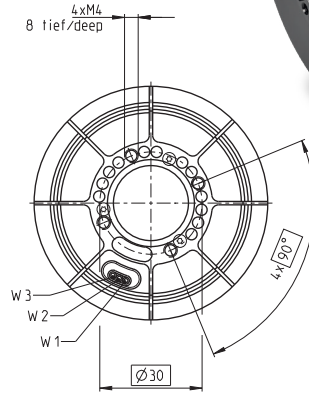
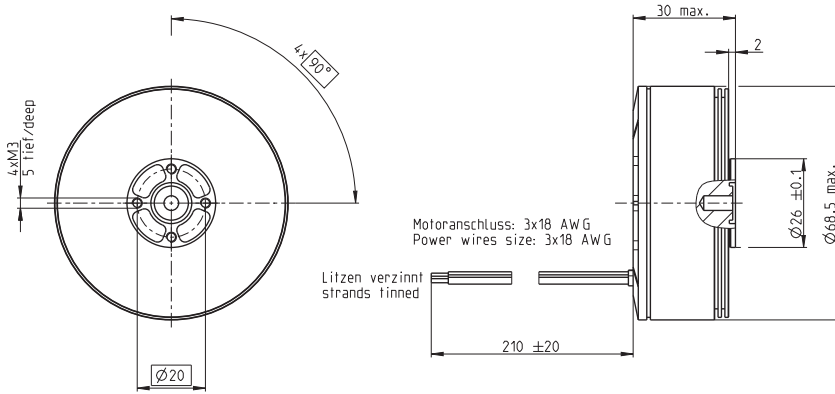


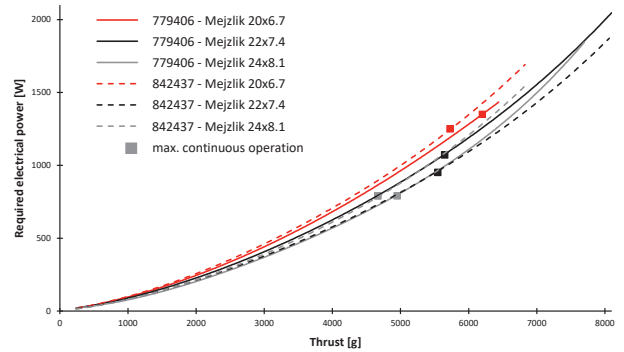
EC 69 flat UAV Ø69 mm, brushless

Designed for professional UAV applications



Part number			
sensorless			
779406			
842437			
Propeller selection			

Motor data			
Values at nominal voltage			
1 Nominal voltage ¹	V	24	12
2 No load speed	rpm	3800	4070
3 No load current	mA	551	1230
4 Nominal speed	rpm	2900	3240
5 Nominal torque (max. continuous torque)	mNm	1180	993
6 Nominal current (max. continuous current)	A	17.6	32.6
7 Stall torque ²	mNm	3000	3020
8 Stall current	A	168	368
9 Max. efficiency	%	88.9	88.8
Characteristics			
10 Terminal resistance phase to phase	Ω	0.143	0.0326
11 Terminal inductance phase to phase	mH	0.0799	0.0174
12 Torque constant	mNm/A	59.9	28.0
13 Speed constant	rpm/V	159	342
14 Speed/torque gradient	rpm/mNm	0.381	0.398
15 Mechanical time constant	ms	2.95	3.09
16 Rotor inertia	gcm ²	740	740
17 Thermal resistance housing-ambient ³	K/W	0.344	0.311
18 Thermal resistance winding-housing ³	K/W	0.852	1.28
19 Thermal time constant winding	s	15.2	19.9
20 Thermal time constant motor	s	46.3	41.8



¹ The nominal voltage is used to characterize the motor properties. This value does not represent the maximum operating voltage.

² Calculation does not include saturation effect.

³ At nominal working point.

