

# DC-Micromotors

## Graphite Commutation

4,9 mNm  
5,3 W

### Series 1727 ... CXR

Values at 22°C and nominal voltage		1727 U	006 CXR	012 CXR	024 CXR	
1	Nominal voltage	$U_N$	6	12	24	V
2	Terminal resistance	$R$	3,06	13,78	57,6	$\Omega$
3	Efficiency, max.	$\eta_{max}$	63	65	66	%
4	No-load speed	$n_0$	7 300	7 600	7 600	min <sup>-1</sup>
5	No-load current, typ. (with shaft $\varnothing$ 2 mm)	$I_0$	0,052	0,026	0,013	A
6	Stall torque	$M_H$	12,2	11,4	11,4	mNm
7	Friction torque	$M_R$	0,36	0,36	0,36	mNm
8	Speed constant	$k_n$	1 362	681	332	min <sup>-1</sup> /V
9	Back-EMF constant	$k_E$	0,734	1,47	3,01	mV/min <sup>-1</sup>
10	Torque constant	$k_M$	7,01	14,03	28,73	mNm/A
11	Current constant	$k_I$	0,143	0,071	0,035	A/mNm
12	Slope of n-M curve	$\Delta n / \Delta M$	595	668	666	min <sup>-1</sup> /mNm
13	Rotor inductance	$L$	80	320	1 440	$\mu$ H
14	Mechanical time constant	$\tau_m$	8,1	8,4	8,4	ms
15	Rotor inertia	$J$	1,3	1,2	1,2	gcm <sup>2</sup>
16	Angular acceleration	$\alpha_{max}$	94	95	95	$\cdot 10^3$ rad/s <sup>2</sup>
17	Thermal resistance	$R_{th1} / R_{th2}$	9,1 / 28,3			K/W
18	Thermal time constant	$\tau_{w1} / \tau_{w2}$	7 / 340			s
19	Operating temperature range:					
	– motor		-30 ... +100			°C
	– winding, max. permissible		+125			°C
20	Shaft bearings		ball bearings, preloaded	sintered bearings		
21	Shaft load max.:		(standard)	(optional version)		
	– with shaft diameter		2	2		mm
	– radial at 3 000 min <sup>-1</sup> (3 mm from bearing)		8	1,5		N
	– axial at 3 000 min <sup>-1</sup>		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, nickel plated			
24	Mass		28			g
25	Direction of rotation		clockwise, viewed from the front face			
26	Speed up to	$n_{max}$	9 000			min <sup>-1</sup>
27	Number of pole pairs		1			
28	Magnet material		NdFeB			
<b>Rated values for continuous operation</b>						
29	Rated torque	$M_N$	4,9	4,7	4,7	mNm
30	Rated current (thermal limit)	$I_N$	0,84	0,41	0,2	A
31	Rated speed	$n_N$	2 910	2 810	2 730	min <sup>-1</sup>

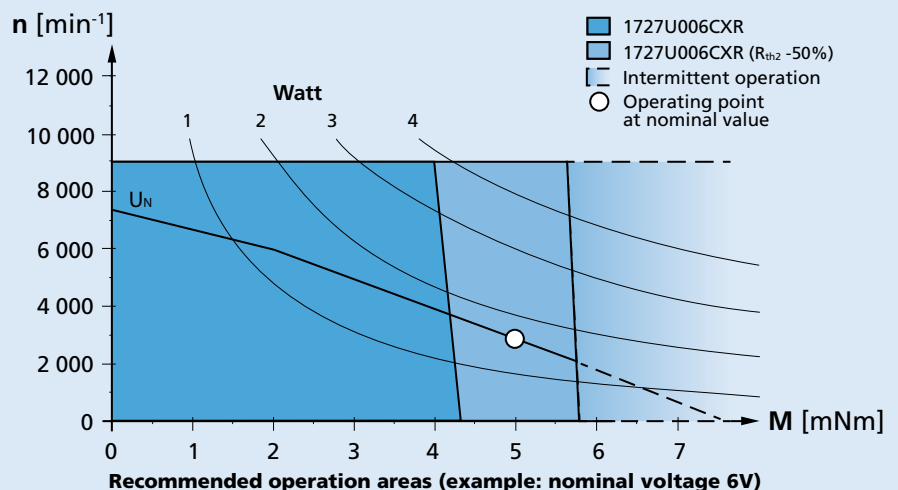
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

**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.

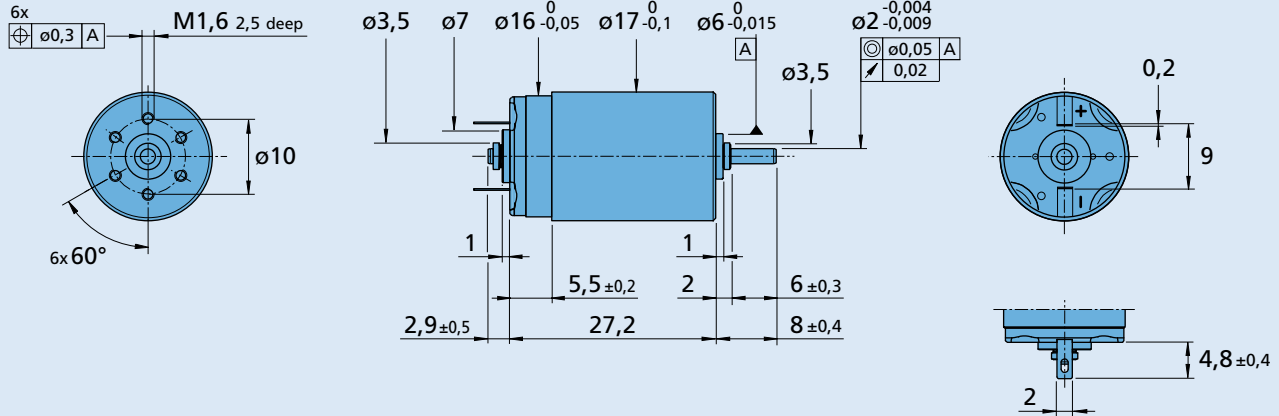
The diagram shows the motor in a completely insulated as well as thermally coupled condition ( $R_{th2}$  50% reduced).

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.



### Dimensional drawing

Orientation with respect to motor terminals not defined



1727 U ... CXR

### Options

Example product designation: **1727U012CXR-217**

Option	Type	Description
L	Twin Leads	For motors with twin leads (PVC), length 150 mm, red (+) / black (-)
4924	Twin Leads	For motors with twin leads (PVC), length 300 mm, red (+) / black (-)
X4924	Twin Leads	For motors with twin leads (PVC), length 600 mm, red (+) / black (-)
4925	Twin Leads	For motors with twin leads (PVC), length 150 mm, red (+) / black (-), with connector AMP 179228-2
X4925	Twin Leads	For motors with twin leads (PVC), length 300 mm, red (+) / black (-), with connector AMP 179228-2
Y4925	Twin Leads	For motors with twin leads (PVC), length 600 mm, red (+) / black (-), with connector AMP 179228-2
F	Single Leads	For motors with single leads (PTFE), length 150 mm, red (+) / black (-)
123	Encoder combination	Second shaft end for combination with encoder IE2, IEH2 and IEH3
217	Bearings	Motor with sintered bearings

### Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
15/10 16/7 17/1	IE2-16 IE2-1024 IEH2-4096 IEH3-4096 IEH3-4096L	SC 1801 P SC 1801 S MCDC 3002 P MCDC 3002 S MC 5004 P	To view our large range of accessory parts, please refer to the "Accessories" chapter.