

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	024 CXR	
1	Nominal voltage	U_N	6	12	24	V
2	Terminal resistance	R	3,98	15,6	63,7	Ω
3	Output power	$P_{2nom.}$	1,75	1,96	2	W
4	Efficiency, max.	$\eta_{max.}$	58	62	64	%
5	No-load speed	n_0	8 300	8 700	8 900	min ⁻¹
6	No-load current, typ. (with shaft \varnothing 2 mm)	I_0	0,058	0,029	0,014	A
7	Stall torque	M_H	8,1	8,6	8,6	mNm
8	Friction torque	M_R	0,35	0,35	0,35	mNm
9	Speed constant	k_n	1 568	783	392	min ⁻¹ /V
10	Back-EMF constant	k_E	0,638	1,277	2,552	mV/min ⁻¹
11	Torque constant	k_M	6,09	12,19	24,37	mNm/A
12	Current constant	k_I	0,164	0,082	0,041	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	1 025	1 003	1 024	min ⁻¹ /mNm
14	Rotor inductance	L	70	280	1 100	μ H
15	Mechanical time constant	τ_m	5,9	6	6	ms
16	Rotor inertia	J	0,55	0,57	0,56	gcm ²
17	Angular acceleration	$\alpha_{max.}$	147	152	154	$\cdot 10^3$ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	13 / 28			K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	11 / 245			s
20	Operating temperature range:					
	– motor		-30 ... +100			°C
	– winding, max. permissible		+125			°C
21	Shaft bearings		ball bearings, preloaded			
22	Shaft load max.:					
	– with shaft diameter		2			mm
	– radial at 3 000 min ⁻¹ (3 mm from bearing)		8			N
	– axial at 3 000 min ⁻¹		0,8			N
	– axial at standstill		10			N
23	Shaft play:					
	– radial	\leq	0,015			mm
	– axial	$=$	0			mm
24	Housing material		steel, nickel plated			
25	Mass		21			g
26	Direction of rotation		clockwise, viewed from the front face			
27	Speed up to	$n_{max.}$	10 000			min ⁻¹
28	Number of pole pairs		1			
29	Magnet material		NdFeB			
Rated values for continuous operation						
30	Rated torque	M_N	3,5	3,6	3,6	mNm
31	Rated current (thermal limit)	I_N	0,7	0,36	0,18	A
32	Rated speed	n_N	2 780	3 170	3 250	min ⁻¹

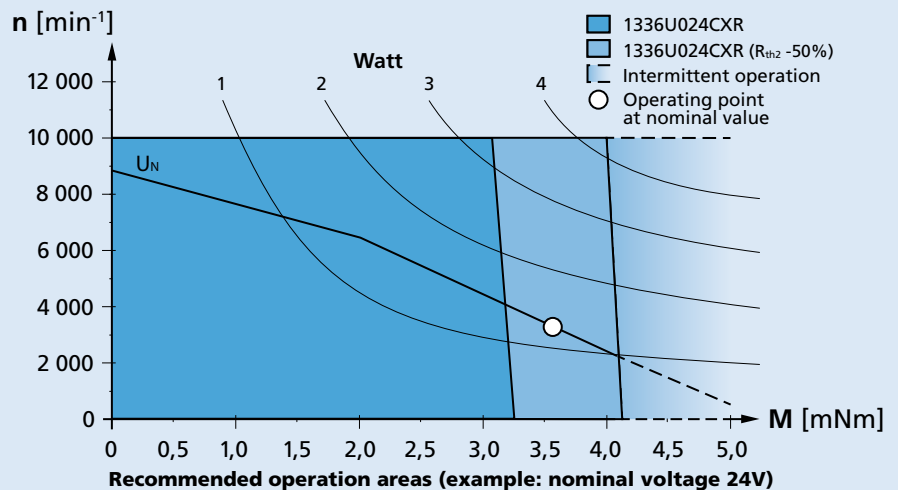
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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.

