Brushless DC-Servomotors 21,5 mNm

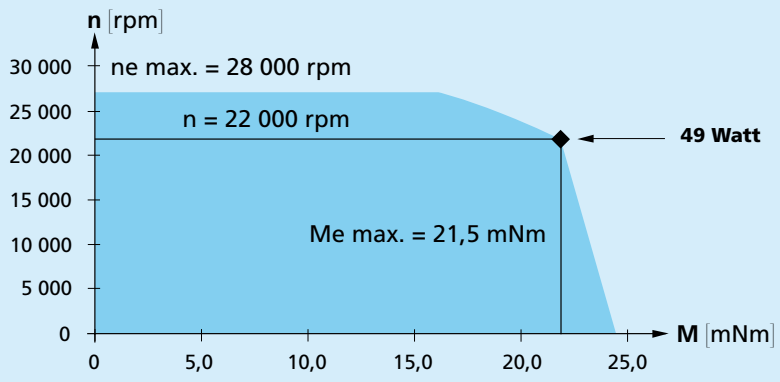
Electronic Commutation

For combination with
Gearheads:
30/1, 38/1, 38/2
Encoders:
5500, 5540
Drive Electronics:
refer to "Combination Chart", pages 14-15

Series 3056 ... B

			3056 K		012 B	024 B	036 B	048 B	
1	Nominal voltage	U_N			12	24	36	48	Volt
2	Terminal resistance, phase-phase	R			1,6	7,0	13,7	26,5	Ω
3	Output power [1]	$P_{2\ max.}$			48	49	49	49	W
4	Efficiency	$\eta_{max.}$			73	73	74	74	%
5	No-load speed	n_o			8 790	8 200	8 840	8 740	rpm
6	No-load current (with shaft ø 4,0 mm)	I_o			0,168	0,075	0,056	0,042	A
7	Stall torque	M_H			95	93	99	100	mNm
8	Friction torque, static	C_o			0,91	0,91	0,91	0,91	mNm
9	Friction torque, dynamic	C_v			$1{,}4 \cdot 10^{-4}$	$1{,}4 \cdot 10^{-4}$	$1{,}4 \cdot 10^{-4}$	$1{,}4 \cdot 10^{-4}$	mNm/rpm
10	Speed constant	k_n			750	350	251	186	rpm/V
11	Back-EMF constant	k_E			1,334	2,861	3,981	5,374	mV/rpm
12	Torque constant	k_M			12,74	27,32	38,02	51,32	mNm/A
13	Current constant	k_I			0,078	0,037	0,026	0,019	A/mNm
14	Slope of n-M curve	$\Delta n/\Delta M$			94	90	91	89	rpm/mNm
15	Terminal inductance, phase-phase	L			160	720	1 400	2 520	µH
16	Mechanical time constant	τ_m			13	13	13	12	ms
17	Rotor inertia	J			13,6	13,6	13,6	13,6	gcm^2
18	Angular acceleration	$\alpha_{max.}$			70	68	73	73	$\cdot 10^3 rad/s^2$
19	Thermal resistance	$R_{th\,1}$ / $R_{th\,2}$	3,3 / 9,4						K/W
20	Thermal time constant	τ_{w1} / τ_{w2}	19 / 1 034						s
21	Operating temperature range		– 30 ... +125						°C
22	Shaft bearings		ball bearings, preloaded						
23	Shaft load max.:								
	– radial at 3 000/20 000 rpm (7,4 mm from mounting flange)		72 / 51						N
	– axial at 3 000/20 000 rpm (axial push-on only)		18 / 12						N
	– axial at standstill (axial push-on only)		62						N
24	Shaft play:								
	– radial	≤	0,015						mm
	– axial	=	0						mm
25	Housing material		aluminium, black anodized						
26	Weight		190						g
27	Direction of rotation		electronically reversible						
Recommended values - mathematically independent of each other									
28	Speed up to [2]	$n_{e\ max.}$			28 000	28 000	28 000	28 000	rpm
29	Torque up to [1] [2]	$M_{e\ max.}$			20,7	21,4	21,2	21,5	mNm
30	Current up to [1] [2]	$I_{e\ max.}$			1,94	0,93	0,66	0,50	A

