

DC-Servomotor KN 09 M4 inch version

Characteristics

Rated Values ¹			
Nominal torque	M_N	45	Ncm
Nominal speed ²	n_N	3000	min ⁻¹
Nominal output ²	P_N	141	W
Terminal voltage	U_N	30	V
Nominal current	I_N	7,8	A

Motor Performance			
Peak torque ³	M_{max}	489	Ncm
Max. peak current ³	I_{max}	79	A
Acceleration at peak torque	a_{max}	123	10 ³ rad/s ²
Stall torque ⁴	M_0	43	Ncm
Current at stall torque ⁴	I_0	7,5	A
Max. load speed	n_{max}	5000	min ⁻¹
Max. no load speed	n_0	6000	min ⁻¹

Intrinsic Motor Constants			
Torque constant	k_T	7,3	Ncm/A
Back E.M.F constant	k_E	7,6	V/10 ³ min ⁻¹
Viscous damping constant	k_D	0,78	Ncm/10 ³ min ⁻¹
Speed regulation at const. Voltage	k_n	10	min ⁻¹ /Ncm
Average friction torque	M_F	3	Ncm
Terminal resistance (+25 °C)	R_A	0,85	?
Armature (Cu) resistance (+25 °C)	R_{Cu}	0,66	?
Armature Inductance (10 ³ Hz)	L_A	<0,01	mH
Mechanical time constant	T_m	4,9	ms
Electrical time constant	T_e	0,15	ms
Rotor Inertia	J	0,396	kg cm ²

Thermal Characteristics			
Time const. armature-housing	T_{th1}	0,6	min
Time const. housing-ambient ⁵	T_{th2}	19	min
Resistance armature-housing	R_{th1}	2	K/W
Resistance housing-ambient ⁵	R_{th2}	1,5	K/W
Temp.-coeff. of back EMF	c_{th}	-0,11	%/K
Max. cont. armature temp.	th	155	°C

Physical Data			
Number of magnet poles	2p	8	pcs
Number of commutator bars	z	117	pcs
Admitted shaft load, radial	F_R	180	N
Admitted shaft load, axial	F_A	150	N
Weight without extensions	m	1,4	kg

¹⁾ for DC current with formfactor 1,05, uncooled execution, protection IP 54, ambient temperature +40 °C.

²⁾ Continuous operation S1 (VDE 530), part 1,4. Motor can be run at all points of the torque speed curve S1, continuous speed beyond 4000 min⁻¹ is not recommended, please check the torque speed curve.

³⁾ Incremental motion cycle S3, VDE 530, part 1,4. Pulse duration 50 ms, 1% of duty cycle.

⁴⁾ Point of intersection torque speed curve S1 with torque co-ordinate at speed zero. Permitted at very low speed < 1min⁻¹. Works the motor with blocked shaft longer than 20s, the stall current must be reduced to appr. 70%.

⁵⁾ Based upon mounted motors, heat transfer from motor to equipment.

Outline dimensions motor (in mm):

