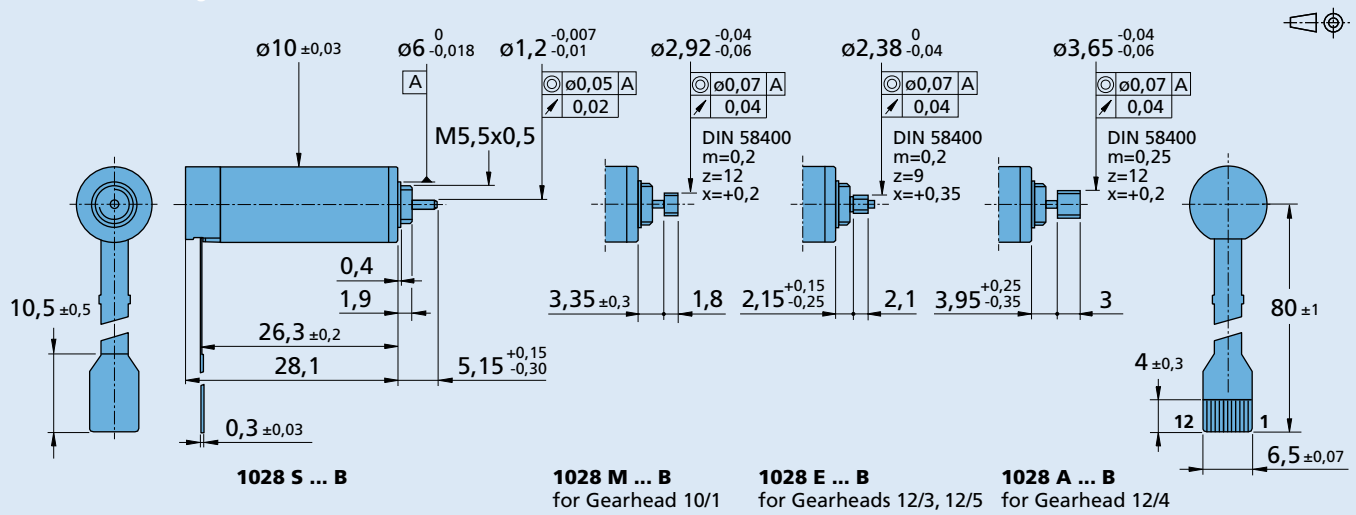
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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.



Recommended operation areas (example: nominal voltage 6V)

Dimensional drawing



1028 S ... B

1028 M ... B
for Gearhead 10/1

1028 E ... B
for Gearheads 12/3, 12/5

1028 A ... B
for Gearhead 12/4

Option, cable and connection information

Example product designation: **1028S006B-K179**

Option	Type	Description
K179	Bearing lubrication	For vacuum of 10^{-7} Torr @ 20°C

Connection

No.	Function
1	Phase C
2	Phase B
3	Phase A
4	GND
5	U_{DD} (+5V)
6	Hall sensor C
7	Hall sensor B
8	Hall sensor A
9	Hall sensor $\overline{B}$
10	Hall sensor $\overline{A}$
11	Hall sensor $\overline{C}$
12	Reserved

Standard flexboard
12 pole, 0,5 mm pitch

Recommended connector
Molex - ZIF Connector, No. 52745-1297.

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
10/1	IEM3-1024	SC 1801	6501.00116
12/4	AESM-4096	SC 2402	Motor adapter (w/wo AES or IEM3) for in combination with SC 2804
12/3		SC 2804	
12/5		MCBL 3002 AES	6501.00163
			Motor adapter (w/wo AES) for in combination with SC1801