Specifications			
Thermal data			
21 Ambient temperature	°C	-40...+70	-40...+70
22 Max. continuous winding temperature	°C	+155	+155
Absolute winding temperature	°C	+180	+180
Mechanical data (preloaded ball bearings)			
23 Max. speed	rpm	6500	6500
Other specifications			
24 Number of pole pairs		14	14
Magnetic system configuration		24N28P	24N28P
25 Number of phases		3	3
26 Weight of motor (incl. 210 mm cable)	g	269	269
27 Recommended propeller sizes	inch	20...24	20...24
Modifications on request - contact aerospace@maxongroup.com			
- Cable length			
- Electrical connector			
- Shaft length			
- Additional shaft end			
- Shaft design (e.g. hollow shaft)			
- Customized labeling (text only)			
- Speed constant and torque constant			
- Active propeller positioning feature			
- Open motor design			
- Integration of a NTC temperature sensor			

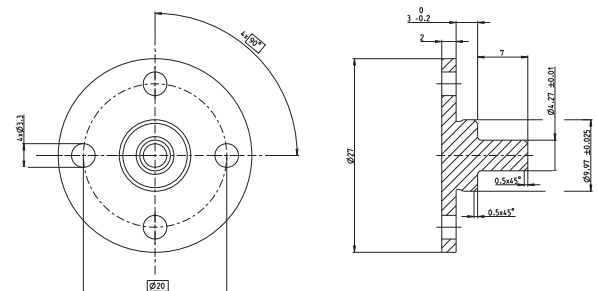
maxon accessories

Propeller adapter: 718087

Values listed in the tables are nominal, i.e. defined for operation without a propeller attached (no active cooling). Motor data when operated with a propeller attached differs from the nominal values. The adjusted motor data depending on the propeller used can be found on the following pages under the section "Adjusted motor data for use with specified propeller (active cooling)."

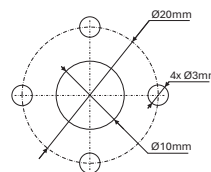
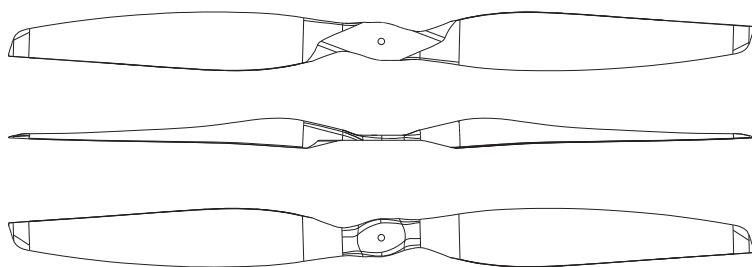
Cable and connection

Connection cable with polyolefin insulation, L = 210 mm, AWG 18
W1: Motor winding 1, W2: Motor winding 2, W3: Motor winding 3



Propeller 22x7.4

maxon recommended propeller for EC 69 flat



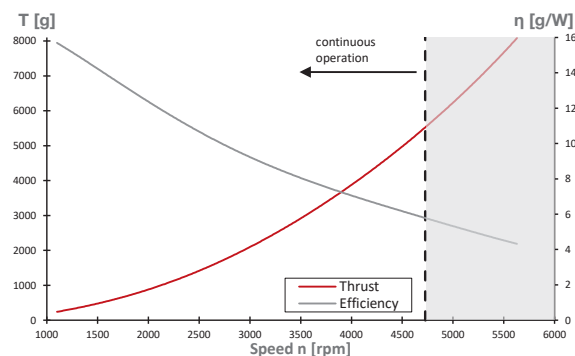
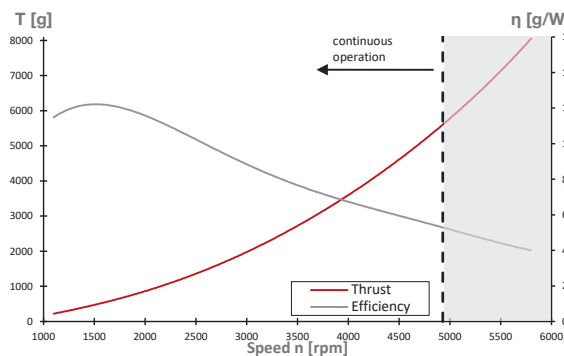
Propeller specifications		
1 Diameter	inch	22.0 (558.8 mm)
2 Pitch	inch	7.4 (188.0 mm)
3 Weight of propeller	g	46.0
4 Drill pattern		maxon EC69fl UAV
5 Interface thickness	mm	4.26
6 Material		carbon/glass fiber
7 Max. recommended speed	rpm	8200

