

NEW

DC-Micromotors
Precious Metal Commutation

0,92 mNm
2 W

Series 1016 ... SR

Values at 22°C and nominal voltage	1016 K	003 SR	006 SR	009 SR	012 SR		
1 Nominal voltage	U_N		3	6	9	12	V
2 Terminal resistance	R		3,1	12,5	27,1	40,7	Ω
3 Efficiency, max.	η_{max}		76	74	74	75	%
4 No-load speed	n_0		12 700	12 800	13 000	14 100	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 1 mm)	I_0		0,017	0,009	0,007	0,005	A
6 Stall torque	M_H		2,12	2,08	2,11	2,32	mNm
7 Friction torque	M_R		0,037	0,04	0,043	0,042	mNm
8 Speed constant	k_n		4 282	2 175	1 475	1 195	min ⁻¹ /V
9 Back-EMF constant	k_E		0,234	0,46	0,678	0,837	mV/min ⁻¹
10 Torque constant	k_M		2,23	4,39	6,48	7,99	mNm/A
11 Current constant	k_I		0,448	0,228	0,154	0,125	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$		5 953	6 166	6 177	6 085	min ⁻¹ /mNm
13 Rotor inductance	L		42	168	363	547	μ H
14 Mechanical time constant	τ_m		8	8	8	8	ms
15 Rotor inertia	J		0,12	0,12	0,12	0,12	gcm ²
16 Angular acceleration	α_{max}		175	171	172	189	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	17 / 59					K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	5,7 / 176					s
19 Operating temperature range:							
– motor		-30 ... +85					°C
– winding, max. permissible		+85					°C
20 Shaft bearings		sintered bearings					
21 Shaft load max.:							
– with shaft diameter		1					mm
– radial at 3 000 min ⁻¹ (1,5 mm from bearing)		0,9					N
– axial at 3 000 min ⁻¹		0,1					N
– axial at standstill		20					N
22 Shaft play:							
– radial	\leq	0,02					mm
– axial	\leq	0,15					mm
23 Housing material		steel, nickel plated					
24 Mass		6,5					g
25 Direction of rotation		clockwise, viewed from the front face					
26 Speed up to	n_{max}	16 000					min ⁻¹
27 Number of pole pairs		1					
28 Magnet material		NdFeB					

Rated values for continuous operation

29 Rated torque	M_N		0,92	0,9	0,9	0,91	mNm
30 Rated current (thermal limit)	I_N		0,46	0,23	0,16	0,13	A
31 Rated speed	n_N		5 550	5 620	5 850	7 070	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 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.



