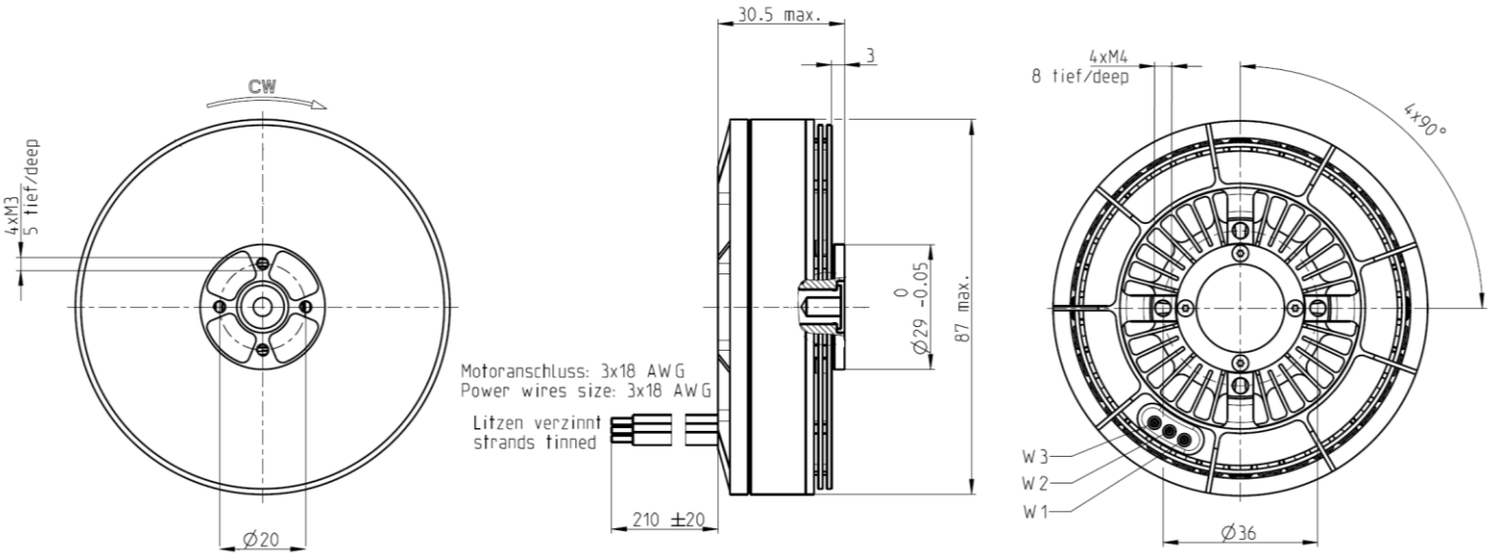
EC 87 flat UAV

∅87 mm, brushless, up to 9kg thrust

NEW

designed for professional UAV applications

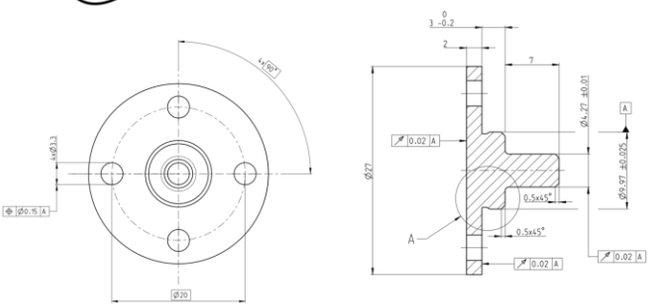


	Part Number
	Sensorless
Motor Data	668415
Values at nominal voltage	
1 Nominal voltage V	24
2 No load speed rpm	3420
3 No load current mA	862
4 Nominal speed rpm	2640
5 Nominal torque (max. continuous torque) mNm	1760
6 Nominal current (max. continuous current) A	23.6
7 Stall torque[1] mNm	17900
8 Stall current A	269
9 Max. efficiency %	89.2
10 Max. continuous power output W	620
11 Max. peak power output W	1460
Characteristics	
12 Terminal resistance phase to phase Ω	0.0891
13 Terminal inductance phase to phase mH	0.048
14 Torque constant mNm/A	66.4
15 Speed constant rpm/V	144
16 Speed/torque gradient rpm/mNm	0.193
17 Mechanical time constant ms	3.52
18 Rotor inertia gcm²	1740
19 Thermal resistance housing-ambient[2] K/W	0.479
20 Thermal resistance winding-housing[2] K/W	0.557
21 Thermal time constant winding s	5.41
22 Thermal time constant motor s	74.1

maxon Accessories

