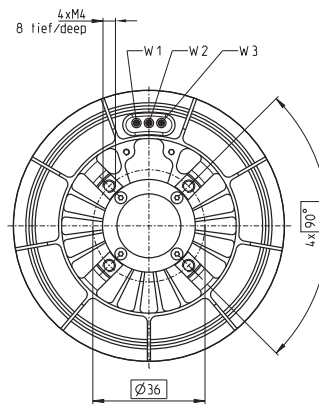
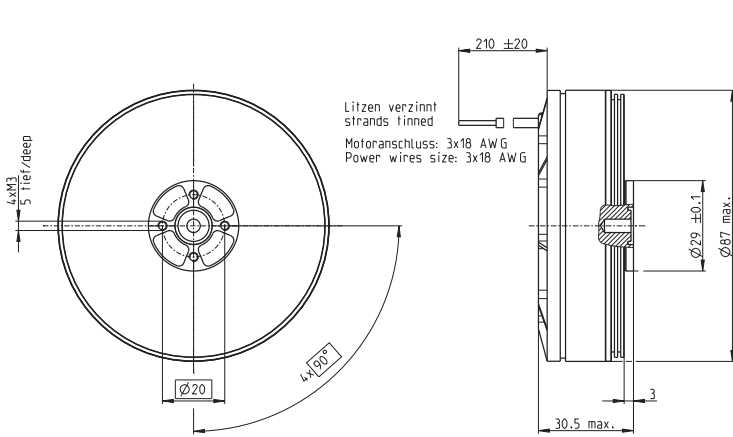


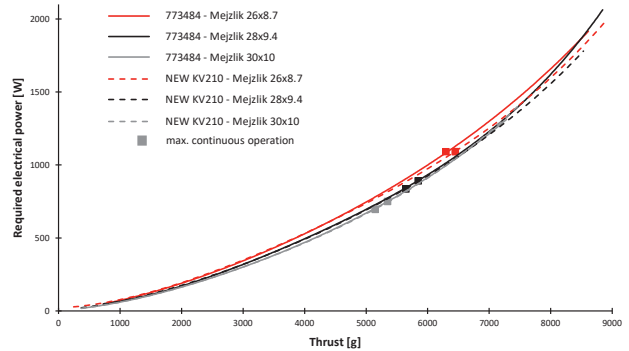
EC 87 flat UAV Ø87 mm, brushless

Designed for professional UAV applications



Part number			
sensorless	773484	NEW	
Motor data			Propeller selection

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

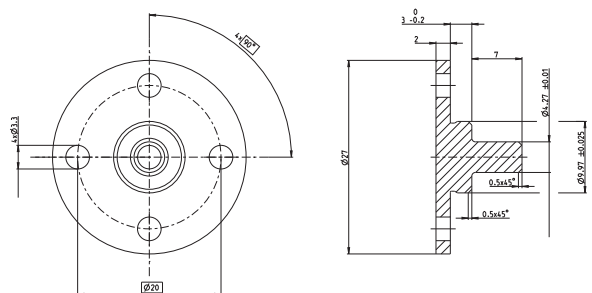
maxon accessories

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)."

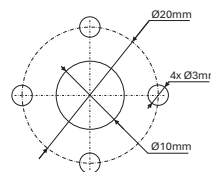
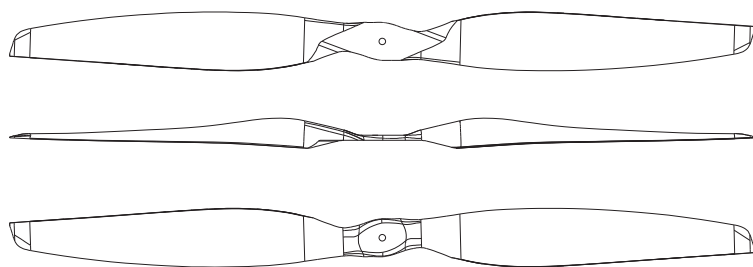
Cable and connection

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



Propeller 26x8.7

maxon recommended propeller for EC 87 flat



Propeller specifications		
1 Diameter	inch	26.0 (660.4 mm)
2 Pitch	inch	8.7 (221.0 mm)
3 Weight of propeller	g	68.0
4 Drill pattern		maxon EC87fl UAV
5 Interface thickness	mm	4.85
6 Material		carbon/glass fiber
7 Max. recommended speed	rpm	6900

