

**NEW**

**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	$\Omega$
3 Efficiency, max.	$\eta_{max}$		76	74	74	75	%
4 No-load speed	$n_0$		12 700	12 800	13 000	14 100	min <sup>-1</sup>
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 <sup>-1</sup> /V
9 Back-EMF constant	$k_E$		0,234	0,46	0,678	0,837	mV/min <sup>-1</sup>
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 <sup>-1</sup> /mNm
13 Rotor inductance	$L$		42	168	363	547	$\mu$ H
14 Mechanical time constant	$\tau_m$		8	8	8	8	ms
15 Rotor inertia	$J$		0,12	0,12	0,12	0,12	gcm <sup>2</sup>
16 Angular acceleration	$\alpha_{max}$		175	171	172	189	$\cdot 10^3$ rad/s <sup>2</sup>
17 Thermal resistance	$R_{th1} / R_{th2}$	17 / 59					K/W
18 Thermal time constant	$\tau_{w1} / \tau_{w2}$	5,7 / 176					s
19 Operating temperature range:							
– motor		-30 ... +85					°C
– winding, max. permissible		+85					°C
20 Shaft bearings		sintered bearings					
21 Shaft load max.:							
– with shaft diameter		1					mm
– radial at 3 000 min <sup>-1</sup> (1,5 mm from bearing)		0,9					N
– axial at 3 000 min <sup>-1</sup>		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 <sup>-1</sup>
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 <sup>-1</sup>

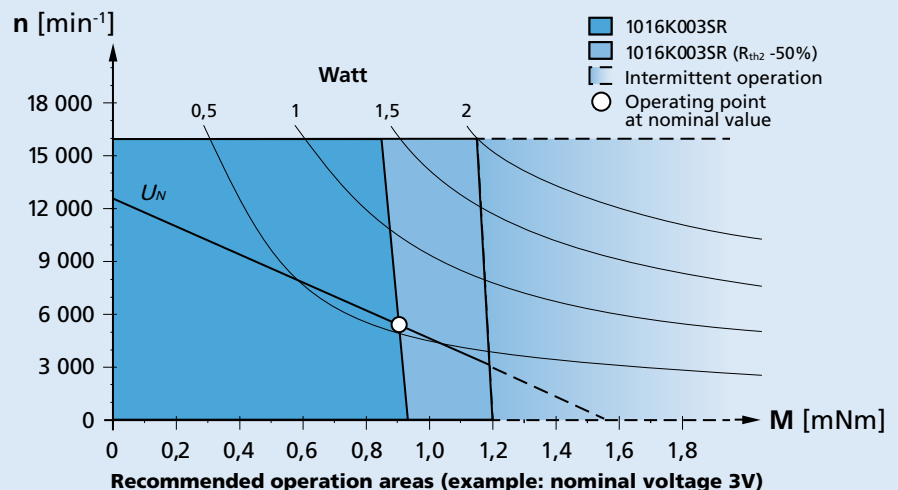
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 0%.

**Note:**

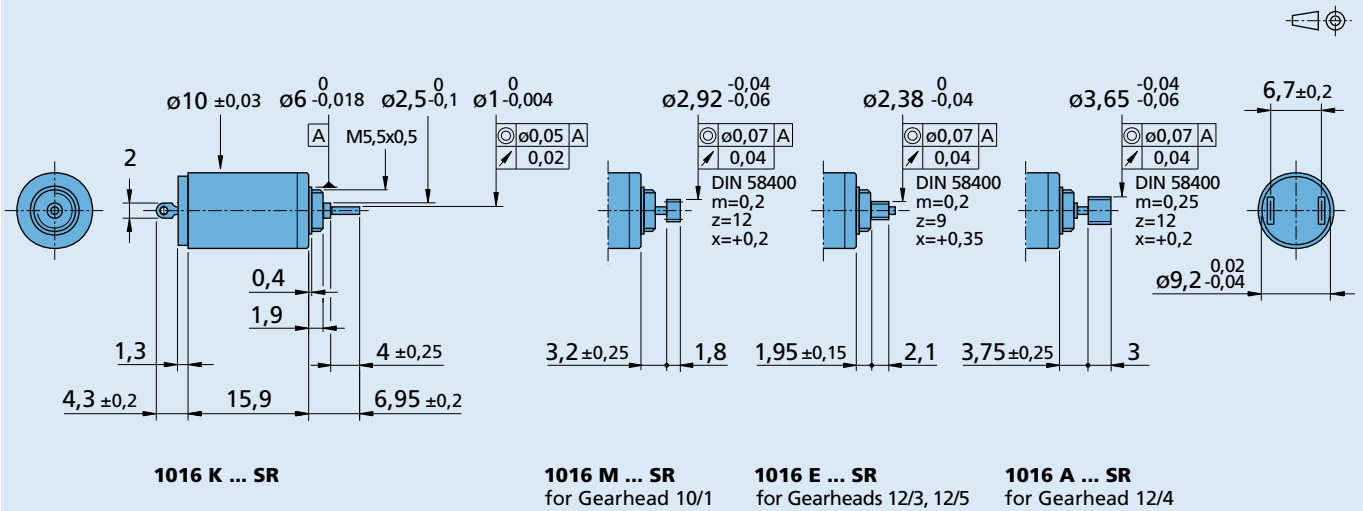
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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 <sup>-5</sup> Pa @ 22°C
K2571	Second shaft end	Ø 1 mm x 4,5 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 MCDC 3002	To view our large range of accessory parts, please refer to the "Accessories" chapter.