

## **Brushless DC-Servomotors**

# 99 mNm

with integrated Speed Controller 4 Pole Technology

53 W

### 3268 ... BX4 SC

| Values at 22°C and nominal voltage   3268 G   024 BX4 SC   |   |            |                          |            |                   |
|--|---|------------|--------------------------|------------|-------------------|
| Power supply motor         Umot         6,5 30           Nominal voltage for motor         UN         24           No-load speed (at Un)         no         5 100           Peak torque (S2 operation for max. 3s)         Mmax.         198           Torque constant         km         43,5           PWM switching frequency         frwm         96           Efficiency electronic         η         95           Standby current for electronic (@ Un)         let         0,01           Speed range (up to 30V)         400 6 500    Shaft load max.:  - with shaft diameter  - radial at 3 000 min⁻¹ (3 mm from mounting flange)  - axial at 3 000 min⁻¹ (push / pull)  - axial at standstill (push / pull)  - axial at standstill (push / pull)  So Shaft play:  - radial  - axial  Operating temperature range  -40 +100  stainless steel  |   | 3268 0     | 3                        | 024 BX4 SC |                   |
| Nominal voltage for motor       UN       24         No-load speed (at UN)       no       5 100         Peak torque (S2 operation for max. 3s)       Mmax       198         Torque constant       kM       43,5         PWM switching frequency       fPWM       96         Efficiency electronic       η       95         Standby current for electronic (@ UN)       lel       0,01         Speed range (up to 30V)       ball bearings, preloaded         Shaft bearings       ball bearings, preloaded         Shaft load max.:       - vith shaft diameter       5         - radial at 3 000 min⁻¹ (3 mm from mounting flange)       50         - axial at 3 000 min⁻¹ (push / pull)       5         - axial at standstill (push / pull)       50         Shaft play:       - radial       ≤ 0,015         - axial       = 0         Operating temperature range       -40 +100         Housing material       stainless steel   |   | $U_P$      |                          | 6,5 30     | V DC              |
| No-load speed (at $U_N$ ) $n_0$ 5 100 Peak torque (S2 operation for max. 3s) $M_{max}$ 198 Torque constant $k_M$ 43,5 PWM switching frequency $f_{PWM}$ 96 Efficiency electronic $\eta$ 95 Standby current for electronic (@ $U_N$ ) $I_{el}$ 0,01 Speed range (up to 30V) 400 6 500  Shaft bearings 5 Shaft load max.:  - with shaft diameter 5 - radial at 3 000 min <sup>-1</sup> (3 mm from mounting flange) 50 - axial at 3 000 min <sup>-1</sup> (push / pull) 5 - axial at standstill (push / pull) 50 Shaft play:  - radial - axial 500 Operating temperature range 40 +100 Housing material 5100  Torque constant 5100 Housing material 5100  198 To0 | Power supply motor  | $U_{mot}$  |                          | 6,5 30     | V DC              |
| Peak torque (S2 operation for max. 3s)     Mmax.     198       Torque constant     kM     43,5       PWM switching frequency     fpwM     96       Efficiency electronic     η     95       Standby current for electronic (@ UN)     lel     0,01       Speed range (up to 30V)     400 6 500       Shaft bearings     ball bearings, preloaded       Shaft load max.:     - with shaft diameter     5       - radial at 3 000 min⁻¹ (3 mm from mounting flange)     50       - axial at 3 000 min⁻¹ (push / pull)     5       - axial at standstill (push / pull)     50       Shaft play:        - radial     ≤ 0,015       - axial     = 0       Operating temperature range     -40 +100       Housing material     stainless steel   | Nominal voltage for motor                                       | $U_N$      |                          | 24         | V                 |
| Torque constant $k_M$ 943,5  PWM switching frequency $f_{PWM}$ 96  Efficiency electronic $\eta$ 95  Standby current for electronic (@ $U_N$ ) $I_{el}$ 0,01  Speed range (up to 30V) 400 6 500  Shaft bearings ball bearings, preloaded 5haft load max.:  - with shaft diameter 5 - radial at 3 000 min <sup>-1</sup> (3 mm from mounting flange) 50  - axial at 3 000 min <sup>-1</sup> (push / pull) 5 - axial at standstill (push / pull) 50  Shaft play:  - radial 5 - axial 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5   | No-load speed (at Un)   | <b>n</b> o |                          | 5 100      | min <sup>-1</sup> |
| PWM switching frequency       f <sub>PWM</sub> 96         Efficiency electronic       η       95         Standby current for electronic (@ U <sub>N</sub> )       I <sub>el</sub> 0,01         Speed range (up to 30V)       400 6 500         Shaft bearings       ball bearings, preloaded         Shaft load max.:       5         - with shaft diameter       5         - radial at 3 000 min⁻¹ (3 mm from mounting flange)       50         - axial at 3 000 min⁻¹ (push / pull)       5         - axial at standstill (push / pull)       50         Shaft play:       - radial         - radial       ≤ 0,015         - axial       = 0         Operating temperature range       -40 +100         Housing material       stainless steel   | Peak torque (S2 operation for max. 3s)                          | $M_{max.}$ |                          | 198        | mNm               |
| Efficiency electronic  | Torque constant   | <b>к</b> м |                          | 43,5       | mNm/A             |
| Standby current for electronic (@ UN)       Iel       0,01         Speed range (up to 30V)       400 6 500         Shaft bearings       ball bearings, preloaded         Shaft load max.:       5         - with shaft diameter       5         - radial at 3 000 min⁻¹ (3 mm from mounting flange)       50         - axial at 3 000 min⁻¹ (push / pull)       50         Shaft play:       50         - radial       ≤ 0,015         - axial       = 0         Operating temperature range       -40 +100         Housing material       stainless steel   | PWM switching frequency   | $f_{PWM}$  |                          | 96         | kHz               |