propeller adapter: 718087

The adapter is designed for mounting the maxon recommended propellers.



Motor Specifications

Thermal data

23	Ambient temperature	-20 … +50 °C
24	Max. winding temperature	+155°C

Mechanical data (preloaded ball bearings)

25	Max. speed	6500 rpm

Other specifications

26	Number of pole pairs	21
27	Number of phases	3
28	Weight of motor (incl. 210 mm cable)	309.5 g
29	Recommended propeller sizes	26"…30"

Values listed in the tables are nominal.

Connection

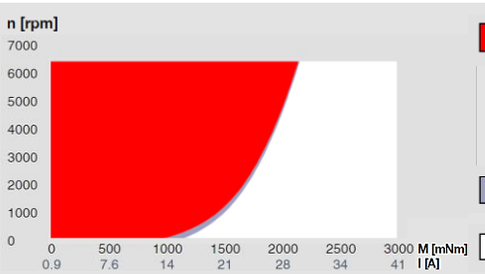
Pin 1 Motor winding 1
Pin 2 Motor winding 2
Pin 3 Motor winding 3

Cable

Connection winding wire direct, L = 210 mm
silicone insulated

[1]Calculation does not include saturation effect
[2]At nominal working point

Operating Range



Continuous operation
In observation of listed thermal resistance (lines 17 and 18) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient. = Thermal limit.

Continuous operation
Thermal resistance Rth2 reduced by 50%.

Short term operation
The motor may be briefly overloaded (recurring).

