DC-Micromotors

Precious Metal Commutation

2,9 mNm

5,3 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	
1	Nominal voltage	U_N	3	6	9	12	18	24	V
2	Terminal resistance	R	1,1	5,1	10,6	19,8	43,9	79,3	Ω
3	Efficiency, max.	$\eta_{max.}$	80	80	80	80	80	80	%
4	No-load speed	n_0	10 600	9 500	10 000	9 800	9 800	9 800	min⁻¹
5	No-load current, typ. (with shaft ø 1,5 mm)	I_0	0,03	0,013	0,009	0,007	0,005	0,004	A
6	Stall torque	M_H	6,95	6,98	7,18	6,92	7,07	6,91	mNm
7	Friction torque	M_R	0,08	0,08	0,08	0,08	0,08	0,08	mNm
8	Speed constant	k_n	3 577	1 592	1 117	827	548	414	min⁻¹/V
9	Back-EMF constant	k_E	0,28	0,628	0,895	1,21	1,83	2,42	mV/min⁻¹
10	Torque constant	k_M	2,67	6	8,55	11,5	17,4	23,1	mNm/A
11	Current constant	k_I	0,374	0,167	0,117	0,087	0,057	0,043	A/mNm
12	Slope of n-M curve	$\Delta n/\Delta M$	1 530	1 350	1 380	1 420	1 380	1 420	min⁻¹/mNm
13	Rotor inductance	L	22	110	230	420	950	1 670	µH
14	Mechanical time constant	τ_m	8,5	8,2	8,3	8,3	8,2	8,3	ms
15	Rotor inertia	J	0,53	0,58	0,57	0,56	0,57	0,56	gcm²
16	Angular acceleration	$\alpha_{max.}$	131	120	126	124	124	123	·10³rad/s²
17	Thermal resistance	R_{th1} / R_{th2}	10 / 29						K/W
18	Thermal time constant	τ_{w1} / τ_{w2}	5,6 / 220						s
19	Operating temperature range:								
	– motor		-30 ... +85 (optional version -55 ... +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⁻¹ (3 mm from bearing)		1,2			5			N
	– axial at 3 000 min⁻¹		0,2			0,5			N
	– axial at standstill		20			10			N
22	Shaft play:								
	– radial	≤	0,03			0,015			mm
	– axial	≤	0,2			0			mm
23	Housing material		steel, black coated						
24	Mass		18						g
25	Direction of rotation		clockwise, viewed from the front face						
26	Speed up to	$n_{max.}$	13 000						min⁻¹
27	Number of pole pairs		1						
28	Magnet material		NdFeB						

Rated values for continuous operation									
29	Rated torque	M_N	1,7	2,9	2,9	2,9	2,9	2,9	mNm
30	Rated current (thermal limit)	I_N	0,7	0,56	0,38	0,28	0,19	0,14	A
31	Rated speed	n_N	7 800	3 860	4 500	4 130	4 330	4 110	min⁻¹

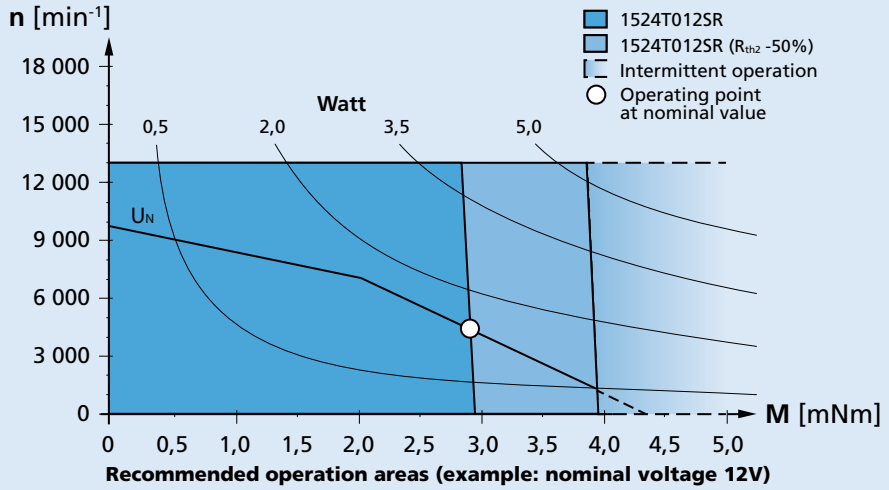
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

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).

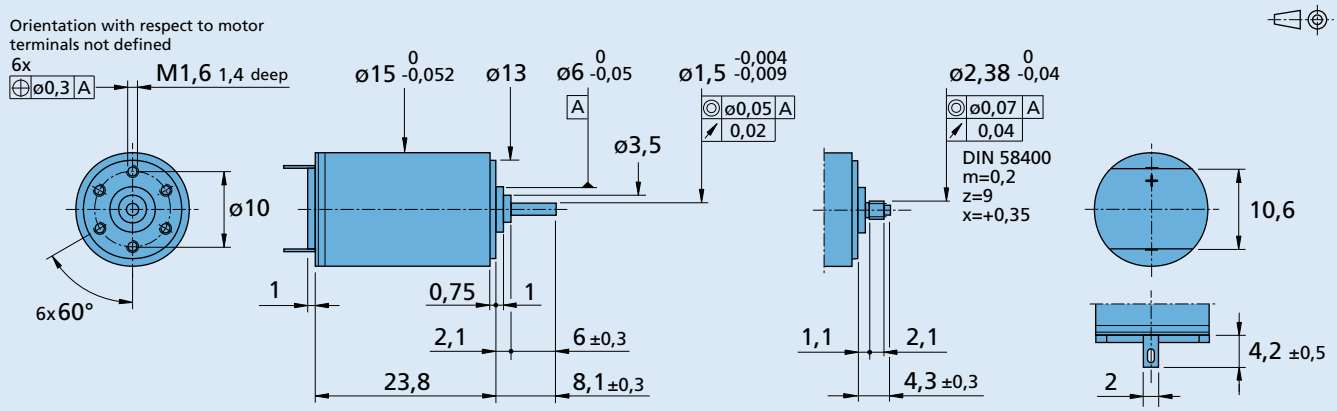
The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



Recommended operation areas (example: nominal voltage 12V)

For notes on technical data and lifetime performance refer to "Technical Information".

Dimensional drawing



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	IE2-16 IE2-1024 IEH2-4096 IEH3-4096	SC 1801 MC 5004 MCDC 3002	To view our large range of accessory parts, please refer to the “Accessories” chapter.