

DC-Micromotors

Precious Metal Commutation

0,94 mNm

1,96 W

Series 1016 ... SR

Values at 22°C and nominal voltage	1016 K	003 SR	006 SR	009 SR	012 SR	
Nominal voltage	U_N	3	6	9	12	V
Terminal resistance	R	3,1	12,5	27,1	40,7	Ω
Rotor inductance	L	42	168	363	547	μH
Efficiency, max.	η_{max}	75	74	74	75	%
No-load current, typ.	I_0	0,0166	0,0091	0,0067	0,0053	A
No-load speed	n_0	12 700	12 800	13 000	14 100	min^{-1}
Stall torque	M_H	2,12	2,07	2,11	2,31	mNm
Rotor inertia	J	0,12	0,12	0,12	0,12	gcm^2
Friction torque	M_R	0,037	0,04	0,043	0,042	mNm
Torque constant	k_M	2,23	4,39	6,48	7,99	mNm/A
Speed constant	k_n	4 280	2 180	1 470	1 200	min^{-1}/V
Slope of n-M curve	$\Delta n/\Delta M$	5 950	6 190	6 160	6 090	$\text{min}^{-1}/\text{mNm}$
Thermal resistance:						
– winding to housing	R_{th1}	21				K/W
– housing to ambient (external plastic flange)	$R_{\text{th2 p}}$	51				K/W
– housing to ambient (external metal flange)	$R_{\text{th2 m}}$	9,5				K/W
Thermal time constant:						
– winding	τ_{w1}	6,9				s
– housing (external plastic flange)	$\tau_{w2 p}$	130				s
– housing (external metal flange)	$\tau_{w2 m}$	25				s
Operating temperature range:						
– motor		-30 ... +85 (optional version	-30 ... +125)			°C
– winding, max. permissible		+85 (optional version	+125)			°C
Shaft bearings		sintered bearings				
Shaft diameter		1				mm
Radial shaft load max.:						
– dynamic at 3 000 min^{-1} (1,5 mm from bearing)		0,9				N
Axial shaft load max.:						
– dynamic at 3 000 min^{-1}		0,1				N
– static (shaft unsupported)		20				N
Shaft play, max.:						
– radial		0,02				mm
– axial		0,15				mm
Speed up to	n_{max}	16 000				min^{-1}
Number of pole pairs		1				
Mass		6,5				g
Housing material		steel, nickel plated				
Magnet material		NdFeB				

Rated values for continuous operation						
Rated torque	M_N	0,94	0,917	0,916	0,921	mNm
Rated current (thermal limit)	I_N	0,471	0,234	0,159	0,129	A
Rated speed	n_N	5 430	5 480	5 740	6 970	min^{-1}

Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The $R_{\text{th2 p}}$ 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.



