

DC-Micromotors

Graphite Commutation

120 mNm
85 W

Series 3272 ... CR

Values at 22°C and nominal voltage		3272 G	012 CR	024 CR	048 CR	
1	Nominal voltage	U_N	12	24	48	V
2	Terminal resistance	R	0,2	0,82	3,35	Ω
3	Output power	$P_{2nom.}$	164	167	167	W
4	Efficiency, max.	$\eta_{max.}$	85	87	88	%
5	No-load speed	n_0	5 400	5 500	5 500	min ⁻¹
6	No-load current, typ. (with shaft \varnothing 5 mm)	I_0	0,191	0,095	0,048	A
7	Stall torque	M_H	1 192	1 188	1 177	mNm
8	Friction torque	M_R	3,9	3,9	3,9	mNm
9	Speed constant	k_n	459	230	115	min ⁻¹ /V
10	Back-EMF constant	k_E	2,18	4,35	8,7	mV/min ⁻¹
11	Torque constant	k_M	20,8	41,6	83,3	mNm/A
12	Current constant	k_I	0,048	0,024	0,012	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	4,4	4,5	4,6	min ⁻¹ /mNm
14	Rotor inductance	L	45	185	740	μ H
15	Mechanical time constant	τ_m	3,1	3	2,9	ms
16	Rotor inertia	J	67	63	60	gcm ²
17	Angular acceleration	$\alpha_{max.}$	178	189	196	$\cdot 10^3$ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	2,3 / 7			K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	40 / 850			s
20	Operating temperature range:					
	– motor		-30 ... +125			°C
	– winding, max. permissible		+155			°C
21	Shaft bearings		ball bearings, preloaded			
22	Shaft load max.:					
	– with shaft diameter		5			mm
	– radial at 3 000 min ⁻¹ (3 mm from bearing)		50			N
	– axial at 3 000 min ⁻¹		5			N
	– axial at standstill		50			N
23	Shaft play:					
	– radial	\leq	0,015			mm
	– axial	$=$	0			mm
24	Housing material		steel, black coated			
25	Mass		312			g
26	Direction of rotation		clockwise, viewed from the front face			
27	Speed up to	$n_{max.}$	6 000			min ⁻¹
28	Number of pole pairs		1			
29	Magnet material		NdFeB			
Rated values for continuous operation						
30	Rated torque	M_N	75	119	120	mNm
31	Rated current (thermal limit)	I_N	4	3,5	1,7	A
32	Rated speed	n_N	5 110	5 150	5 180	min ⁻¹

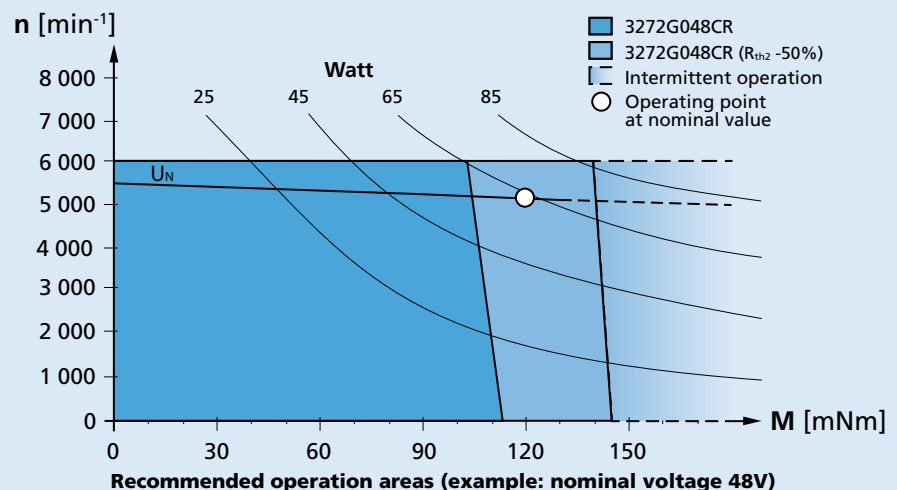
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

