

Brushless DC-Servomotors

16,5 mNm

For combination with
 Gearheads:
 20/1, 23/1
 Encoders:
 IE2-1024, 5500, 5540
 Drive Electronics:
 Speed Controller, Motion Controller

Series 2057 ... B

	2057 S	012 B	024 B	
1 Nominal voltage	U_N	12	24	Volt
2 Terminal resistance, phase-phase	R	0,55	1,42	Ω
3 Output power ¹⁾	$P_{2 \text{ max.}}$	61	62	W
4 Efficiency	$\eta_{\text{ max.}}$	82	83	%
5 No-load speed	n_o	21 900	26 500	rpm
6 No-load current (with shaft \varnothing 3,0 mm)	I_o	0,210	0,147	A
7 Stall torque	M_H	113	144	mNm
8 Friction torque, static	C_o	0,28	0,28	mNm
9 Friction torque, dynamic	C_v	$3,70 \cdot 10^{-5}$	$3,70 \cdot 10^{-5}$	mNm/rpm
10 Speed constant	k_n	1 840	1 116	rpm/V
11 Back-EMF constant	k_E	0,543	0,896	mV/rpm
12 Torque constant	k_M	5,19	8,56	mNm/A
13 Current constant	k_i	0,193	0,117	A/mNm
14 Slope of n-M curve	$\Delta n / \Delta M$	195	185	rpm/mNm
15 Terminal inductance, phase-phase	L	68	117	μH
16 Mechanical time constant	τ_m	8	8	ms
17 Rotor inertia	J	3,95	3,95	gcm^2
18 Angular acceleration	$\alpha_{\text{ max.}}$	286	365	10^3rad/s^2
19 Thermal resistance	$R_{\text{th} 1} / R_{\text{th} 2}$	2,8 / 11,5		K/W
20 Thermal time constant	τ_{w1} / τ_{w2}	10 / 590		s
21 Operating temperature range		- 30 ... +125		$^{\circ}\text{C}$
22 Shaft bearings		ball bearings, preloaded		
23 Shaft load max.:				
– radial at 3 000/20 000 rpm (4,5 mm from mounting flange)		28 / 14		N
– axial at 3 000/20 000 rpm (push-on only)		17 / 11		N
– axial at standstill (push-on only)		75		N
24 Shaft play:				
– radial	\leq	0,015		mm
– axial	\equiv	0		mm
25 Housing material		aluminium, black anodized		
26 Weight		95		g
27 Direction of rotation		electronically reversible		
Recommended values - mathematically independent of each other				
28 Speed up to ²⁾	$n_{e \text{ max.}}$	52 000	52 000	rpm
29 Torque up to ^{1) 2)}	$M_{e \text{ max.}}$	16,1	16,5	mNm
30 Current up to ^{1) 2)}	$I_{e \text{ max.}}$	3,41	2,12	A

¹⁾ at 36 000 rpm

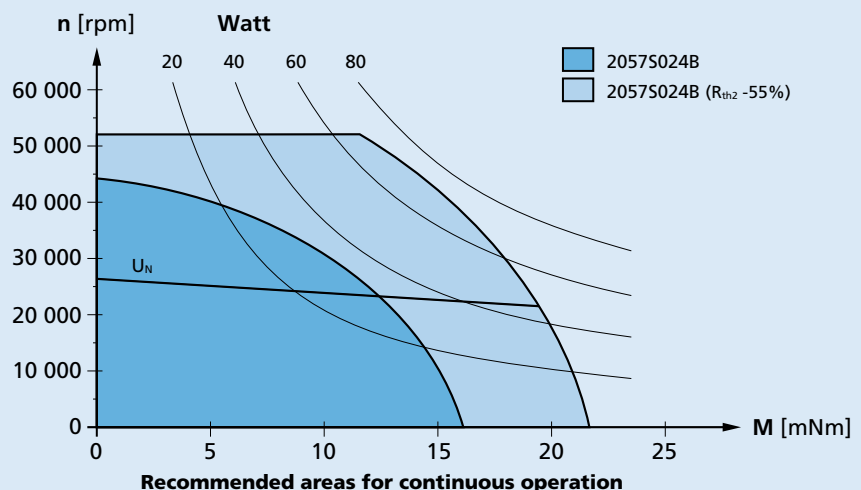
²⁾ thermal resistance $R_{\text{th} 2}$ by 55% reduced

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 ($R_{\text{th} 2}$ 55% 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.