| Standby current for electronic (@ Un)       Iel       0,01         Speed range (up to 30V)       400 6 500         Shaft bearings       ball bearings, preloaded         Shaft load max.:       - with shaft diameter         - radial at 3 000 min⁻¹ (3 mm from mounting flange)       50         - axial at 3 000 min⁻¹ (push / pull)       50         Shaft play:       - radial         - radial       ≤ 0,015         - axial       = 0         Operating temperature range       -40 +100         Housing material       stainless steel   | Efficiency electronic   | $\eta$     |                          | 95         | %                 |
| Shaft bearings Shaft load max.:  - with shaft diameter  - radial at 3 000 min⁻¹ (3 mm from mounting flange)  - axial at 3 000 min⁻¹ (push / pull)  - axial at standstill (push / pull)  Shaft play:  - radial  - axial  Operating temperature range  Housing material  ball bearings, preloaded  5  5  5  50  50  50  50  50  50  50   | Standby current for electronic (@ UN)                           |            |                          | 0,01       | Α                 |
| Shaft load max.:       - with shaft diameter       5         - radial at 3 000 min⁻¹ (3 mm from mounting flange)       50         - axial at 3 000 min⁻¹ (push / pull)       5         - axial at standstill (push / pull)       50         Shaft play:       - radial         - axial       ≤ 0,015         - axial       = 0         Operating temperature range       -40 +100         Housing material       stainless steel   | Speed range (up to 30V)   |            |                          | 400 6 500  | min <sup>-1</sup> |
| Shaft load max.:       - with shaft diameter       5         - radial at 3 000 min⁻¹ (3 mm from mounting flange)       50         - axial at 3 000 min⁻¹ (push / pull)       5         - axial at standstill (push / pull)       50         Shaft play:       - radial         - axial       ≤ 0,015         - axial       = 0         Operating temperature range       -40 +100         Housing material       stainless steel   |   |            |                          |            |                   |
| - with shaft diameter - radial at 3 000 min⁻¹ (3 mm from mounting flange) - axial at 3 000 min⁻¹ (push / pull) - axial at standstill (push / pull) 50 Shaft play: - radial - axial - axial  Operating temperature range Housing material  5 5 5 5 5 5 5 6 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9  | Shaft bearings  |            | ball bearings, preloaded |            |                   |
| - radial at 3 000 min-1 (3 mm from mounting flange)  - axial at 3 000 min-1 (push / pull)  - axial at standstill (push / pull)  Shaft play:  - radial  - axial   | Shaft load max.:  |            |                          |            |                   |
| - axial at 3 000 min <sup>-1</sup> (push / pull) 5 - axial at standstill (push / pull) 50 Shaft play: - radial ≤ 0,015 - axial = 0  Operating temperature range -40 +100 Housing material stainless steel  | – with shaft diameter   |            | 5                        |            | mm                |
| - axial at standstill (push / pull)  Shaft play:  - radial  - axial  Solution  Shaft play:  - radial  Solution  Sol                  | – radial at 3 000 min <sup>-1</sup> (3 mm from mounting flange) |            | 50                       |            | N                 |
| Shaft play:  - radial $\leq 0,015$ - axial $= 0$ Operating temperature range $= -40 \dots +100$ Housing material $= -40 \dots +100$  | - axial at 3 000 min-1 (push / pull)                            |            | 5                        |            | N                 |
| - radial ≤ 0,015 - axial = 0  Operating temperature range -40 +100  Housing material stainless steel   | <ul> <li>axial at standstill (push / pull)</li> </ul>           |            | 50                       |            | N                 |
| - axial = 0  Operating temperature range -40 +100  Housing material stainless steel  | Shaft play:   |            |                          |            |                   |
| Operating temperature range -40 +100 Housing material stainless steel  | – radial  |            | ≤ 0,015                  |            | mm                |
| Housing material stainless steel   | – axial   |            | = 0                      |            | mm                |
| Housing material stainless steel   |   |            |                          |            |                   |
|  | Operating temperature range                                     |            | -40 +100                 |            | °C                |
| Mass 305   | Housing material  |            | stainless steel          |            |                   |
|  | Mass  |            | 305                      |            | g                 |
|  |   |            |                          |            | -                 |

| Rated values for continuous operation |                       |       |                   |  |  |
|---------------------------------------|-----------------------|-------|-------------------|--|--|
| Rated torque                          | M <sub>N</sub>        | 99    | mNm               |  |  |
| Rated current (thermal limit)         | <i>I</i> <sub>N</sub> | 2,53  | Α                 |  |  |
| Rated speed                           | nn                    | 4 200 | min <sup>-1</sup> |  |  |

Interface / range of functions
Configuration from Motion Manager 5.0

via USB Programming Adapter

Operating modes

Speed range Additional functions

Integrated speed control via PI controller and external set value specification; commutation via digital Hall sensors (or optionally via analog Hall sensors). Can optionally be operated in voltage controller mode or fixed speed mode.

