

Brushless DC-Flat Motors

External rotor technology, without housing

134 mNm

100 W

Series 4221 ... BXT R

Values at 22°C and nominal voltage		4221 G	018 BXT R	024 BXT R	048 BXT R	
1	Nominal voltage	U_N	18	24	48	V
2	Terminal resistance, phase-phase	R	0,46	0,74	2,6	Ω
3	Efficiency, max.	η_{max}	88	87	88	%
4	No-load speed	n_0	5 670	5 960	6 070	min ⁻¹
5	No-load current, typ. (with shaft $\varnothing$ 5 mm)	I_0	0,181	0,186	0,074	A
6	Starting torque	M_A	1 170	1 220	1 390	mNm
7	Speed constant	k_n	320	253	127	min ⁻¹ /V
8	Back-EMF constant	k_E	3,13	3,95	7,87	mV/min ⁻¹
9	Torque constant	k_M	29,8	37,7	75,2	mNm/A
10	Current constant	k_I	0,0335	0,0265	0,0133	A/mNm
11	Slope of n-M curve	$\Delta n/\Delta M$	4,93	4,97	4,4	min ⁻¹ /mNm
12	Terminal inductance, phase-phase	L	396	664	2 550	μ H
13	Mechanical time constant	τ_m	3,56	3,59	3,18	ms
14	Rotor inertia	J	69	69	69	gcm ²
15	Angular acceleration	α_{max}	169	177	201	·10 ³ rad/s ²
16	Operating temperature range:					
	– motor	-40 ... +100				°C
	– winding, max. permissible	+125				°C
17	Shaft bearings	ball bearings, preloaded				
18	Shaft load max.:					
	– with shaft diameter	5				mm
	– radial at 3 000 min ⁻¹ (5 mm from mounting flange)	25				N
	– axial at 3 000 min ⁻¹ (push / pull)	4				N
	– axial at standstill (push / pull)	50				N
19	Shaft play:					
	– radial	≤ 0,015				mm
	– axial	= 0				mm
20	Mass	127				g
21	Direction of rotation	electronically reversible				
22	Speed up to	n_{max} 10 000				min ⁻¹
23	Number of pole pairs	7				
24	Hall sensors	digital				
25	Magnet material	NdFeB				
Rated values for continuous operation						
26	Rated torque	M_N	122	127	134	mNm
27	Rated current (thermal limit)	I_N	3,6	3,17	1,66	A
28	Rated speed	n_N	3 690	4 180	4 390	min ⁻¹
29	Rated slope of n-M curve	$\Delta n/\Delta M$	16,3	14	12,5	min ⁻¹ /mNm

Note: Rated values are measured at nominal voltage and 22°C ambient temperature.

Note:

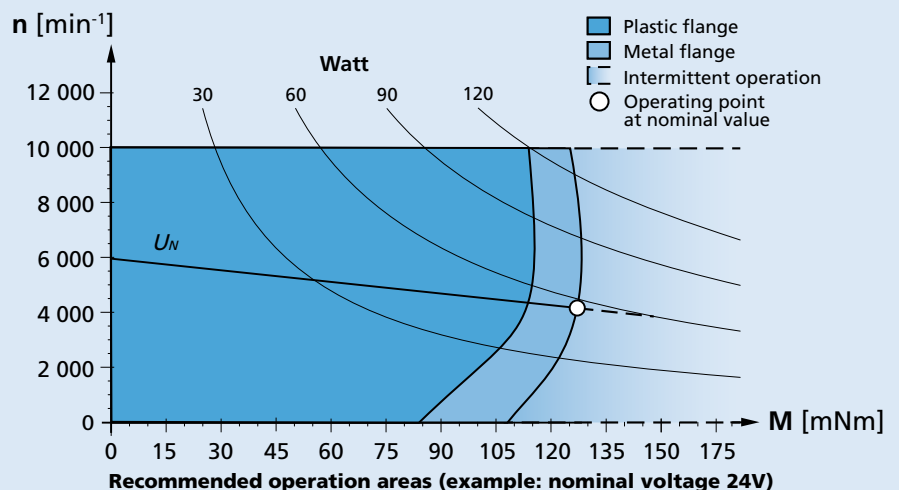
The display shows the range of possible operation points of the drives at a given ambient temperature of 22°C.

The diagram indicates the recommended speed in relation to the available torque at the output shaft.

It includes the assembly on a plastic- as well as on a metal flange (assembly method: IM B 5).

The nominal voltage linear slope describes the maximal achievable operating points at nominal voltage.

Any points of operation above this linear slope will require a supply voltage $U_{mot} > U_N$.



Dimensional drawing

Orientation with respect to motor cable $\pm 5^\circ$
 6x M3 max. 3 deep
 $\oplus \phi 0,3 \text{ A}$

Scale reduced

4221 G ... BXT R

Option, cable and connection information

Example product designation: **4221G018BXTR-3830**

Option	Type	Description	Connection		
			No.	Function	Colour
3830	Connector 	Standard cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800	1	Phase C	yellow
			2	Phase B	orange
			3	Phase A	brown
			4	GND	black
			5	U _{DD} (+5V)	red
			6	Hall sensor C	grey
			7	Hall sensor B	blue
			8	Hall sensor A	green
			Standard cable		
			Single wires, material PVC,		
			AWG 20, Phase A/B/C		
			AWG 26, Hall A/B/C, U _{DD} , GND		

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
32GPT HT 38/1 38/1 S 38/2 38/2 S 42GPT		SC 2804 S SC 5004 P SC 5008 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.