

# Brushless DC-Gearmotors

## 4 Pole Technology

30 mNm

### Series 1515 ... B

Values at 22°C and nominal voltage		1515 U	006 B	012 B	
1	Nominal voltage	$U_N$	6	12	V
2	Terminal resistance, phase-phase	$R$	22	92,7	$\Omega$
3	Efficiency, max.	$\eta_{max}$	54	53	%
4	No-load speed	$n_o$	15 000	14 900	$\text{min}^{-1}$
5	No-load current, typ.	$I_o$	0,019	0,009	A
6	Stall torque	$M_H$	0,953	0,904	mNm
7	Friction torque, static	$C_o$	0,019	0,019	mNm
8	Friction torque, dynamic	$C_v$	$3,42 \cdot 10^{-6}$	$3,42 \cdot 10^{-6}$	$\text{mNm}/\text{min}^{-1}$
9	Speed constant	$k_n$	2 682	1 339	$\text{min}^{-1}/\text{V}$
10	Back-EMF constant	$k_E$	0,373	0,747	$\text{mV}/\text{min}^{-1}$
11	Torque constant	$k_M$	3,56	7,13	$\text{mNm}/\text{A}$
12	Current constant	$k_I$	0,281	0,14	$\text{A}/\text{mNm}$
13	Slope of n-M curve	$\Delta n/\Delta M$	16 577	17 423	$\text{min}^{-1}/\text{mNm}$
14	Terminal inductance, phase-phase	$L$	570	2 282	$\mu\text{H}$
15	Mechanical time constant	$\tau_m$	120	126	ms
16	Rotor inertia	$J$	0,69	0,69	$\text{gcm}^2$
17	Angular acceleration	$\alpha_{max}$	14	13	$\cdot 10^3 \text{rad}/\text{s}^2$
18	Thermal resistance	$R_{th1} / R_{th2}$	65 / 45		K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	12 / 130		s

### Integrated Gearhead

Housing material		plastic	
Geartrain material		metal	
Backlash, at no-load	$\leq$	4	°
Bearings on output shaft		plastic / brass bearing	
Shaft load max.:			
– radial (5 mm from mounting face)	$\leq$	1,4	N
– axial	$\leq$	0,3	N
Shaft press fit force, max.	$\leq$	5	N
Shaft play:			
– radial (5 mm from mounting face)	$\leq$	0,08	mm
– axial	$\leq$	0,25	mm
Operating temperature range		– 25 ... + 80 °C	

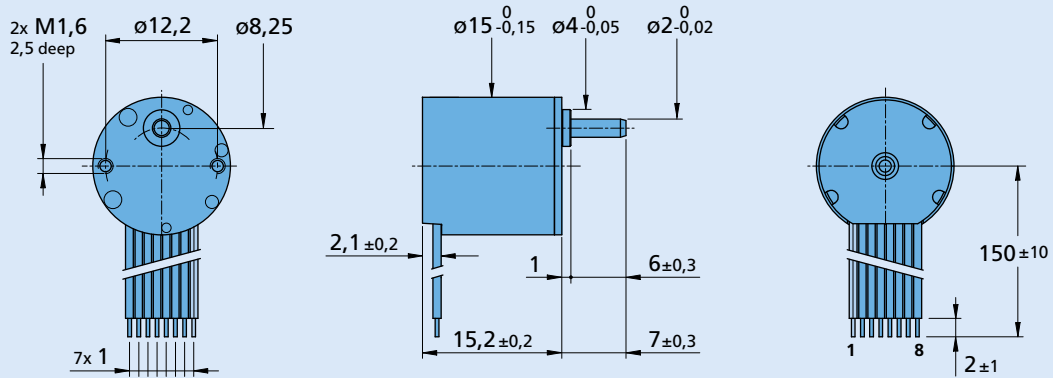
### Specifications

reduction ratio (rounded)	output speed up to $n_{max}$ $\text{min}^{-1}$	weight with motor g	output torque		direction of rotation (reversible)	efficiency %
			continuous operation $M_{max}$ mNm	intermittent operation $M_{max}$ mNm		
6 : 1	779	6,9	1,4	3	=	81
13 : 1	372	7,0	2,8	5	$\neq$	73
39 : 1	129	7,2	7,0	10	=	60
112 : 1	45	7,4	19,8	30	$\neq$	59
324 : 1	15	7,7	30,0	50	=	53

Note: output speed at 5000  $\text{min}^{-1}$  input speed. Based on motor 1509 ... B.

**Dimensional drawing**

Scale enlarged 



**1515 U ... B**

**Option, cable and connection information**

Example product designation: **1515U006B-4082**

Option	Type	Description	Connection	
4082	Temperature range	Extended temperature range (-40...+85°C)	No.	Function
			1	Phase C
			2	Phase B
			3	Phase A
			4	GND
			5	U <sub>DD</sub> (+5V)
			6	Hall sensor C
			7	Hall sensor B
			8	Hall sensor A
			<b>Standard cable</b>	
			Insulation: PVC	
			8 conductors, AWG 28	
			pitch 1 mm, wires tinned	

**Product Combination**

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
		SC 1801	To view our large range of accessory parts, please refer to the "Accessories" chapter.