

DC-Micromotors

Precious Metal Commutation

0,97 mNm

2,4 W

Series 1516 ... SR

Values at 22°C and nominal voltage		1516 T	006 SR	009 SR	012 SR	
1	Nominal voltage	U_N	6	9	12	V
2	Terminal resistance	R	15,2	32,5	60	Ω
3	Output power	$P_{2nom.}$	0,51	0,54	0,52	W
4	Efficiency, max.	$\eta_{max.}$	57	58	58	%
5	No-load speed	n_0	12 800	12 800	12 900	min ⁻¹
6	No-load current, typ. (with shaft ø 1,5 mm)	I_0	0,029	0,019	0,014	A
7	Stall torque	M_H	1,52	1,61	1,53	mNm
8	Friction torque	M_R	0,12	0,12	0,12	mNm
9	Speed constant	k_n	2 300	1 530	1 160	min ⁻¹ /V
10	Back-EMF constant	k_E	0,434	0,655	0,865	mV/min ⁻¹
11	Torque constant	k_M	4,15	6,25	8,26	mNm/A
12	Current constant	k_I	0,241	0,16	0,121	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	8 420	7 950	8 430	min ⁻¹ /mNm
14	Rotor inductance	L	100	230	400	μ H
15	Mechanical time constant	τ_m	35	35	35	ms
16	Rotor inertia	J	0,4	0,42	0,4	gcm ²
17	Angular acceleration	$\alpha_{max.}$	38	38	39	·10 ³ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	10 / 33			K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	2,9 / 190			s
20	Operating temperature range:					
	– motor		-30 ... +85 (optional version -55 ... +125)			°C
	– winding, max. permissible		+125			°C
21	Shaft bearings		sintered bearings	ball bearings, preloaded		
22	Shaft load max.:		(standard)	(optional version)		
	– with shaft diameter		1,5	1,5		mm
	– radial at 3 000 min ⁻¹ (3 mm from bearing)		1,2	5		N
	– axial at 3 000 min ⁻¹		0,2	0,5		N
	– axial at standstill		20	10		N
23	Shaft play:					
	– radial	≤	0,03	0,015		mm
	– axial	≤	0,2	0		mm
24	Housing material		steel, black coated			
25	Mass		13			g
26	Direction of rotation		clockwise, viewed from the front face			
27	Speed up to	$n_{max.}$	15 000			min ⁻¹
28	Number of pole pairs		1			
29	Magnet material		NdFeB			
Rated values for continuous operation						
30	Rated torque	M_N	0,92	0,97	0,93	mNm
31	Rated current (thermal limit)	I_N	0,27	0,19	0,14	A
32	Rated speed	n_N	2 500	2 500	2 500	min ⁻¹

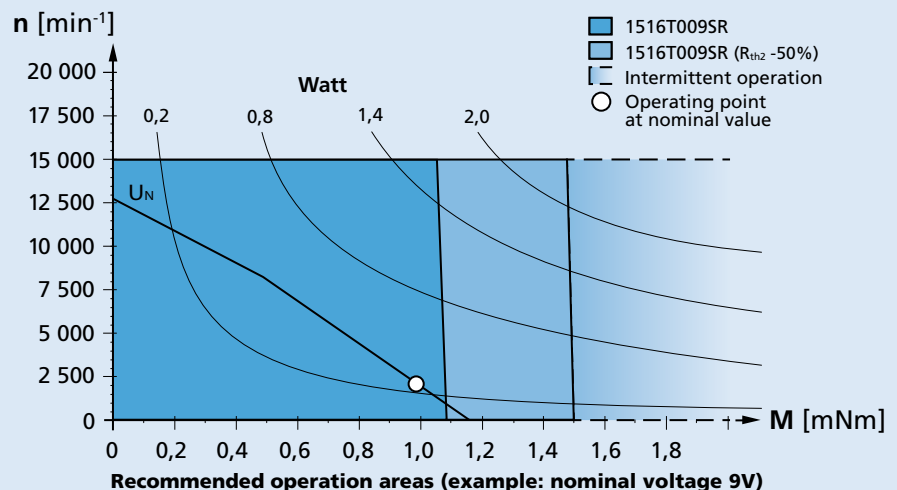
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

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.

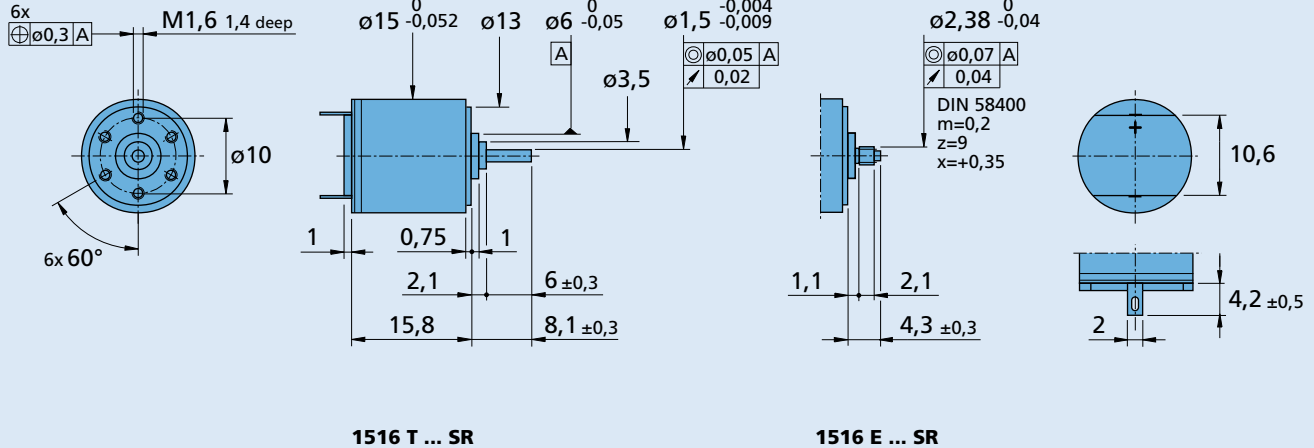
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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



Options

Example product designation: **1516T012SR-277**

Option	Type	Description
L	Twin Leads	For motors with twin leads (PVC), length 150 mm, red (+) / black (-)
4924	Twin Leads	For motors with twin leads (PVC), length 300 mm, red (+) / black (-)
X4924	Twin Leads	For motors with twin leads (PVC), length 600 mm, red (+) / black (-)
4925	Twin Leads	For motors with twin leads (PVC), length 150 mm, red (+) / black (-), with connector AMP 179228-2
X4925	Twin Leads	For motors with twin leads (PVC), length 300 mm, red (+) / black (-), with connector AMP 179228-2
Y4925	Twin Leads	For motors with twin leads (PVC), length 600 mm, red (+) / black (-), with connector AMP 179228-2
F	Single Leads	For motors with single leads (PTFE), length 150 mm, red (+) / black (-)
277	Bearings	2 preloaded ball bearings

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
15A 15/10 16/7 15/5 15/5 S 16A 15/8	IE2-16 IE2-1024 IEH2-4096 IEH3-4096	SC 1801 MCDC 3002	