

DC-Micromotors

Precious Metal Commutation

1,7 mNm

For combination with
Gearheads:
10/1, 12/3, 12/4, 12/5
Encoders:
HEM3-256-W, PA2-100

Series 1224 ... SR

Values at 22°C and nominal voltage	1224 N	006 SR	012 SR	015 SR	
1 Nominal voltage	U_N	6	12	15	V
2 Terminal resistance	R	4,6	18,2	29,4	Ω
3 Output power	$P_{2nom.}$	1,92	1,95	1,88	W
4 Efficiency, max.	$\eta_{max.}$	82	83	83	%
5 No-load speed	n_0	13 800	13 700	13 400	rpm
6 No-load current, typ. (with shaft \varnothing 1 mm)	I_0	0,011	0,005	0,004	A
7 Stall torque	M_H	5,31	5,43	5,36	mNm
8 Friction torque	M_R	0,05	0,05	0,05	mNm
9 Speed constant	k_n	2 323	1 151	901	rpm/V
10 Back-EMF constant	k_E	0,43	0,869	1,11	mV/rpm
11 Torque constant	k_M	4,11	8,3	10,6	mNm/A
12 Current constant	k_I	0,243	0,12	0,094	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$	2 600	2 523	2 499	rpm/mNm
14 Rotor inductance	L	55	220	350	μH
15 Mechanical time constant	τ_m	5	5	5	ms
16 Rotor inertia	J	0,18	0,18	0,18	gcm ²
17 Angular acceleration	$\alpha_{max.}$	295	302	298	$\cdot 10^3 rad/s^2$
18 Thermal resistance	R_{th1} / R_{th2}	17 / 37			K/W
19 Thermal time constant	τ_{w1} / τ_{w2}	6,5 / 371			s
20 Operating temperature range:					
– motor		-30 ... +85 (optional version	-30 ... +125)		°C
– winding, max. permissible		+85 (optional version	+125)		°C
21 Shaft bearings		sintered bearings			
22 Shaft load max.:					
– with shaft diameter		1			mm
– radial at 3 000 rpm (1,5 mm from bearing)		0,5			N
– axial at 3 000 rpm		0,1			N
– axial at standstill		20			N
23 Shaft play					
– radial	\leq	0,03			mm
– axial	\leq	0,2			mm
24 Housing material		steel, black coated			
25 Mass		13,5			g
26 Direction of rotation		clockwise, viewed from the front face			
27 Speed up to	$n_{max.}$	16 000			rpm
28 Number of pole pairs		1			
29 Magnet material		NdFeB			
Rated values for continuous operation					
30 Rated torque	M_N	1,5	1,7	1,7	mNm
31 Rated current (thermal limit)	I_N	0,4	0,22	0,18	A
32 Rated speed	n_N	9 680	8 580	8 270	rpm

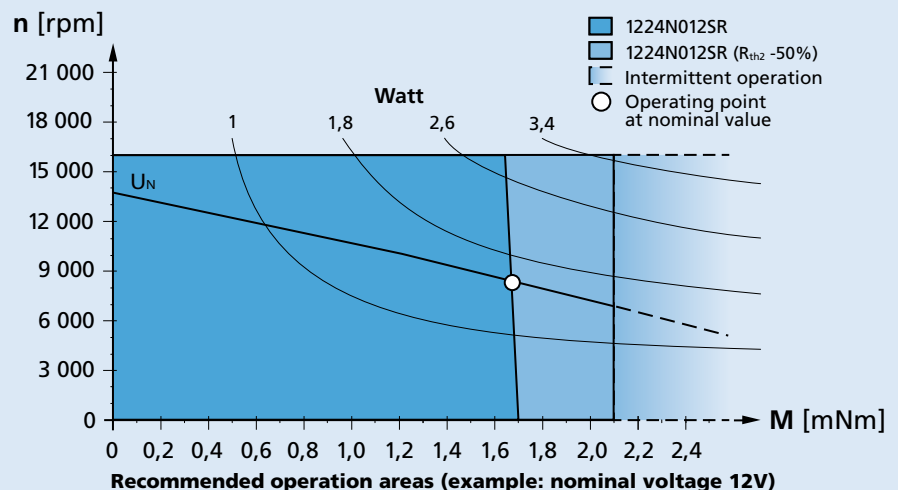
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

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.



Dimensional drawing

