

Brushless DC-Servomotors

4 Pole Technology

18 mNm
23 W

Series 2250 ... BX4 S

| Values at 22°C and nominal voltage | 2250 S | 024 BX4 S | |
|-----------------------------------------------------------------|-------------------------|---------------------------|---------------------------------|
| 1 Nominal voltage | U_N | 24 | V |
| 2 Terminal resistance, phase-phase | R | 5,9 | Ω |
| 3 Efficiency, max. | η_{max} | 72 | % |
| 4 No-load speed | n_0 | 10 900 | min ⁻¹ |
| 5 No-load current, typ. (with shaft \varnothing 3 mm) | I_0 | 0,095 | A |
| 6 Stall torque | M_H | 85,7 | mNm |
| 7 Friction torque, static | C_0 | 0,54 | mNm |
| 8 Friction torque, dynamic | C_V | $1,3 \cdot 10^{-4}$ | mNm/min ⁻¹ |
| 9 Speed constant | k_n | 448 | min ⁻¹ /V |
| 10 Back-EMF constant | k_E | 2,231 | mV/min ⁻¹ |
| 11 Torque constant | k_M | 21,3 | mNm/A |
| 12 Current constant | k_I | 0,047 | A/mNm |
| 13 Slope of n-M curve | $\Delta n / \Delta M$ | 124,8 | min ⁻¹ /mNm |
| 14 Terminal inductance, phase-phase | L | 250 | μ H |
| 15 Mechanical time constant | τ_m | 6,7 | ms |
| 16 Rotor inertia | J | 5,1 | gcm ² |
| 17 Angular acceleration | α_{max} | 168 | $\cdot 10^3$ rad/s ² |
| 18 Thermal resistance | R_{th1} / R_{th2} | 3,7 / 15,1 | K/W |
| 19 Thermal time constant | τ_{w1} / τ_{w2} | 13 / 550 | s |
| 20 Operating temperature range: | | | |
| – motor | | -40 ... +100 | °C |
| – winding, max. permissible | | +125 | °C |
| 21 Shaft bearings | | ball bearings, preloaded | |
| 22 Shaft load max.: | | | |
| – with shaft diameter | | 3 | mm |
| – radial at 3 000 min ⁻¹ (5 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 Mass | | 88 | g |
| 26 Direction of rotation | | electronically reversible | |
| 27 Speed up to | n_{max} | 26 000 | min ⁻¹ |
| 28 Number of pole pairs | | 2 | |
| 29 Hall sensors | | digital | |
| 30 Magnet material | | NdFeB | |
| Rated values for continuous operation | | | |
| 31 Rated torque | M_N | 13,7 | mNm |
| 32 Rated current (thermal limit) | I_N | 0,81 | A |
| 33 Rated speed | n_N | 8 720 | min ⁻¹ |

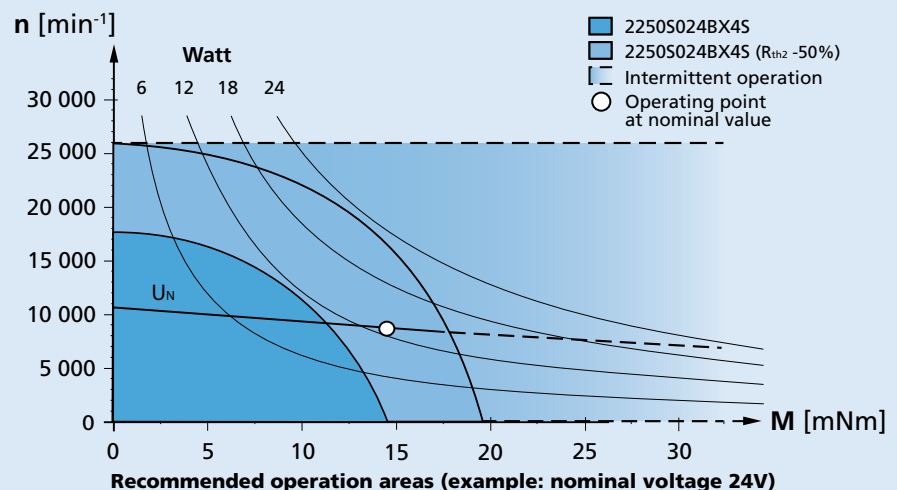
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

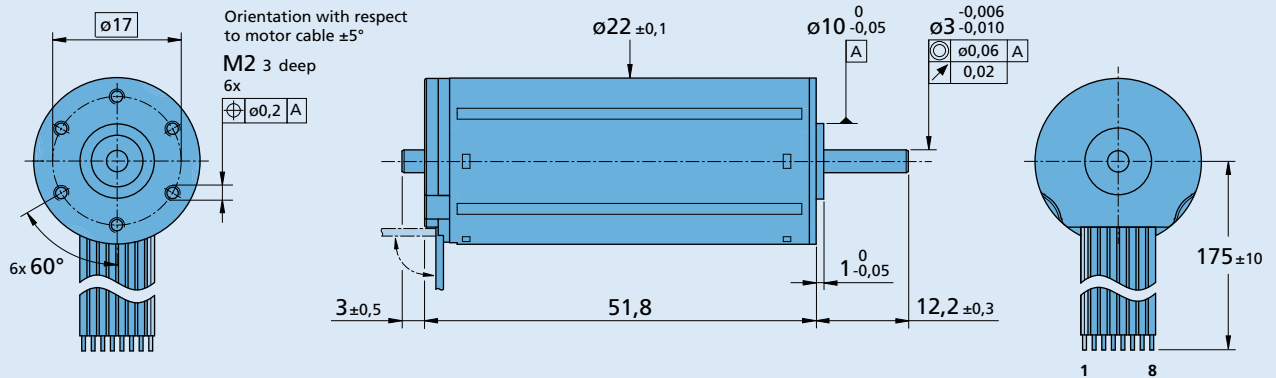
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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



2250 S ... BX4 S

Option, cable and connection information

Example product designation: 2250S024BX4S-3830

| Option | Type | Description | Connection | |
|--------|--------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------|
| | | | standard | Option: 4935 |
| 3830 | Connector | AWG 26 / PVC ribbon cable with connector MOLEX Microfit 3.0, 43025-0800, recommended mating connector 43020-0800 | No. Function | Function Colour |
| 4935 | Single wires | Motor with single wires (PTFE), length 175 mm, AWG26 | 1 Phase C | Phase C yellow |
| X4935 | Single wires | Motor with single wires (PTFE), length 300 mm, AWG26 | 2 Phase B | Phase B orange |
| Y4935 | Single wires | Motor with single wires (PTFE), length 600 mm, AWG26 | 3 Phase A | Phase A brown |
| Y158 | Shaft end | Motor without second shaft end | 4 GND | GND black |
| | | | 5 U _{DD} (+5V) | U _{DD} (+5V) red |
| | | | 6 Hall sensor C | Hall sensor C grey |
| | | | 7 Hall sensor B | Hall sensor B blue |
| | | | 8 Hall sensor A | Hall sensor A green |
| | | | Standard cable | |
| | | | Insulation: PVC | |
| | | | 8 conductors, AWG 26 | |
| | | | pitch 1,27 mm, wires tinned | |

Product combination

| Precision Gearheads / Lead Screws | Encoders | Drive Electronics | Cables / Accessories |
|-----------------------------------|------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 22F 22/7 26A BS22-1.5 | IE3-1024 IE3-1024 L IER3-10000 IER3-10000 L AES-4096 | SC 2402 SC 2804 SC 5004 SC 5008 MC 5004 MC 5008 | MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter. |