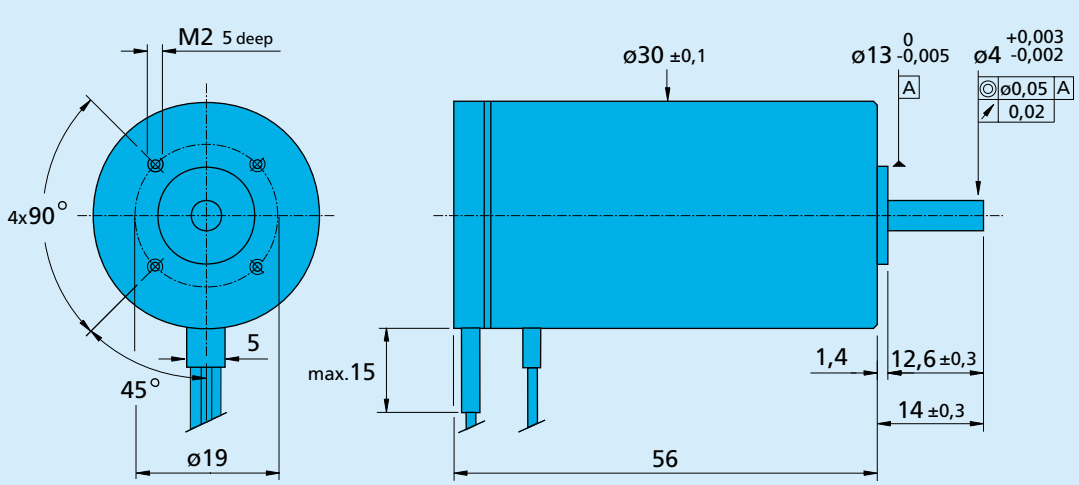
[1] at 22 000 rpm
[2] thermal resistance $R_{th\,2}$ by 55% reduced



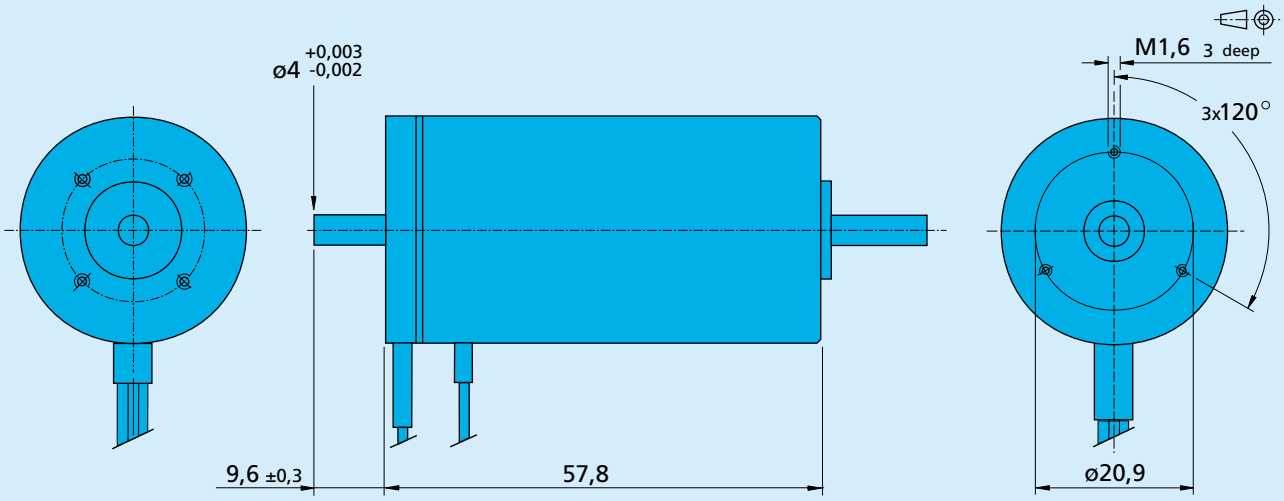
Recommended area for continuous operation

Options
K1000:
Motors in autoclavable version.
K1155:
Motors for operation with Motion Controllers MCBL 3003/06 S, MCBL 3003/06 C.

3056 K ... B

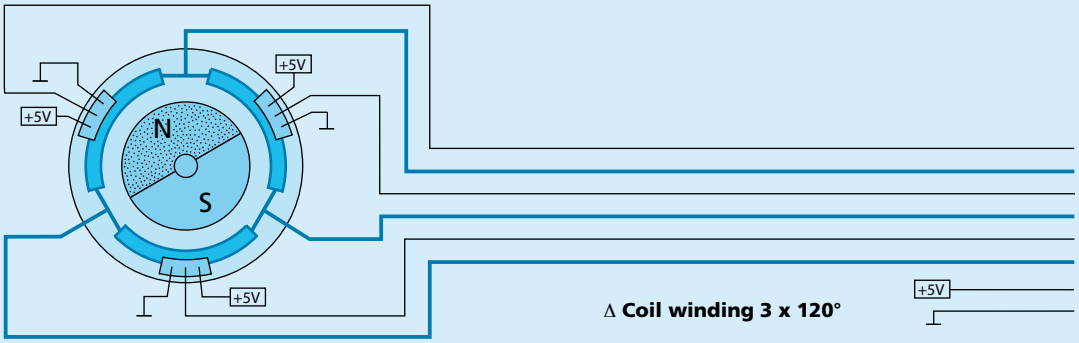


3056 K ... B - K312 with rear end shaft



Cable and connection information

Cable
Single wires, material PTFE
Length 300 mm ± 15 mm
3 conductors, AWG 20
5 conductors, AWG 26



Connection

	Function	Colour
A	Hall sensor	green
A	Phase	brown
B	Hall sensor	blue
B	Phase	orange
C	Hall sensor	grey
C	Phase	yellow
+5V	Logical supply	red
GND	Logical	black

Δ **Coil winding 3 x 120°**