

Brushless DC-Servomotors

with integrated Motion Controller
and RS232 or CAN interface

18 mNm

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

2232 ... BX4 CxD

	2232 S	024 BX4 CSD/CCD/COD	
1 Nominal voltage	U_N	24	Volt
2 Terminal resistance, phase-phase	R	12,4	Ω
3 Output power ¹⁾	$P_{2 \text{ max.}}$	6,4	W
4 Efficiency	$\eta_{\text{ max.}}$	67,7	%
5 No-load speed	n_o	6 800	rpm
6 No-load current ³⁾	I_o	0,061	A
7 Stall torque at 1,8A	M_H	57	mNm
8 Friction torque, static	C_o	0,85	mNm
9 Friction torque, dynamic	C_v	$1,5 \cdot 10^{-4}$	mNm/rpm
10 Speed constant	k_n	304	rpm/V
11 Back-EMF constant	k_E	3,288	mV/rpm
12 Torque constant	k_M	31,40	mNm/A
13 Current constant	k_i	0,031	A/mNm
14 Slope of n-M curve	$\Delta n / \Delta M$	120	rpm/mNm
15 Terminal inductance, phase-phase	L	440	μH
16 Mechanical time constant	τ_m	6,5	ms
17 Rotor inertia	J	5,2	gcm^2
18 Angular acceleration	$\alpha_{\text{ max.}}$	109	$\cdot 10^3 \text{ rad/s}^2$
19 Thermal resistance	$R_{\text{th} 1} / R_{\text{th} 2}$	2 / 17	K/W
20 Thermal time constant	τ_{w1} / τ_{w2}	4,1 / 360	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		77	g
27 Direction of rotation		electronically reversible	
Recommended values - mathematically independent of each other			
28 Speed up to	$n_{e \text{ max.}}$	5 - 8 000	rpm
29 Torque up to ^{1) 2)}	$M_{e \text{ max.}}$	11 / 18	mNm
30 Current up to ^{1) 2) 3)}	$I_{e \text{ max.}}$	0,44 / 0,69	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 $U_B = 24\text{V}$

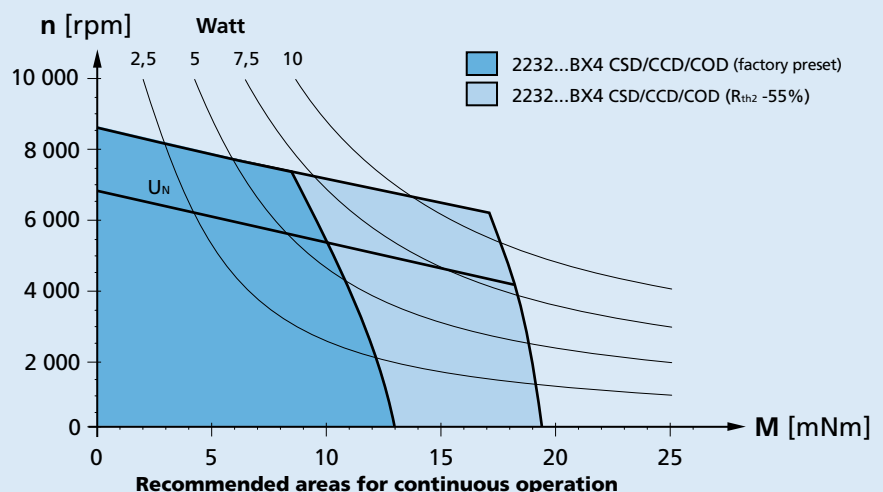
Note:

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

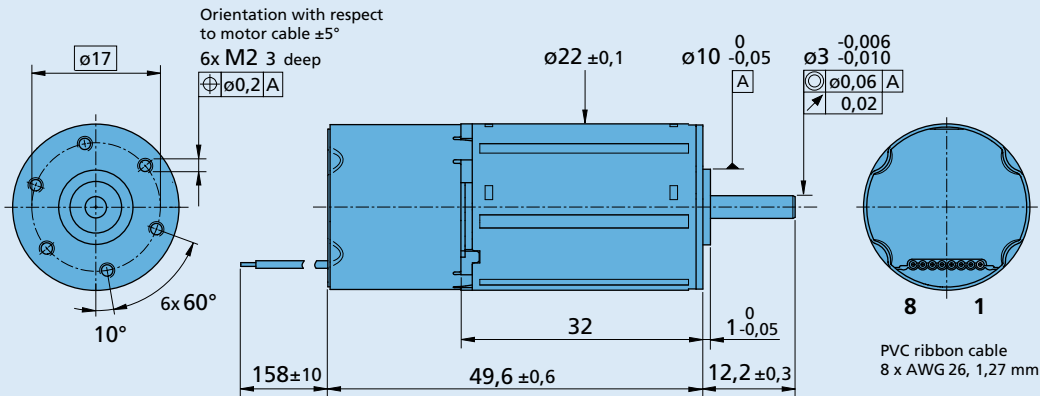
The diagram shows the motor in a completely insulated as well as thermally coupled condition ($R_{\text{th} 2}$ 55% reduced).

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



2232 ... BX4 CSD/CCD/COD

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!

Options

Options

- 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:
22325024 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	kΩ
- 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 mA	
- Digital input		input resistance	100	kΩ
Connection "3.input":				
- Digital input		input resistance	22	kΩ
- 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.