

**DC-Servomotor KN 12 M4 T inch version**

**Characteristics**

Rated Values <sup>1</sup>			
Nominal torque	$M_N$	128	Ncm
Nominal speed <sup>2</sup>	$n_N$	3000	min <sup>-1</sup>
Nominal output <sup>2</sup>	$P_N$	401	W
Terminal voltage	$U_N$	46	V
Nominal current	$I_N$	9,3	A

Motor Performance			
Peak torque <sup>3</sup>	$M_{max}$	1352	Ncm
Max. peak current <sup>3</sup>	$I_{max}$	92	A
Acceleration at peak torque	$a_{max}$	123	10 <sup>3</sup> rad/s <sup>2</sup>
Stall torque <sup>4</sup>	$M_0$	123	Ncm
Current at stall torque <sup>4</sup>	$I_0$	8,9	A
Max. load speed	$n_{max}$	5000	min <sup>-1</sup>
Max. no load speed	$n_0$	6000	min <sup>-1</sup>

Intrinsic Motor Constants			
Torque constant	$k_T$	13,8	Ncm/A
Back E.M.F constant	$k_E$	14,4	V/10 <sup>3</sup> min <sup>-1</sup>
Viscous damping constant	$k_D$	1,7	Ncm/10 <sup>3</sup> min <sup>-1</sup>
Speed regulation at const. Voltage	$k_n$	4,44	min <sup>-1</sup> /Ncm
Average friction torque	$M_F$	3,7	Ncm
Terminal resistance (+25 °C)	$R_A$	0,75	?
Armature (Cu) resistance (+25 °C)	$R_{Cu}$	0,61	?
Armature Inductance (10 <sup>3</sup> Hz)	$L_A$	<0,05	mH
Mechanical time constant	$T_m$	7,1	ms
Electrical time constant	$T_e$	<0,07	ms
Rotor Inertia	$J$	1,838	kg cm <sup>2</sup>

Thermal Characteristics			
Time const. armature-housing	$T_{th1}$	1	min
Time const. housing-ambient <sup>9</sup>	$T_{th2}$	32	min
Resistance armature-housing	$R_{th1}$	1,6	K/W
Resistance housing-ambient <sup>9</sup>	$R_{th2}$	1,2	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	$z$	141	pcs
Admitted shaft load, radial	$F_R$	220	N
Admitted shaft load, axial	$F_A$	180	N
Weight without extensions	$m$	2,8	kg

Tachometer characteristics <sup>6</sup>			
Output voltage (±5%)	$U$	6,6	V/10 <sup>3</sup> min <sup>-1</sup>
Max. ripple peak to peak	$U_{RH}$	3,0	%
Temperature coefficient of $K_E$	$c_T$	-0,1	%/K
Max. rated current	$I_L$	100	mA

- <sup>1)</sup> for DC current with formfactor 1,05, uncooled execution, protection IP 54, ambient temperature +40 °C.
- <sup>2)</sup> 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<sup>-1</sup> is not recommended, please check the torque speed curve.
- <sup>3)</sup> Incremental motion cycle S3, VDE 530, part 1,4. Pulse duration 50 ms, 1% of duty cycle.
- <sup>4)</sup> Point of intersection torque speed curve S1 with torque co-ordinate at speed zero. Permitted at very low speed < 1min<sup>-1</sup>. Works the motor with blocked shaft longer than 20 s, the stall current must be reduced to appr. 70%.
- <sup>5)</sup> Based upon mounted motors, heat transfer from motor to equipment.
- <sup>6)</sup> Tacho must not operate without load,  $R_L, min = 10k\Omega$

Outline dimensions motor (in mm):

