

Brushless DC-Servomotors

with integrated Motion Controller
and RS232 or CAN interface

53 mNm

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

3564 ... B Cx

	3564 K		024 B CS/CC/CO	
1 Nominal voltage	U_N		24	Volt
2 Terminal resistance, phase-phase	R		1,16	Ω
3 Output power ¹⁾	$P_{2 \text{ max.}}$		51	W
4 Efficiency	$\eta_{\text{ max.}}$		82	%
5 No-load speed	n_o		10 500	rpm
6 No-load current ³⁾	I_o		0,225	A
7 Stall torque at 8A	M_H		160	mNm
8 Friction torque, static	C_o		1,10	mNm
9 Friction torque, dynamic	C_v		$2,4 \cdot 10^{-4}$	mNm/rpm
10 Speed constant	k_n		473	rpm/V
11 Back-EMF constant	k_E		2,114	mV/rpm
12 Torque constant	k_M		20,2	mNm/A
13 Current constant	k_i		0,05	A/mNm
14 Slope of n-M curve	$\Delta n / \Delta M$		26,2	rpm/mNm
15 Terminal inductance, phase-phase	L		194	μH
16 Mechanical time constant	τ_m		9,3	ms
17 Rotor inertia	J		34	gcm^2
18 Angular acceleration	$\alpha_{\text{ max.}}$		47	$\cdot 10^3 \text{ rad/s}^2$
19 Thermal resistance	$R_{\text{th} 1} / R_{\text{th} 2}$	2,5 / 6,3		K/W
20 Thermal time constant	τ_{w1} / τ_{w2}	23 / 1 175		s
21 Operating temperature range		- 30 ... +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)		108		N
– axial at 3 000 rpm		50		N
– axial at standstill		131		N
24 Shaft play:				
– radial	\leq	0,015		mm
– axial	$=$	0		mm
25 Housing material		motor: aluminium, black anodized; controller housing: zinc		
26 Weight		510		g
27 Direction of rotation		electronically reversible		
Recommended values - mathematically independent of each other				
28 Speed up to	$n_{e \text{ max.}}$		5 - 12 000	rpm
29 Torque up to ^{1) 2)}	$M_{e \text{ max.}}$		39 / 53	mNm
30 Current up to ^{1) 2) 3)}	$I_{e \text{ max.}}$		2,1 / 2,8	A

¹⁾ at 8 400 rpm ²⁾ thermal resistance $R_{\text{th} 2}$ not reduced / thermal resistance $R_{\text{th} 2}$ by 55% reduced

³⁾ current for electronic plus 0,055 A at $U_B = 24\text{V}$

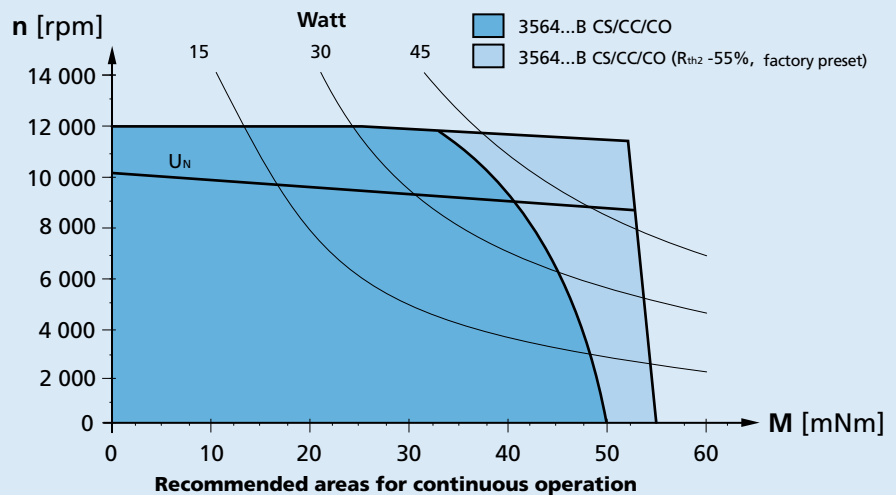
Note:

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


The motor can provide more power with adequate cooling (for ex. $R_{\text{th} 2}$ reduction of -55%).

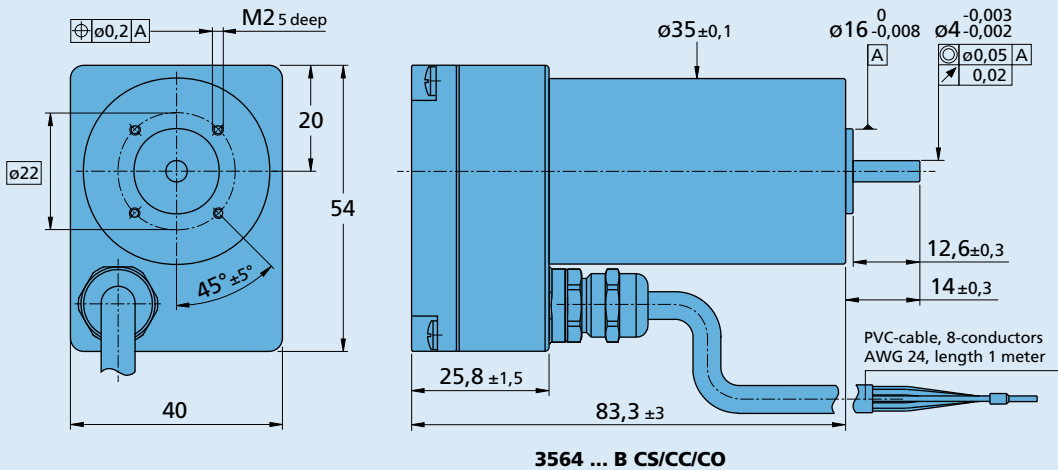
The maximum available torque and speed will be reduced if the ambient temperature is higher than 22°C and/or the motor is thermally insulated to the ambient environment.

The characteristics of the curve diagram is determined by U_B and the control characteristics of the integrated Motion Controller.



Dimensional drawing

Scale reduced 



Connection

Wires	Function
blue	GND
pink	UB
brown	Analog input
white	Fault output
grey	Analog GND
yellow	RS232 RXD / CAN_L
green	RS232 TXD / CAN_H
red	Connection No. 3

Caution:

Connect motor supply terminals to the correct polarity. Electronics are protected against polarity reversal by an internal fuse. In case of damage, this internal fuse can only be replaced at the factory.

Options

Accessories

- Adapter board (Part No.: 6501.00065)

Full product description

- Example:
 - 3564K024B CS (RS232 interface)
 - 3564K024B CC (CANopen with FAULHABER CAN)
 - 3564K024B CO (CANopen CiA)

Motion Controller

Supply voltage ¹⁾	U_B		12 ... 30	V DC
Peak current ²⁾	I_{max}		8	A
Input/output			3	
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_{EL}		12 ... 30	V DC
Encoder:				
- Scanning rate			100	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...7,0V / High 12,5V... U_B , TTL: Low 0...0,5V / High 3,5V... 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; connection 3.

²⁾ Preset value. Can be changed over the interface.