

# Brushless DC-Flat Motors

134 mNm

External rotor technology, without housing

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	$\Omega$
3	Efficiency, max.	$\eta_{max}$	88	87	88	%
4	No-load speed	$n_0$	5 670	5 960	6 070	min <sup>-1</sup>
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 <sup>-1</sup> /V
8	Back-EMF constant	$k_E$	3,13	3,95	7,87	mV/min <sup>-1</sup>
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 <sup>-1</sup> /mNm
12	Terminal inductance, phase-phase	$L$	396	664	2 550	$\mu$ H
13	Mechanical time constant	$\tau_m$	3,56	3,59	3,18	ms
14	Rotor inertia	$J$	69	69	69	gcm <sup>2</sup>
15	Angular acceleration	$\alpha_{max}$	169	177	201	$\cdot 10^3$ rad/s <sup>2</sup>
<b>16 Operating temperature range:</b>						
	– 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 <sup>-1</sup> (5 mm from mounting flange)		25			N
	– axial at 3 000 min <sup>-1</sup> (push / pull)		4			N
	– axial at standstill (push / pull)		50			N
19	Shaft play:					
	– radial	$\leq$	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 <sup>-1</sup>
23	Number of pole pairs		7			
24	Hall sensors		digital			
25	Magnet material		NdFeB			
<b>Rated values for continuous operation</b>						
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 <sup>-1</sup>
29	Rated slope of n-M curve	$\Delta n/\Delta M$	16,3	14	12,5	min <sup>-1</sup> /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  $U_{mot} > U_N$ .



