

Brushless DC-Servomotors

with integrated Motion Controller
and RS232 or CAN interface

35 mNm

For combination with
Gearheads:
22F, 22/7, 26A

2250 ... BX4 CxD

		2250 S	024 BX4 CSD/CCD/COD	
1	Nominal voltage	U_N	24	Volt
2	Terminal resistance, phase-phase	R	5,9	Ω
3	Output power ¹⁾	$P_{2 \text{ max.}}$	12,2	W
4	Efficiency	$\eta_{\text{ max.}}$	75,1	%
5	No-load speed	n_o	5 900	rpm
6	No-load current ³⁾	I_o	0,072	A
7	Stall torque at 3A	M_H	110	mNm
8	Friction torque, static	C_o	1,20	mNm
9	Friction torque, dynamic	C_v	$2,4 \cdot 10^{-4}$	mNm/rpm
10	Speed constant	k_n	259	rpm/V
11	Back-EMF constant	k_E	3,864	mV/rpm
12	Torque constant	k_M	36,90	mNm/A
13	Current constant	k_i	0,027	A/mNm
14	Slope of n-M curve	$\Delta n / \Delta M$	41,4	rpm/mNm
15	Terminal inductance, phase-phase	L	240	μH
16	Mechanical time constant	τ_m	4,3	ms
17	Rotor inertia	J	10	gcm^2
18	Angular acceleration	$\alpha_{\text{ max.}}$	110	$\cdot 10^3 \text{ rad/s}^2$
19	Thermal resistance	$R_{\text{th} 1} / R_{\text{th} 2}$	1,2 / 14	K/W
20	Thermal time constant	τ_{w1} / τ_{w2}	4,2 / 566	s
21	Operating temperature range		- 25 ... + 85	$^{\circ}\text{C}$
22	Shaft bearings		ball bearings, preloaded	
23	Shaft load max.:			
	- radial at 3 000 rpm (4 mm from mounting flange)	20		N
	- axial at 3 000 rpm	2		N
	- axial at standstill	20		N
24	Shaft play:			
	- radial	\leq	0,015	mm
	- axial	$=$	0	mm
25	Housing material		stainless steel	
26	Weight		117	g
27	Direction of rotation		electronically reversible	
Recommended values - mathematically independent of each other				
28	Speed up to	$n_{e \text{ max.}}$	5 - 7 000	rpm
29	Torque up to ^{1) 2)}	$M_{e \text{ max.}}$	22 / 35	mNm
30	Current up to ^{1) 2) 3)}	$I_{e \text{ max.}}$	0,7 / 1,1	A

¹⁾ at 4 000 rpm ²⁾ thermal resistance $R_{\text{th} 2}$ not reduced / thermal resistance $R_{\text{th} 2}$ by 55% reduced

³⁾ total standby current 0,04 A at $U_B = 24\text{V}$

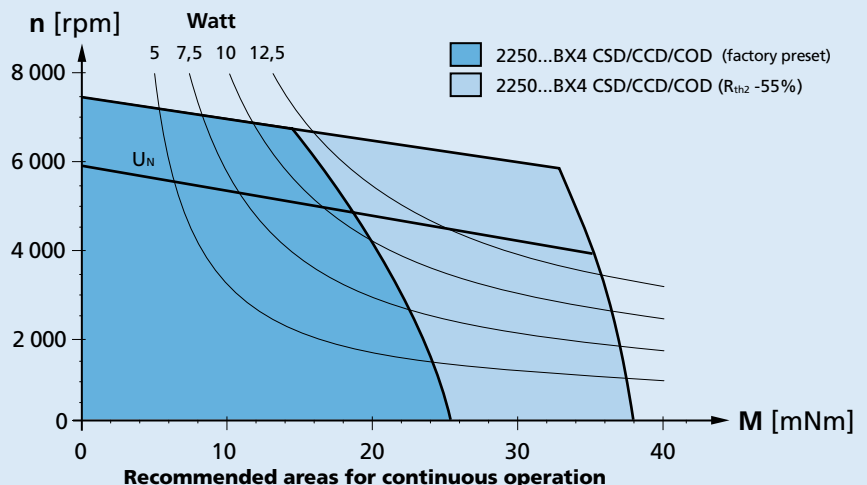
Note:

