DC-Micromotors

10 mNm

Precious Metal Commutation

8,5 W

Series 2232 ... SR

Values at 22°C and nominal voltage		2232 U	006 SR	009 SR	012 SR	015 SR	018 SR	024 SR	
1	Nominal voltage	U_N	6	9	12	15	18	24	V
2	Terminal resistance	R	0,81	2,14	4,09	6,61	9,04	16,4	Ω
3	Efficiency, max.	$\eta_{max.}$	87	86	86	85	86	86	%
4	No-load speed	n_0	7 100	7 400	7 100	7 100	7 100	7 100	min^{-1}
5	No-load current, typ. (with shaft ø 2 mm)	I_0	0,035	0,0241	0,0175	0,0139	0,0116	0,0087	A
6	Stall torque	M_H	59,2	48,3	46,8	45,2	47,6	46,7	mNm
7	Friction torque	M_R	0,28	0,28	0,28	0,28	0,28	0,28	mNm
8	Speed constant	k_n	1 190	827	595	476	397	298	min^{-1}/V
9	Back-EMF constant	k_E	0,84	1,21	1,68	2,1	2,52	3,36	mV/min^{-1}
10	Torque constant	k_M	8,03	11,5	16	20,1	24,1	32,1	mNm/A
11	Current constant	k_I	0,125	0,087	0,062	0,05	0,042	0,031	A/mNm
12	Slope of n-M curve	$\Delta n/\Delta M$	120	153	152	157	149	152	min^{-1}/mNm
13	Rotor inductance	L	45	90	180	280	400	710	µH
14	Mechanical time constant	τ_m	6	6	6	6	6	6	ms
15	Rotor inertia	J	4,8	3,8	3,8	3,8	3,8	3,8	gcm²
16	Angular acceleration	$\alpha_{max.}$	120	120	120	120	120	120	·10³rad/s²
17	Thermal resistance	R_{th1} / R_{th2}	4 / 13						K/W
18	Thermal time constant	τ_{w1} / τ_{w2}	7 / 340						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		2			2			mm
	– radial at 3 000 min^{-1} (3 mm from bearing)		1,5			8			N
	– axial at 3 000 min^{-1}		0,2			0,8			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		62						g
25	Direction of rotation		clockwise, viewed from the front face						
26	Speed up to	$n_{max.}$	8 000						min^{-1}
27	Number of pole pairs		1						
28	Magnet material		NdFeB						
Rated values for continuous operation									
29	Rated torque	M_N	10	10	10	10	10	10	mNm
30	Rated current (thermal limit)	I_N	1,3	0,93	0,67	0,53	0,44	0,33	A
31	Rated speed	n_N	5 900	5 810	5 510	5 420	5 530	5 490	min^{-1}

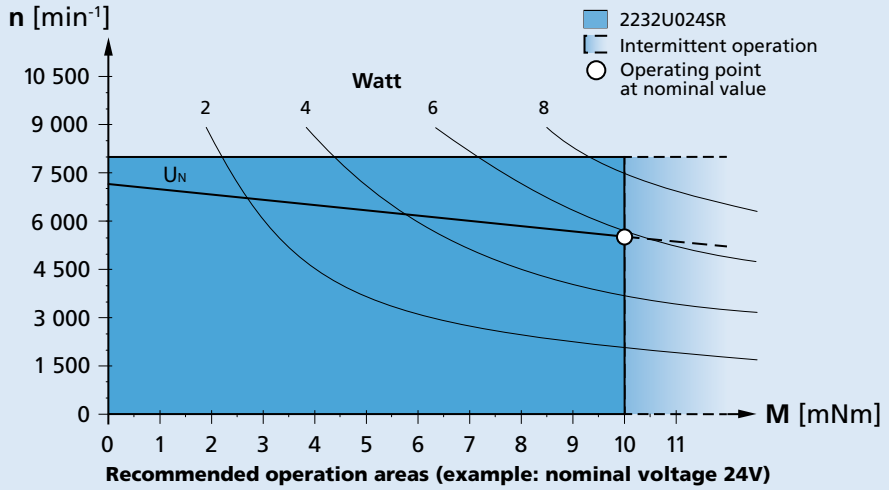
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 0%.

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 24V)

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

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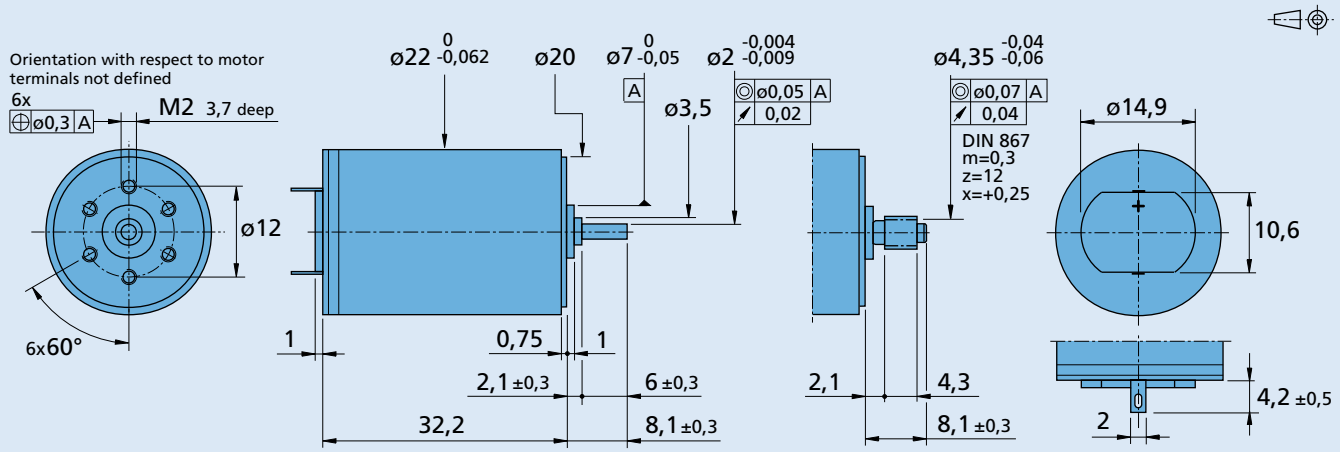
Dimensional drawing



2232 U ... SR **2232 R ... SR**

Options

Example product designation: **2232U012SR-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
20/1R 22E 22EKV 22GPT 22/2 22/5 22/7 23/1 26A	IE2-1024 IEH2-4096 IEH3-4096 IEH3-4096L	SC 1801 P SC 1801 S SC 2402 P SC 2804 S MCDC 3002 P MCDC 3002 S MCDC 3003 P MCDC 3006 S MC 3001 B MC 3001 P MC 5004 P	To view our large range of accessory parts, please refer to the "Accessories" chapter.