

DC-Micromotors

Precious Metal Commutation

3,8 mNm
5 W

Series 1331 ... SR

Values at 22°C and nominal voltage	1331 T	006 SR	012 SR	024 SR	
1 Nominal voltage	U_N	6	12	24	V
2 Terminal resistance	R	2,83	13,7	52,9	Ω
3 Efficiency, max.	η_{max}	81	80	80	%
4 No-load speed	n_0	10 600	9 900	10 400	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 1,5 mm)	I_0	0,022	0,0105	0,0055	A
6 Stall torque	M_H	11,2	9,9	9,76	mNm
7 Friction torque	M_R	0,12	0,12	0,12	mNm
8 Speed constant	k_n	1 790	835	439	min ⁻¹ /V
9 Back-EMF constant	k_E	0,56	1,2	2,28	mV/min ⁻¹
10 Torque constant	k_M	5,35	11,4	21,8	mNm/A
11 Current constant	k_I	0,187	0,087	0,046	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	946	1 000	1 070	min ⁻¹ /mNm
13 Rotor inductance	L	70	310	1 100	μ H
14 Mechanical time constant	τ_m	7	7	7	ms
15 Rotor inertia	J	0,71	0,67	0,63	gcm ²
16 Angular acceleration	α_{max}	160	150	160	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	6 / 25			K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	5 / 190			s
19 Operating temperature range:					
– motor		-30 ... +85 (optional version -55 ... +125)			°C
– winding, max. permissible		+125			°C
20 Shaft bearings		sintered bearings	ball bearings, preloaded		
21 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
22 Shaft play:					
– radial	\leq	0,03	0,015		mm
– axial	\leq	0,2	0		mm
23 Housing material		steel, black coated			
24 Mass		19			g
25 Direction of rotation		clockwise, viewed from the front face			
26 Speed up to	n_{max}	12 000			min ⁻¹
27 Number of pole pairs		1			
28 Magnet material		NdFeB			
Rated values for continuous operation					
29 Rated torque	M_N	2	3,8	3,7	mNm
30 Rated current (thermal limit)	I_N	0,4	0,37	0,19	A
31 Rated speed	n_N	8 710	4 900	5 260	min ⁻¹

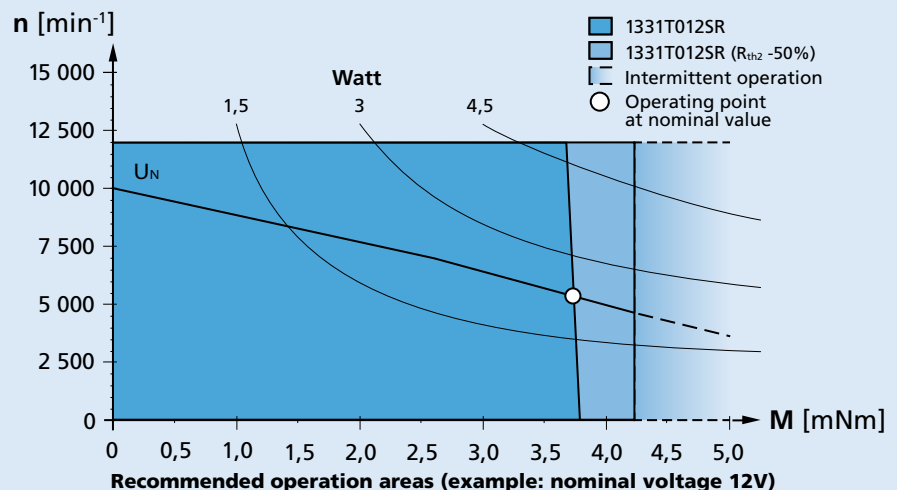
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

Note:

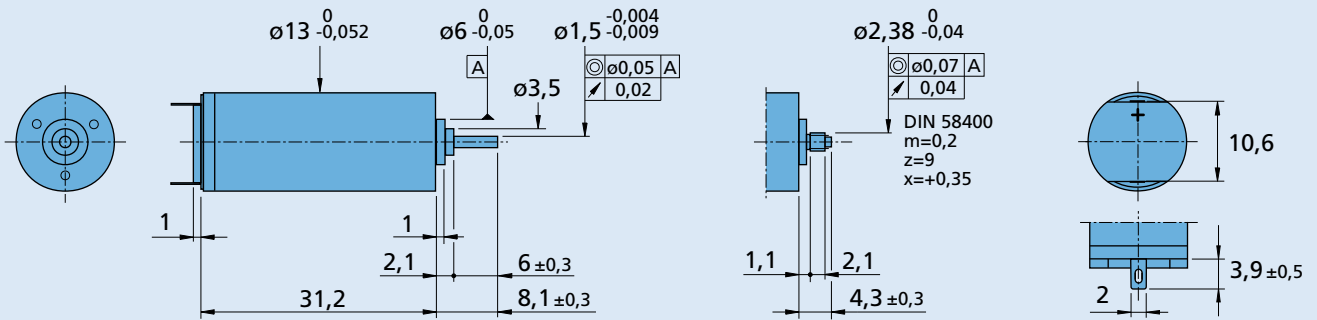
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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



1331 T ... SR

1331 E ... SR

Options

Example product designation: **1331T012SR-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
13A 14/1 15/5 15/5 S	IE2-400	SC 1801 P SC 1801 S MCDC 3002 P MCDC 3002 S MC 5004 P	To view our large range of accessory parts, please refer to the "Accessories" chapter.