

DC-Micromotors

Precious Metal Commutation

0,92 mNm
2 W

Series 1016 ... SR

Values at 22°C and nominal voltage	1016 K	003 SR	006 SR	009 SR	012 SR	
1 Nominal voltage	U_N	3	6	9	12	V
2 Terminal resistance	R	3,1	12,5	27,1	40,7	Ω
3 Efficiency, max.	η_{max}	76	74	74	75	%
4 No-load speed	n_0	12 700	12 800	13 000	14 100	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 1 mm)	I_0	0,017	0,009	0,007	0,005	A
6 Stall torque	M_H	2,12	2,08	2,11	2,32	mNm
7 Friction torque	M_R	0,037	0,04	0,043	0,042	mNm
8 Speed constant	k_n	4 282	2 175	1 475	1 195	min ⁻¹ /V
9 Back-EMF constant	k_E	0,234	0,46	0,678	0,837	mV/min ⁻¹
10 Torque constant	k_M	2,23	4,39	6,48	7,99	mNm/A
11 Current constant	k_I	0,448	0,228	0,154	0,125	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	5 953	6 166	6 177	6 085	min ⁻¹ /mNm
13 Rotor inductance	L	42	168	363	547	μ H
14 Mechanical time constant	τ_m	8	8	8	8	ms
15 Rotor inertia	J	0,12	0,12	0,12	0,12	gcm ²
16 Angular acceleration	α_{max}	175	171	172	189	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	17 / 59				K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	5,7 / 176				s
19 Operating temperature range:						
– motor		-30 ... +85 (optional version	-30 ... +125)			°C
– winding, max. permissible		+85 (optional version	+125)			°C
20 Shaft bearings		sintered bearings				
21 Shaft load max.:						
– with shaft diameter		1				mm
– radial at 3 000 min ⁻¹ (1,5 mm from bearing)		0,9				N
– axial at 3 000 min ⁻¹		0,1				N
– axial at standstill		20				N
22 Shaft play:						
– radial	\leq	0,02				mm
– axial	\leq	0,15				mm
23 Housing material		steel, nickel plated				
24 Mass		6,5				g
25 Direction of rotation		clockwise, viewed from the front face				
26 Speed up to	n_{max}	16 000				min ⁻¹
27 Number of pole pairs		1				
28 Magnet material		NdFeB				
Rated values for continuous operation						
29 Rated torque	M_N	0,92	0,9	0,9	0,91	mNm
30 Rated current (thermal limit)	I_N	0,46	0,23	0,16	0,13	A
31 Rated speed	n_N	5 550	5 620	5 850	7 070	min ⁻¹

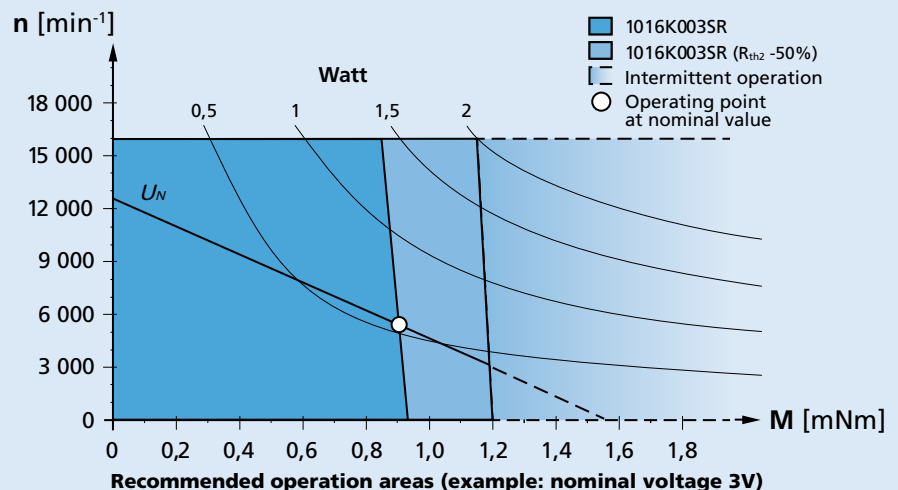
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

Note:

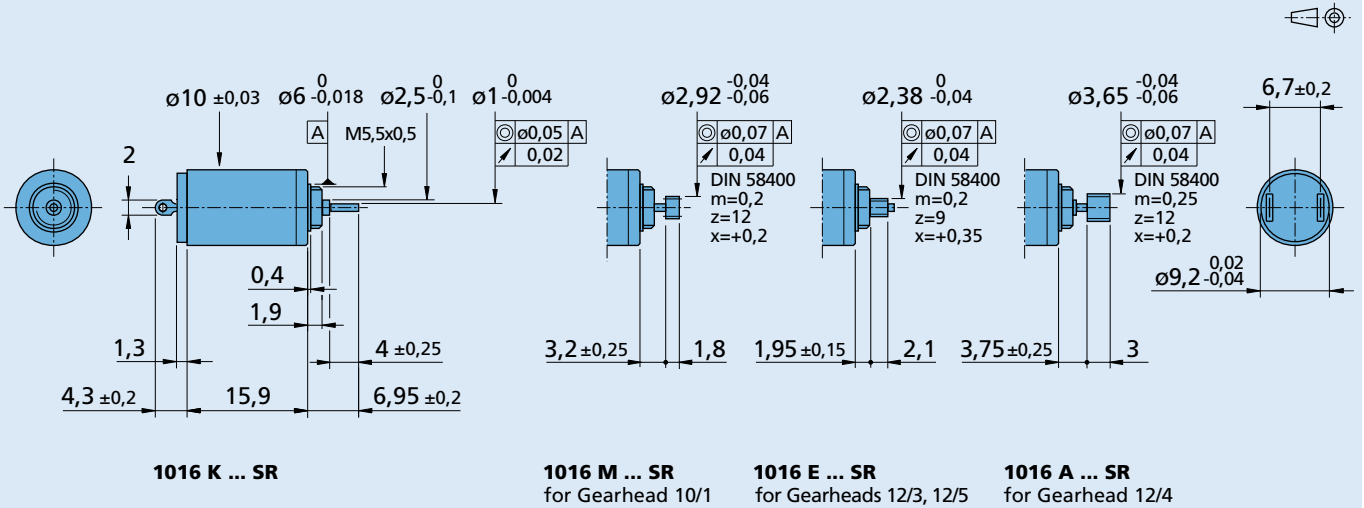
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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



Options

Example product designation: **1016K006SR K2565**

Option	Type	Description
K2565	Encoder combination	Motor with rear end shaft for combination with Encoder PA2-100
K2566	Encoder combination	Motor with rear end shaft for combination with Encoder HEM3
K2567	Bearing	Front ball bearing
K2568	Temperature range	Extended temperature range (-30...+125°C)
K2570	Bearing lubrication	For vacuum of 10^{-5} Pa @ 22°C
K2571	Second shaft end	$\varnothing 1 \text{ mm} \times 4,5 \text{ mm}$

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
10/1 12/3 12/4 12/5	PA2-100 HEM3-256 W	SC 1801 P SC 1801 S MCDC 3002 P MCDC 3002 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.