Brushless DC-Servomotors

2 Pole Technology

18,7 mNm

81 W

Series 1660 ... BHT

Values at 22°C and nominal voltage		1660 S		024 BHT	036 BHT	048 BHT	
1	Nominal voltage	U_N		24	36	48	V
2	Terminal resistance, phase-phase	R		0,49	1,1	1,93	Ω
3	Efficiency, max.	$\eta_{max.}$		90	90	90	%
4	No-load speed	n_0		34 900	35 200	35 500	min^{-1}
5	No-load current, typ. (with shaft ø 3 mm)	I_0		0,133	0,09	0,069	A
6	Stall torque	M_H		344	341	343	mNm
7	Friction torque, static	C_0		0,43	0,43	0,43	mNm
8	Friction torque, dynamic	C_V		$1{,}28 \cdot 10^{-5}$	$1{,}28 \cdot 10^{-5}$	$1{,}28 \cdot 10^{-5}$	mNm/min^{-1}
9	Speed constant	k_n		1 368	918	694	min^{-1}/V
10	Back-EMF constant	k_E		0,731	1,09	1,441	mV/min^{-1}
11	Torque constant	k_M		6,98	10,4	13,7	mNm/A
12	Current constant	k_I		0,143	0,096	0,073	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$		95	97	97	min^{-1}/mNm
14	Terminal inductance, phase-phase	L		52	114	203	µH
15	Mechanical time constant	τ_m		1,2	1,2	1,3	ms
16	Rotor inertia	J		1,2	1,2	1,2	gcm^2
17	Angular acceleration	$\alpha_{max.}$		2 796	2 772	2 787	$\cdot 10^3 rad/s^2$
18	Thermal resistance	R_{th1} / R_{th2}	2,1 / 18,2				K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	6,8 / 631				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)		19				N
	– axial at 40 000 min^{-1} (push only)		9				N
	– axial at standstill (push only)		44				N
23	Shaft play:						
	– radial	≤	0,01				mm
	– axial	=	0				mm
24	Housing material		stainless steel				
25	Mass		78				g
26	Direction of rotation		electronically reversible				
27	Speed up to	$n_{max.}$	76 000				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		13,9	13,7	13,6	mNm
32	Rated current (thermal limit)	I_N		2,38	1,58	1,18	A
33	Rated speed	n_N		34 490	34 740	35 070	min^{-1}

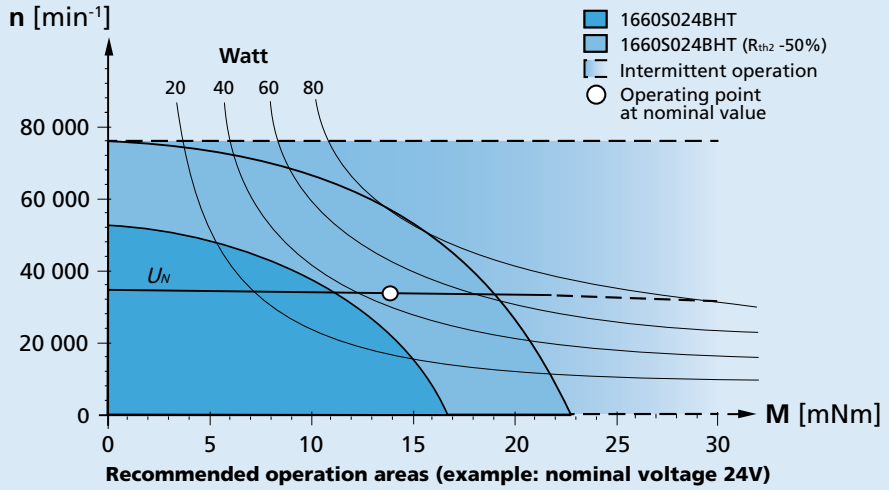
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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).

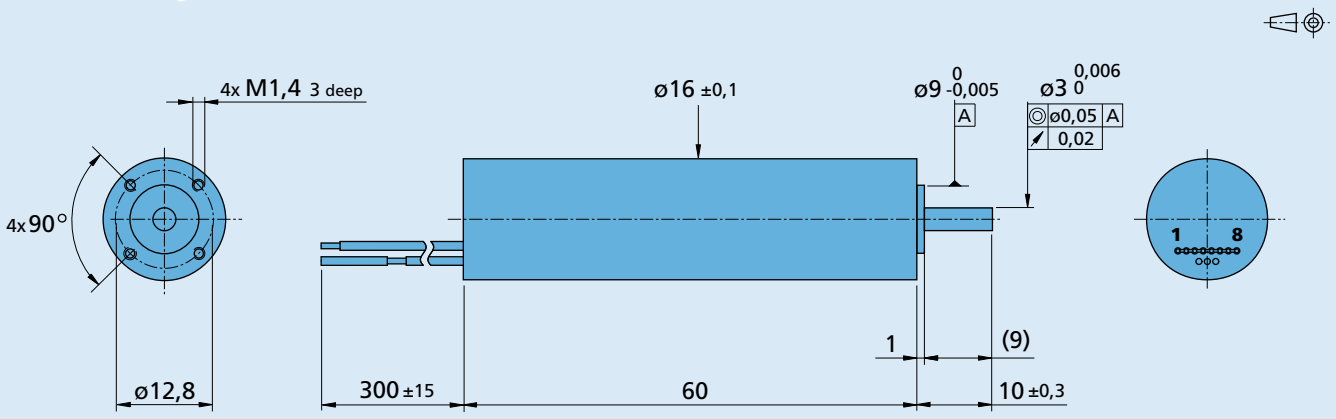
The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



Recommended operation areas (example: nominal voltage 24V)

For notes on technical data and lifetime performance refer to "Technical Information".

Dimensional drawing



1660 S ... BHT

Option, cable and connection information

Example product designation: **1660S024BHT**

Option	Type	Description

Connection

No.	Function	Colour
–	Phase C	yellow
–	Phase B	orange
–	Phase A	brown
1	GND	red
2	U_{DD} (4,5 ... 5,5V)	grey
3	Hall sensor C	grey
4	Hall sensor B	grey
5	Hall sensor A	grey
6	Reserved	grey
7	Reserved	grey
8	Reserved	grey

Standard cable

Single wires, material PTFE
AWG24, Phase A/B/C
Flat cable, material PVC
AWG28, Pitch 1,27 mm
Hall A,B,C, U_{DD}, GND

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
15/10 17/1 20/1R	IEM3-1024	SC 5004 P SC 5008 S MC 5004 P MC 5004 P STO MC 5005 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.