DC-Micromotors

Precious Metal Commutation

0,59 mNm

1,2 W

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	min⁻¹
6	No-load current, typ. (with shaft ø 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	min⁻¹/V
10	Back-EMF constant	k_E	0,098	0,128	0,273	0,357	0,692	mV/min⁻¹
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	min⁻¹/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	gcm²
17	Angular acceleration	$\alpha_{max.}$	39	32	28	28	27	·10³rad/s²
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 (standard)	ball bearings, preloaded (optional version)				
22	Shaft load max.:							
	– 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, 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					min⁻¹
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	min⁻¹

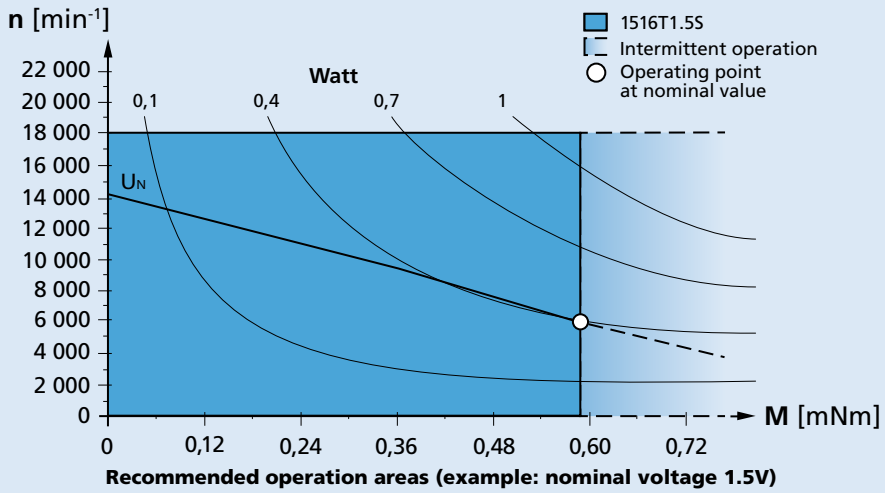
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

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.

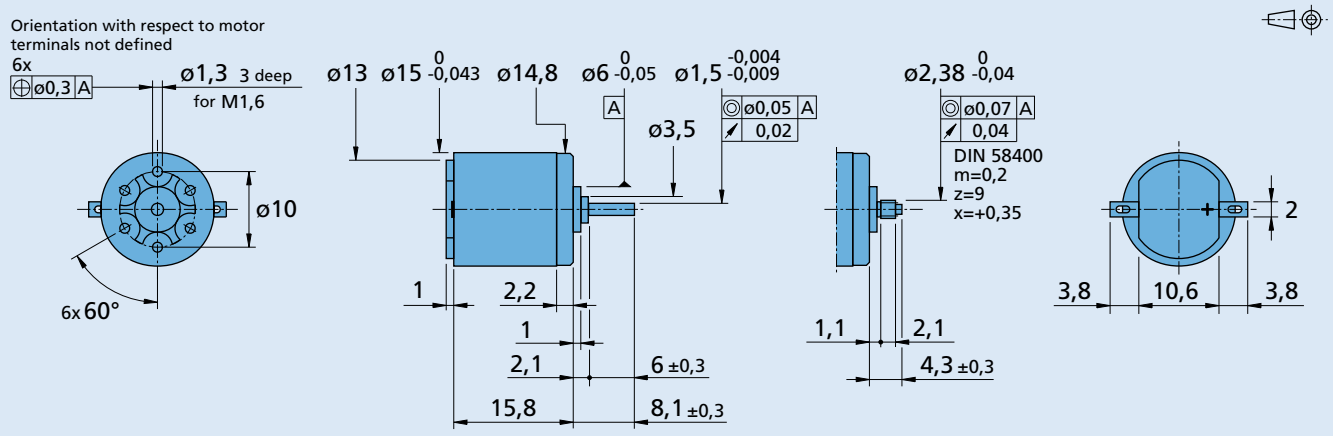
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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.



Recommended operation areas (example: nominal voltage 1.5V)

Dimensional drawing



1516 T ... S **1516 E ... S**

Options

Example product designation: **1516T012S-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
277	Bearings	2 preloaded ball bearings

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics
15/5 15/5 S 16A		SC 1801 MCDC 3002

For notes on technical data and lifetime performance refer to “Technical Information”.

Edition 2015

www.faulhaber.com