

Brushless DC-Servomotors

with integrated Motion Controller
and RS232 or CAN interface

35 mNm

For combination with
Gearheads:
22F, 22/7, 26A
Ball Screw:
BS22-1.5

2250 ... BX4 CxD

	2250 S	024 BX4 CSD/CCD/COD	
1 Nominal voltage	U_N	24	V DC
2 Terminal resistance, phase-phase	R	5,9	Ω
3 Efficiency	η_{max}	75,1	%
4 No-load speed	n_o	5 900	min^{-1}
5 No-load current ³⁾	I_o	0,072	A
6 Stall torque at 3A	M_H	110	mNm
7 Friction torque, static	C_o	1,20	mNm
8 Friction torque, dynamic	C_v	$2,4 \cdot 10^{-4}$	$\text{mNm}/\text{min}^{-1}$
9 Speed constant	k_n	259	min^{-1}/V
10 Back-EMF constant	k_E	3,864	$\text{mV}/\text{min}^{-1}$
11 Torque constant	k_M	36,90	mNm/A
12 Current constant	k_I	0,027	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$	41,4	$\text{min}^{-1}/\text{mNm}$
14 Terminal inductance, phase-phase	L	240	μH
15 Mechanical time constant	τ_m	4,3	ms
16 Rotor inertia	J	10	gcm^2
17 Angular acceleration	α_{max}	110	$\cdot 10^3 \text{rad}/\text{s}^2$
18 Thermal resistance	R_{th1} / R_{th2}	1,2 / 14	K/W
19 Thermal time constant	τ_{w1} / τ_{w2}	4,2 / 566	s
20 Operating temperature range		- 25 ... + 85	$^{\circ}\text{C}$
21 Shaft bearings		ball bearings, preloaded	
22 Shaft load max.:			
- radial at 3 000 min^{-1} (4 mm from mounting flange)		20	N
- axial at 3 000 min^{-1} (push / pull)		2	N
- axial at standstill (push / pull)		20	N
23 Shaft play:			
- radial	\leq	0,015	mm
- axial	$=$	0	mm
24 Housing material		stainless steel	
25 Weight		117	g
26 Direction of rotation		electronically reversible	
Recommended values - mathematically independent of each other			
27 Speed up to	$n_{e,max}$	5 - 7 000	min^{-1}
28 Torque up to ^{1) 2)}	$M_{e,max}$	22 / 35	mNm
29 Current up to ^{1) 2) 3)}	$I_{e,max}$	0,7 / 1,1	A

¹⁾ at 4 000 min^{-1} ²⁾ thermal resistance R_{th2} not reduced / thermal resistance R_{th2} by 55% reduced

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

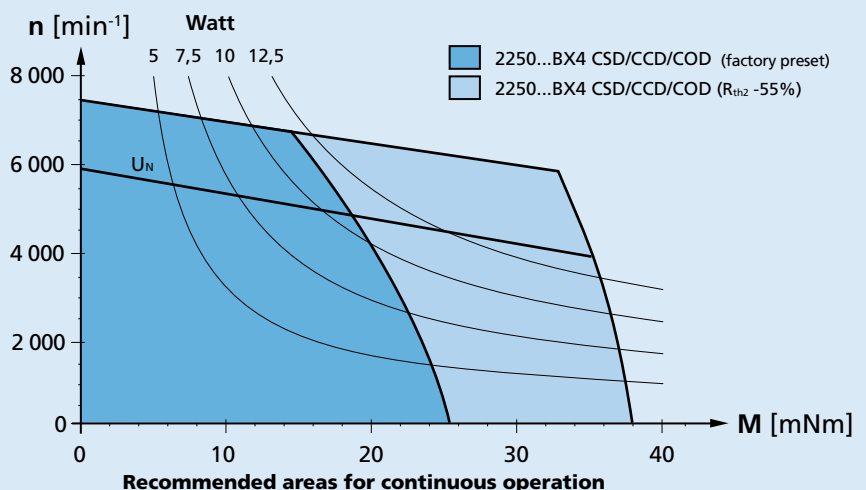
Note:

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

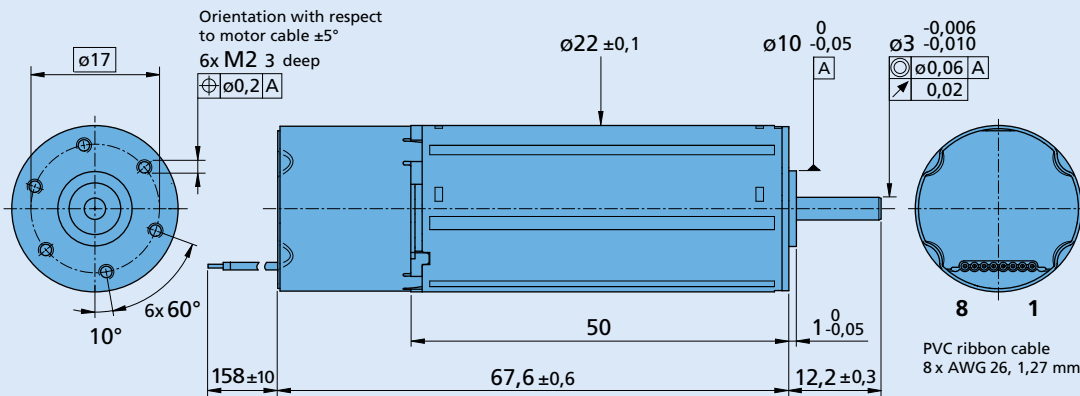
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 55% reduced).

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

- To view our large range of accessory parts, please refer to the "Accessories" chapter.

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	min^{-1}
- 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.