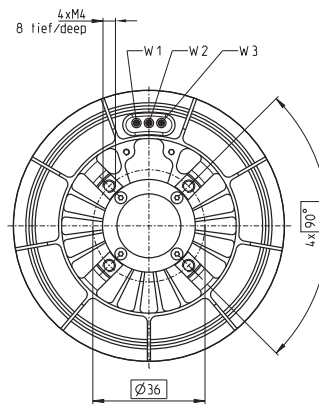
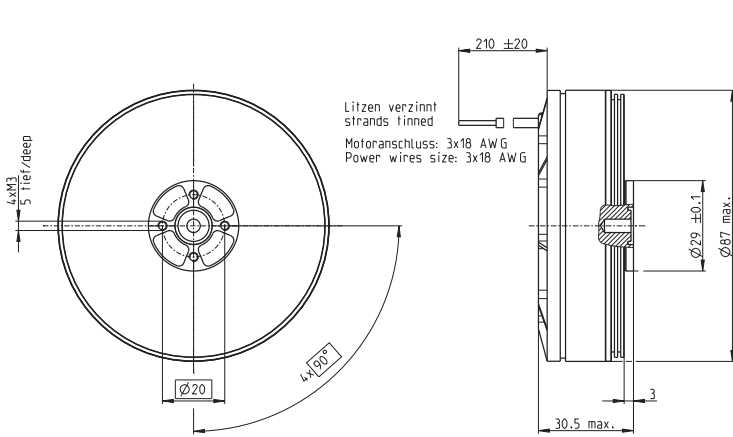


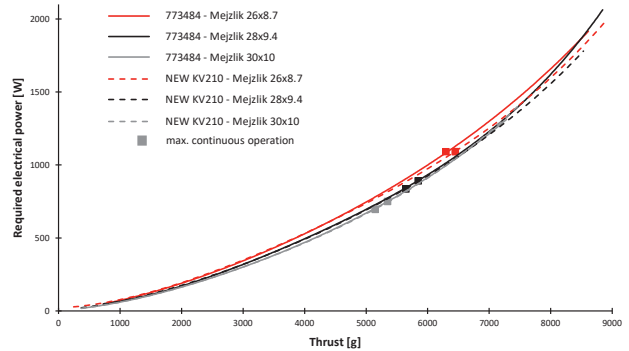
EC 87 flat UAV Ø87 mm, brushless

Designed for professional UAV applications



Part number			
sensorless			
773484			
NEW			
Propeller selection			

Motor data			
Values at nominal voltage			
1 Nominal voltage ¹	V	24	24
2 No load speed	rpm	3500	4990
3 No load current	mA	895	1630
4 Nominal speed	rpm	2690	3890
5 Nominal torque (max. continuous torque)	mNm	1590	1700
6 Nominal current (max. continuous current)	A	22	33.4
7 Stall torque ²	mNm	5380	5970
8 Stall current	A	227	424
9 Max. efficiency	%	88	88
Characteristics			
10 Terminal resistance phase to phase	Ω	0.106	0.0566
11 Terminal inductance phase to phase	mH	0.048	0.0175
12 Torque constant	mNm/A	64.9	45.4
13 Speed constant	rpm/V	147	210
14 Speed/torque gradient	rpm/mNm	0.239	0.262
15 Mechanical time constant	ms	3.26	3.57
16 Rotor inertia	gcm ²	1300	1300
17 Thermal resistance housing-ambient ³	K/W	0.471	0.338
18 Thermal resistance winding-housing ³	K/W	0.553	0.474
19 Thermal time constant winding	s	9.4	8.2
20 Thermal time constant motor	s	72.9	52.2



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	6000	6000
Other specifications			
24 Number of pole pairs		21	21
Magnetic system configuration		36N42P	36N42P
25 Number of phases		3	3
26 Weight of motor (incl. 210 mm cable)	g	310	310
27 Recommended propeller sizes	inch	26...30	26...30

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

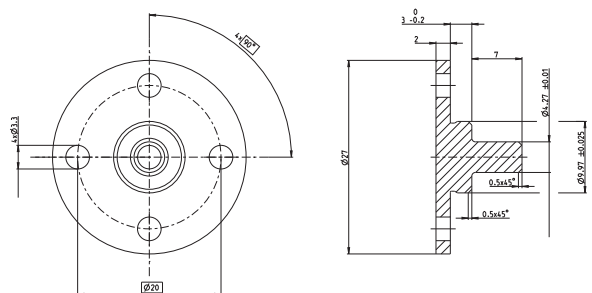
maxon accessories

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)."

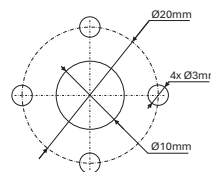
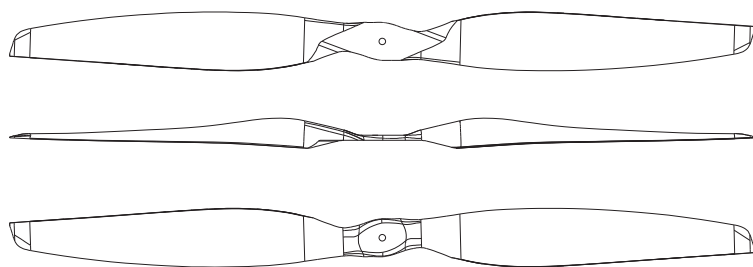
Cable and connection

