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.	$\eta_{max.}$		81	80	80	%
4	No-load speed	n_0		10 600	9 900	10 400	min⁻¹
5	No-load current, typ. (with shaft ø 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	µH
14	Mechanical time constant	τ_m		7	7	7	ms
15	Rotor inertia	J		0,71	0,67	0,63	gcm²
16	Angular acceleration	$\alpha_{max.}$		160	150	160	·10³rad/s²
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	≤	0,03	0,015			mm
	– axial	≤	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

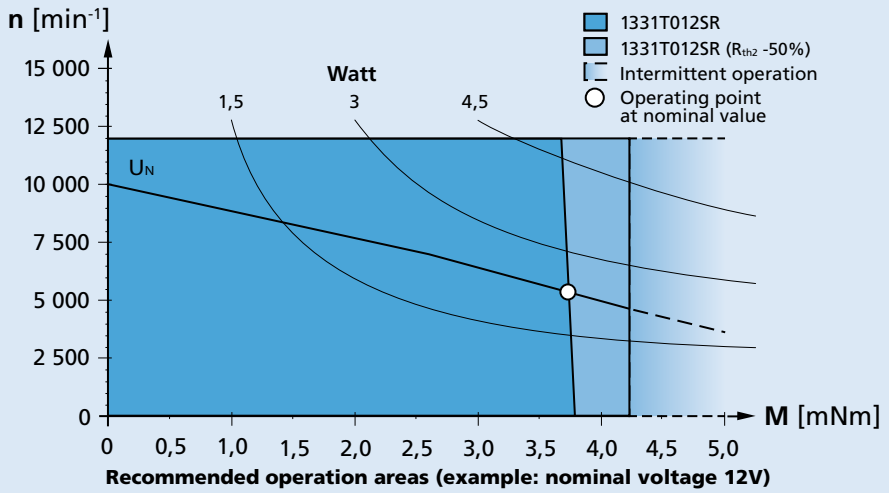
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

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).

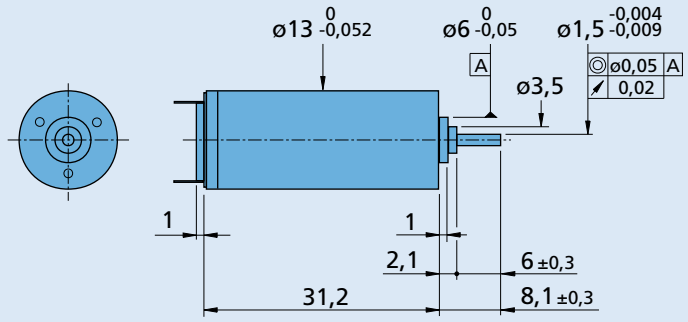
The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



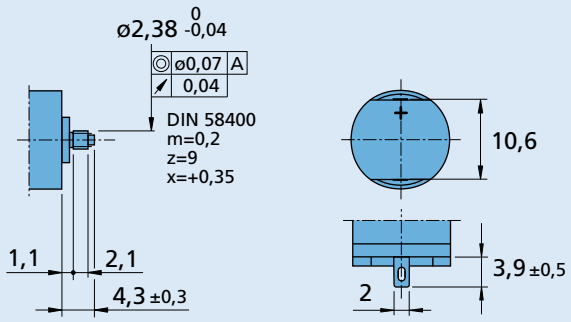
Recommended operation areas (example: nominal voltage 12V)

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

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 MC 5004 MCDC 3002	To view our large range of accessory parts, please refer to the “Accessories” chapter.

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