

DC-Micromotors

Graphite Commutation

8,8 mNm
9 W

Series 1741 ... CXR

Values at 22°C and nominal voltage		1741 U	006 CXR	012 CXR	018 CXR	024 CXR	
1	Nominal voltage	U_N	6	12	18	24	V
2	Terminal resistance	R	1,3	5,8	15	26,9	Ω
3	Efficiency, max.	η_{max}	72	74	75	75	%
4	No-load speed	n_0	7 100	7 600	7 300	7 300	min ⁻¹
5	No-load current, typ. (with shaft \varnothing 2 mm)	I_0	0,055	0,028	0,017	0,013	A
6	Stall torque	M_H	30,6	27,9	26,1	26,2	mNm
7	Friction torque	M_R	0,4	0,4	0,4	0,4	mNm
8	Speed constant	k_n	1 303	668	420	314	min ⁻¹ /V
9	Back-EMF constant	k_E	0,768	1,496	2,378	3,185	mV/min ⁻¹
10	Torque constant	k_M	7,33	14,29	22,71	30,41	mNm/A
11	Current constant	k_I	0,136	0,07	0,044	0,033	A/mNm
12	Slope of n-M curve	$\Delta n / \Delta M$	231	271	278	278	min ⁻¹ /mNm
13	Rotor inductance	L	35	135	340	600	μ H
14	Mechanical time constant	τ_m	4,3	4,5	4,4	4,4	ms
15	Rotor inertia	J	1,8	1,6	1,5	1,5	gcm ²
16	Angular acceleration	α_{max}	170	175	174	174	$\cdot 10^3$ rad/s ²
17	Thermal resistance	R_{th1} / R_{th2}	7 / 23				K/W
18	Thermal time constant	τ_{w1} / τ_{w2}	8 / 440				s
19	Operating temperature range:						
	– motor		-30 ... +100				°C
	– winding, max. permissible		+125				°C
20	Shaft bearings		ball bearings, preloaded (standard)		sintered bearings (optional version)		
21	Shaft load max.:						
	– with shaft diameter		2		2		mm
	– radial at 3 000 min ⁻¹ (3 mm from bearing)		8		1,5		N
	– axial at 3 000 min ⁻¹		0,8		0,2		N
	– axial at standstill		10		20		N
22	Shaft play:						
	– radial	\leq	0,015		0,03		mm
	– axial	$=$	0		0,2		mm
23	Housing material		steel, zinc galvanized and passivated				
24	Mass		45				g
25	Direction of rotation		clockwise, viewed from the front face				
26	Speed up to	n_{max}	9 000				min ⁻¹
27	Number of pole pairs		1				
28	Magnet material		NdFeB				
Rated values for continuous operation							
29	Rated torque	M_N	8,8	8,4	8,4	8,4	mNm
30	Rated current (thermal limit)	I_N	1,4	0,69	0,43	0,33	A
31	Rated speed	n_N	4 280	4 410	3 940	3 940	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 25%.

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.



