

DC-Micromotor

Graphite Commutation

5.7 mNm

For combination with:
Gearheads: MD22P
Encoder: ME2-16

Series MD2230

		MD2230E	006V	012V	024V		
1	Nominal voltage	U_N	6	12	24	Volt	
2	Winding resistance	R	± 12%	2.40	17.50	198	Ω
3	Output power	$P_{2 \text{ max.}}$	3.48	1.85	0.41	W	
4	Efficiency	$\eta_{\text{ max.}}$	66	60	25	%	
5	No-load speed	n_o	± 12%	8,000	5,300	5,000	rpm
6	No-load current max. (shaft \varnothing 2 mm)	I_o	± 50%	0.090	0.035	0.003	A
7	Stall torque	M_H	17.26	14.07	4.18	mNm	
8	Friction torque	M_R	0.62	0.72	1.03	mNm	
9	Speed constant	k_N	1,383	465	277	rpm/V	
10	Back-EMF constant	k_E	0.72	2.15	3.61	mV/rpm	
11	Torque constant	k_M	6.90	20.52	34.49	mNm/A	
12	Current constant	k_I	0.145	0.049	0.029	A/mNm	
13	Slope of n-M curve	$\Delta n / \Delta M$	463	377	1,196	rpm/mNm	
14	Rotor inductance	L	1,300	11,000	135,000	μH	
15	Mechanical time constant	τ_m	20	19	60	ms	
16	Rotor inertia	J	4	4.5	3.6	gcm^2	
17	Angular acceleration	$\alpha_{\text{ max.}}$	43	31	12	$\cdot 10^3 \text{rad/s}^2$	
18	Thermal resistance	$R_{\text{th} 1} / R_{\text{th} 2}$	5.5 / 28			$^{\circ}\text{C/W}$	
19	Thermal time constant	τ_{w1}	750			s	
20	Operating temperature range:						
	- motor		- 10 to + 50			$^{\circ}\text{C}$	
	- rotor, max. permissible		+ 120			$^{\circ}\text{C}$	
21	Shaft bearing		sintered bronze sleeves				
22	Shaft load max.:						
	- with shaft diameter		2			mm	
	- radial at 3,000 rpm (3 mm from bearing)		2			N	
	- axial at 3,000 rpm		1			N	
	- axial at standstill (shaft supported)		294			N	
23	Shaft play						
	- radial	\leq	0.025			mm	
	- axial	\leq	0.05 to 0.45			mm	
24	Housing material		steel, zinc-plating (chrome free)				
25	Weight		40			g	
26	Direction of rotation		CW				
Recommended values							
27	Speed up to	$n_{e \text{ max.}}$	10,000	10,000	10,000	rpm	
28	Torque up to	$M_{e \text{ max.}}$	5.207	5.731	2.864	mNm	
29	Current up to (thermal limits)	$I_{e \text{ max.}}$	0.938	0.347	0.103	A	



