

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 ø 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	9,5·10 ⁻⁵	9,5·10 ⁻⁵	9,5·10 ⁻⁵	9,5·10 ⁻⁵	mNm/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	mV/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	min ⁻¹ /mNm
14	Terminal inductance, phase-phase	L	160	740	1 400	2 600	μ H
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	·10 ³ rad/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				°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)		75				N
	– axial at 3 000 min ⁻¹ (push only)		18				N
	– axial at standstill (push only)		62				N
23	Shaft play:						
	– radial	≤	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

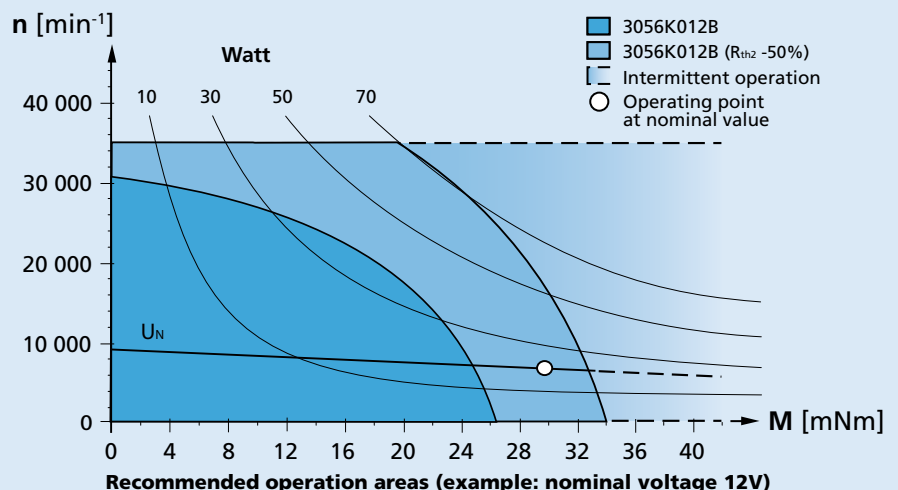
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

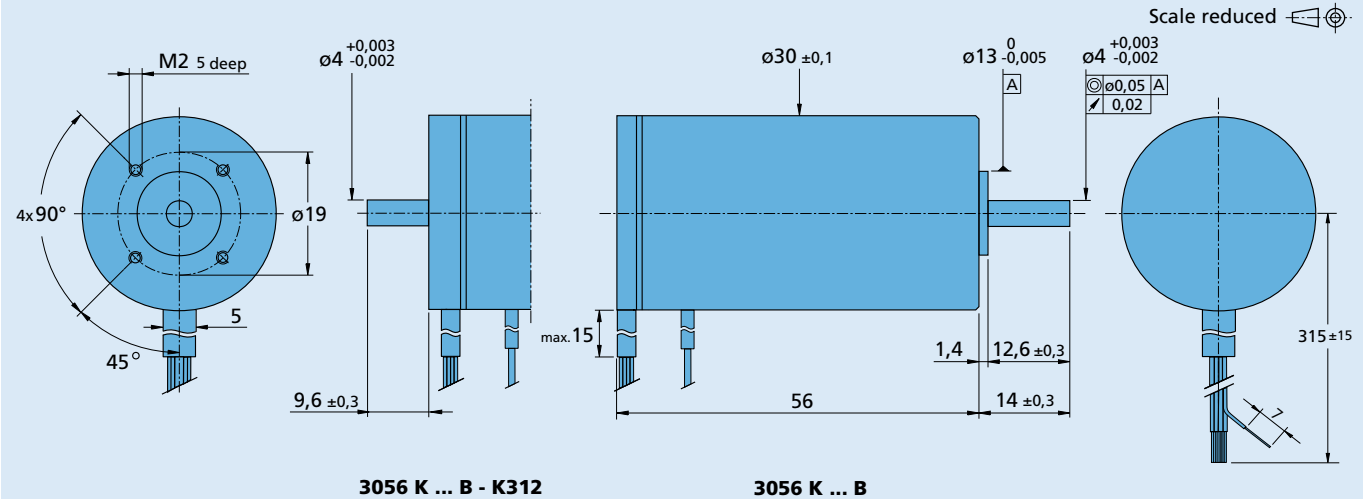
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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	
32GPT	IE3-1024 L	SC 5004 P	
38/1	HEDL 5540	SC 5008 S	
38/1 S	AES-4096	MCBL 3002 P	
38/2	AES-4096 L	MCBL 3002 S	
38/2 S		MCBL 3003 P	
		MCBL 3006 S	
		MC 5004 P	
		MC 5004 P STO	
		MC 5005 S	