Brushless DC-Flat Motors

External rotor technology, without housing

10,2 mNm

9 W

Series 2214 ... BXT R

Values at 22°C and nominal voltage		2214 S	006 BXT R	012 BXT R	024 BXT R	
1 Nominal voltage	U_N		6	12	24	V
2 Terminal resistance, phase-phase	R		2,42	6,95	25,9	Ω
3 Efficiency, max.	$\eta_{max.}$		72	73	70	%
4 No-load speed	n_0		5 740	6 500	6 960	min^{-1}
5 No-load current, typ. (with shaft ø 3 mm)	I_0		0,062	0,039	0,016	A
6 Starting torque	M_A		23,5	29,1	29,6	mNm
7 Speed constant	k_n		997	561	296	min^{-1}/V
8 Back-EMF constant	k_E		1	1,78	3,37	mV/min^{-1}
9 Torque constant	k_M		9,58	17	32,2	mNm/A
10 Current constant	k_I		0,104	0,0588	0,031	A/mNm
11 Slope of n-M curve	$\Delta n/\Delta M$		252	229	238	min^{-1}/mNm
12 Terminal inductance, phase-phase	L		271	884	3 150	µH
13 Mechanical time constant	τ_m		8,7	7,92	8,22	ms
14 Rotor inertia	J		3,3	3,3	3,3	gcm²
15 Angular acceleration	$\alpha_{max.}$		71,1	88,2	89,7	·10³rad/s²
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		3				mm
– radial at 3 000 min^{-1} (5 mm from mounting flange)		6				N
– axial at 3 000 min^{-1} (push / pull)		2				N
– axial at standstill (push / pull)		50				N
19 Shaft play:						
– radial	≤	0,015				mm
– axial	=	0				mm
20 Mass		25,5				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		9,5	10	10,2	mNm
27 Rated current (thermal limit)	I_N		1,18	0,66	0,368	A
28 Rated speed	n_N		1 200	2 590	2 600	min^{-1}
29 Rated slope of n-M curve	$\Delta n/\Delta M$		478	391	427	min^{-1}/mNm

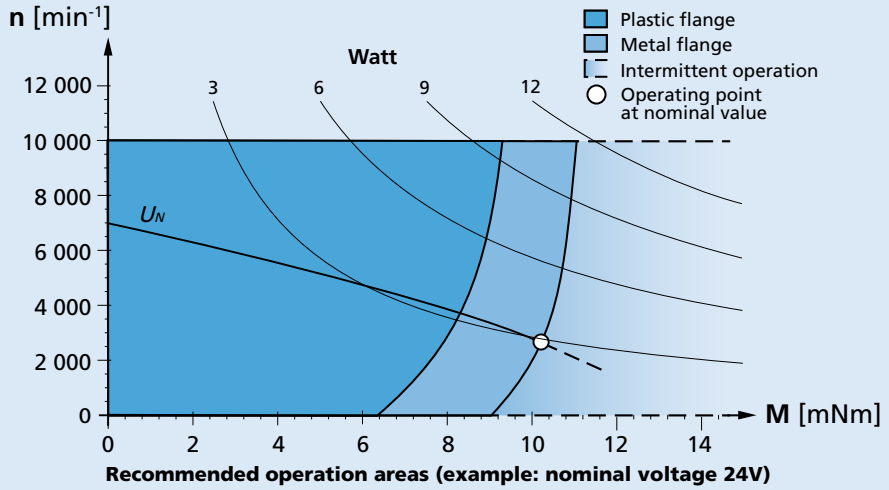
Note: Rated values are measured at nominal voltage and 22°C ambient temperature.

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 $U_{mot} > U_N$.

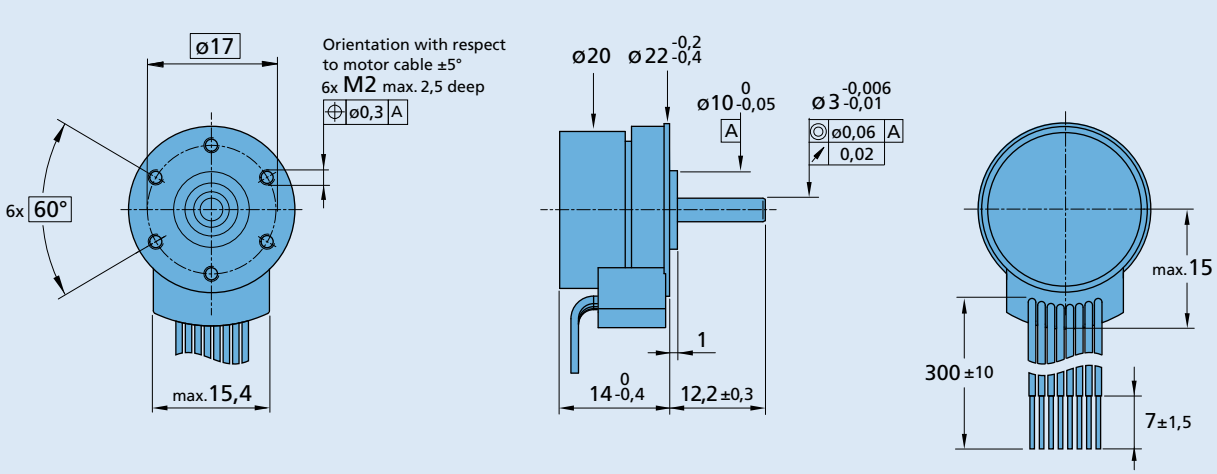


Recommended operation areas (example: nominal voltage 24V)

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

Edition 2025 May 12

Dimensional drawing



2214 S ... BXT R

Option, cable and connection information

Example product designation: **2214S012BXTR-3830**

Option	Type	Description
3830	Connector 	Standard cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800
4337	Gearhead combination	For combination with gearhead 20/1R

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 26, Phase A/B/C
AWG 26, Hall A/B/C, U_{DD}, GND

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
20/1R 22GPT 22GPT HT 26/1R 22L ... ML 22L ... SB 22L ... PB		SC 1801 P SC 1801 S SC 2402 P SC 2804 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.