

DC-Micromotors

Precious Metal Commutation

5 mNm

For combination with

Gearheads:

20/1, 22E, 22F, 22/2, 22/5, 22/6, 22/7, 23/1, 38/3

Encoders:

IE2 – 16 ... 512

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	Volt
2 Terminal resistance	R	0,56	1,94	8,71	17,50	36,30	91,40	Ω
3 Output power	P _{2 max.}	3,92	4,55	4,05	4,54	3,88	3,46	W
4 Efficiency	η _{max.}	80	82	82	82	81	80	%
5 No-load speed	n _o	8 100	8 200	7 800	8 100	7 800	7 800	rpm
6 No-load current (with shaft ø 2,0 mm)	I _o	0,066	0,029	0,014	0,010	0,007	0,005	A
7 Stall torque	M _H	18,5	21,2	19,8	21,4	19,0	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	1,520	2,200	3,040	4,560	mV/rpm
11 Torque constant	k _M	3,49	6,92	14,50	21,00	29,10	43,50	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	Δn/ΔM	438	387	394	379	411	462	rpm/mNm
14 Rotor inductance	L	11	45	200	450	800	1 800	μH
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	·10 ³ rad/s ²
18 Thermal resistance	R _{th 1} / R _{th 2}	5 / 20						K/W
19 Thermal time constant	τ _{w1} / τ _{w2}	6,8 / 440						s
20 Operating temperature range:								
– motor		– 30 ... + 85 (optional – 55 ... + 125)						°C
– rotor, max. permissible		+125						°C
21 Shaft bearings		sintered bronze sleeves		ball bearings		ball bearings, preloaded		
22 Shaft load max.:		(standard)		(optional)		(optional)		
– with shaft diameter		2,0		2,0		2,0		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	≤	0,03		0,015		0,015		mm
– axial	≤	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.}	2,200	1,200	0,570	0,400	0,280	0,180	A

