

DC-Micromotors

Precious Metal Commutation

1,32 mNm

3,08 W

Series 1319 ... SR

Values at 22°C and nominal voltage	1319 T	006 SR	012 SR	024 SR	
Nominal voltage	U_N	6	12	24	V
Terminal resistance	R	8,26	34,6	119	Ω
Rotor inductance	L	127	533	1 630	μH
Efficiency, max.	η_{max}	63	62	63	%
No-load current, typ.	I_0	0,0313	0,0153	0,0087	A
No-load speed	n_0	13 200	12 800	14 700	min^{-1}
Stall torque	M_H	2,9	2,84	2,91	mNm
Rotor inertia	J	0,4	0,4	0,36	gcm^2
Friction torque	M_R	0,13	0,13	0,13	mNm
Torque constant	k_M	4,18	8,58	15	mNm/A
Speed constant	k_n	2 290	1 110	636	min^{-1}/V
Slope of n-M curve	$\Delta n/\Delta M$	4 520	4 490	5 020	$\text{min}^{-1}/\text{mNm}$
Thermal resistance:					
- winding to housing	R_{th1}	15			K/W
- housing to ambient (external plastic flange)	R_{th2p}	37			K/W
- housing to ambient (external metal flange)	R_{th2m}	3,9			K/W
Thermal time constant:					
- winding	τ_{w1}	6,8			s
- housing (external plastic flange)	τ_{w2p}	190			s
- housing (external metal flange)	τ_{w2m}	20			s
Operating temperature range:					
- motor		-30 ... +85 (optional version -30 ... +125)			$^{\circ}\text{C}$
- winding, max. permissible		+125			$^{\circ}\text{C}$
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}	17 000			min^{-1}
Number of pole pairs		1			
Mass		12			g
Housing material		steel, nickel plated			
Magnet material		NdFeB			

Rated values for continuous operation

Rated torque	M_N	1,32	1,32	1,24	mNm
Rated current (thermal limit)	I_N	0,383	0,187	0,101	A
Rated speed	n_N	4 410	4 040	5 600	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.



