

DC-Micromotors

Precious Metal Commutation

2,2 mNm
5 W

Series 1717 ... SR

Values at 22°C and nominal voltage	1717 T	003 SR	006 SR	012 SR	018 SR	024 SR	
1 Nominal voltage	U_N	3	6	12	18	24	V
2 Terminal resistance	R	1,07	4,3	17,1	50,1	68,8	Ω
3 Efficiency, max.	η_{max}	69	69	70	68	70	%
4 No-load speed	n_0	14 000	14 000	14 000	12 300	14 000	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 1,5 mm)	I_0	0,091	0,046	0,023	0,013	0,011	A
6 Stall torque	M_H	5,37	5,34	5,38	4,66	5,36	mNm
7 Friction torque	M_R	0,18	0,18	0,18	0,18	0,17	mNm
8 Speed constant	k_n	4 820	2 410	1 210	709	602	min ⁻¹ /V
9 Back-EMF constant	k_E	0,207	0,414	0,829	1,41	1,66	mV/min ⁻¹
10 Torque constant	k_M	1,98	3,96	7,92	13,5	15,9	mNm/A
11 Current constant	k_I	0,505	0,253	0,126	0,074	0,063	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	2 610	2 620	2 600	2 640	2 610	min ⁻¹ /mNm
13 Rotor inductance	L	17	65	260	760	1 040	μ H
14 Mechanical time constant	τ_m	16	16	16	16	16	ms
15 Rotor inertia	J	0,59	0,58	0,59	0,58	0,59	gcm ²
16 Angular acceleration	α_{max}	92	92	92	80	92	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	4,5 / 27					K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	2 / 210					s
19 Operating temperature range:							
– motor		-30 ... +85 (optional version -55 ... +125)					°C
– winding, max. permissible		+125					°C
20 Shaft bearings		sintered bearings		ball bearings, preloaded			
21 Shaft load max.:		(standard)		(optional version)			
– with shaft diameter		1,5		1,5			mm
– radial at 3 000 min ⁻¹ (3 mm from bearing)		1,2		5			N
– axial at 3 000 min ⁻¹		0,2		0,5			N
– axial at standstill		20		10			N
22 Shaft play:							
– radial	\leq	0,03		0,015			mm
– axial	\leq	0,2		0			mm
23 Housing material		steel, black coated					
24 Mass		18					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	1,2	2,1	2,1	2,1	2,2	mNm
30 Rated current (thermal limit)	I_N	0,7	0,63	0,32	0,19	0,16	A
31 Rated speed	n_N	10 790	6 540	6 570	4 570	6 540	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.