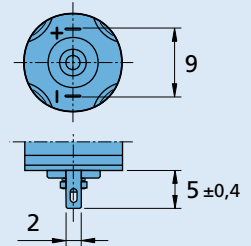
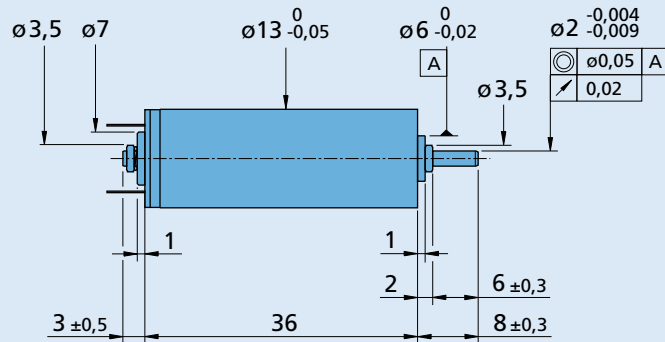
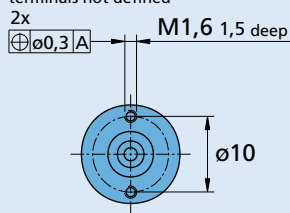
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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



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
217	Bearings	Motor with sintered bearings

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
13A 14/1	IE2-16 IE2-1024	SC 1801 MCDC 3002	

Planetary Gearheads

0,3 Nm

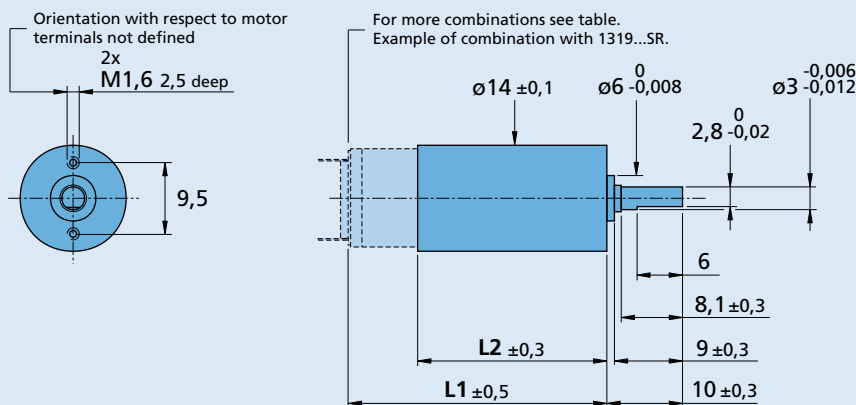
For combination with
DC-Micromotors

Series 14/1

	14/1
Housing material	metal
Geartrain material	steel
Recommended max. input speed for:	
– continuous operation	5 000 min ⁻¹
Backlash, at no-load	≤ 1 °
Bearings on output shaft	ball bearings, preloaded
Shaft load, max.:	
– radial (6,5 mm from mounting face)	≤ 20 N
– axial	≤ 5 N
Shaft press fit force, max.	≤ 15 N
Shaft play	
– radial (6,5 mm from mounting face)	≤ 0,04 mm
– axial	= 0 mm
Operating temperature range	- 30 ... + 100 °C

Technical data		1	2	3	4	5	6
Number of gear stages							
Continuous torque	mNm	200	300	300	300	300	300
Intermittent torque	mNm	300	450	450	450	450	450
Mass without motor, ca.	g	17	20	24	27	30	34
Efficiency, max.	%	90	80	70	60	55	50
Direction of rotation, drive to output		=	=	=	=	=	=
Reduction ratio ¹⁾ (rounded)		3,71:1	9,7:1 14:1	43:1 66:1	94:1 112:1 134:1 159:1 190:1 246:1	415:1 592:1 989:1 1 526:1	2 608:1 4 365:1 5 647:1
L2 [mm] = length without motor		20,9	25,0	29,2	33,3	37,4	41,5
L1 [mm] = length with motor							
	1319T...SR	34,1	38,2	42,4	46,5	50,6	54,7
	1331T...SR	46,1	50,2	54,4	58,5	62,6	66,7
	1336U...CXR	50,9	55,0	59,2	63,3	67,4	71,5

¹⁾ The reduction ratios are rounded, the exact values are available on request or at www.faulhaber.com.



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