Brushless DC-Servomotors

2 Pole Technology

66 mNm

126 W

Series 3564 ... B

Values at 22°C and nominal voltage		3564 K	012 B	024 B	036 B	048 B	
1	Nominal voltage	U_N	12	24	36	48	V
2	Terminal resistance, phase-phase	R	0,56	1,1	2,61	4,1	Ω
3	Efficiency, max.	$\eta_{max.}$	82	83	83	83	%
4	No-load speed	n_0	8 300	11 500	11 600	12 800	min^{-1}
5	No-load current, typ. (with shaft ø 4 mm)	I_0	0,198	0,166	0,112	0,099	A
6	Stall torque	M_H	293	432	408	418	mNm
7	Friction torque, static	C_0	1,2	1,2	1,2	1,2	mNm
8	Friction torque, dynamic	C_V	$1{,}8 \cdot 10^{-4}$	$1{,}8 \cdot 10^{-4}$	$1{,}8 \cdot 10^{-4}$	$1{,}8 \cdot 10^{-4}$	mNm/min^{-1}
9	Speed constant	k_n	696	481	323	266	min^{-1}/V
10	Back-EMF constant	k_E	1,44	2,08	3,1	3,75	mV/min^{-1}
11	Torque constant	k_M	13,7	19,9	29,6	35,8	mNm/A
12	Current constant	k_I	0,073	0,05	0,034	0,028	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	28	27	28	31	min^{-1}/mNm
14	Terminal inductance, phase-phase	L	90	190	410	640	µH
15	Mechanical time constant	τ_m	10,4	9,7	10,4	11,1	ms
16	Rotor inertia	J	34,9	34,9	34,9	34,9	gcm²
17	Angular acceleration	$\alpha_{max.}$	84	124	117	120	·10³rad/s²
18	Thermal resistance	R_{th1} / R_{th2}	1,6 / 6,2				K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	15,4 / 820				s
20	Operating temperature range:						
	– motor		-30 ... +125				°C
	– winding, max. permissible		+125				°C
21	Shaft bearings		ball bearings, preloaded				
22	Shaft load max.:						
	– with shaft diameter		4				mm
	– radial at 3 000 min^{-1} (5 mm from mounting flange)		112				N
	– axial at 3 000 min^{-1} (push only)		50				N
	– axial at standstill (push only)		131				N
23	Shaft play:						
	– radial	≤	0,015				mm
	– axial	=	0				mm
24	Housing material		aluminium, black anodized				
25	Mass		311				g
26	Direction of rotation		electronically reversible				
27	Speed up to	$n_{max.}$	29 000				min^{-1}
28	Number of pole pairs		1				
29	Hall sensors		digital				
30	Magnet material		SmCo				
Rated values for continuous operation							
31	Rated torque	M_N	56,2	55,3	53,5	50,4	mNm
32	Rated current (thermal limit)	I_N	4,43	3,04	1,98	1,55	A
33	Rated speed	n_N	6 160	9 620	9 640	10 800	min^{-1}

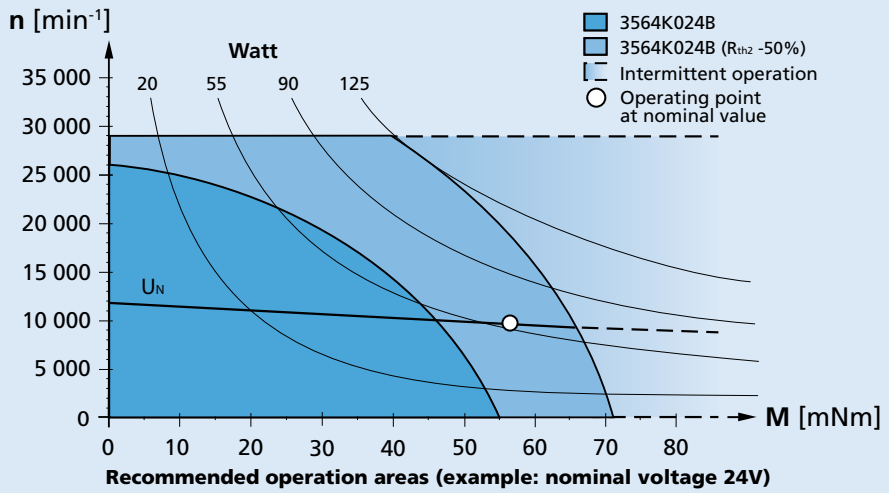
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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.



