

# DC-Micromotors

## Precious Metal Commutation

4,5 mNm  
6 W

### Series 1724 ... SR

Values at 22°C and nominal voltage	1724 T	003 SR	006 SR	012 SR	018 SR	024 SR	
1 Nominal voltage	$U_N$	3	6	12	18	24	V
2 Terminal resistance	$R$	0,78	3,41	16,2	32,1	54,6	$\Omega$
3 Efficiency, max.	$\eta_{max}$	82	81	80	81	81	%
4 No-load speed	$n_0$	8 200	8 600	7 900	8 400	8 600	min <sup>-1</sup>
5 No-load current, typ. (with shaft $\varnothing$ 1,5 mm)	$I_0$	0,038	0,02	0,009	0,006	0,005	A
6 Stall torque	$M_H$	13,2	11,5	10,5	11,2	11,5	mNm
7 Friction torque	$M_R$	0,13	0,13	0,13	0,12	0,13	mNm
8 Speed constant	$k_n$	2 760	1 450	666	472	362	min <sup>-1</sup> /V
9 Back-EMF constant	$k_E$	0,362	0,69	1,5	2,12	2,76	mV/min <sup>-1</sup>
10 Torque constant	$k_M$	3,46	6,59	14,3	20,2	26,3	mNm/A
11 Current constant	$k_I$	0,289	0,152	0,07	0,049	0,038	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	621	748	752	750	748	min <sup>-1</sup> /mNm
13 Rotor inductance	$L$	21	75	360	710	1 200	$\mu$ H
14 Mechanical time constant	$\tau_m$	8	8	8	8	8	ms
15 Rotor inertia	$J$	1,2	1	1	1	1	gcm <sup>2</sup>
16 Angular acceleration	$\alpha_{max}$	110	110	100	100	100	$\cdot 10^3$ rad/s <sup>2</sup>
17 Thermal resistance	$R_{th1} / R_{th2}$	4 / 24,5					K/W
18 Thermal time constant	$\tau_{w1} / \tau_{w2}$	2,6 / 270					s
19 Operating temperature range:							
– motor		-30 ... +85 (optional version -30 ... +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 <sup>-1</sup> (3 mm from bearing)		1,2		5			N
– axial at 3 000 min <sup>-1</sup>		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		27					g
25 Direction of rotation		clockwise, viewed from the front face					
26 Speed up to	$n_{max}$	10 000					min <sup>-1</sup>
27 Number of pole pairs		1					
28 Magnet material		NdFeB					
<b>Rated values for continuous operation</b>							
29 Rated torque	$M_N$	2,3	4,2	4,5	4,5	4,5	mNm
30 Rated current (thermal limit)	$I_N$	0,7	0,7	0,35	0,25	0,19	A
31 Rated speed	$n_N$	6 790	4 720	3 430	3 990	4 220	min <sup>-1</sup>

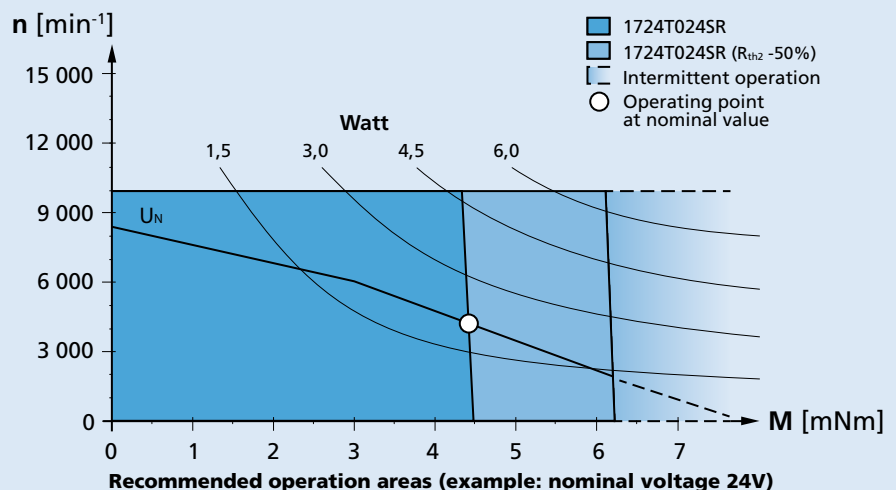
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 0%.

**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.

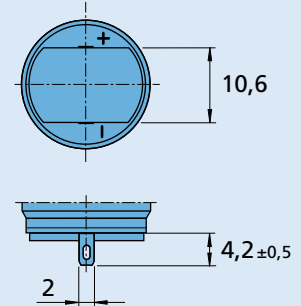
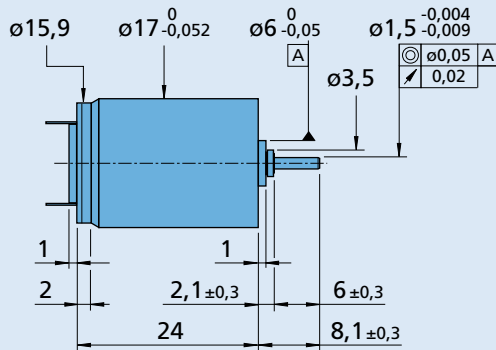
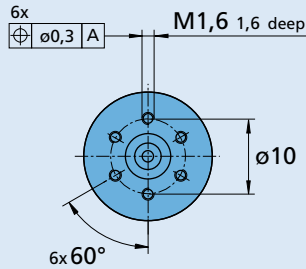
The diagram shows the motor in a completely insulated as well as thermally coupled condition ( $R_{th2}$  50% reduced).

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

Orientation with respect to motor terminals not defined



1724 T ... SR

### Options

Example product designation: **1724T012SR-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
15A 15/10 16A 16/7 17/1	IE2-1024 IEH2-4096 IEH3-4096 IEH3-4096L	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.