

Brushless DC-Servomotors

2 Pole Technology

12 mNm
69 W

Series 2057 ... BHS

Values at 22°C and nominal voltage		2057 S	024 BHS	
1	Nominal voltage	U_N	24	V
2	Terminal resistance, phase-phase	R	1,46	Ω
3	Efficiency, max.	η_{max}	88	%
4	No-load speed	n_0	36 500	min ⁻¹
5	No-load current, typ. (with shaft \varnothing 3 mm)	I_0	0,064	A
6	Stall torque	M_H	104	mNm
7	Friction torque, static	C_0	0,104	mNm
8	Friction torque, dynamic	C_V	$8,18 \cdot 10^{-6}$	mNm/min ⁻¹
9	Speed constant	k_n	1 511	min ⁻¹ /V
10	Back-EMF constant	k_E	0,662	mV/min ⁻¹
11	Torque constant	k_M	6,32	mNm/A
12	Current constant	k_I	0,158	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	349	min ⁻¹ /mNm
14	Terminal inductance, phase-phase	L	120	μ H
15	Mechanical time constant	τ_m	7,5	ms
16	Rotor inertia	J	2	gcm ²
17	Angular acceleration	α_{max}	509	$\cdot 10^3$ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	3,4 / 12,3	K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	13,1 / 403	s
20	Operating temperature range:			
	– motor		-30 ... +125	°C
	– winding, max. permissible		+125	°C
21	Shaft bearings		ball bearings, preloaded	
22	Shaft load max.:			
	– with shaft diameter		3	mm
	– radial at 40 000 min ⁻¹ (5 mm from mounting flange)		22	N
	– axial at 40 000 min ⁻¹ (push only)		12	N
	– axial at standstill (push only)		75	N
23	Shaft play:			
	– radial	\leq	0,05	mm
	– axial	$=$	0	mm
24	Housing material		aluminium, black anodized	
25	Mass		81	g
26	Direction of rotation		electronically reversible	
27	Speed up to	n_{max}	65 000	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	10,1	mNm
32	Rated current (thermal limit)	I_N	1,87	A
33	Rated speed	n_N	34 370	min ⁻¹

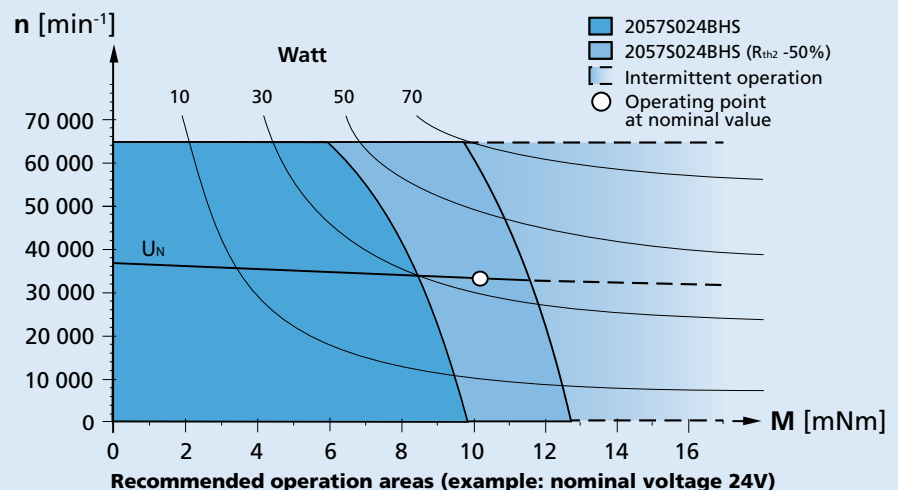
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:


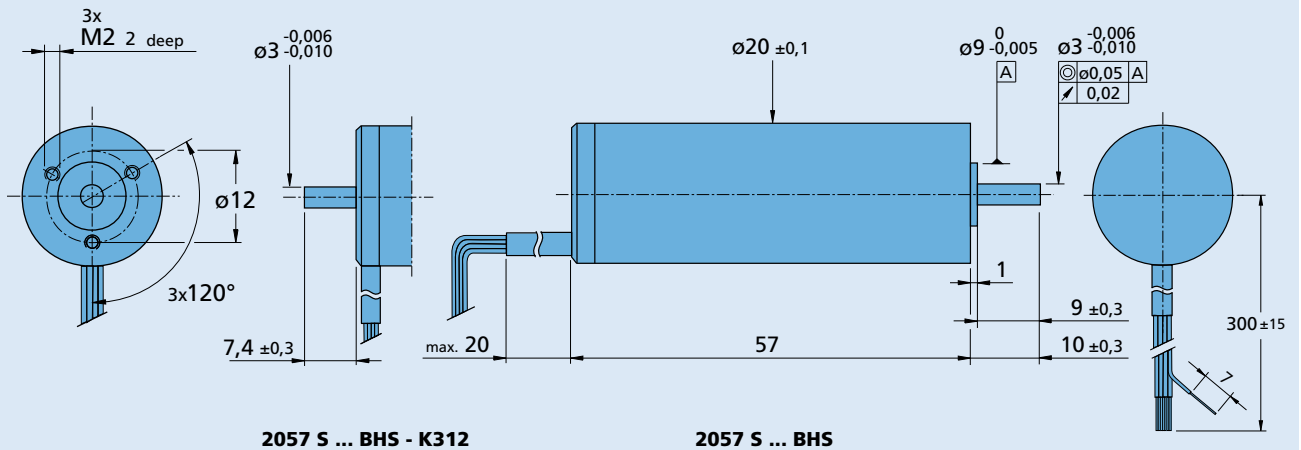
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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

 Scale reduced 

Option, cable and connection information

 Example product designation: **2057S024BHS-K2470**

Option	Type	Description	Connection	
			Function	Colour
K2470	Controller combination	Analog Hall sensors for combination with Speed Controller SC and Motion Controller MCBL	Phase C	yellow
K313	Encoder combination	Motor with rear end shaft for combination with Encoder IE2	Phase B	orange
K312	Encoder combination	Motor with rear end shaft for combination with Encoder HEDS/HEDL/HEDM	Phase A	brown
K179	Bearing lubrication	For vacuum of 10^{-7} Torr @ 20°C	GND	black
			U _{DD} (+5V)	red
			Hall sensor C	grey
			Hall sensor B	blue
			Hall sensor A	green
			Standard cable	
			Single wires, material PTFE	
			AWG 24: Phase A/B/C	
			AWG 26: Hall A/B/C, U _{DD} , GND	

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
20/1 20/1R 23/1	IE2-1024 HEDS 5500 HEDM 5500 HEDS 5540 HEDL 5540	SC 2804 SC 5004 SC 5008 MCBL 3006	