

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}

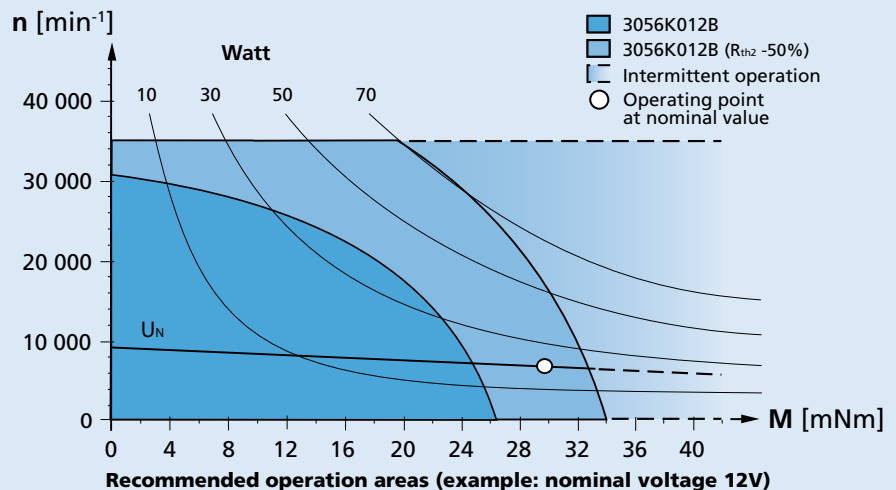
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

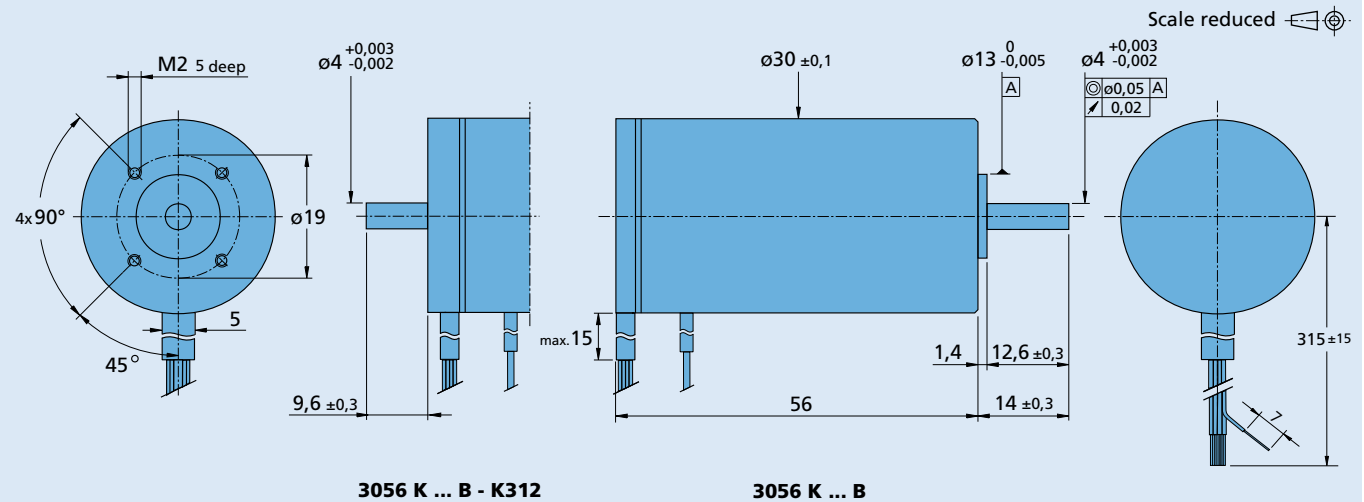
Note:

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 Motion Controller MCBL	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	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	
38/1	IE3-1024 L	SC 5004 P	
38/1 S	HEDL 5540	SC 5008 S	
38/2	AES-4096	MCBL 3002 P	
38/2 S		MCBL 3002 S	
		MCBL 3003 P	
		MCBL 3006 S	
		MC 5004 P	
		MC 5004 P STO	
		MC 5005 S	