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



Propeller 30x10

maxon recommended propeller for EC 87 flat



Propeller specifications		
1 Diameter	inch	30.0 (762.0 mm)
2 Pitch	inch	10.0 (254.0 mm)
3 Weight of propeller	g	96.0
4 Drill pattern		maxon EC87fl UAV
5 Interface thickness	mm	5.55
6 Material		carbon/glass fiber
7 Max. recommended speed	rpm	6000

Motor propeller combination					
Adjusted motor data for use with specified propeller (active cooling)					
		773484	NEW motor – please contact aerospace@maxongroup.com		
8 Max. continuous speed	rpm	2590	2502		
9 Max. continuous torque	mNm	2005	1906		
10 Max. continuous current	A	33.3	45.0	motor current=output current from ESC maxon UAV ESC parameter: nominal current	
11 Max. continuous electrical power	W	820	774		
12 Max. peak electrical power	W	1555	1498	<15s	
13 Thermal time constant winding	s	23.5	33.5		

Propulsion system performance table

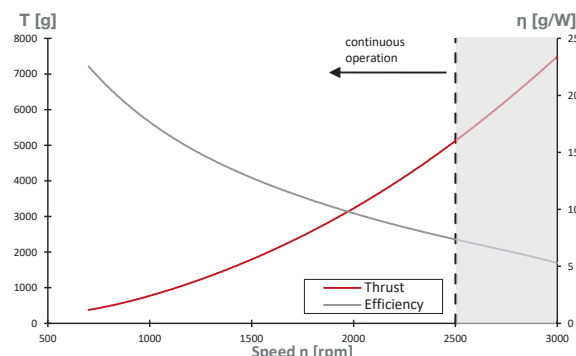
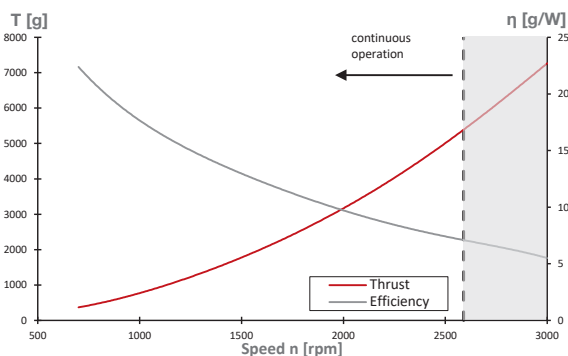
ESC supply voltage: 52.2 V (12S max. LiPo voltage) / Ambient temperature: 20°C / Elevation (AMSL): 475 m

773484

NEW motor – please contact aerospace@maxongroup.com

Achievable speed with battery level	Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
Continuous operation ($T_w < 155^\circ\text{C}$)						
	700	0.3	170	372	17	22.5
	800	0.5	213	480	24	20.3
	900	0.6	263	613	32	18.9
	1000	0.8	318	771	43	17.9
	1100	1.1	384	940	57	16.6
	1200	1.4	455	1122	73	15.4
	1300	1.8	537	1351	93	14.5
	1400	2.2	604	1533	112	13.7
	1500	2.7	692	1793	136	13.2
	1600	3.2	781	2016	166	12.1
	1700	3.8	871	2273	196	11.6
	1800	4.6	978	2578	234	11.0
	1900	5.4	1093	2851	281	10.1
	2000	6.3	1213	3159	329	9.6
	2100	7.3	1328	3485	382	9.1
	2200	8.6	1468	3875	445	8.7
	2300	9.8	1594	4194	505	8.3
6S (22.2V)	2400	11.3	1748	4630	583	7.9
2450 rpm	2500	13.0	1898	5009	678	7.4
Short term operation ($T_w > 155^\circ\text{C}$)						
	2600	14.7	2041	5394	766	7.0
	2700	17.0	2223	5926	882	6.7
	2800	19.5	2397	6319	1013	6.2
8S (29.6V)	2900	21.9	2548	6762	1132	6.0
2965 rpm	3000	25.2	2722	7283	1314	5.5
10S (37.0V)						
3000 rpm						

Achievable speed with battery level	Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
Continuous operation ($T_w < 155^\circ\text{C}$)						
	700	0.3	169	370	16	22.5
	800	0.5	211	491	24	20.8
	900	0.6	260	619	33	18.8
	1000	0.8	320	784	44	17.8
	1100	1.1	379	944	57	16.6
	1200	1.4	451	1129	74	15.3
	1300	1.8	521	1330	92	14.4
	1400	2.2	603	1548	114	13.5
	1500	2.7	691	1798	141	12.8
	1600	3.3	779	2047	171	12.0
	1700	3.9	883	2331	203	11.5
	1800	4.6	984	2611	242	10.8
	1900	5.5	1095	2913	287	10.2
	2000	6.4	1202	3231	333	9.7
	2100	7.4	1322	3558	386	9.2
	2200	8.7	1466	3922	454	8.6
	2300	10.1	1608	4309	527	8.2
	2400	11.6	1746	4656	603	7.7
	2500	13.5	1914	5155	699	7.4
Short term operation ($T_w > 155^\circ\text{C}$)						
	2600	15.5	2074	5598	803	7.0
	2700	17.6	2220	6026	903	6.7
	2800	20.4	2414	6437	1054	6.1
6S (22.2V)	2900	23.6	2597	7016	1223	5.7
2980 rpm	3000	27.2	2793	7485	1412	5.3



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.