

**NEW**

**DC-Micromotors**  
Precious Metal Commutation

**2 mNm**  
**3,65 W**

**Series 1218 ... SXR**

Values at 22°C and nominal voltage	1218 V	003 SXR	4,5 SXR	006 SXR	009 SXR	012 SXR	018 SXR	
Nominal voltage	$U_N$	3	4,5	6	9	12	18	V
Terminal resistance	$R$	1,13	2,34	4,81	9,46	18,2	37,8	$\Omega$
Rotor inductance	$L$	31,8	65,4	133	265	498	994	$\mu\text{H}$
Efficiency, max.	$\eta_{max}$	79	79	79	79	79	79	%
No-load current, typ.	$I_0$	0,0325	0,0232	0,0157	0,0116	0,0084	0,0058	A
No-load speed	$n_0$	11 200	11 700	11 000	11 700	11 400	11 600	$\text{min}^{-1}$
Stall torque	$M_H$	6,65	6,92	6,37	6,86	6,5	6,9	mNm
Rotor inertia	$J$	0,3	0,3	0,3	0,3	0,3	0,3	$\text{gcm}^2$
Friction torque	$M_f$	0,082	0,082	0,082	0,082	0,082	0,082	mNm
Torque constant	$k_M$	2,53	3,64	5,17	7,3	9,96	14,7	$\text{mNm/A}$
Speed constant	$k_n$	3 770	2 620	1 850	1 310	959	651	$\text{min}^{-1}/\text{V}$
Slope of n-M curve	$\Delta n/\Delta M$	1 680	1 690	1 720	1 690	1 750	1 680	$\text{min}^{-1}/\text{mNm}$
Thermal resistance:								
- winding to housing	$R_{th1}$	16						K/W
- housing to ambient (external plastic flange)	$R_{th2p}$	47						K/W
- housing to ambient (external metal flange)	$R_{th2m}$	6,1						K/W
Thermal time constant:								
- winding	$\tau_{w1}$	11						s
- housing (external plastic flange)	$\tau_{w2p}$	190						s
- housing (external metal flange)	$\tau_{w2m}$	25						s
Operating temperature range:								
- motor		-30 ... +85						$^{\circ}\text{C}$
- winding, max. permissible		+100						$^{\circ}\text{C}$
Shaft bearings								
Shaft diameter		sintered bearings			ball bearings, preloaded			
Radial shaft load max.:		1,5			1,5			mm
- dynamic at 3 000 $\text{min}^{-1}$ (3 mm from bearing)		1,2			5			N
Axial shaft load max.:								
- dynamic at 3 000 $\text{min}^{-1}$		0,2			0,5			N
- static (shaft unsupported)		20			10			N
- static (shaft supported)		200			200			N
Shaft play, max.:								
- radial		0,03			0,015			mm
- axial		0,2			0			mm
Speed up to	$n_{max}$	14 000						$\text{min}^{-1}$
Number of pole pairs		1						
Mass		10						g
Housing material		steel, nickel plated						
Magnet material		NdFeB						

Rated values for continuous operation								
Rated torque	$M_N$	1,82	2	1,99	2	1,97	2	mNm
Rated current (thermal limit)	$I_N$	0,8	0,626	0,438	0,311	0,225	0,156	A
Rated speed	$n_N$	7 650	7 480	6 620	7 430	7 050	7 410	$\text{min}^{-1}$

