

NEW

DC-Micromotors
Precious Metal Commutation

1,6 mNm
3,1 W

Series 1024 ... SR

Values at 22°C and nominal voltage	1024 K	003 SR	006 SR	009 SR	012 SR	
1 Nominal voltage	U_N	3	6	9	12	V
2 Terminal resistance	R	1,36	5,96	14,9	23,7	Ω
3 Efficiency, max.	η_{max}	84	83	82	82	%
4 No-load speed	n_0	12 200	12 300	12 000	12 800	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 1 mm)	I_0	0,016	0,008	0,005	0,004	A
6 Stall torque	M_H	5,1	4,6	4,28	4,45	mNm
7 Friction torque	M_R	0,037	0,037	0,037	0,038	mNm
8 Speed constant	k_n	4 098	2 071	1 337	1 078	min ⁻¹ /V
9 Back-EMF constant	k_E	0,244	0,483	0,748	0,928	mV/min ⁻¹
10 Torque constant	k_M	2,33	4,61	7,14	8,86	mNm/A
11 Current constant	k_I	0,429	0,217	0,14	0,113	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	2 392	2 678	2 791	2 883	min ⁻¹ /mNm
13 Rotor inductance	L	16	62	151	218	μ H
14 Mechanical time constant	τ_m	3	3,4	3,5	3,3	ms
15 Rotor inertia	J	0,12	0,12	0,12	0,11	gcm ²
16 Angular acceleration	α_{max}	425	384	356	404	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	16 / 51				K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	6,1 / 251				s
19 Operating temperature range:						
– motor		-30 ... +85				°C
– winding, max. permissible		+85				°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)		1				N
– axial at 3 000 min ⁻¹		0,1				N
– axial at standstill		20				N
22 Shaft play:						
– radial	\leq	0,02				mm
– axial	\leq	0,15				mm
23 Housing material		steel, nickel plated				
24 Mass		10,8				g
25 Direction of rotation		clockwise, viewed from the front face				
26 Speed up to	n_{max}	15 000				min ⁻¹
27 Number of pole pairs		1				
28 Magnet material		NdFeB				

Rated values for continuous operation

29 Rated torque	M_N	1,6	1,5	1,5	1,4	mNm
30 Rated current (thermal limit)	I_N	0,74	0,35	0,22	0,18	A
31 Rated speed	n_N	7 640	7 460	6 910	7 780	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.



