

DC-Micromotors

Graphite Commutation

3,6 mNm
4 W

Series 1336 ... CXR

Values at 22°C and nominal voltage	1336 U	006 CXR	012 CXR	018 CXR	024 CXR		
1 Nominal voltage	U_N		6	12	18	24	V
2 Terminal resistance	R		3,98	15,6	36,6	63,7	Ω
3 Efficiency, max.	η_{max}		58	62	64	64	%
4 No-load speed	n_0		8 300	8 700	8 800	8 900	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 2 mm)	I_0		0,058	0,029	0,019	0,014	A
6 Stall torque	M_H		8,1	8,6	8,6	8,6	mNm
7 Friction torque	M_R		0,35	0,35	0,35	0,35	mNm
8 Speed constant	k_n		1 568	783	525	392	min ⁻¹ /V
9 Back-EMF constant	k_E		0,638	1,277	1,904	2,552	mV/min ⁻¹
10 Torque constant	k_M		6,09	12,19	18,18	24,37	mNm/A
11 Current constant	k_I		0,164	0,082	0,055	0,041	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$		1 025	1 003	1 057	1 024	min ⁻¹ /mNm
13 Rotor inductance	L		70	280	656	1 100	μ H
14 Mechanical time constant	τ_m		5,9	6	6,1	6	ms
15 Rotor inertia	J		0,55	0,57	0,55	0,56	gcm ²
16 Angular acceleration	α_{max}		147	152	156	154	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	13 / 28					K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	11 / 245					s
19 Operating temperature range:							
– motor		-30 ... +100					°C
– winding, max. permissible		+125					°C
20 Shaft bearings		ball bearings, preloaded		sintered bearings			
21 Shaft load max.:		(standard)		(optional version)			
– with shaft diameter		2		2			mm
– radial at 3 000 min ⁻¹ (3 mm from bearing)		8		1,5			N
– axial at 3 000 min ⁻¹		0,8		0,2			N
– axial at standstill		10		20			N
22 Shaft play:							
– radial	\leq	0,015		0,03			mm
– axial	$=$	0		0,2			mm
23 Housing material		steel, nickel plated					
24 Mass		21					g
25 Direction of rotation		clockwise, viewed from the front face					
26 Speed up to	n_{max}	10 000					min ⁻¹
27 Number of pole pairs		1					
28 Magnet material		NdFeB					
Rated values for continuous operation							
29 Rated torque	M_N		3,5	3,6	3,5	3,6	mNm
30 Rated current (thermal limit)	I_N		0,7	0,36	0,24	0,18	A
31 Rated speed	n_N		2 780	3 170	3 160	3 250	min ⁻¹

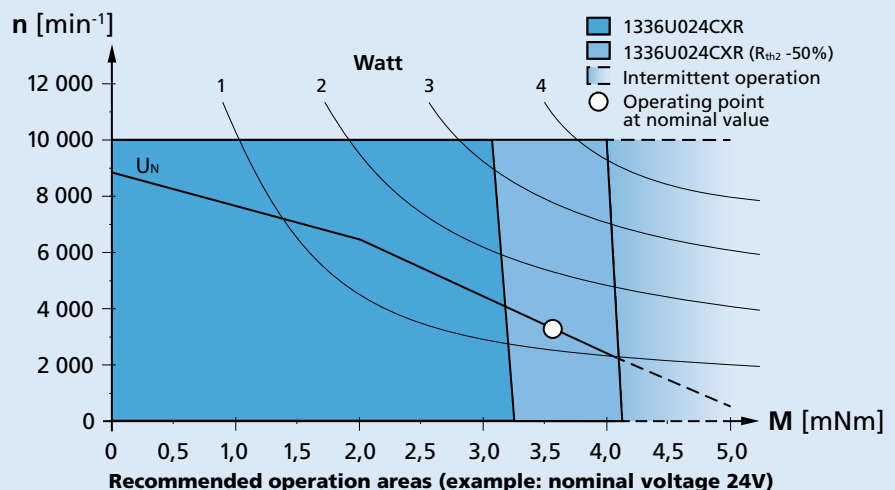
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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).

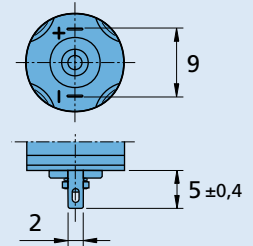
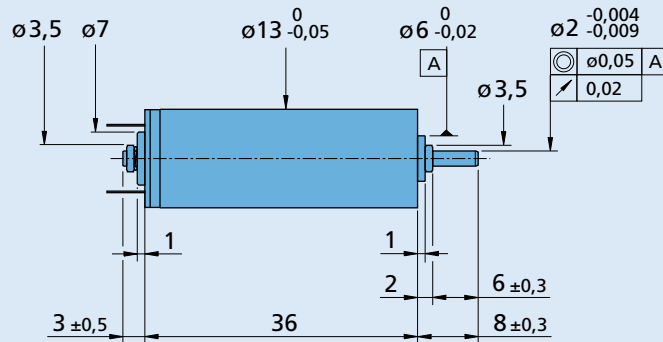
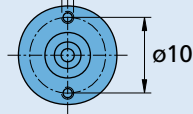
The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



Dimensional drawing

Orientation with respect to motor terminals not defined

2x $\oplus \varnothing 0,3 \text{ A}$ M1,6 1,5 deep



1336 U ... CXR

Options

Example product designation: **1336U012CXR-217**

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 (-)
123	Encoder combination	Motor with rear end shaft for combination with Encoder IE2, IEH2 and IEH3
217	Bearings	Motor with sintered bearings

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
13A 14/1	IE2-16 IE2-1024 IEH2-4096 IEH3-4096 IEH3-4096L	SC 1801 P SC 1801 S MCDC 3002 P MCDC 3002 S MC 5004 P	To view our large range of accessory parts, please refer to the "Accessories" chapter.