

# Brushless DC-Servomotors

## with integrated Speed Controller

### 4 Pole Technology

## 58 mNm

For combination with  
Gearheads:  
30/1, 32A, 32ALN, 32/3 (S), 38/1(S), 38/2(S)

### Series 3268 ... BX4 SCDC

	3268 G		024 BX4	SCDC
1 Nominal voltage	$U_N$		24	Volt
2 Terminal resistance, phase-phase	R		1,45	$\Omega$
3 Output power <sup>1)</sup>	$P_{2 \text{ max.}}$		32,7	W
4 Efficiency	$\eta_{\text{ max.}}$		79,5	%
5 No-load speed	$n_0$		5 300	rpm
6 No-load current	$I_0$		0,210	A
7 Stall torque	$M_H$		137	mNm
8 Friction torque, static	$C_0$		1,7	mNm
9 Friction torque, dynamic	$C_v$		$1,3 \cdot 10^{-3}$	mNm/rpm
10 Speed constant	$k_n$		220	rpm/V
11 Back-EMF constant	$k_E$		4,555	mV/rpm
12 Torque constant	$k_M$		43,5	mNm/A
13 Current constant	$k_I$		0,0230	A/mNm
14 Slope of n-M curve	$\Delta n / \Delta M$		7,3	rpm/mNm
15 Terminal inductance, phase-phase	L		110	$\mu\text{H}$
16 Mechanical time constant	$\tau_m$		4,6	ms
17 Rotor inertia	J		60	$\text{gcm}^2$
18 Angular acceleration	$\alpha_{\text{ max.}}$		23	$\cdot 10^3 \text{ rad/s}^2$
19 Thermal resistance	$R_{th 1} / R_{th 2}$	1,9 / 9,6		K/W
20 Thermal time constant	$\tau_{w1} / \tau_{w2}$	17 / 1 060		s
21 Operating temperature range		- 40 ... + 85		$^{\circ}\text{C}$
22 Shaft bearings		ball bearings, preloaded		
23 Shaft load max.:				
– radial at 3 000 rpm (4,5 mm from mounting flange)		50		N
– axial at 3 000 rpm		5		N
– axial at standstill		50		N
24 Shaft play:				
– radial	$\leq$	0,015		mm
– axial	$=$	0		mm
25 Housing material		stainless steel		
26 Weight		305		g
27 Direction of rotation		electronically reversible		
28 Number of pole pairs		2		
<b>Recommended values - mathematically independent of each other</b>				
29 Speed up to	$n_{e \text{ max.}}$		6 500	rpm
30 Torque up to <sup>1) 2)</sup>	$M_{e \text{ max.}}$		37 / 58	mNm
31 Current up to <sup>1) 2)</sup>	$I_{e \text{ max.}}$		1,11 / 1,60	A

<sup>1)</sup> at 5000 rpm

<sup>2)</sup> thermal resistance  $R_{th 2}$  not reduced / thermal resistance  $R_{th 2}$  by 55% reduced

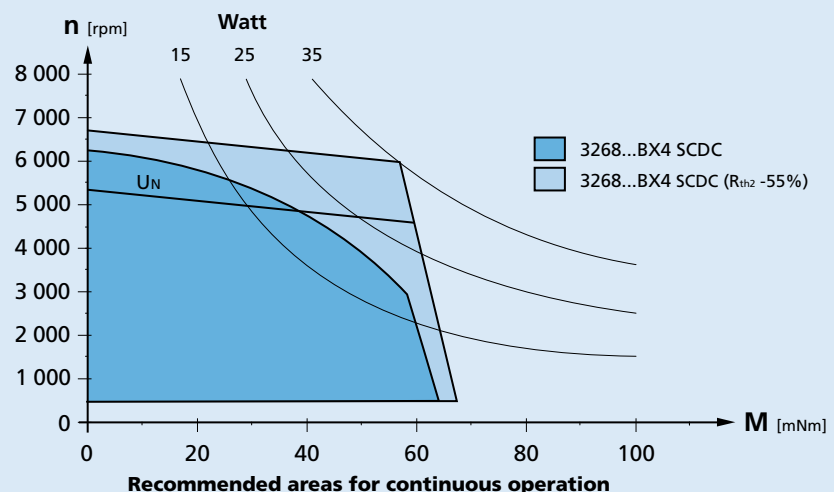
#### Note:

