

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 |

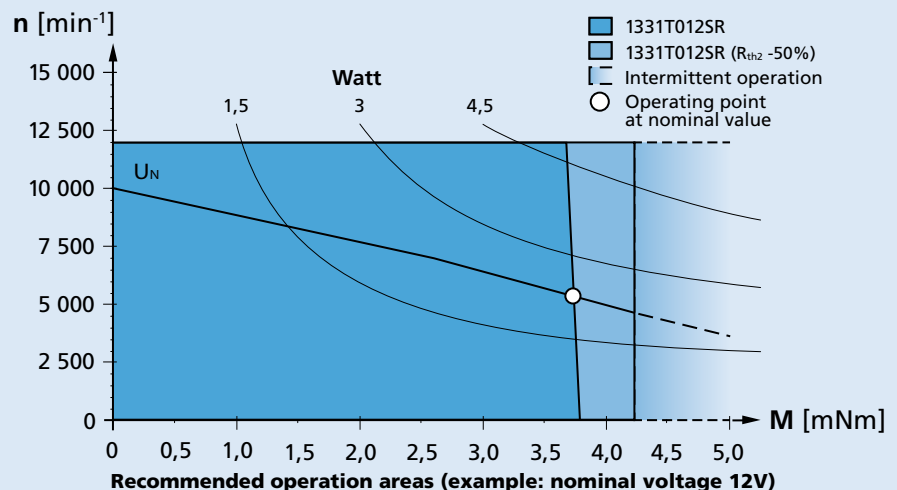
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

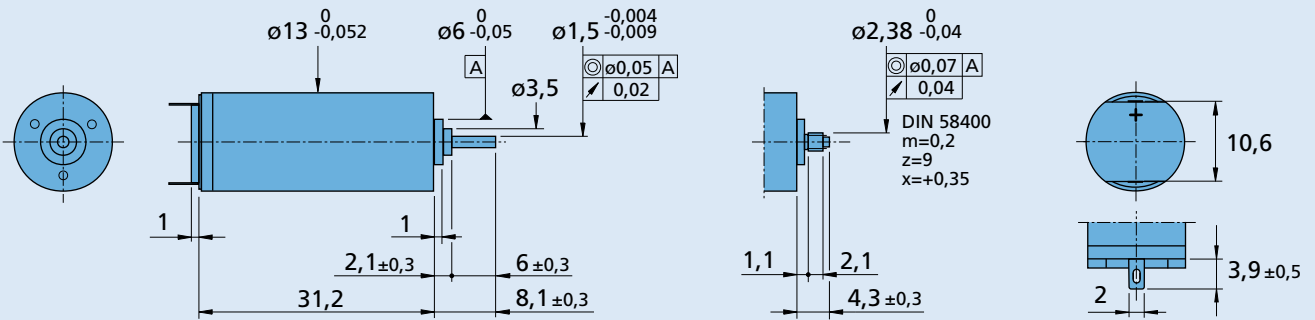
Note:

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 |
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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 3001 B MC 3001 P MC 5004 P | To view our large range of accessory parts, please refer to the "Accessories" chapter. |