

# DC-Micromotors

## Precious Metal Commutation

2,87 mNm  
5 W

### Series 1524 ... SR

Values at 22°C and nominal voltage	1524 T	003 SR	006 SR	009 SR	012 SR	018 SR	024 SR	
Nominal voltage	$U_N$	3	6	9	12	18	24	V
Terminal resistance	$R$	1,14	5,15	10,6	19,8	44	79,3	$\Omega$
Rotor inductance	$L$	22	110	230	420	950	1 670	$\mu\text{H}$
Efficiency, max.	$\eta_{max}$	80	80	80	80	80	80	%
No-load current, typ.	$I_0$	0,0301	0,0134	0,0094	0,007	0,0046	0,0035	A
No-load speed	$n_0$	10 700	9 480	9 980	9 850	9 790	9 850	$\text{min}^{-1}$
Stall torque	$M_H$	6,93	6,9	7,19	6,92	7,05	6,9	mNm
Rotor inertia	$J$	0,53	0,58	0,57	0,56	0,57	0,56	$\text{gcm}^2$
Friction torque	$M_f$	0,08	0,08	0,08	0,08	0,08	0,08	mNm
Torque constant	$k_M$	2,66	5,99	8,54	11,5	17,4	23,1	$\text{mNm/A}$
Speed constant	$k_n$	3 590	1 600	1 120	828	549	414	$\text{min}^{-1}/\text{V}$
Slope of n-M curve	$\Delta n/\Delta M$	1 540	1 370	1 380	1 420	1 390	1 420	$\text{min}^{-1}/\text{mNm}$
Thermal resistance:								
- winding to housing	$R_{th1}$	12						K/W
- housing to ambient (external plastic flange)	$R_{th2p}$	30						K/W
- housing to ambient (external metal flange)	$R_{th2m}$	3,9						K/W
Thermal time constant:								
- winding	$\tau_{w1}$	6,9						s
- housing (external plastic flange)	$\tau_{w2p}$	230						s
- housing (external metal flange)	$\tau_{w2m}$	30						s
Operating temperature range:								
- motor		-30 ... +85 (optional version -30 ... +125)						$^{\circ}\text{C}$
- winding, max. permissible		+125						$^{\circ}\text{C}$
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
Shaft play, max.:								
- radial		0,03			0,015			mm
- axial		0,2			0			mm
Speed up to	$n_{max}$	13 000						$\text{min}^{-1}$
Number of pole pairs		1						
Mass		18						g
Housing material		steel, nickel plated						
Magnet material		NdFeB						

#### Rated values for continuous operation

Rated torque	$M_N$	1,73	2,87	2,85	2,82	2,85	2,81	mNm
Rated current (thermal limit)	$I_N$	0,7	0,545	0,38	0,278	0,186	0,139	A
Rated speed	$n_N$	7 830	3 930	4 460	4 230	4 240	4 220	$\text{min}^{-1}$

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

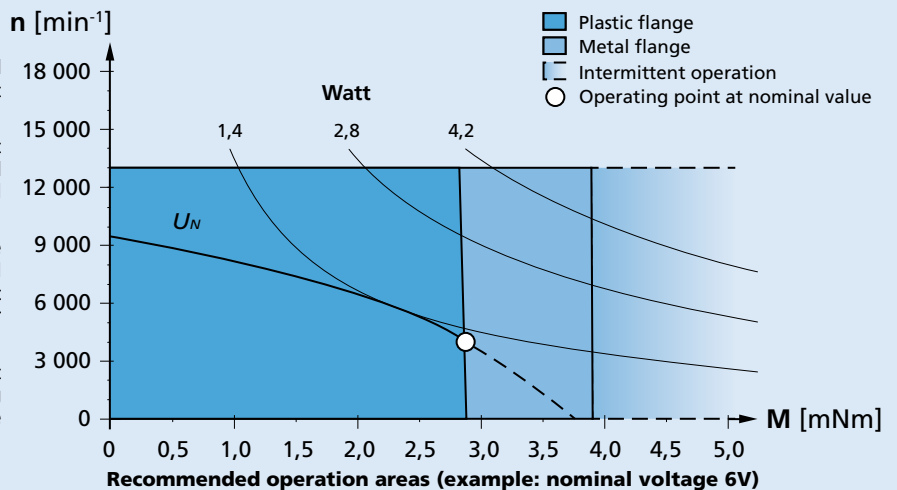
#### Note:

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.

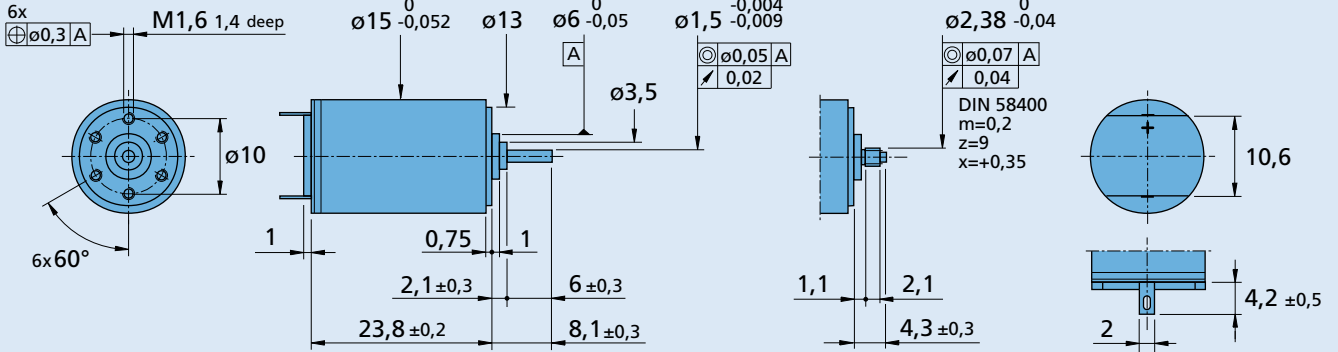
The nominal voltage ( $U_N$ ) curve shows, up to the thermal limit, the operating point at nominal voltage for the motor mounted on a plastic flange. Higher torque can be achieved by further reducing the thermal resistance.

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

Orientation with respect to motor terminals not defined



1524 T ... SR

1524 E ... SR

### Options

Example product designation: **1524T012SR-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 15/5 15/5 S 15/8 15/10 16A 16/7	IE2-1024 IEH2-4096 IEH3-4096 IEH3-4096L	SC 1801 P SC 1801 S MC 3001 B MC 3001 P MC 3602 B MC 3603 S MC 5004 P	To view our large range of accessory parts, please refer to the "Accessories" chapter.