

DC-Micromotors

Precious Metal Commutation

0,59 mNm

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

Series 1516 ... S

Values at 22°C and nominal voltage	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	Ω	
3 Output power	$P_{2nom.}$	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, typ. (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	μH	
15 Mechanical time constant	τ_m	39	45	56	56	60	ms	
16 Rotor inertia	J	0,31	0,21	0,26	0,21	0,23	gcm ²	
17 Angular acceleration	$\alpha_{max.}$	39	32	28	28	27	$\cdot 10^3 \text{rad/s}^2$	
18 Thermal resistance	R_{th1} / R_{th2}	8 / 45					K/W	
19 Thermal time constant	τ_{w1} / τ_{w2}	2 / 200					s	
20 Operating temperature range:								
– motor		-30 ... +65 (optional version -55 ... +125)						°C
– winding, max. permissible		+65 (optional version +125)						°C
21 Shaft bearings		sintered bearings	ball bearings	ball bearings	ball bearings	ball bearings		
22 Shaft load max.:		(standard)	(optional version)	(optional version)	(optional version)	(optional version)		
– with shaft diameter		1,5	1,5	1,5	1,5	1,5	mm	
– radial at 3 000 rpm (3 mm from bearing)		1,2	5	5	5	5	N	
– axial at 3 000 rpm		0,2	0,5	0,5	0,5	0,5	N	
– axial at standstill		20	10	10	10	10	N	
23 Shaft play								
– radial	\leq	0,03	0,015	0,015	0,015	0,015	mm	
– axial	\leq	0,2	0,2	0,2	0,2	0,2	mm	
24 Housing material		steel, zinc galvanized and passivated						
25 Mass		10						g
26 Direction of rotation		clockwise, viewed from the front face						
27 Speed up to	$n_{max.}$	18 000						rpm
28 Number of pole pairs		1						
29 Magnet material		AlNiCo						
Rated values for continuous operation								
30 Rated torque	M_N	0,59	0,47	0,49	0,41	0,43	mNm	
31 Rated current (thermal limit)	I_N	0,7	0,45	0,21	0,14	0,077	A	
32 Rated speed	n_N	6 290	2 500	2 980	2 500	2 500	rpm	

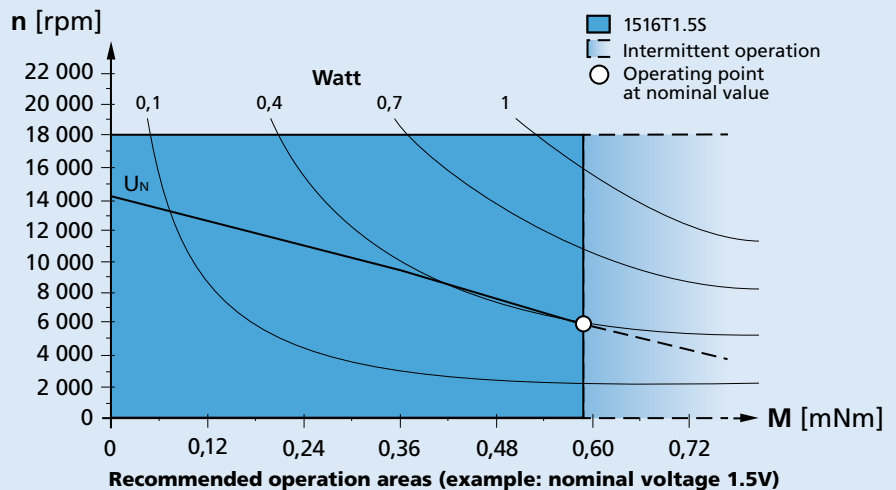
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

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.

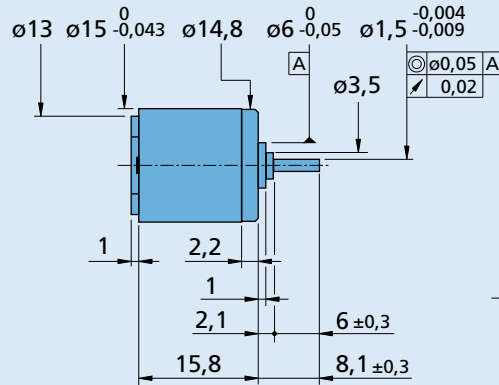
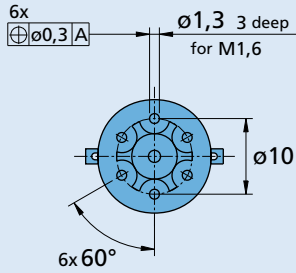
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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.

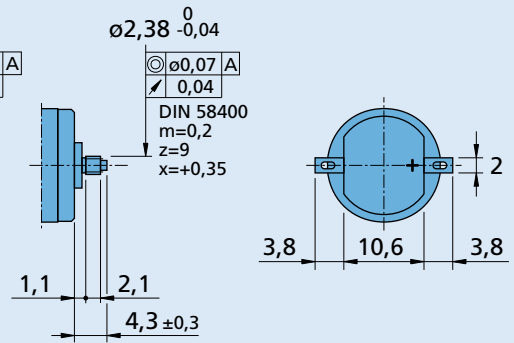


Dimensional drawing

Orientation with respect to motor terminals not defined



1516 T ... S



1516 E ... S