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TECHNOLOGY GROUP

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Brushless DC-Servomotors

2 Pole Technology

7,2 mNm

25 W

Series 2036 ... B

Values at 22°C and nominal voltage		2036 U		012 B	024 B	036 B	048 B	
1	Nominal voltage	U_N		12	24	36	48	V
2	Terminal resistance, phase-phase	R		3,24	13,4	26,4	62,3	Ω
3	Efficiency, max.	$\eta_{max.}$		71	72	71	69	%
4	No-load speed	n_0		18 800	18 400	20 300	18 500	min^{-1}
5	No-load current, typ. (with shaft ø 2 mm)	I_0		0,089	0,043	0,033	0,022	A
6	Stall torque	M_H		21,9	21,6	22,4	18,4	mNm
7	Friction torque, static	C_0		0,22	0,22	0,22	0,22	mNm
8	Friction torque, dynamic	C_V		$1{,}64 \cdot 10^{-5}$	$1{,}64 \cdot 10^{-5}$	$1{,}64 \cdot 10^{-5}$	$1{,}64 \cdot 10^{-5}$	mNm/min^{-1}
9	Speed constant	k_n		1 602	783	575	396	min^{-1}/V
10	Back-EMF constant	k_E		0,624	1,28	1,74	2,52	mV/min^{-1}
11	Torque constant	k_M		5,96	12,2	16,6	24,1	mNm/A
12	Current constant	k_I		0,168	0,082	0,06	0,042	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$		871	860	915	1 024	min^{-1}/mNm
14	Terminal inductance, phase-phase	L		145	613	1 132	2 390	µH
15	Mechanical time constant	τ_m		17,8	17,6	18,7	20,9	ms
16	Rotor inertia	J		1,95	1,95	1,95	1,95	gcm²
17	Angular acceleration	$\alpha_{max.}$		112	111	115	94	·10³rad/s²
18	Thermal resistance	R_{th1} / R_{th2}	4,1 / 16,6					K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	6 / 397					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		2					mm
	– radial at 3 000 min^{-1} (4 mm from mounting flange)		14,5					N
	– axial at 3 000 min^{-1} (push only)		8					N
	– axial at standstill (push only)		30					N
23	Shaft play:							
	– radial	≤	0,015					mm
	– axial	=	0					mm
24	Housing material		aluminium, black anodized					
25	Mass		56					g
26	Direction of rotation		electronically reversible					
27	Speed up to	$n_{max.}$	55 000					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		6,08	6,14	5,87	5,62	mNm
32	Rated current (thermal limit)	I_N		1,14	0,559	0,396	0,26	A
33	Rated speed	n_N		11 430	11 010	12 810	10 450	min^{-1}

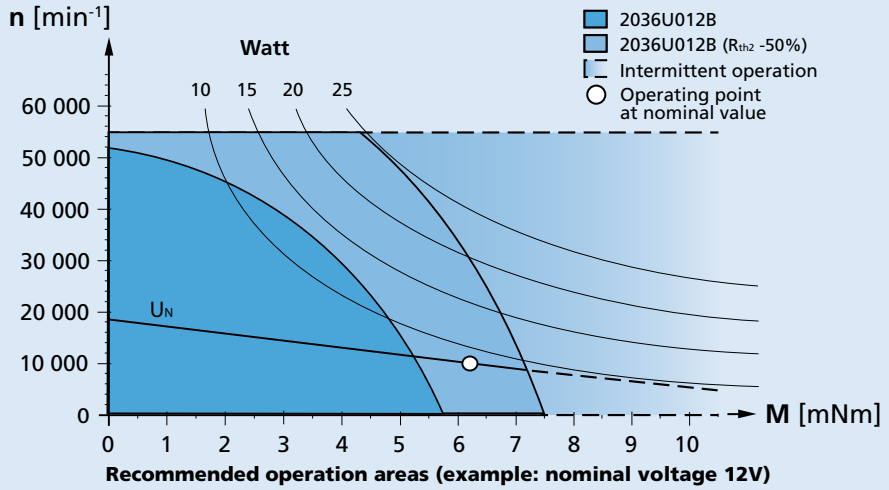
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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.



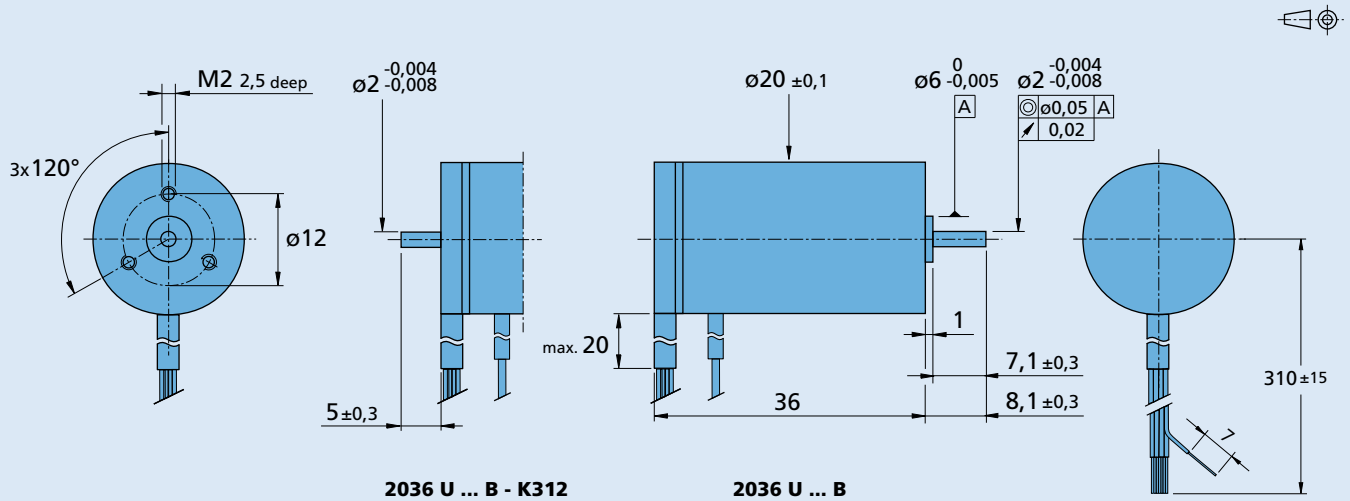
Recommended operation areas (example: nominal voltage 12V)

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

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Dimensional drawing



Option, cable and connection information

Example product designation: **2036U012B-K1155**

Option	Type	Description
K1155	Controller combination	Analog Hall sensors for combination with Speed Controller SC or Motion Controller MC
K1026	Sensorless	Motor without Hall sensors
K903	Lead wires length	Single lead wires 1000 mm long in PTFE
K313	Encoder combination	Motor with rear end shaft for combination with Encoder IE2
K312	Encoder combination	Motor with rear end shaft for combination with Encoder HEDS/HEDL/HEDM
K179	Bearing lubrication	For vacuum of 10^{-5} Pa @ 22°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 24: Phase A/B/C
AWG 26: Hall A/B/C, U_{DD}, GND

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
20/1R 22GPT 22L ... ML 22L ... SB 22L ... PB	IE2-1024 HEDS 5500 HEDL 5540	SC 1801 P SC 1801 S SC 2402 P SC 2804 S SC 5004 P MC 3001 B MC 3001 P MC 3603 S MC 5004 P MC 5005 S	To view our large range of accessory parts, please refer to the “Accessories” chapter.

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

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