

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 ø 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	·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 (optional version		-30 ... +125)		°C
	– winding, max. permissible		+85 (optional version		+125)		°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	≤	0,02				mm
	– axial	≤	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.



