

Brushless DC-Servomotors

2 Pole Technology

33 mNm
71 W

Series 3056 ... B

Values at 22°C and nominal voltage	3056 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		1,5	6,4	12,3	23,6	Ω
3 Efficiency, max.	η_{max}		76	77	77	76	%
4 No-load speed	n_0		8 800	8 100	8 900	8 900	min^{-1}
5 No-load current, typ. (with shaft \varnothing 4 mm)	I_0		0,128	0,057	0,044	0,033	A
6 Stall torque	M_H		102	104	111	103	mNm
7 Friction torque, static	C_0		0,81	0,81	0,81	0,81	mNm
8 Friction torque, dynamic	C_V		$9,5 \cdot 10^{-5}$	$9,5 \cdot 10^{-5}$	$9,5 \cdot 10^{-5}$	$9,5 \cdot 10^{-5}$	$\text{mNm}/\text{min}^{-1}$
9 Speed constant	k_n		742	343	251	188	min^{-1}/V
10 Back-EMF constant	k_E		1,35	2,91	3,99	5,32	$\text{mV}/\text{min}^{-1}$
11 Torque constant	k_M		12,9	27,8	38,1	50,8	mNm/A
12 Current constant	k_I		0,078	0,036	0,026	0,02	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$		87	79	81	87	$\text{min}^{-1}/\text{mNm}$
14 Terminal inductance, phase-phase	L		160	740	1 400	2 600	μH
15 Mechanical time constant	τ_m		13,6	12,4	12,7	13,7	ms
16 Rotor inertia	J		15	15	15	15	gcm^2
17 Angular acceleration	α_{max}		68	69	74	68	$\cdot 10^3 \text{rad}/\text{s}^2$
18 Thermal resistance	R_{th1} / R_{th2}	2,2 / 7,9					K/W
19 Thermal time constant	τ_{w1} / τ_{w2}	11,7 / 650					s
20 Operating temperature range:							
– motor		-30 ... +125					$^{\circ}\text{C}$
– winding, max. permissible		+125					$^{\circ}\text{C}$
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)		75					N
– axial at 3 000 min^{-1} (push only)		18					N
– axial at standstill (push only)		62					N
23 Shaft play:							
– radial	\leq	0,015					mm
– axial	$=$	0					mm
24 Housing material		aluminium, black anodized					
25 Mass		192					g
26 Direction of rotation		electronically reversible					
27 Speed up to	n_{max}	35 000					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		28,5	30	29,4	28,3	mNm
32 Rated current (thermal limit)	I_N		2,4	1,17	0,838	0,605	A
33 Rated speed	n_N		5 340	4 820	5 600	5 450	min^{-1}

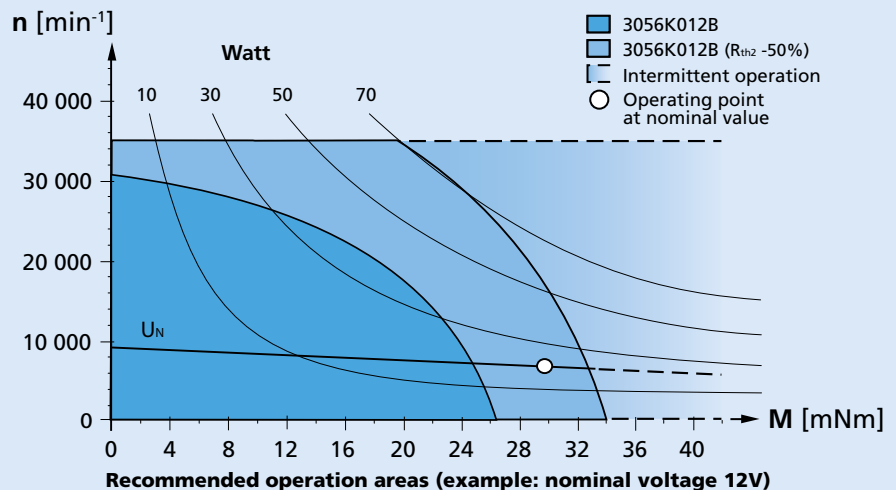
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

