Brushless DC-Gearmotors

5 mNm

For combination with
Drive Electronics:
Speed controller with adapter board

Series 1309 ... BH

Integrated Motor	1309 C		004 BH	006 BH	
Nominal voltage	U_N		4	6	V
Terminal resistance, phase-phase	R		16	70	Ω
Output power [1]	$P_{2\ max.}$		0,206	0,157	W
Efficiency	$\eta_{max.}$		52	43	%
No-load speed	n_o		37 630	34 770	rpm
No-load current	I_o		0,026	0,015	A
Stall torque	M_H		0,249	0,136	mNm
Speed constant	k_n		9 502	5 902	rpm/V
Back-EMF constant	k_E		0,105	0,169	mV/rpm
Torque constant	k_M		1,005	1,618	mNm/A
Current constant	k_I		0,995	0,618	A/mNm
Slope of n-M curve	$\Delta n/\Delta M$		151 272	255 336	rpm/mNm
Rotor inertia	J		0,16	0,16	gcm²

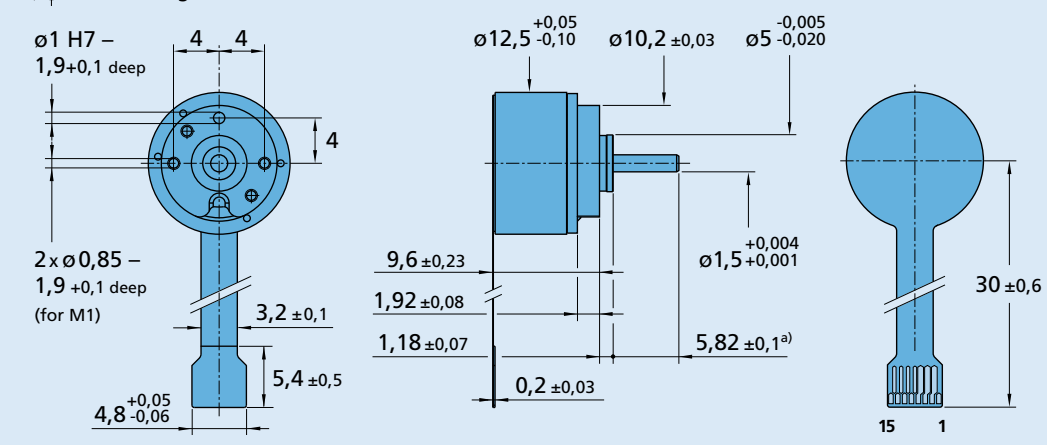
Drive system			
Housing material / Geartrain material		plastic / metal	
Shaft bearing		combination ball bearings + sleeve bearings	
Shaft load max.:			
– radial at 10 000 rpm (1,5 mm from bearing)	≤	0,5	N
– axial at 10 000 rpm	≤	0,1	N
– axial at standstill	≤	5	N
Shaft play:			
– radial (3 mm from bearing face)	≤	0,12	mm
– axial	≤	0,2	mm
Operating temperature range		0 ... + 85	°C

Recommended values - mathematically independent of each other					
Speed up to	$n_{e\ max}$		10 000	10 000	min^{-1}
Current up to (thermal limits) [2] [3]	$I_{e\ max}$		0,205	0,098	A

[1] at 10 000 min^{-1} [2] thermal resistance R_{th2} not reduced [3] at standstill

Integrated Gearhead			004 BH		006 BH			
			output torque		output torque			
reduction ratio (rounded)	output speed up to n_{max} rpm	weight with motor g	continuous operation $M_{max.}$ mNm	intermittent operation $M_{max.}$ mNm	continuous operation $M_{max.}$ mNm	intermittent operation $M_{max.}$ mNm	direction of rotation (reversible)	efficiency %
17 : 1	592	2,6	2,5	5,0	2,0	3,9	≠	82
31 : 1	323	2,7	4,3	8,5	3,4	6,8	=	77
90 : 1	111	2,8	5,0	15,0	5,0	15,0	≠	72
259 : 1	39	2,9	5,0	15,0	5,0	15,0	=	68
749 : 1	13	2,9	5,0	15,0	5,0	15,0	≠	64
1 830 : 1	5	3,0	5,0	15,0	5,0	15,0	=	60

Scale enlarged



[a] also available with 2,82 mm output shaft length

1309 C ... BH

Connection

No.	Function
1	Star point
2	Phase A
3	Phase A
4	Phase B
5	Phase B
6	Phase C
7	Phase C
8	Hall sensor In +
9	Hall sensor In -
10	analog Hall A Out +
11	analog Hall A Out -
12	analog Hall B Out +
13	analog Hall B Out -
14	analog Hall C Out +
15	analog Hall C Out -

Connectors
15-pole; 0,3 mm pitch; e.g.:
Hirose: FH23-15S-0.3SHAW (05)

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