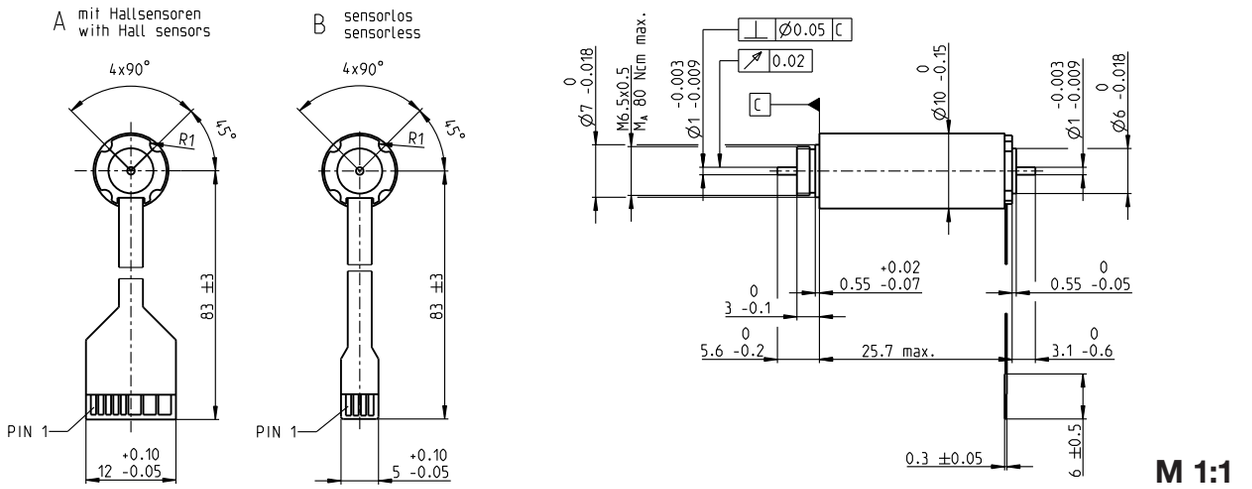
EC 10 ∅10 mm, brushless, 8 Watt



M 1:1

Stock program
Standard program
Special program (on request)

Part Numbers

A with Hall sensors	315170	315171	315172	**315173**
B sensorless	315174	315175	315176	315177

Motor Data

	Values at nominal voltage					
1	Nominal voltage	V	6	9	12	18
2	No load speed	rpm	49200	52500	53200	57100
3	No load current	mA	160	118	90.4	67.3
4	Nominal speed	rpm	41700	45600	46600	50900
5	Nominal torque (max. continuous torque)	mNm	1.74	1.63	1.62	1.61
6	Nominal current (max. continuous current)	A	1.66	1.11	0.843	0.6
7	Stall torque	mNm	12	13	13.7	15.6
8	Stall current	A	10.4	8.05	6.46	5.27
9	Max. efficiency	%	77	78	78	79
	Characteristics					
10	Terminal resistance phase to phase	Ω	0.575	1.12	1.86	3.42
11	Terminal inductance phase to phase	mH	0.00998	0.0198	0.0342	0.0671
12	Torque constant	mNm/A	1.15	1.61	2.12	2.97
13	Speed constant	rpm/V	8340	5920	4500	3220
14	Speed/torque gradient	rpm/mNm	4180	4110	3940	3700
15	Mechanical time constant	ms	3.03	2.97	2.85	2.68
16	Rotor inertia	gcm²	0.0691	0.0691	0.0691	0.0691

Specifications

Thermal data

17	Thermal resistance housing-ambient	39.8 K/W
18	Thermal resistance winding-housing	5.1 K/W
19	Thermal time constant winding	1.51 s
20	Thermal time constant motor	221 s
21	Ambient temperature	-40…+100°C
22	Max. winding temperature	+125°C

Mechanical data (preloaded ball bearings)

23	Max. speed		65000 rpm
24	Axial play at axial load	< 0.2 N	0 mm
		> 0.2 N	max. 0.14 mm
25	Radial play		preloaded
26	Max. axial load (dynamic)		0.16 N
27	Max. force for press fits (static)		12 N
	(static, shaft supported)		250 N
28	Max. radial load, 5 mm from flange		2 N

Other specifications

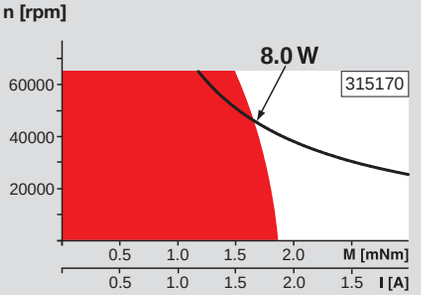
29	Number of pole pairs	1
30	Number of phases	3
31	Weight of motor	13 g

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.

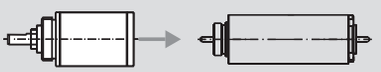
Short term operation
The motor may be briefly overloaded (recurring).

Assigned power rating

maxon Modular System

Overview on page 20–27

Planetary Gearhead
∅10 mm
0.01 - 0.15 Nm
Page 314



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