**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2p}$  value has been reduced by 0%.

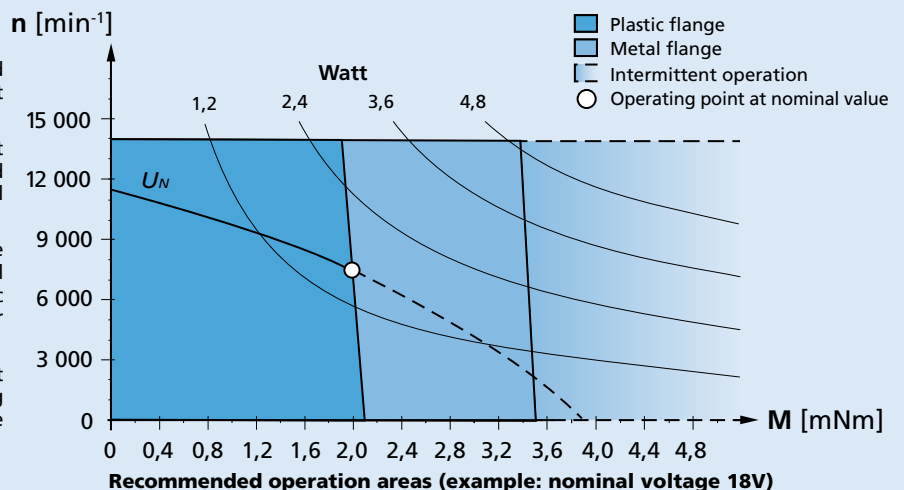
**Note:**

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

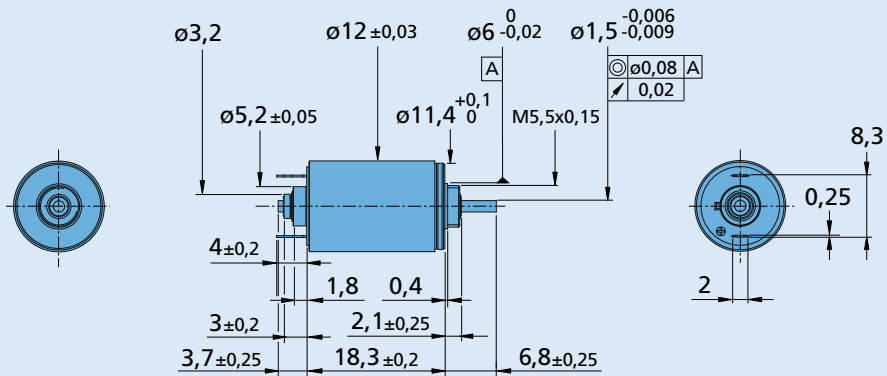
The diagram shows the motor in different conditions of thermal coupling, i.e. mounted respectively on a plastic flange and a metal flange.

The nominal voltage ( $U_N$ ) curve shows, up to the thermal limit, the operating point at nominal voltage for the motor mounted on a plastic flange. Higher torque can be achieved by further reducing the thermal resistance.

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



1218 V ... SXR

### Options

Example product designation: **1218V012SXR-K4585**

Option	Type	Description
K4584	Bearings	Motor with 2 preloaded ball bearings
K4585	Encoder combination	Motor with rear end shaft for combination with Encoder IEP3, motor with red/black twin leads (PVC), length 150 mm
K4613	Temperature range	Extended temperature range (-30°C...+125°C)
K4614	Temperature range	Motor with 2 preloaded ball bearings, extended temperature range (-30°C...+125°C)
K4682	Temperature range	Motor for combination with Encoder IEP3, extended temperature range (-30°C...+125°C), motor with red/black twin leads (PVC), length 150 mm
K4615	Bearings	Special sintered bearings for vacuum of 10 <sup>-5</sup> Pa @ 22°C
K4616	Bearings	Special ball bearings for vacuum of 10 <sup>-5</sup> Pa @ 22°C
K4670	Leads	Motor with twin leads (PVC), length 50 mm, red (+) / black (-), radial exit
K4671	Leads	Motor with twin leads (PVC), length 100 mm, red (+) / black (-), radial exit
K4672	Leads	Motor with twin leads (PVC), length 150 mm, red (+) / black (-), radial exit
K4673	Leads	Motor with single leads (PTFE), length 150 mm, red (+) / black (-), radial exit
K4686	Shaft end	Motor front shaft end 1,5 mm x 5,6 mm from motor front

### Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
10/1 12/3 12/4 12/5 13A 14GPT 10L ... SL 10L ... HL  <b>Note:</b> 12/3 and 12/5 to be ordered with option - K4586.	IEP3-4096	SC 1801 S SC 2804 S MC 3001 B	To view our large range of accessory parts, please refer to the "Accessories" chapter.