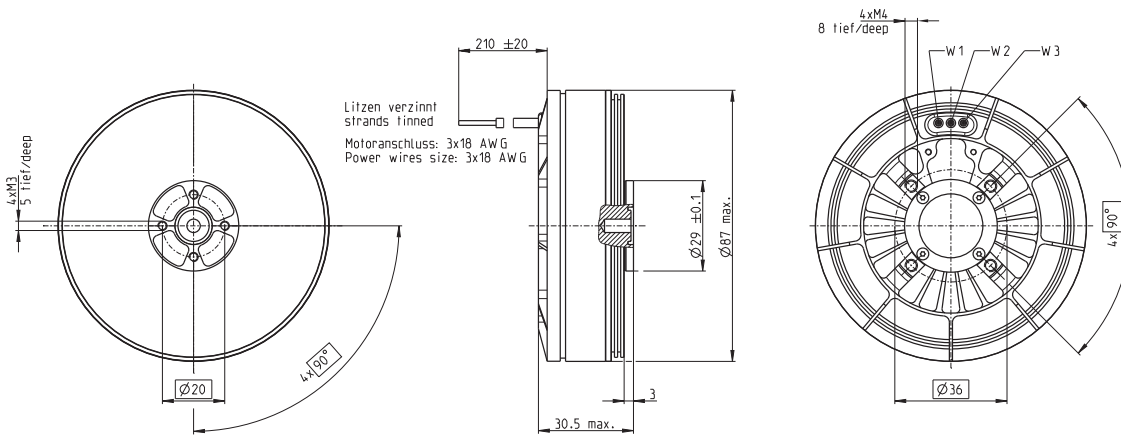


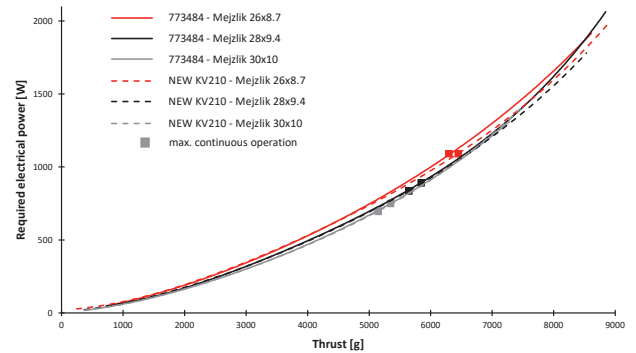
EC 87 flat UAV Ø87 mm, brushless

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.

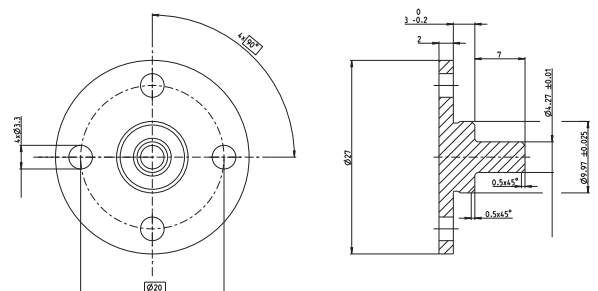
Specifications			
Thermal data			
21 Ambient temperature	°C	-40...+70	-40...+70
22 Max. continuous winding temperature	°C	+155	+155
Absolute winding temperature	°C	+180	+180
Mechanical data (preloaded ball bearings)			
23 Max. speed	rpm	6000	6000
Other specifications			
24 Number of pole pairs		21	21
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



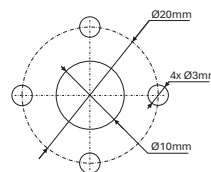
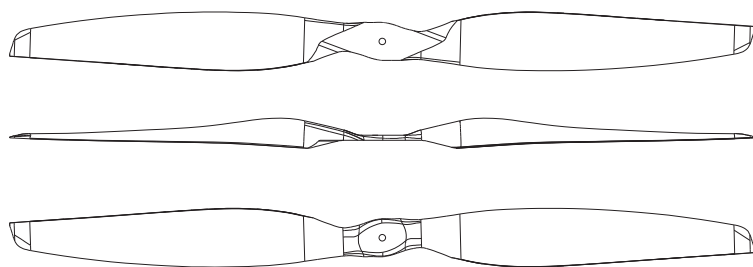
Values listed in the tables are nominal, i.e. defined for operation without a propeller attached (no active cooling). Motor data when operated with a propeller attached differs from the nominal values. The adjusted motor data depending on the propeller used can be found on the following pages under the 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 28x9.4

maxon recommended propeller for EC 87 flat



Propeller specifications		
1 Diameter	inch	28.0 (711.2 mm)
2 Pitch	inch	9.4 (238.8 mm)
3 Weight of propeller	g	78.0
4 Drill pattern		maxon EC87fl UAV
5 Interface thickness	mm	5.17
6 Material		carbon/glass fiber
7 Max. recommended speed	rpm	6400