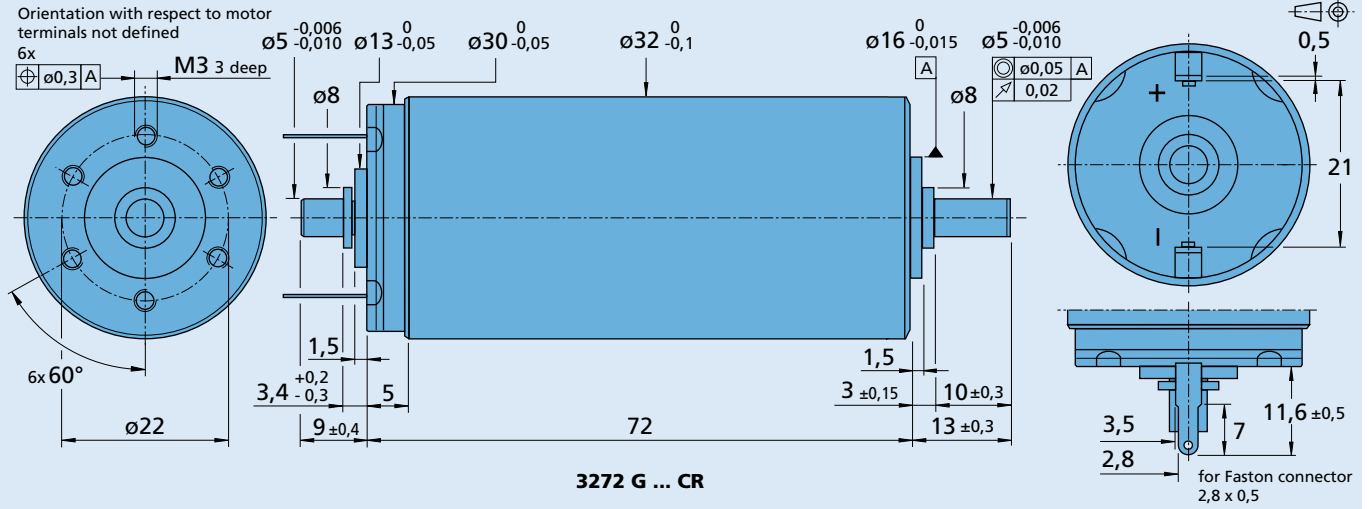
Note:

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

Options

Example product designation: **3272G012CR-158**

Option	Type	Description
U	Single Leads	For motors with single leads (PTFE), length 160 mm, red (+) / black (-)
158	Shaft end	No second shaft end

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
32A 32ALN 32/3 32/3 S 38A 38/1 38/1 S 38/2 38/2 S BS32-2.0	HEDS 5500 HEDM 5500 IE3-1024 IE3-1024 L HEDS 5540 HEDL 5540	SC 2402 SC 2804 SC 5004 SC 5008 MCDC 3003 MCDC 3006	MBZ

Planetary Gearheads

7 Nm

For combination with
DC-Micromotors
Brushless DC-Motors
Motion Control Systems

Series 32/3

	32/3
Housing material	metal
Geartrain material ¹⁾	plastic/steel
Recommended max. input speed for:	
– continuous operation	4 000 min ⁻¹
Backlash, at no-load	≤ 1 °
Bearings on output shaft	ball bearings, preloaded
Shaft load, max.:	
– radial (10 mm from mounting face)	≤ 200 N
– axial	≤ 200 N
Shaft press fit force, max.	≤ 250 N
Shaft play	
– radial (10 mm from mounting face)	≤ 0,03 mm
– axial	≤ 0,15 mm
Operating temperature range	- 20 ... + 125 °C

Technical data		1	2	3	3	4	4	4	5	5
Number of gear stages										
Continuous torque	Nm	4,2	0,4	1,4	2	4	4,9	5,8	7	7
Intermittent torque	Nm	5,3	0,6	1,9	2,6	5,2	6,5	8	10	10
Mass without motor, ca.	g	160	190	230	230	260	260	260	290	300
Efficiency, max.	%	88	80	70	70	60	60	60	55	55
Direction of rotation, drive to output		=	=	=	=	=	=	=	=	=
Reduction ratio ²⁾ (rounded)		3,71:1	14:1	43:1	66:1	134:1	159:1	246:1	415:1 592:1 989:1	1 526:1
L2 [mm] = length without motor		33,9	41,6	49,4	49,4	57,2	57,2	57,2	65,0	65,0
L1 [mm] = length with motor										
	2668W...CR	101,9	109,6	117,4	117,4	125,2	125,2	125,2	133,0	133,0
	3242G...CR	75,9	83,6	91,4	91,4	99,2	99,2	99,2	107,0	107,0
	3257G...CR	90,9	98,6	106,4	106,4	114,2	114,2	114,2	122,0	122,0
	3272G...CR	105,9	113,6	121,4	121,4	129,2	129,2	129,2	137,0	137,0
	3242G...BX4	78,1	85,8	93,6	93,6	101,4	101,4	101,4	109,2	109,2
	3268G...BX4	104,1	111,8	119,6	119,6	127,4	127,4	127,4	135,2	135,2
	3274G...BP4	107,9	115,6	123,4	123,4	131,2	131,2	131,2	139,0	139,0
	3564K...B	97,9	105,6	113,4	113,4	121,2	121,2	121,2	129,0	129,0
	MCS 3242G...BX4..	108,9	116,6	124,4	124,4	132,2	132,2	132,2	140,0	140,0
	MCS 3268G...BX4..	134,9	142,6	150,4	150,4	158,2	158,2	158,2	166,0	166,0
	MCS 3274G...BP4..	143,9	151,6	159,4	159,4	167,2	167,2	167,2	175,0	175,0

¹⁾ Gearheads with ratios < 14:1 have all steel gears.

²⁾ The reduction ratios are rounded, the exact values are available on request or at www.faulhaber.com.

