

# DC-Micromotors

# 2,5 mNm

## Precious Metal Commutation

For combination with (overview on page 14-15)

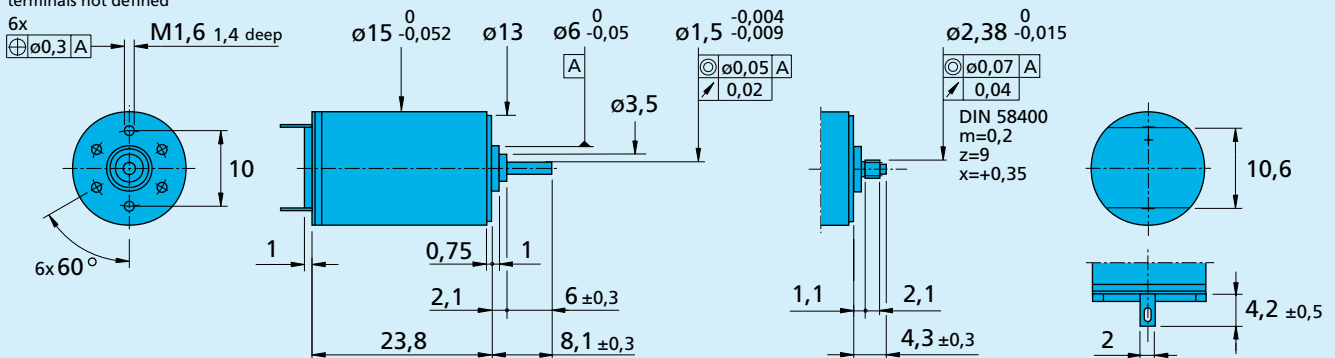
Gearheads:  
15A, 15/3, 15/4, 15/5, 15/8, 16A, 16/7

Encoders:  
IE2 – 16 ... 512

### Series 1524 ... SR

	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	Volt
2 Terminal resistance	R	1,1	5,1	10,4	19,8	44,0	79,6	$\Omega$
3 Output power	$P_{2 \max}$	1,92	1,70	1,88	1,75	1,78	1,75	W
4 Efficiency	$\eta_{\max}$	77	77	77	76	77	78	%
5 No-load speed	$n_0$	10 800	9 700	10 100	9 900	9 900	9 900	rpm
6 No-load current (with shaft $\varnothing$ 1,5 mm)	$I_0$	0,047	0,021	0,014	0,011	0,007	0,005	A
7 Stall torque	$M_H$	6,80	6,68	7,12	6,76	6,86	6,75	mNm
8 Friction torque	$M_R$	0,12	0,12	0,12	0,13	0,12	0,11	mNm
9 Speed constant	$k_n$	3 660	1 650	1 140	840	560	419	rpm/V
10 Back-EMF constant	$k_E$	0,273	0,607	0,877	1,190	1,790	2,380	mV/rpm
11 Torque constant	$k_M$	2,61	5,80	8,37	11,40	17,10	22,80	mNm/A
12 Current constant	$k_i$	0,384	0,172	0,119	0,088	0,059	0,044	A/mNm
13 Slope of n-M curve	$\Delta n / \Delta M$	1 590	1 450	1 420	1 460	1 440	1 470	rpm/mNm
14 Rotor inductance	L	17	70	150	250	560	1 000	$\mu H$
15 Mechanical time constant	$\tau_m$	10	10	10	10	10	10	ms
16 Rotor inertia	J	0,60	0,66	0,67	0,65	0,66	0,65	gcm <sup>2</sup>
17 Angular acceleration	$\alpha_{\max}$	110	100	110	100	100	100	$\cdot 10^3 \text{ rad/s}^2$
18 Thermal resistance	$R_{th 1} / R_{th 2}$	4,5 / 31						K/W
19 Thermal time constant	$\tau_{w1} / \tau_{w2}$	2,4 / 300						s
20 Operating temperature range:								
– motor		– 30 ... + 85 (optional – 55 ... + 125)						$^{\circ}C$
– rotor, max. permissible		+ 125						$^{\circ}C$
21 Shaft bearings		sintered bronze sleeves	ball bearings		ball bearings, preloaded			
22 Shaft load max.:		(standard)	(optional)		(optional)			
– with shaft diameter		1,5	1,5		1,5			mm
– radial at 3 000 rpm (3 mm from bearing)		1,2	5		5			N
– axial at 3 000 rpm		0,2	0,5		0,5			N
– axial at standstill		20	10		10			N
23 Shaft play:								
– radial	$\leq$	0,03	0,015		0,015			mm
– axial	$\leq$	0,2	0,2		0			mm
24 Housing material		steel, black coated						
25 Weight		21						g
26 Direction of rotation		clockwise, viewed from the front face						
<b>Recommended values - mathematically independent of each other</b>								
27 Speed up to	$n_{e \max}$	10 000	10 000	10 000	10 000	10 000	10 000	rpm
28 Torque up to	$M_{e \max}$	2,5	2,5	2,5	2,5	2,5	2,5	mNm
29 Current up to (thermal limits)	$I_{e \max}$	1,300	0,630	0,440	0,320	0,210	0,160	A

Orientation with respect to motor terminals not defined



1524 T ... SR

1524 E ... SR  
for Gearheads 15/... (except 15A)