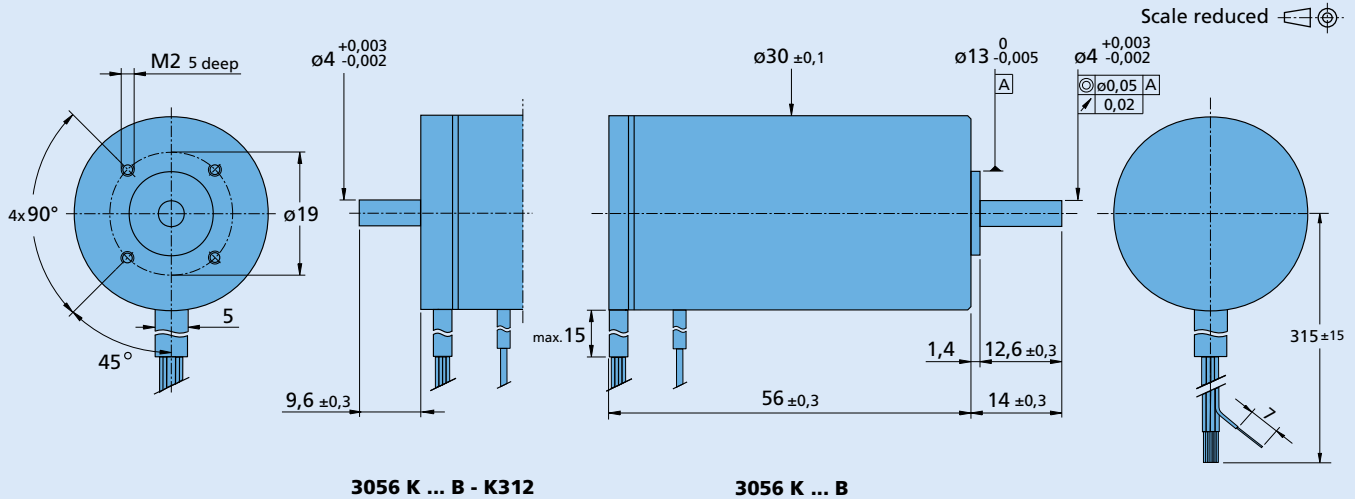
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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



Option, cable and connection information

Example product designation: **3056K012B-K1155**

Option	Type	Description	Connection	
			Function	Colour
K1155	Controller combination	Analog Hall sensors for combination with Speed Controller SC or Motion Controller MC	Phase C	yellow
K1026	Sensorless	Motor without Hall sensors	Phase B	orange
K1555	Lead wires length	Single lead wires 750 mm long in PTFE	Phase A	brown
K1838	Encoder combination	Motor with rear end shaft for combination with Encoder IE3	GND	black
K312	Encoder combination	Motor with rear end shaft for combination with Encoder HEDS/HEDL/HEDM	U _{DD} (+5V)	red
K3051	Encoder combination	Motor with rear end shaft for combination with Encoder AES/AEMT	Hall sensor C	grey
K179	Bearing lubrication	For vacuum of 10 ⁻⁵ Pa @ 22°C	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 2402 P	MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter.
30/1 S	IE3-1024	SC 2804 S	
32GPT	IE3-1024 L	SC 5004 P	
32GPT LN	HEDL 5540	SC 5008 S	
32GPT HT	AEMT-12/16 L	MC 3001 B	
38/1	AES-4096 L	MC 3001 P	
38/1 S		MC 3602 B	
38/2		MC 3603 S	
38/2 S		MC 3606 B	
32L ... TL		MC 5004 P	
32L ... ML		MC 5005 S	
32L ... SB			
32L ... PB			