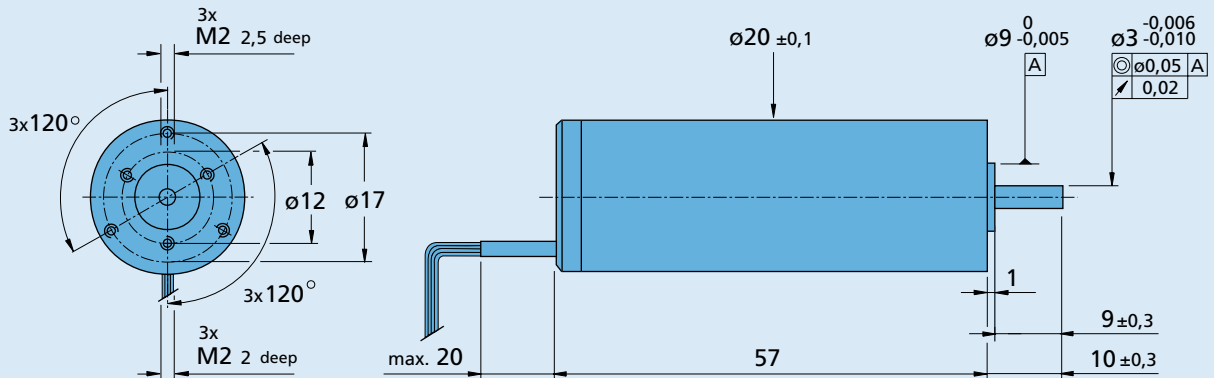


Options

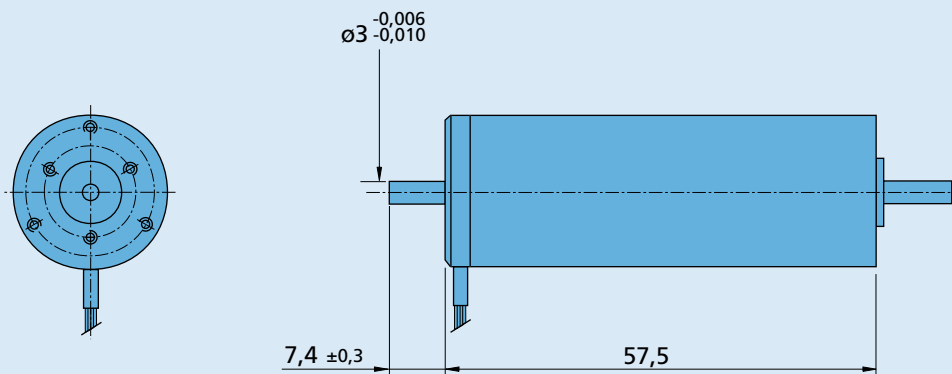
K1000:
Motors in autoclavable version.

K1155:
Motors for operation with Motion Controllers

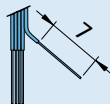
2057 S ... B



2057 S ... B - K312 with rear end shaft

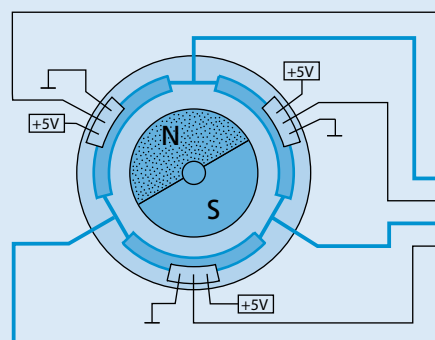


Cable and connection information



Cable

Single wires, material PTFE
Length 300 mm \pm 15 mm
5 conductors, AWG 26
3 conductors, AWG 24



Δ Coil winding 3 x 120°

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