

DC-Micromotors

Precious Metal Commutation

0,566 mNm

1,06 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	
Nominal voltage	U_N	1,5	2	4,5	6	12	V
Terminal resistance	R	1,11	3,25	14,7	31,2	115	Ω
Rotor inductance	L	16,4	27,7	138	237	885	μH
Efficiency, max.	η_{max}	58	48	50	46	47	%
No-load current, typ.	I_0	0,0766	0,0589	0,0264	0,0202	0,0104	A
No-load speed	n_0	14 800	14 500	14 800	14 700	15 300	min^{-1}
Stall torque	M_H	1,17	0,662	0,74	0,599	0,633	mNm
Rotor inertia	J	0,31	0,21	0,26	0,21	0,23	gcm^2
Friction torque	M_R	0,07	0,07	0,07	0,07	0,07	mNm
Torque constant	k_M	0,915	1,19	2,65	3,48	6,73	mNm/A
Speed constant	k_n	10 400	8 020	3 600	2 750	1 420	min^{-1}/V
Slope of n-M curve	$\Delta n/\Delta M$	12 600	21 900	20 000	24 600	24 200	$\text{min}^{-1}/\text{mNm}$
Thermal resistance:							
- winding to housing	R_{th1}	15					K/W
- housing to ambient (external plastic flange)	R_{th2p}	41					K/W
- housing to ambient (external metal flange)	R_{th2m}	29					K/W
Thermal time constant:							
- winding	τ_{w1}	4,5					s
- housing (external plastic flange)	τ_{w2p}	180					s
- housing (external metal flange)	τ_{w2m}	130					s
Operating temperature range:							
- motor		-30 ... +65 (optional version +65 (optional version		-30 ... +125		°C	
- winding, max. permissible						°C	
Shaft bearings		sintered bearings		ball bearings, preloaded			
Shaft diameter		1,5		1,5		mm	
Radial shaft load max.:							
- dynamic at 3 000 min^{-1} (3 mm from bearing)		1,2		5		N	
Axial shaft load max.:							
- dynamic at 3 000 min^{-1}		0,2		0,5		N	
- static (shaft unsupported)		20		10		N	
Shaft play, max.:							
- radial		0,03		0,015		mm	
- axial		0,2		0		mm	
Speed up to	n_{max}	18 000				min^{-1}	
Number of pole pairs		1					
Mass		10				g	
Housing material		steel, zinc galvanized and passivated					
Magnet material		AlNiCo					

Rated values for continuous operation

Rated torque	M_N		0,566	0,455	0,479	0,416	0,43	mNm
Rated current (thermal limit)	I_N		0,7	0,445	0,209	0,141	0,0749	A
Rated speed	n_N		6 450	2 500	3 280	2 500	2 790	min^{-1}

Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2p} value has been reduced by 0%.

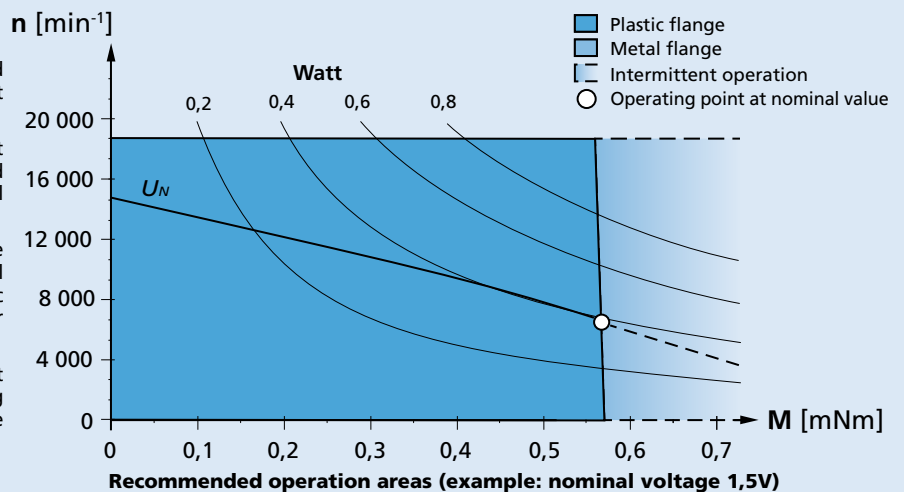
Note:

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 different conditions of thermal coupling, i.e. mounted respectively on a plastic flange and a metal flange.

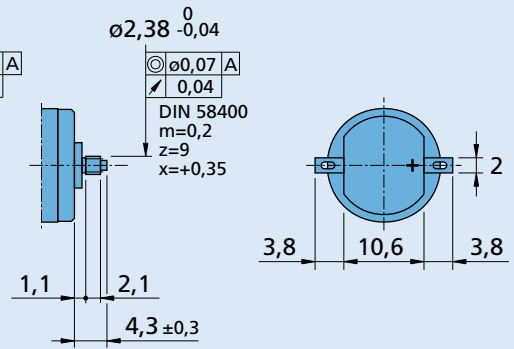
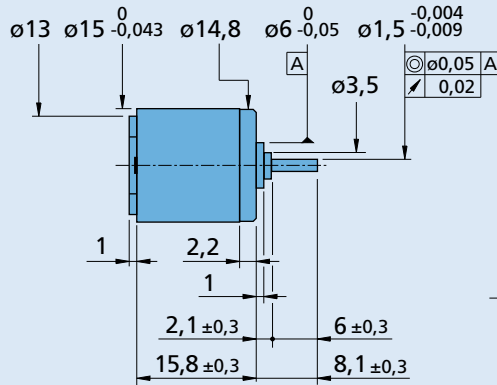
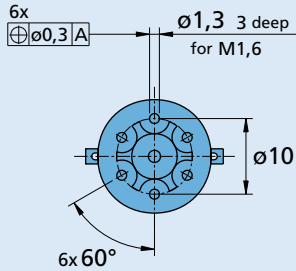
The nominal voltage (U_N) curve shows, up to the thermal limit, the operating point at nominal voltage for the motor mounted on a plastic flange. Higher torque can be achieved by further reducing the thermal resistance.

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

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
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
15/5 15/5 S 16A		SC 1801 P SC 1801 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.