

# DC-Micromotors

## 0,4 mNm

### Precious Metal Commutation

For combination with  
Gearheads:  
15/5, 15/5 S, 16A

### Series 1516 ... S

	1516 T	1,5 S	002 S	4,5 S	006 S	012 S	
1 Nominal voltage	$U_N$	1,5	2	4,5	6	12	V
2 Terminal resistance	R	1,11	3,25	14,7	31,2	115	$\Omega$
3 Output power	$P_{2 \max}$	0,45	0,25	0,29	0,23	0,25	W
4 Efficiency, max.	$\eta_{\max}$	59	48	50	45	47	%
5 No-load speed	$n_0$	14 400	14 200	15 000	15 000	15 600	rpm
6 No-load current (with shaft $\varnothing$ 1,5 mm)	$I_0$	0,075	0,057	0,027	0,021	0,011	A
7 Stall torque	$M_H$	1,2	0,68	0,73	0,59	0,62	mNm
8 Friction torque	$M_R$	0,07	0,07	0,07	0,07	0,07	mNm
9 Speed constant	$k_n$	10 159	7 827	3 659	2 800	1 445	rpm/V
10 Back-EMF constant	$k_E$	0,098	0,128	0,273	0,357	0,692	mV/rpm
11 Torque constant	$k_M$	0,94	1,22	2,61	3,41	6,61	mNm/A
12 Current constant	$k_i$	1,064	0,82	0,383	0,293	0,151	A/mNm
13 Slope of n-M curve	$\Delta n / \Delta M$	12 000	20 800	20 600	25 600	25 100	rpm/mNm
14 Rotor inductance	L	16	27	140	240	900	$\mu H$
15 Mechanical time constant	$\tau_m$	39	45	56	56	60	ms
16 Rotor inertia	J	0,31	0,21	0,26	0,21	0,23	gcm <sup>2</sup>
17 Angular acceleration	$\alpha_{\max}$	39	32	28	28	27	$\cdot 10^3 \text{rad/s}^2$
18 Thermal resistance	$R_{th 1} / R_{th 2}$	8 / 45					K/W
19 Thermal time constant	$\tau_{w1} / \tau_{w2}$	2 / 200					s
20 Operating temperature range:		-30 ... +65 (optional version -55 ... +125)					$^{\circ}C$
- motor		+65 (optional version +125)					$^{\circ}C$
- rotor, max. permissible							
21 Shaft bearings		sintered bearings	ball bearings	ball bearings, preloaded			
22 Shaft load max.:		(standard)	(optional version)	(optional version)			
- with shaft diameter		1,5	1,5	1,5	mm		
- radial at 3 000 rpm (3 mm from bearing)		1,2	5	5	N		
- axial at 3 000 rpm		0,2	0,5	0,5	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, zinc galvanized and passivated					
25 Weight		10					g
26 Direction of rotation		clockwise, viewed from the front face					
<b>Recommended values - mathematically independent of each other</b>							
27 Speed up to	$n_{e \max}$	12 000	12 000	12 000	12 000	12 000	rpm
28 Torque up to	$M_{e \max}$	0,4	0,4	0,4	0,4	0,4	mNm
29 Current up to (thermal limits)	$I_{e \max}$	0,78	0,46	0,22	0,15	0,077	A