Digital Hall = from 400 min<sup>-1</sup>, analog Hall = from 50 min<sup>-1</sup>

Integrated current limitating to protect against thermal overload. Intermittent operation (S2) with up to double the continuous current. Separate voltage supply for motor and electronics. Direction of rotation changeover through separate switching input; reading of speed signal via frequency output.

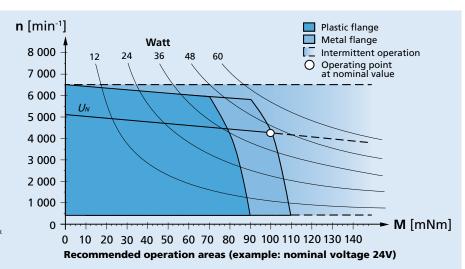
The display shows the range of possible operation points of the drives at a given ambient temperature of 22°C.

The diagram indicates the recommended speed in relation to the available torque at the output shaft.

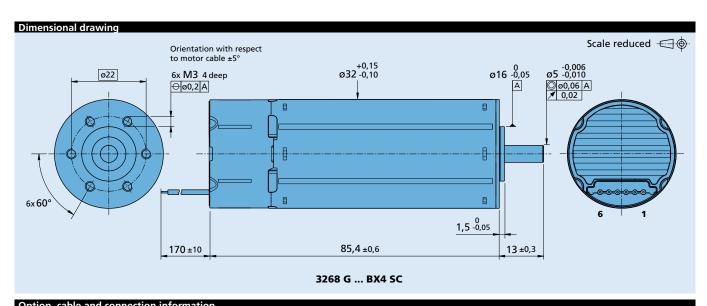
It includes the assembly on a plastic- as well as on a metal flange (assembly method: IM B 5).

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  $U_{mot} > U_{N.}$ 







| Option, can                                     | ole and connection | IIIOIIIIatioii  |   |            |  |  |
|---|--------------------|---|---|------------|--|--|
| Example product designation: 3268G024BX4SC-3692 |                    |   |   |            |  |  |
| Option  | Туре               | Description   | Connection  |            |  |  |
|   |                    |   | Name  | e Function | Inputs-outputs                                     | Description  |
| 3809  | Connector          | AWG 24 / PVC ribbon cable with connector MOLEX Microfit 3.0, 43025-0600, recommended mating | 1   | UP         | power supply electronic                            | 6,5 30 V DC  |
|   | 531                | connector 43020-0600  | 2   | Umot       | power supply electronic coil                       | 6,5 30 V DC  |
|   | 642                |   | 3   | GND        | ground   |  |
| 3692  | Sensors            | Hall Sensors  | 4   | Unsoll     | analog input voltage                               | Uin = 0 10 V   > 10 V U <sub>P</sub>   |
| 3092  | 36113013           | riali Serisors  |   |            | input resistance                                   | » set speed value not defined $Rin \ge 8.9  \text{k}\Omega$ per 1 V , 1 000 min <sup>-1</sup> $Uin < 0.15  \text{V}$ » motor stops |
|   |                    |   |   |            | set speed value                                    |  |
|   |                    |   |   |            |  | Uin > 0,3 V » motor starts   |
|   |                    |   | 5 DIR   | DIR        | direction of rotation                              | to ground or $U < 0.5 \text{ V}$ » counterclockwis   |
|   |                    |   |   |            | input resistance                                   | open or level > 3 V » clockwise $Rin \ge 10 \text{ k}\Omega$   |
|   |                    |   | 6   | FG         | frequency output                                   | max. $U_P$ ; $Imax = 15$ mA; open collector  |
|   |                    |   |   |            | with 22 kΩ pull-up resistor 6 lines per revolution |  |
|   |                    |   |   |            |  | o intes per revolution   |
|   |                    |   | Standard cable PVC ribbon cable 6 x AWG 24, 2,54 mm                                   |            |  |  |
|   |                    |   | <b>Note:</b> For details on the connection assignment, see device manual for the SCS. |            |  |  |

| Product combination   |          |                   |  |  |  |
|---|----------|-------------------|--|--|--|
| Precision Gearheads / Lead Screws   | Encoders | Drive Electronics | Cables / Accessories   |  |  |
| 32GPT<br>32/3R<br>38/1<br>38/1 S<br>38/2<br>38/2 S<br>42GPT<br>32L TL<br>32L ML<br>32L SB<br>32L PB |          | Integrated        | To view our large range of accessory parts, please refer to the "Accessories" chapter. |  |  |