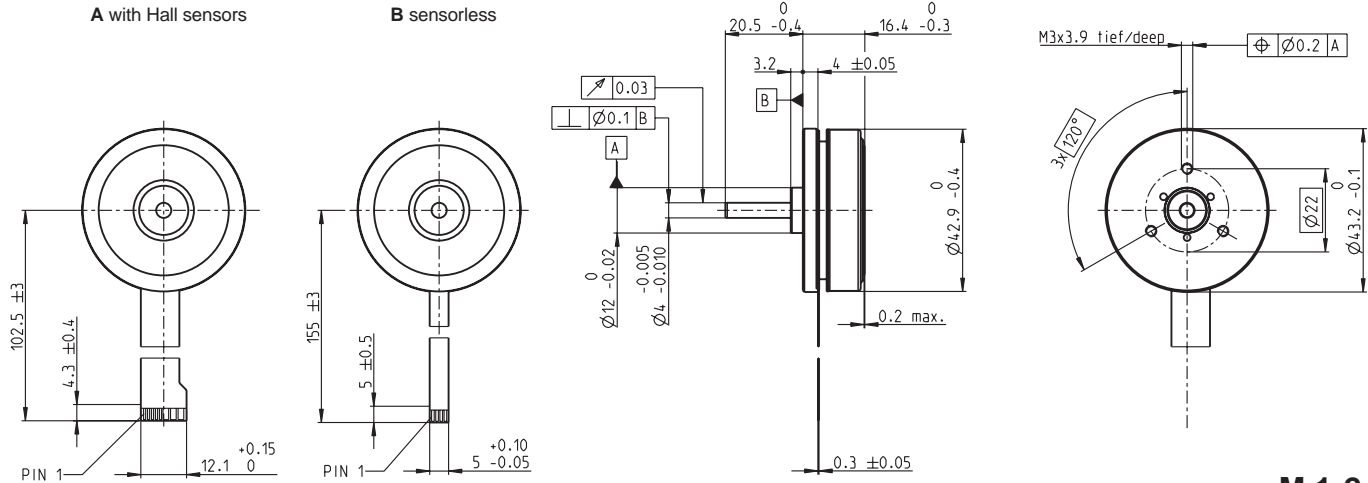


# EC 45 flat Ø42.9 mm, brushless, 30 Watt



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

## Part Numbers

A with Hall sensors  
B sensorless

200142	339281	339282
200189	339283	339284

## Motor Data

Values at nominal voltage							
1 Nominal voltage	V	12	12	24	24	36	36
2 No load speed	rpm	4370	4350	4360	4380	4750	4760
3 No load current	mA	163	163	81.4	73	61.6	55.3
4 Nominal speed	rpm	2940	2800	2940	2900	3290	3270
5 Nominal torque (max. continuous torque)	mNm	55	54.7	54.8	55.2	66	66.6
6 Nominal current (max. continuous current)	A	2.02	2.02	1.01	1.01	0.847	0.849
7 Stall torque	mNm	255	219	253	243	380	369
8 Stall current	A	10	8.58	4.97	4.77	5.38	5.22
9 Max. efficiency	%	76	75	76	77	80	81
Characteristics							
10 Terminal resistance phase to phase	Ω	1.2	1.4	4.83	5.03	6.69	6.89
11 Terminal inductance phase to phase	mH	0.56	0.56	2.24	2.24	4.29	4.29
12 Torque constant	mNm/A	25.5	25.5	51	51	70.6	70.6
13 Speed constant	rpm/V	374	374	187	187	135	135
14 Speed/torque gradient	rpm/mNm	17.6	20.5	17.7	18.5	12.8	13.2
15 Mechanical time constant	ms	17.1	19.9	17.2	17.9	12.4	12.8
16 Rotor inertia	gcm <sup>2</sup>	92.5	92.5	92.5	92.5	92.5	92.5

## Specifications

Thermal data		
17 Thermal resistance housing-ambient	6.69 K/W	
18 Thermal resistance winding-housing	3.92 K/W	
19 Thermal time constant winding	11.4 s	
20 Thermal time constant motor	295 s	
21 Ambient temperature	-40...+100°C	
22 Max. winding temperature	+125°C	

Mechanical data (preloaded ball bearings)		
23 Max. speed	10000 rpm	
24 Axial play at axial load < 5.0 N	0 mm	
	> 5.0 N	typ. 0.14 mm
25 Radial play	preloaded	
26 Max. axial load (dynamic)	4.8 N	
27 Max. force for press fits (static) (static, shaft supported)	53 N	
28 Max. radial load, 5 mm from flange	1000 N	
	18 N	

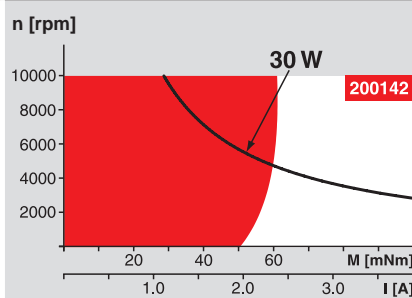
## Other specifications

29 Number of pole pairs	8
30 Number of phases	3
31 Weight of motor	75 g

Values listed in the table are nominal.

Connection	with Hall sensors	sensorless
Pin 1	V <sub>hall</sub> 4.5...18 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	
*Internal pull-up (7...13 kΩ) on pin 1		
Wiring diagram for Hall sensors see p. 35		
Adapter	Part number	Part number
see p. 398	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		

## 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

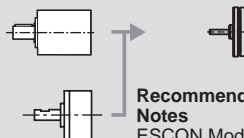
Overview on page 20–25

### Planetary Gearhead

Ø42 mm  
3 - 15 Nm  
Page 316

### Spur Gearhead

Ø45 mm  
0.5 - 2.0 Nm  
Page 317



### Recommended Electronics:

Notes	Page 24
ESCON Module 24/2	378
ESCON 36/3 EC	379
ESCON Mod. 50/4 EC-S	379
ESCON Module 50/5	379
ESCON 50/5	380
DEC Module 24/2	382
DEC Module 50/5	382
EPOS2 24/2, Module 36/2	386
EPOS2 24/5, 50/5	387
EPOS2 P 24/5	390
EPOS3 70/10 EtherCAT	393
MAXPOS 50/5	396

### Option

With Cable and Connector  
(Motor length +1.3 mm,  
Ambient temperature -20...+100°C)

Encoder MILE  
256 - 2048 CPT,  
2 channels  
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