

DC-Micromotors

Precious Metal Commutation

5 mNm

For combination with

Gearheads:

20/1, 22/2, 22/5, 22/7, 22E, 22EKV, 22F, 23/1, 38/3

Encoders:

IE2-1024, IE2-16

Series 2224 ... SR

	2224 U	003 SR	006 SR	012 SR	018 SR	024 SR	036 SR	
1 Nominal voltage	U_N	3	6	12	18	24	36	V
2 Terminal resistance	R	0,56	1,94	8,71	17,5	36,3	91,4	Ω
3 Output power	$P_{2\max}$	3,92	4,55	4,05	4,54	3,88	3,46	W
4 Efficiency, max.	η_{\max}	80	82	82	82	81	80	%
5 No-load speed	n_0	8 100	8 200	7 800	8 100	7 800	7 800	rpm
6 No-load current (with shaft \varnothing 2 mm)	I_0	0,066	0,029	0,014	0,01	0,007	0,005	A
7 Stall torque	M_H	18,5	21,2	19,8	21,4	19	16,9	mNm
8 Friction torque	M_R	0,23	0,2	0,2	0,21	0,2	0,22	mNm
9 Speed constant	k_n	2 730	1 380	657	454	328	219	rpm/V
10 Back-EMF constant	k_E	0,366	0,725	1,52	2,2	3,04	4,56	mV/rpm
11 Torque constant	k_M	3,49	6,92	14,5	21	29,1	43,5	mNm/A
12 Current constant	k_i	0,286	0,144	0,069	0,048	0,034	0,023	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$	438	387	394	379	411	462	rpm/mNm
14 Rotor inductance	L	11	45	200	450	800	1 800	μ H
15 Mechanical time constant	τ_m	11	11	11	11	11	11	ms
16 Rotor inertia	J	2,4	2,7	2,7	2,8	2,6	2,3	gcm ²
17 Angular acceleration	α_{\max}	77	78	74	77	74	74	$\cdot 10^3$ rad/s ²
18 Thermal resistance	R_{th1} / R_{th2}	5 / 20						K/W
19 Thermal time constant	τ_{w1} / τ_{w2}	6,8 / 440						s
20 Operating temperature range:		-30 ... +85 (optional version -55 ... +125)						°C
- motor								
- rotor, max. permissible		+125						°C
21 Shaft bearings		sintered bearings		ball bearings		ball bearings, preloaded		
22 Shaft load max.:		(standard)		(optional version)		(optional version)		
- with shaft diameter		2		2		2		mm
- radial at 3 000 rpm (3 mm from bearing)		1,5		8		8		N
- axial at 3 000 rpm		0,2		0,8		0,8		N
- axial at standstill		20		10		10		N
23 Shaft play								
- radial	\leq	0,03		0,015		0,015		mm
- axial	\leq	0,2		0,2		0		mm
24 Housing material		steel, black coated						
25 Weight		46						g
26 Direction of rotation		clockwise, viewed from the front face						

Recommended values - mathematically independent of each other

27 Speed up to	$n_{e\max}$	8 000	8 000	8 000	8 000	8 000	8 000	rpm
28 Torque up to	$M_{e\max}$	5	5	5	5	5	5	mNm
29 Current up to (thermal limits)	$I_{e\max}$	2,2	1,2	0,57	0,4	0,28	0,18	A