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

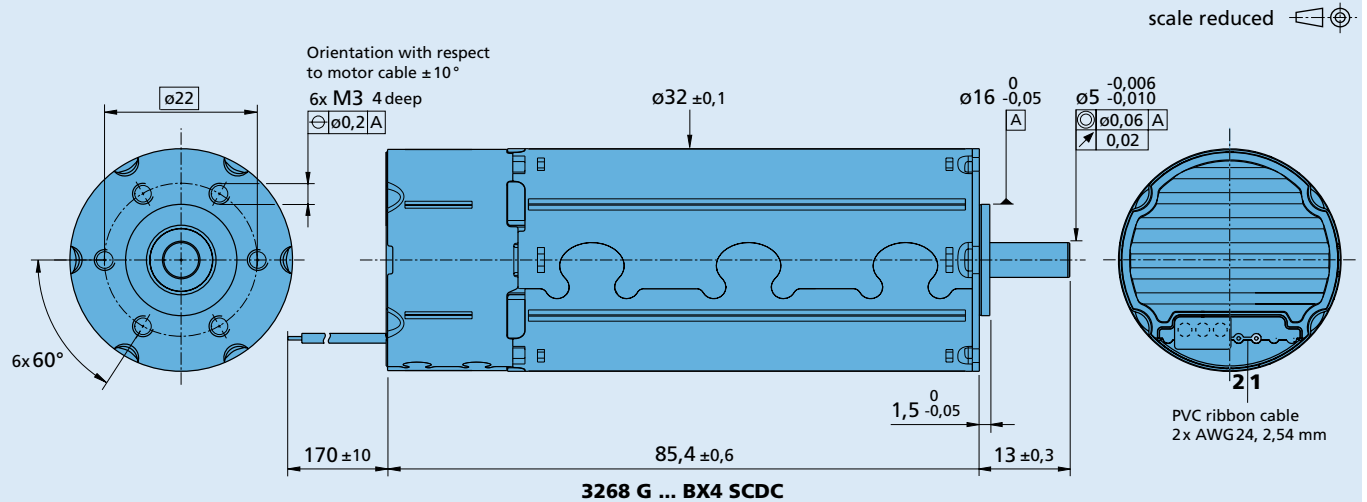
The diagram shows the motor in a completely insulated as well as thermally coupled condition ( $R_{th 2} \geq 55\%$  reduced).

The motor is factory pre-configured to perform at the recommended continuous current. Non-standard configurations are only possible upon request from the manufacturer.

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



Speed Controller		024 BX4	SCDC
Power supply electronic	$U_p$	6,5 ... 30	V DC
Power supply motor	$U_{mot}$	6,5 ... 30	V DC
PWM switching frequency	$f_{PWM}$	96	kHz
Efficiency	$\eta$	95	%
Max. continuous output current <sup>1)</sup>	$I_{dauer}$	1,6	A
Max. peak output current	$I_{max}$	4	A
Total standby current at $U_N$	$I_{el}$	10	mA
Speed range, electronics		400 ... 50 000 <sup>2)</sup>	rpm
Scanning rate		500	$\mu s$

<sup>1)</sup> at 22°C ambient temperature

<sup>2)</sup> speed is dependent on the motor operating voltage

### Connection information

Connection 1 "Mot +": positive power supply

Connection 2 "Mot -": negative power supply

### Features

In this version, the brushless DC servomotors have an integrated Speed Controller. The motor is commutated using the integrated digital hall sensors. Speed control is via a PI regulator.

The Speed Controller has a current limiting device which limits the maximum motor current if the thermal load is too high. Twice the continuous current is possible over a short time.

The direction of rotation is dependent on the polarity of the voltage.

### Full product description

■ Examples:  
**3268G024BX4 SCDC**

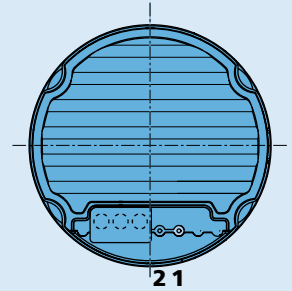
**Connection information**

**Options**

- Connector variants (Option no. 4140)  
AWG 24 / PVC ribbon cable  
with connector Micro-Fit  
connector pin assignment:



**Cable connection**



**Connection**

No.	Function
1	Mot +
2	Mot -