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	3065	2970	
9 Max. continuous torque	mNm	2060	1972	
10 Max. continuous current	A	34.8	46.8	motor current=output current from ESC maxon UAV ESC parameter: nominal current
11 Max. continuous electrical power	W	970	925	
12 Max. peak electrical power	W	1806	1783	<15s
13 Thermal time constant winding	s	27.5	34.5	

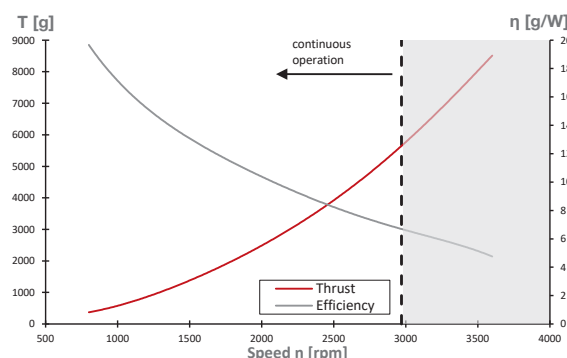
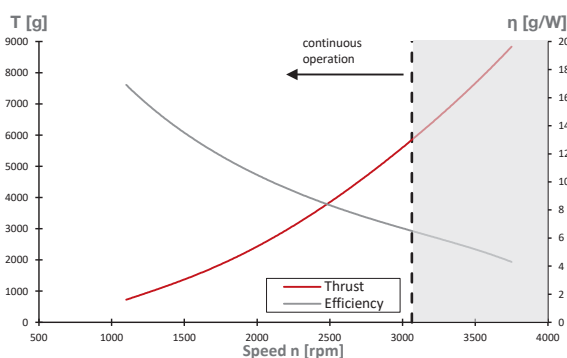
Propulsion system performance table

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]	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	0.8	287	733	43	16.9	6S (22.2V)	800	0.4	155	369	19	19.8		
	1200	1.0	335	870	54	16.0		900	0.5	190	466	26	18.2		
	1300	1.3	394	1037	69	15.1		1000	0.7	229	580	34	17.1		
	1400	1.6	446	1184	83	14.3		1100	0.9	273	706	44	16.0		
	1500	2.0	515	1380	102	13.5		1300	1.4	376	1024	70	14.5		
	1600	2.3	577	1564	122	12.8		1400	1.7	437	1185	86	13.8		
	1800	3.3	722	1981	171	11.6		1500	2.0	498	1379	105	13.1		
	1900	3.8	790	2179	198	11.0		1600	2.4	564	1567	125	12.5		
	2000	4.4	881	2449	232	10.5		1800	3.4	715	2020	177	11.4		
	2100	5.1	960	2663	266	10.0		1900	4.0	795	2247	208	10.8		
	2200	5.9	1057	2944	310	9.5		2000	4.6	875	2495	242	10.3		
	2300	6.8	1151	3236	354	9.1		2100	5.3	962	2723	277	9.8		
2570 rpm	2500	8.8	1363	3843	459	8.4	3240 rpm	2300	7.0	1151	3312	364	9.1		
	2600	10.0	1479	4171	520	8.0		2400	8.0	1249	3588	415	8.6		
	2700	11.3	1608	4541	591	7.7		2500	9.2	1370	3929	476	8.3		
	2800	12.8	1733	4876	670	7.3		2600	10.4	1483	4278	541	7.9		
	2900	14.3	1859	5227	748	7.0		2800	13.2	1728	4959	686	7.2		
8S (29.6V)	3000	15.9	1962	5530	829	6.7	8S (29.6V)	2900	14.9	1861	5335	770	6.9		
	Short term operation ($T_w > 155^{\circ}\text{C}$)							Short term operation ($T_w > 155^{\circ}\text{C}$)							
	3180 rpm	3200	20.2	2294	6436	1058		6.1	6S (22.2V)	3000	16.9	2003	5749	873	6.6
		3300	22.5	2423	6846	1177		5.8		3100	19.1	2159	6242	986	6.3
		3400	24.9	2546	7158	1299		5.5		3240 rpm	3300	24.1	2451	7113	1233
10S (37.0V)	3500	28.2	2727	7675	1473	5.2	3240 rpm	3400	27.0	2610	7516	1383	5.4		
	3570 rpm	3600	31.5	2875	8099	1645		4.9	3500	30.5	2797	8002	1554	5.1	
12S (44.4V)	3750	39.7	3142	8845	2075	4.3	3640 rpm	3600	34.5	2968	8532	1784	4.8		



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.