Brushless DC-Flat Motors

112 mNm

External rotor technology, with housing

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.	$\eta_{max.}$		88	87	88	%
4	No-load speed	n_0		5 710	6 040	6 070	min^{-1}
5	No-load current, typ. (with shaft ø 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	µH
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	$\alpha_{max.}$		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

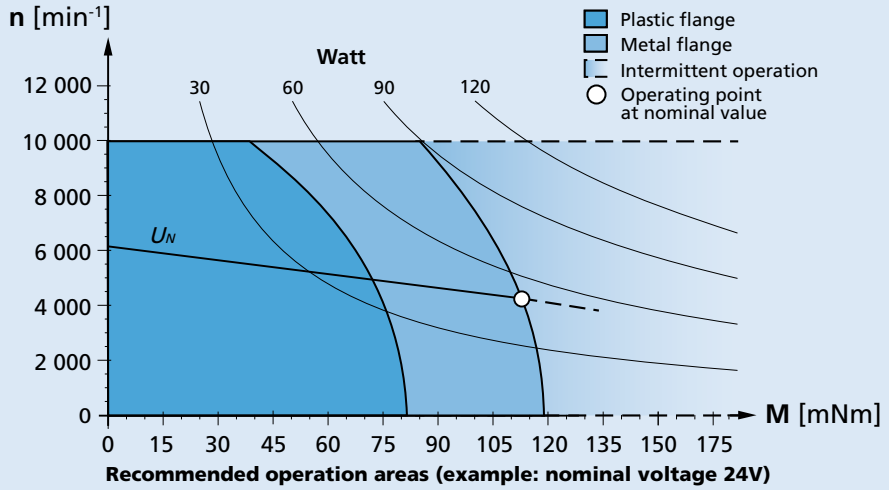
Note: Rated values are measured at nominal voltage and 22°C ambient temperature.

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).

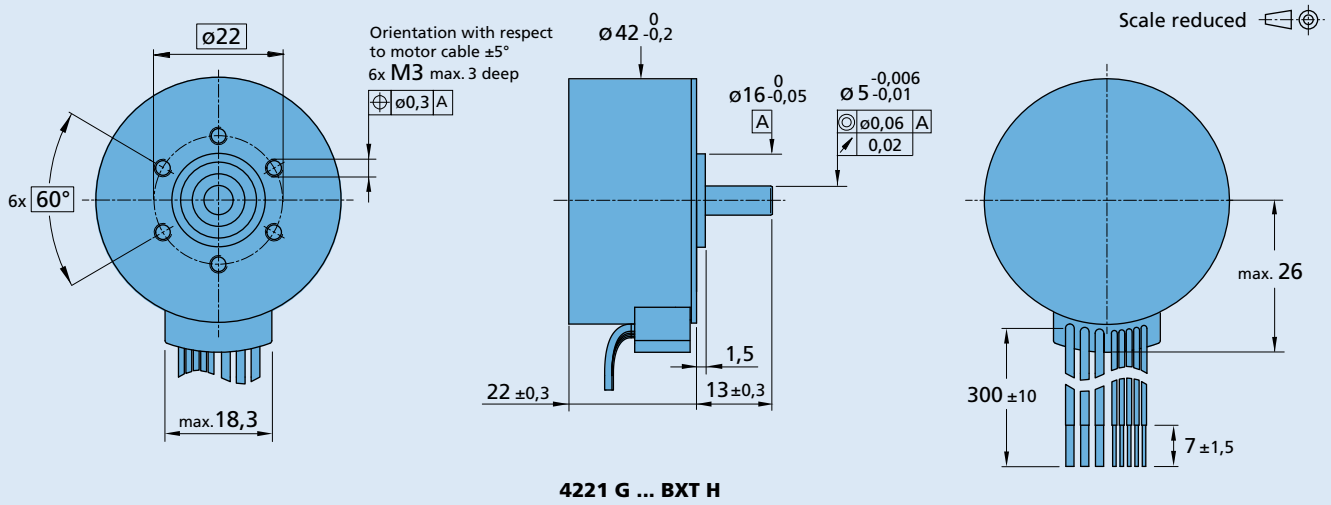
The nominal voltage linear slope describes the maximal achievable operating points at nominal voltage.
Any points of operation above this linear slope will require a supply voltage $U_{mot} > U_N$.



Recommended operation areas (example: nominal voltage 24V)

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

Dimensional drawing



4221 G ... BXT H

Option, cable and connection information

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

Option	Type	Description
3830		Standard cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800

Connection

No.	Function	Colour
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	IE3-1024 IE3-1024 L IEF3-4096 IEF3-4096 L IERS3-500 IERS3-500 L IER3-10000 IER3-10000 L IERF3-16384 L	SC 2804 S SC 5004 P SC 5008 S MC 3603 S MC 3606 B MC 5004 P MC 5005 S	PMB32 To view our large range of accessory parts, please refer to the “Accessories” chapter.