Recommended operation areas (example: nominal voltage 24V)

For notes on technical data and lifetime performance refer to "Technical Information".

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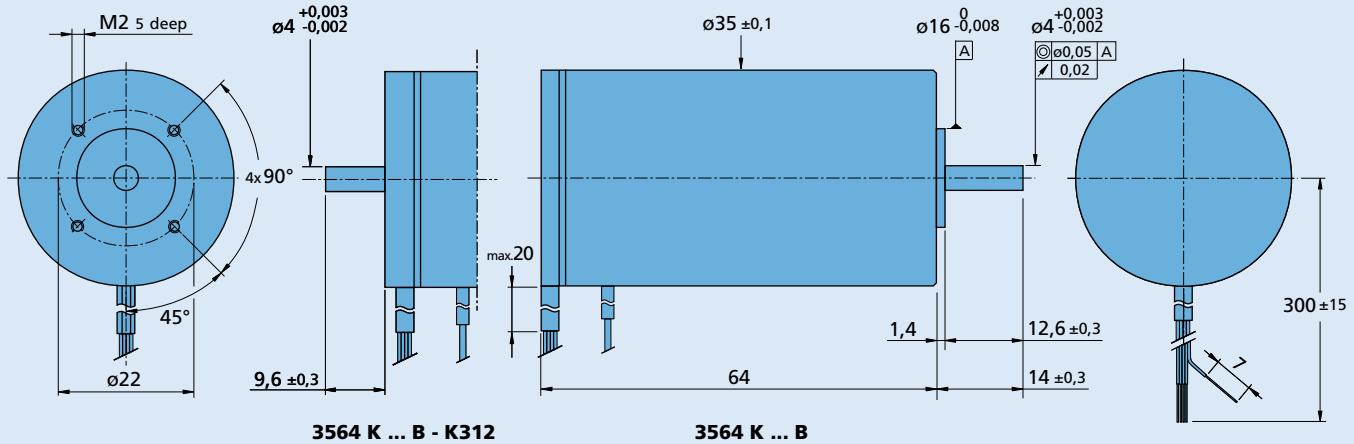
Dimensional drawing

Scale reduced



Option, cable and connection information

Example product designation: **3564K012B-K1155**

Option	Type	Description
K1155	Controller combination	Analog Hall sensors for combination with Motion Controller MCBL
K1026	Sensorless	Motor without Hall sensors
K1838	Encoder combination	Motor with rear end shaft for combination with Encoder IE3
K312	Encoder combination	Motor with rear end shaft for combination with Encoder HEDS/HEDL/HEDM
K179	Bearing lubrication	For vacuum of 10^{-7} Torr @ 20°C

Connection

Function	Colour
Phase C	yellow
Phase B	orange
Phase A	brown
GND	black
U_{DD} (+5V)	red
Hall sensor C	grey
Hall sensor B	blue
Hall sensor A	green

Standard cable

Single wires, material PTFE
AWG 20: Phase A/B/C
AWG 26: Hall A/B/C, U_{DD}, GND

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
30/1	HEDS 5500	SC 2804	MBZ
30/1 S	HEDM 5500	SC 5004	
32/3	IE3-1024	SC 5008	
32/3 S	IE3-1024 L	MCBL 3003	
38A	HEDS 5540	MCBL 3006	
38/1	HEDL 5540		
38/1 S			
38/2			
38/2 S			

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