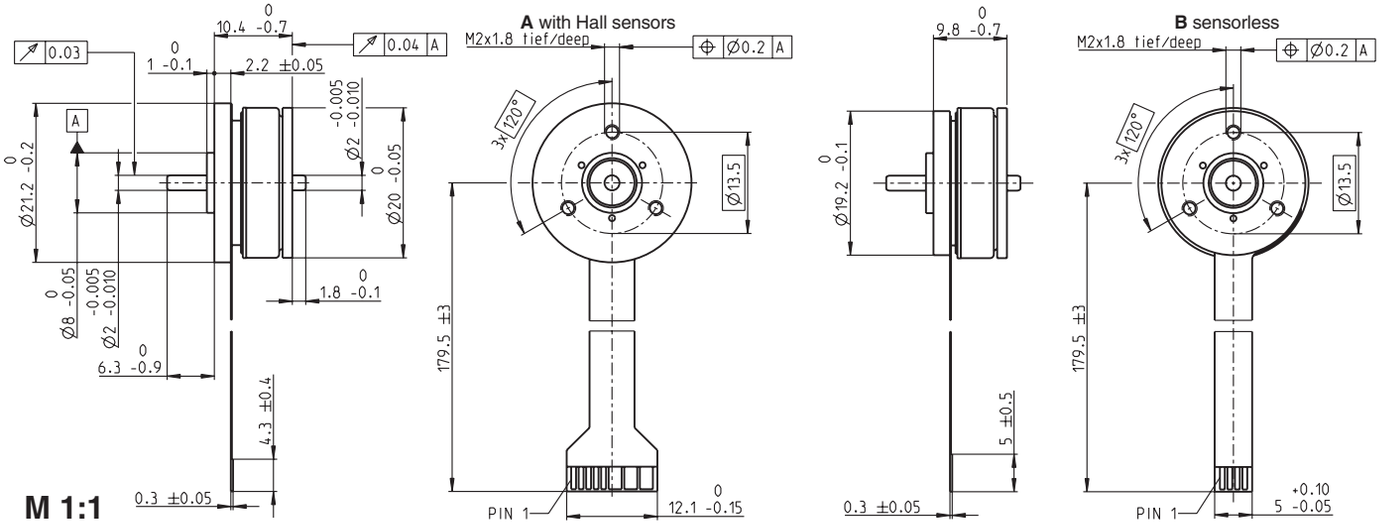
EC 20 flat ∅20 mm, brushless, 3 Watt



Stock program
Standard program
Special program (on request)

Part Numbers

A with Hall sensors	351098	351099	351100	351101
B sensorless	339255	**241916**	339257	339258

Motor Data

	Values at nominal voltage								
1	Nominal voltage	V	6	9	12	24			
2	No load speed	rpm	9070	9760	9540	9450			
3	No load current	mA	53.6	35.1	25.8	12.6			
4	Nominal speed	rpm	3030	4140	3490	3830			
5	Nominal torque (max. continuous torque)	mNm	3.22	4.08	3.28	3.78			
6	Nominal current (max. continuous current)	A	0.56	0.478	0.294	0.163			
7	Stall torque	mNm	5.29	8.04	5.67	7.12			
8	Starting current	A	0.9	0.957	0.503	0.309			
9	Max. efficiency	%	59	66	61	65			
	Characteristics								
10	Terminal resistance phase to phase	Ω	6.67	9.4	23.9	77.7			
11	Terminal inductance phase to phase	mH	0.639	1.3	2.35	9.8			
12	Torque constant	mNm/A	5.88	8.4	11.3	23			
13	Speed constant	rpm/V	1620	1140	847	414			
14	Speed/torque gradient	rpm/mNm	1840	1270	1790	1400			
15	Mechanical time constant	ms	74.1	51.2	72.1	56.2			
16	Rotor inertia	gcm²	3.84	3.84	3.84	3.84			

Specifications

Thermal data

17	Thermal resistance housing-ambient		19.2 K/W
18	Thermal resistance winding-housing		8.41 K/W
19	Thermal time constant winding		3.69 s
20	Thermal time constant motor		31.8 s
21	Ambient temperature		-40…+100°C
22	Max. permissible winding temperature		+125°C

Mechanical data (preloaded ball bearings)

23	Max. permissible speed		15000 rpm
24	Axial play at axial load	< 2.0 N	0 mm
		> 2.0 N	0.14 mm
25	Radial play		preloaded
26	Max. axial load (dynamic)		1.8 N
27	Max. force for press fits (static)		18 N
	(static, shaft supported)		200 N
28	Max. radial load, 5 mm from flange		1.8 N

Other specifications

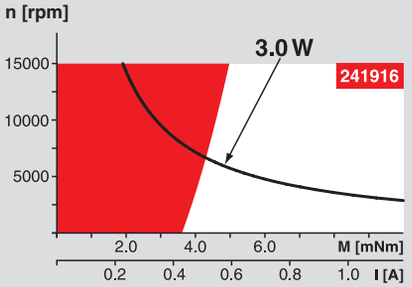
29	Number of pole pairs	4
30	Number of phases	3
31	Weight of motor	15 g

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	⅄ neutral point
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. 362	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 p. 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).

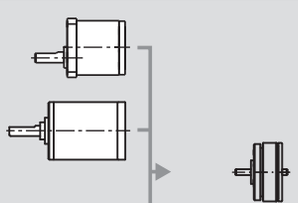
Assigned power rating

maxon Modular System

Overview on page 20–25

Spur Gearhead
∅20.3 mm
0.06 - 0.25 Nm
Page 259

Planetary Gearhead
∅22 mm
0.5 - 2.0 Nm
Page 262/265



Recommended Electronics:

ESCON 36/3 EC	Page 342
ESCON Mod. 50/4 EC-S	343
ESCON Module 50/5	343
ESCON 50/5	344
DEC Module 24/2	346
EPOS2 24/2	350
EPOS3 70/10 EtherCAT	357
MAXPOS 50/5	360
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