The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

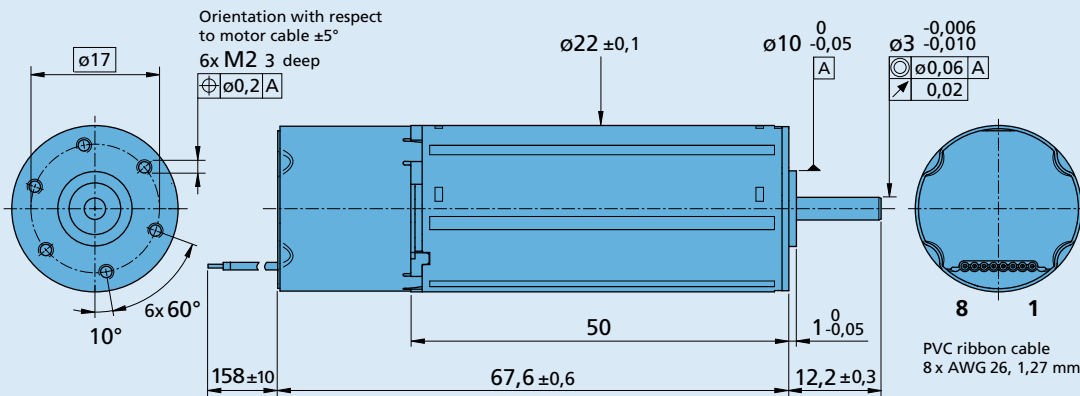
The diagram shows the motor in a completely insulated as well as thermally coupled condition ($R_{\text{th} 2}$ 55% reduced).

The motor is factory pre-configured to a continuous current for the thermally insulated condition. The controller must be reconfigured with the easy to use Motion Manager Software for use at higher continuous current.

The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



Dimensional drawing



Connection

No. Function

1	3.input
2	+24V
3	GND
4	Analog input
5	Analog GND
6	Fault output
7	RS232 RXD / CAN_L
8	RS232 TXD / CAN_H

Caution:

Incorrect lead connection will damage the motor electronics!

2250 ... BX4 CSD/CCD/COD

Options

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- Connector variant (Option no. 3830)
 AWG 26 / PVC ribbon cable with connector Micro-Fit



Accessories

- Adapter board BX4 CxD (Part No.: 6501.00113)

Full product description

- Example:
 2250S024 BX4 CSD

Motion Controller

Supply voltage ¹⁾	U_B		5 ... 30	V DC
Peak current ²⁾	I_{max}		3	A
Connection "Analog input":				
- Speed command analog input		voltage range	± 10	V
- Speed command PWM input		frequency range	100 ... 2 000	Hz
		pulse duty factor 50%	0	rpm
- Digital input		input resistance (at 24V)	5	k Ω
- External encoder	f_{max}		400	kHz
- Step frequency input	f_{max}		400	kHz
Connection "Fault output":				
- Fault output		no error	switched to GND	
- Digital output		open collector	max. $U_B / 30 \text{ mA}$	
- Digital input		input resistance	100	k Ω
Connection "3.input":				
- Digital input		input resistance	22	k Ω
- Electronic supply voltage ¹⁾	U_B		5 ... 30	V DC
Encoder:				
- Scanning rate			200	μs
- Resolution internal encoder			3 000	Inc./turn

The signal level of the digital inputs can be set using the above commands:
 Standard (PLC): Low 0...4,5V / High 12,5V... U_B , TTL: Low 0...0,5V / High 2,5V... U_B

¹⁾ Separate supply of motor and control electronics for safetyrelevant applications is optionally available (Option no. 2993).
 In this case the 3rd input is not available for digital signals.

²⁾ Preset value. Can be changed over the interface.