

DC-Micromotors

Precious Metal Commutation

0,5 mNm

1,4 W

Series 1016 ... G

Values at 22°C and nominal voltage		1016 N	003 G	006 G	012 G	
1	Nominal voltage	U_N	3	6	12	V
2	Terminal resistance	R	8,7	19,3	95	Ω
3	Output power	$P_{2nom.}$	0,24	0,44	0,36	W
4	Efficiency, max.	$\eta_{max.}$	63	68	68	%
5	No-load speed	n_0	14 200	18 400	16 500	min ⁻¹
6	No-load current, typ. (with shaft ø 0,8 mm)	I_0	0,015	0,01	0,004	A
7	Stall torque	M_H	0,64	0,9	0,82	mNm
8	Friction torque	M_R	0,03	0,03	0,03	mNm
9	Speed constant	k_n	4 948	3 173	1 419	min ⁻¹ /V
10	Back-EMF constant	k_E	0,202	0,315	0,705	mV/min ⁻¹
11	Torque constant	k_M	1,93	3,01	6,73	mNm/A
12	Current constant	k_I	0,518	0,332	0,149	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	22 304	20 342	20 029	min ⁻¹ /mNm
14	Rotor inductance	L	28	90	310	μ H
15	Mechanical time constant	τ_m	9	12,8	10	ms
16	Rotor inertia	J	0,04	0,06	0,05	gcm ²
17	Angular acceleration	$\alpha_{max.}$	159	151	165	·10 ³ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	26 / 56			K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	3,1 / 260			s
20	Operating temperature range:					
	– motor		-30 ... +85 (optional version -30 ... +125)			°C
	– winding, max. permissible		+85 (optional version +125)			°C
21	Shaft bearings		sintered bearings			
22	Shaft load max.:					
	– with shaft diameter		0,8			mm
	– radial at 3 000 min ⁻¹ (1,5 mm from bearing)		0,5			N
	– axial at 3 000 min ⁻¹		0,1			N
	– axial at standstill		20			N
23	Shaft play:					
	– radial	≤	0,03			mm
	– axial	≤	0,2			mm
24	Housing material		steel, nickel plated			
25	Mass		6,5			g
26	Direction of rotation		clockwise, viewed from the front face			
27	Speed up to	$n_{max.}$	22 000			min ⁻¹
28	Number of pole pairs		1			
29	Magnet material		SmCo			
Rated values for continuous operation						
30	Rated torque	M_N	0,43	0,48	0,5	mNm
31	Rated current (thermal limit)	I_N	0,24	0,17	0,08	A
32	Rated speed	n_N	2 500	5 730	3 750	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 0%.

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.



