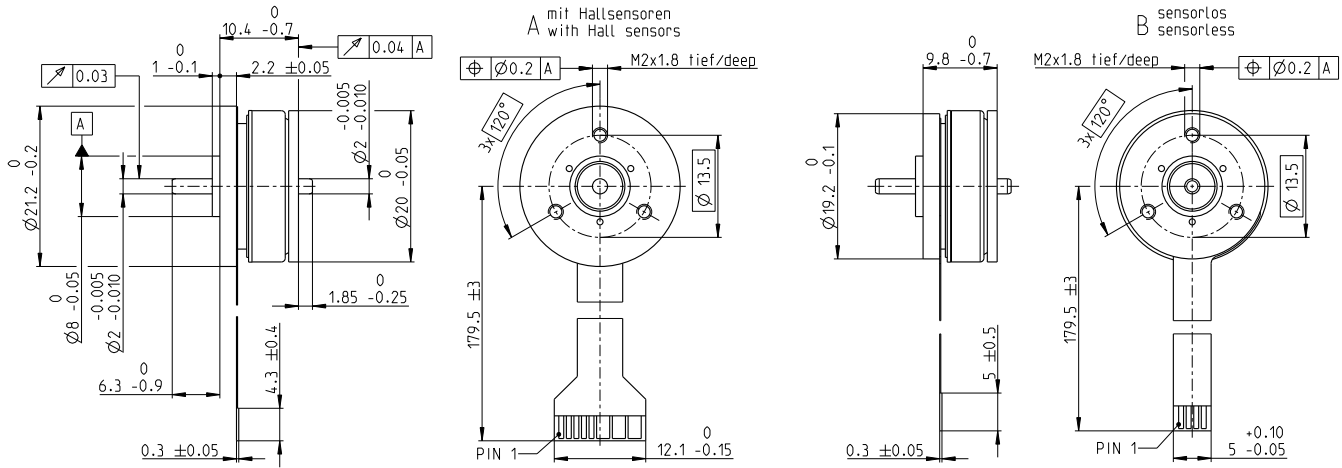


# EC 20 flat $\varnothing 20$ mm, brushless, 3 watt



EC flat

M 1:1

- 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					
<b>Values at nominal voltage</b>					
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	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 <sup>1</sup>	mNm	5.29	8.04	5.67	7.12
8 Stall current	A	0.9	0.957	0.503	0.309
9 Max. efficiency	%	59	66	61	65
<b>Characteristics</b>					
10 Terminal resistance phase to phase	$\Omega$	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	gcm <sup>2</sup>	3.84	3.84	3.84	3.84

Specifications		Operating Range		Comments		
<b>Thermal data</b>				<p><span style="display: inline-block; width: 15px; height: 10px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> <b>Continuous operation</b> 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.</p> <p><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> <b>Short term operation</b> The motor may be briefly overloaded (recurring).</p> <p><b>Assigned power rating</b></p>		
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. winding temperature	+125°C					
<b>Mechanical data (preloaded ball bearings)</b>						
23 Max. speed	15 000 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) (static, shaft supported)	200 N					
28 Max. radial load, 5 mm from flange	1.9 N					

Other specifications		Modular System		Details on catalog page 54	
29 Number of pole pairs	4				
30 Number of phases	3				
31 Weight of motor	15 g				
Values listed in the table are nominal.					
<b>Connection with Hall sensors</b>		<b>sensorless</b>			
Pin 1	V <sub>Hall</sub> 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				
<b>Adapter</b>	<b>Part number</b>	<b>Part number</b>			
see p. 581	220300	220310			
<b>Connector</b>	<b>Part number</b>	<b>Part number</b>			
TE	1-84953-1	84953-4			
Molex	52207-1133	52207-0433			

- Motor Control**
- 554\_ESCON Module 24/2
  - 555\_ESCON 36/3 EC
  - 559\_ESCON Module 50/4 EC-S
  - 559\_DEC Module 24/2
  - 563\_EPOS4 Micro 24/5
  - 564\_EPOS4 Module 24/1.5
  - 565\_EPOS4 Compact 24/5 3-axes
  - 566\_EPOS4 Compact 24/1.5

Pin for design with Hall sensors:  
FPC, 11-pol, Pitch 1.0 mm, top contact style  
Wiring diagram for Hall sensors see p. 67  
<sup>1</sup>Calculation does not include saturation effect (p. 81/188)