Motor propeller combination				
Adjusted motor data for use with specified propeller (active cooling)				
		779406	842437	
8 Max. continuous speed	rpm	4930	4728	
9 Max. continuous torque	mNm	1575	1470	
10 Max. continuous current	A	30.5	57.9	motor current=output current from ESC maxon UAV ESC parameter: nominal current
11 Max. continuous electrical power	W	1145	1057	
12 Max. peak electrical power	W	2135	2061	<15s
13 Thermal time constant winding	s	28.5	30.5	

Propulsion system performance table

ESC supply voltage: 52.2 V (12S max. LiPo voltage) / Ambient temperature: 20°C / Elevation (AMSL): 475 m

779406							842437						
Achievable speed with battery level	Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]	Achievable speed with battery level	Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
Continuous operation ($T_w < 155^\circ\text{C}$)							Continuous operation ($T_w < 155^\circ\text{C}$)						
6S (22.2V)	1100	0.4	84	237	21	11.5	6S (22.2V)	1100	0.3	83	241	15	15.6
	1300	0.5	113	336	28	11.9		1300	0.4	112	349	23	15.1
	1500	0.7	147	461	37	12.3		1500	0.6	147	476	33	14.3
	1700	1.0	186	608	50	12.2		1700	0.9	187	624	46	13.5
	1900	1.2	231	767	65	11.8		1900	1.2	233	796	63	12.7
	2100	1.6	282	959	84	11.4		2100	1.6	277	970	81	11.9
	2300	2.1	337	1152	108	10.6		2300	2.0	332	1177	105	11.2
	2500	2.6	401	1386	136	10.2		2500	2.5	392	1417	132	10.7
	2700	3.2	463	1623	167	9.7		2700	3.2	457	1674	165	10.1
	2900	3.9	529	1860	203	9.2		2900	3.9	532	1953	205	9.5
3110 rpm	3100	4.7	594	2091	243	8.6	3110 rpm	3100	4.8	610	2240	250	8.9
	3300	5.7	682	2393	295	8.1		3300	5.8	691	2582	302	8.5
	3600	7.3	814	2873	382	7.5		3500	6.9	772	2903	360	8.1
3950 rpm	3800	8.7	899	3215	452	7.1	3950 rpm	3700	8.3	883	3277	432	7.6
	4000	10.2	1001	3559	531	6.7		3900	9.8	984	3682	509	7.2
	4200	12.1	1134	4046	632	6.4		4100	11.4	1086	4083	592	6.9
4700 rpm	4400	13.9	1234	4398	724	6.1	4700 rpm	4300	13.5	1209	4520	698	6.5
	4600	16.1	1359	4824	838	5.8		4400	14.5	1275	4784	754	6.3
	4800	18.7	1500	5316	974	5.5		4600	16.8	1395	5214	873	6.0
Short term operation ($T_w > 155^\circ\text{C}$)							Short term operation ($T_w > 155^\circ\text{C}$)						
12S (44.4V)	5000	21.5	1635	5787	1122	5.2	5500 rpm	4800	19.4	1521	5667	1004	5.6
	5200	24.8	1797	6365	1296	4.9		5000	22.4	1658	6199	1159	5.3
	5400	28.2	1916	6762	1470	4.6		5200	26.2	1818	6810	1352	5.0
	5600	33.1	2093	7389	1727	4.3		5400	30.7	1998	7401	1585	4.7
5330 rpm	5800	39.1	2299	8099	2042	4.0		5630	36.4	2170	8063	1874	4.3



Notes

Bench test data for reference only. Direct comparison with datasheets from other manufacturers can be misleading.
The propeller is not distributed by maxon. Please contact the propeller manufacturer.
Please note the interface to the motor, see drawing above.