

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}

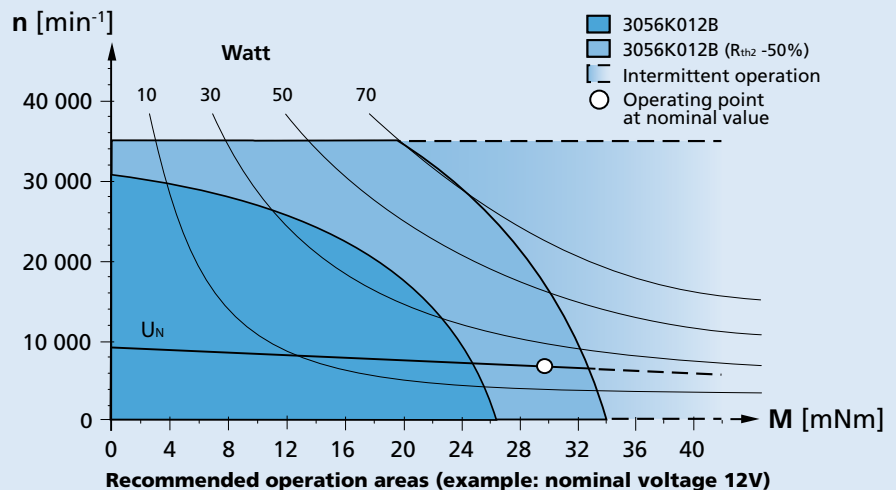
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

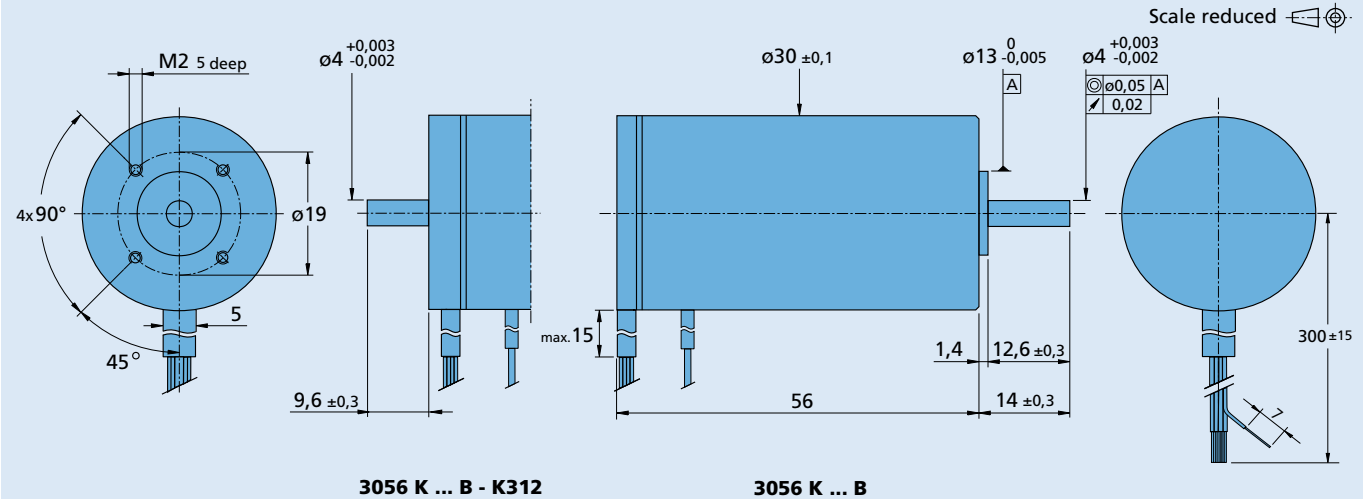
Note:

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
K179	Bearing lubrication	For vacuum of 10 ⁻⁵ Pa @ 22°C	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 30/1 S 38/1 38/1 S 38/2 38/2 S	HEDS 5500 IE3-1024 IE3-1024 L HEDL 5540	SC 2402 SC 2804 SC 5004 SC 5008 MC 5004 MC 5005 MCBL 3002 MCBL 3003 MCBL 3006	MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter.