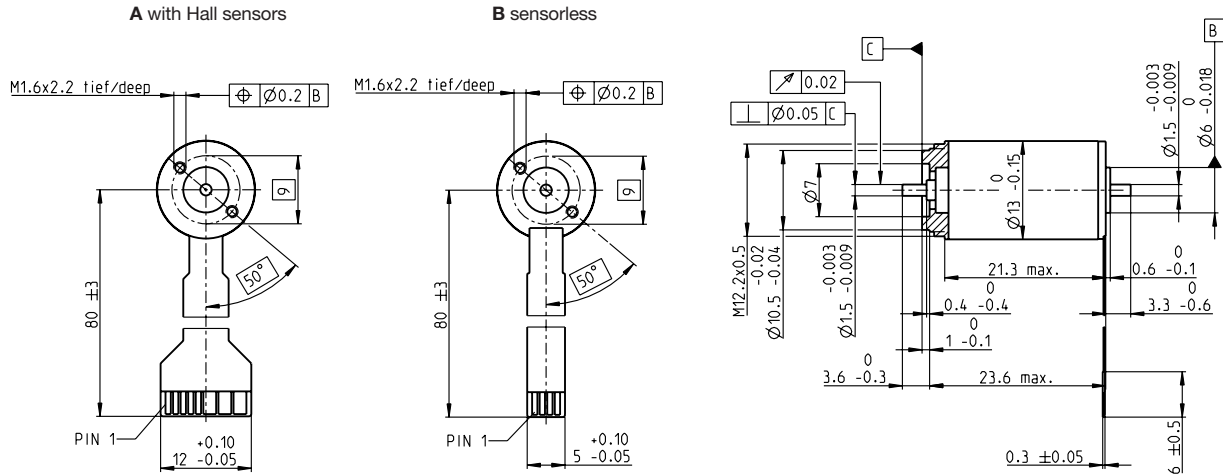


EC 13 Ø13 mm, brushless, 6 Watt



M 1:1

- Stock program
- Standard program
- Special program (on request)

Part Numbers

	416184	430152	430153	430154	430155
A with Hall sensors					
B sensorless					

Motor Data

Values at nominal voltage		6	9	12	18	24
1 Nominal voltage	V	6	9	12	18	24
2 No load speed	rpm	28800	30600	27500	27900	27700
3 No load current	mA	168	121	78.6	53.5	39.8
4 Nominal speed	rpm	20200	22700	19500	19700	19400
5 Nominal torque (max. continuous torque)	mNm	2.23	2.36	2.32	2.24	2.21
6 Nominal current (max. continuous current)	A	1.31	0.976	0.646	0.425	0.312
7 Stall torque	mNm	7.79	9.53	8.27	8	7.72
8 Stall current	A	4.08	3.52	2.06	1.35	0.973
9 Max. efficiency	%	64	67	65	65	64
Characteristics						
10 Terminal resistance phase to phase	Ω	1.47	2.56	5.82	13.3	24.7
11 Terminal inductance phase to phase	mH	0.021	0.042	0.091	0.198	0.357
12 Torque constant	mNm/A	1.91	2.71	4.01	5.92	7.94
13 Speed constant	rpm/V	5000	3520	2380	1610	1200
14 Speed/torque gradient	rpm/mNm	3850	3330	3460	3630	3740
15 Mechanical time constant	ms	7.83	6.76	7.02	7.38	7.59
16 Rotor inertia	gcm ²	0.194	0.194	0.194	0.194	0.194

Specifications

Thermal data	
17 Thermal resistance housing-ambient	32 K/W
18 Thermal resistance winding-housing	2.46 K/W
19 Thermal time constant winding	0.72 s
20 Thermal time constant motor	188 s
21 Ambient temperature	-40...+100°C
22 Max. winding temperature	+155°C
Mechanical data (preloaded ball bearings)	
23 Max. speed	50000 rpm
24 Axial play at axial load < 1.8 N	0 mm
> 1.8 N	max. 0.05 mm
25 Radial play	preloaded
26 Max. axial load (dynamic)	1.5 N
27 Max. force for press fits (static) (static, shaft supported)	18 N
28 Max. radial load, 5 mm from flange	250 N
	4 N

Other specifications	
29 Number of pole pairs	1
30 Number of phases	3
31 Weight of motor	19 g

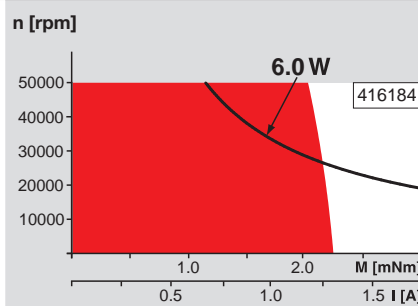
Values listed in the table are nominal.

Connection	with Hall sensors	sensorless
Pin 1	V _{Hall} 4.5...24 VDC	Motor winding 1
Pin 2	Hall sensor 3	Motor winding 2
Pin 3	Hall sensor 1	Motor winding 3
Pin 4	Hall sensor 2	N.C.
Pin 5	GND	
Pin 6	Motor winding 3	
Pin 7	Motor winding 2	
Pin 8	Motor winding 1	

Adapter	Part number	Part number
see p. 438	220300	220310
Connector	Part number	Part number
Tyco	1-84953-1	84953-4
Molex	52207-1133	52207-0433
Molex	52089-1119	52089-0419

Pin for design with Hall sensors:
FPC, 11-pol, Pitch 1.0 mm, top contact style
Wiring diagram for Hall sensors see page 35

Operating Range



Comments

Continuous operation
In observation of above listed thermal resistance (lines 17 and 18) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient.
= Thermal limit.

Short term operation
The motor may be briefly overloaded (recurring).

Assigned power rating

maxon Modular System

Overview on page 20-27

Planetary Gearhead

Ø13 mm
0.2 - 0.35 Nm
Page 317



Recommended Electronics:	Notes	Page 26
ESCON Module 24/2		416
ESCON 36/3 EC		417
ESCON Mod. 50/4 EC-S		417
DEC Module 24/2		420