

DC-Micromotors

Graphite Commutation

40 mNm
34 W

Series 2657 ... CXR

Values at 22°C and nominal voltage		2657 W	012 CXR	018 CXR	024 CXR	030 CXR	036 CXR	048 CXR	
1	Nominal voltage	U_N	12	18	24	30	36	48	V
2	Terminal resistance	R	0,72	1,53	2,98	4,84	6,76	12,61	Ω
3	Efficiency, max.	η_{max}	81	85	83	84	85	83	%
4	No-load speed	n_0	5 600	5 500	5 800	5 700	5 800	5 800	min ⁻¹
5	No-load current, typ. (with shaft ø 4 mm)	I_0	0,104	0,067	0,052	0,041	0,035	0,026	A
6	Stall torque	M_H	306,7	347,3	302,9	300,7	306,9	283,1	mNm
7	Friction torque	M_R	2	2	2	2	2	2	mNm
8	Speed constant	k_n	494	321	247	196	165	122	min ⁻¹ /V
9	Back-EMF constant	k_E	2,024	3,113	4,05	5,11	6,07	8,205	mV/min ⁻¹
10	Torque constant	k_M	19,33	29,73	38,67	48,84	58	78,35	mNm/A
11	Current constant	k_I	0,052	0,034	0,026	0,02	0,017	0,013	A/mNm
12	Slope of n-M curve	$\Delta n / \Delta M$	18,4	16,5	19	19,4	19,2	19,6	min ⁻¹ /mNm
13	Rotor inductance	L	90	214	365	579	816	1 500	μ H
14	Mechanical time constant	τ_m	3,3	2,9	3,4	3,4	3,4	3,5	ms
15	Rotor inertia	J	17	17	17	17	17	17	gcm ²
16	Angular acceleration	α_{max}	180	204	178	177	180	172	·10 ³ rad/s ²
17	Thermal resistance	R_{th1} / R_{th2}	4,4 / 12,6						K/W
18	Thermal time constant	τ_{w1} / τ_{w2}	28 / 810						s
19	Operating temperature range:								
	– motor		-30 ... +100						°C
	– winding, max. permissible		+125						°C
20	Shaft bearings		sintered bearings			ball bearings, preloaded			
21	Shaft load max.:		(standard)			(optional version)			
	– with shaft diameter		4			4			mm
	– radial at 3 000 min ⁻¹ (3 mm from bearing)		10			20			N
	– axial at 3 000 min ⁻¹		2			2			N
	– axial at standstill		50			20			N
22	Shaft play:								
	– radial	≤	0,03			0,015			mm
	– axial	≤	0,15			0			mm
23	Housing material		steel, zinc galvanized and passivated						
24	Mass		156						g
25	Direction of rotation		clockwise, viewed from the front face						
26	Speed up to	n_{max}	7 000						min ⁻¹
27	Number of pole pairs		1						
28	Magnet material		NdFeB						
Rated values for continuous operation									
29	Rated torque	M_N	39	43	40	40	40	40	mNm
30	Rated current (thermal limit)	I_N	2,4	1,7	1,2	0,97	0,82	0,61	A
31	Rated speed	n_N	5 040	5 020	5 110	5 050	5 140	5 050	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.