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	3700	3670		
9 Max. continuous torque	mNm	2080	2076		
10 Max. continuous current	A	36.8	50.1	motor current=output current from ESC maxon UAV ESC parameter: nominal current	
11 Max. continuous electrical power	W	1168	1170		
12 Max. peak electrical power	W	2037	2018	<15s	
13 Thermal time constant winding	s	27.5	29.5		

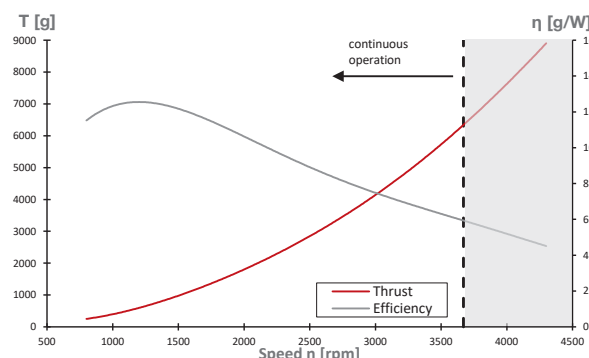
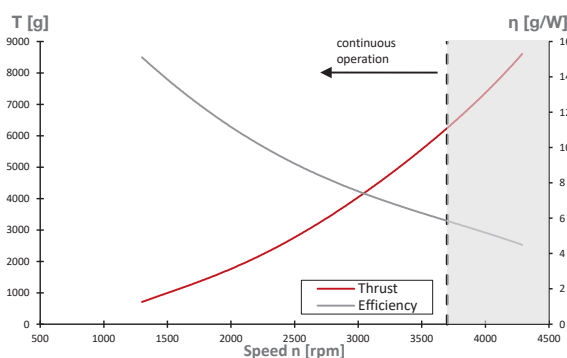
Propulsion system performance table

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							Achievable speed with battery level						
Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]		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)	1300	0.9	266	724	48	15.2	800	0.4	113	246	21	11.4	
	1400	1.1	303	840	58	14.4	900	0.5	137	318	26	12.1	
	1600	1.6	390	1112	84	13.3	1100	0.8	195	494	39	12.5	
	1700	1.9	441	1270	100	12.7	1200	0.9	229	600	48	12.6	
	1800	2.3	494	1437	118	12.2	1400	1.3	305	842	68	12.4	
	1900	2.6	550	1608	138	11.7	1500	1.6	349	979	81	12.1	
	2100	3.5	661	1946	182	10.7	1700	2.1	442	1278	111	11.5	
	2200	4.0	724	2146	209	10.3	1800	2.5	495	1444	128	11.3	
	2300	4.5	786	2339	236	9.9	2000	3.3	602	1797	169	10.6	
	2500	5.9	932	2775	306	9.1	2100	3.7	654	1985	191	10.4	
2690 rpm	2600	6.6	1005	3000	343	8.7	2300	4.9	799	2408	252	9.6	
8S (29.6V)	2700	7.3	1062	3172	379	8.4	2500	6.2	936	2860	317	9.0	
	2900	9.3	1257	3777	484	7.8	2600	6.9	1008	3055	359	8.5	
	3000	10.3	1351	4048	538	7.5	2800	8.7	1170	3575	448	8.0	
	3100	11.4	1436	4312	595	7.2	2900	9.7	1257	3884	499	7.8	
	3200	12.5	1524	4610	654	7.0	3100	11.9	1446	4466	615	7.3	
	3380 rpm	3400	15.4	1739	5243	805	6.5	3200	13.2	1548	4754	681	7.0
	3500	17.0	1856	5608	890	6.3	3400	16.1	1758	5383	829	6.5	
	3600	18.8	1974	5954	984	6.1	3500	17.5	1853	5684	906	6.3	
Short term operation ($T_w > 155^{\circ}\text{C}$)							6S (22.2V)	3500	17.5	1853	5684	906	6.3
10S (37.0V)	3800	22.4	2171	6560	1168	5.6	3500 rpm	3700	21.5	2108	6481	1108	5.8
	3900	24.6	2305	6937	1285	5.4	Short term operation ($T_w > 155^{\circ}\text{C}$)						
	3925 rpm	4000	27.3	2448	7374	1423	5.2	3800	23.3	2201	6748	1205	5.6
	4200	33.3	2736	8207	1737	4.7	4000	28.5	2475	7650	1454	5.3	
12S (44.4V)	4290	36.8	2849	8612	1919	4.5	8S (29.6V)	4100	31.6	2627	8116	1610	5.0
4290 rpm						4260 rpm	4300	38.8	2900	8868	1992	4.5	



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.