

Brushless DC-Flat Motors

External rotor technology, with housing

112 mNm
60 W

Series 4221 ... BXT H

Values at 22°C and nominal voltage	4221 G	018 BXT H	024 BXT H	048 BXT H	
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	5 710	6 040	6 070	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 5 mm)	I_0	0,177	0,139	0,103	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	$\cdot 10^3$ 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		142			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	102	112	107	mNm
27 Rated current (thermal limit)	I_N	3,33	2,87	1,39	A
28 Rated speed	n_N	3 980	4 380	4 700	min ⁻¹
29 Rated slope of n-M curve	$\Delta n/\Delta M$	17	14,8	12,8	min ⁻¹ /mNm

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

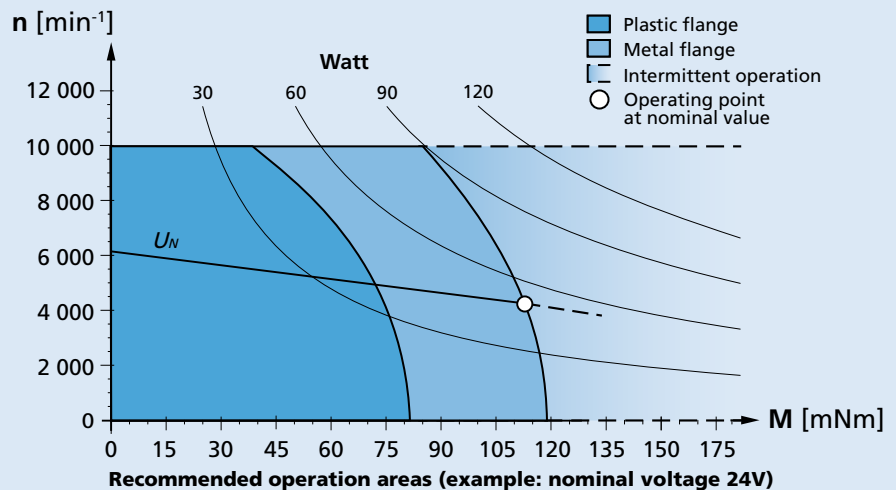
Note:

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

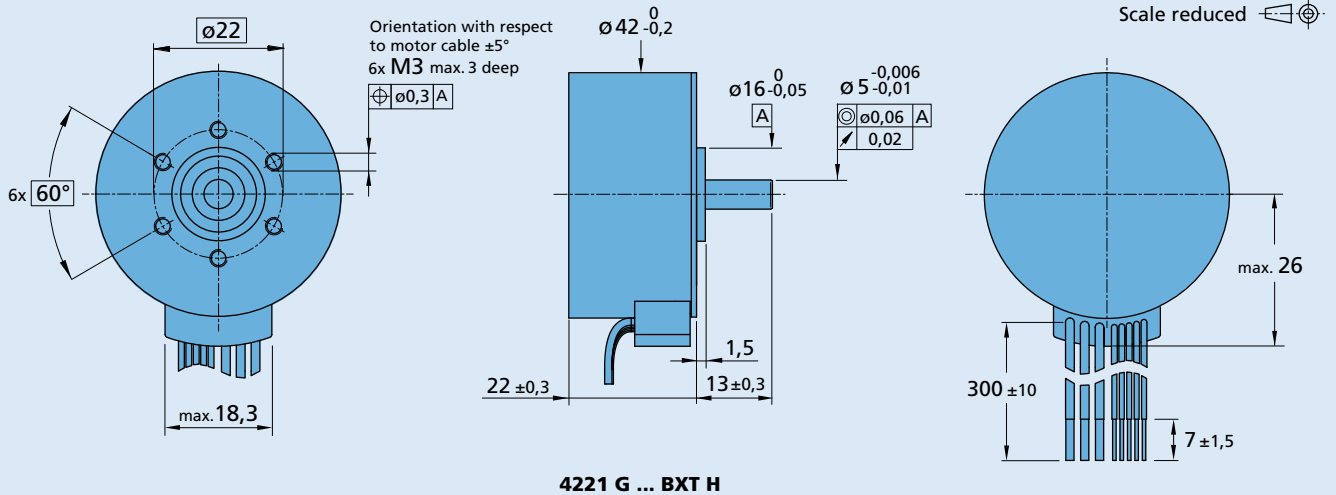
The diagram indicates the recommended speed in relation to the available torque at the output shaft.

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



Option, cable and connection information

Example product designation: **4221G018BXTH-3830**

Option	Type	Description	Connection		
			No.	Function	Colour
3830		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
38/1 38/1 S 38/2 38/2 S 42GPT	IE3-1024 IE3-1024 L IEF3-4096 IEF3-4096 L IERS3-500 IERS3-500 L IER3-10000 IER3-10000 L	SC 2804 S SC 5004 P SC 5008 S MC 3603 S MC 5004 P MC 5005 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.