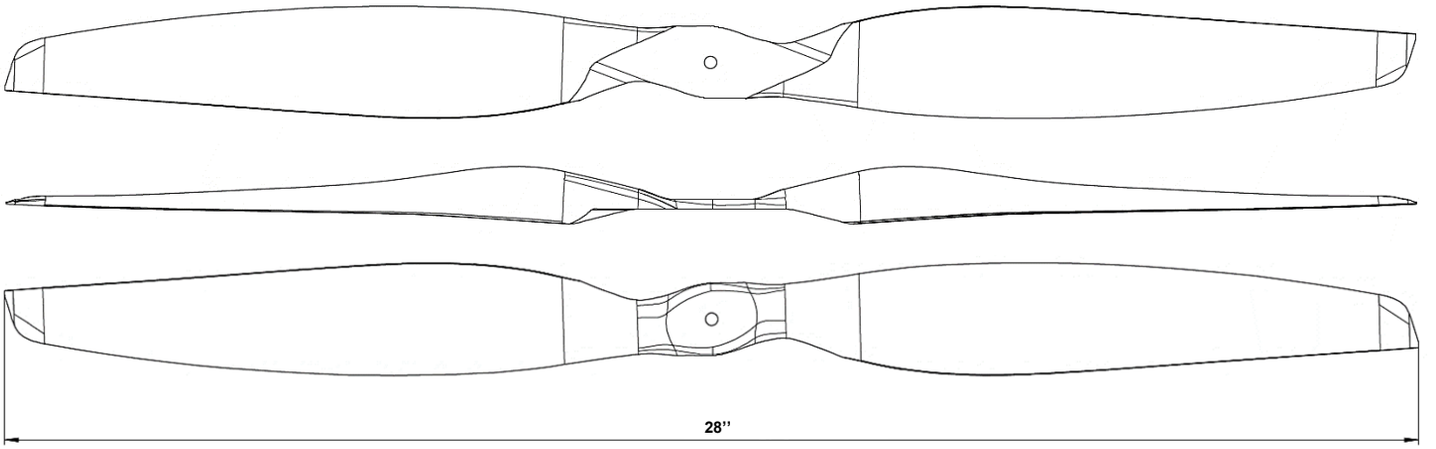
Notes

Please contact aerospace@maxongroup.com

Propeller 28x9.4

propeller recommendation

maxon recommended propeller



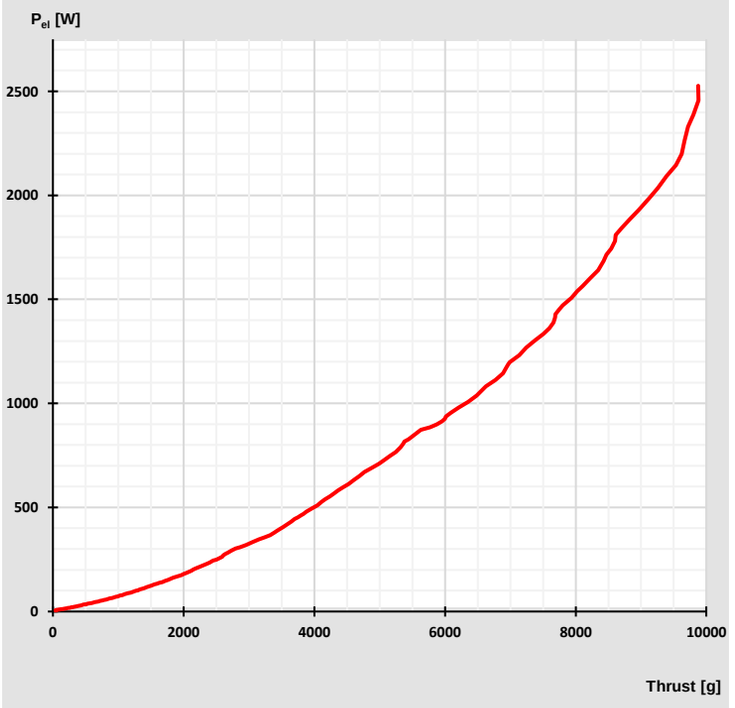
Propeller Specifications

1	Diameter	28'' (711.2 mm)
2	Pitch	9.4'' (238.8 mm)
3	Weight of Propeller	76 g
4	Max. speed	6400 rpm
5	Material	carbon fiber, glass fiber, roving, polyurethane, epoxy

Motor Propeller Combination

Efficiency Propulsion System

Propulsion system efficiency is indicated by depiction of required amount of electrical power (required by motor) to achieve a certain amount of thrust.



Propulsion System Performance Table

Based on measured data @ **52.2V** ESC supply voltage.

Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
continuous operation					
1100	0.9	286	692	48	14.4
1400	1.7	448	1169	89	13.1
1600	2.4	576	1536	127	12.1
1800	3.4	726	1985	178	11.2
2000	4.6	892	2428	241	10.1
2200	6.1	1052	2922	316	9.3
2400	8.1	1299	3601	422	8.5
2600	10.2	1485	4129	532	7.8
2800	13.3	1756	4893	692	7.1
2900	15.3	1925	5335	796	6.7
3000	16.3	1969	5544	853	6.5
short term operation					
3100	17.7	2151	5999	926	6.5
3200	20.0	2311	6511	1046	6.2
3300	22.5	2509	6943	1174	5.9
3400	25.1	2657	7413	1311	5.7
3500	27.2	2808	7686	1422	5.4
3600	29.9	2901	8098	1561	5.2
3700	33.7	3099	8565	1758	4.9
3800	38.2	3287	9136	1991	4.6
3900	43.6	3484	9678	2277	4.2

Notes

Please contact aerospace@maxongroup.com