

P115M Integrated thrust system specification

Integrated Thrust System Specification

Model	P115M	Max Thrust	236 kg
Max single-axis takeoff weight	115 kg	Efficiency of max single-axis takeoff weight	6.1 g/W
Input voltage	500~850 V	Rated voltage	720 V
Tube outer diameter	Φ80mm (Suitable for wall thickness of 2~5 mm, recommend 3 mm and 5 mm)		
Weight (With cable)	18.7 kg±100 g	Cable specification	Power cable: 12AWG*2000 mm Signal cable:2200 mm
Operating temperature	-35~55 °C	Ingress protection	IPX5
Pinout	Blue-CAN GND, Red-CANH, Brown-CANL, Black-Shielded, Green-PWM, Gray-PWM GND, Orange-DCIN 24V+, Yellow-DCIN GND		
Rated output power (Max continuous)	18.3 kW		

ESC Specification

Rated voltage	720 V	Communication protocol	CAN (Customizable RS485)
ESC size	211 mm*104 mm*67 mm (Without plug)	Weight (With cable)	1880±50 g
Peak current (10 seconds)	45 A	Continuous current	15 A
Ingress Protection	IP67	Double throttle signal	CAN+RS485 / CAN+PWM / RS485+PWM
Operating pulse width	1100~1940 μs	Black box	2~48h log
Throttle Range Calibration	Solidified and cannot be calibrated(Can be changed via Datalink software)		

Motor Specification

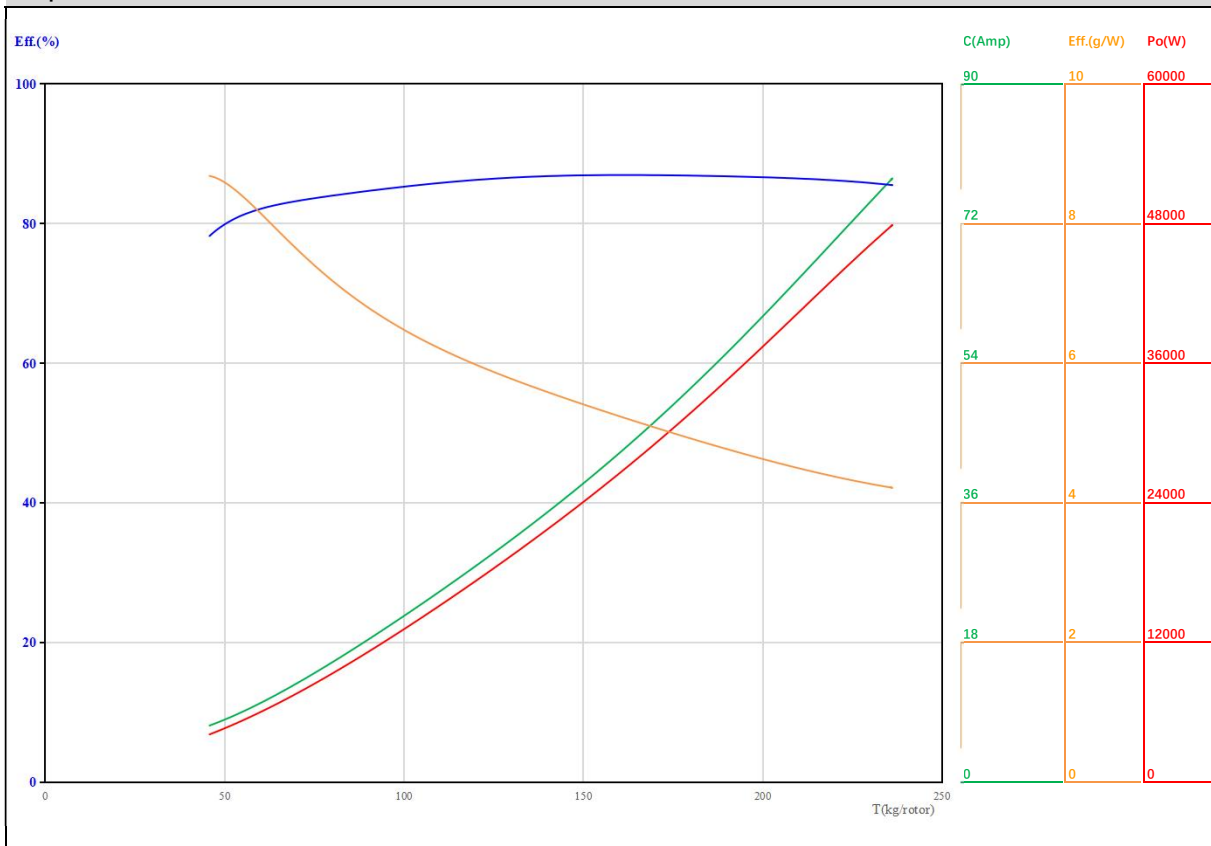
KV	5 KV	Slot& Pole	36N42P
Motor size	Φ167.1±0.1 mm (With fan 209.9±1 mm)	Weight (with cable)	6090 g
Ingress Protection	IPX5	single motor Rated output power (Max continuous)	8.5 kW

Propeller Specification

Model	MSC 73x21-P	Weight	1254 g
Material of Props	Carbon fibre composite material	Mounting dimensions	D60-6*M6, centre hole D20

Load Performance Parameters of Coaxial (720V)

Graph



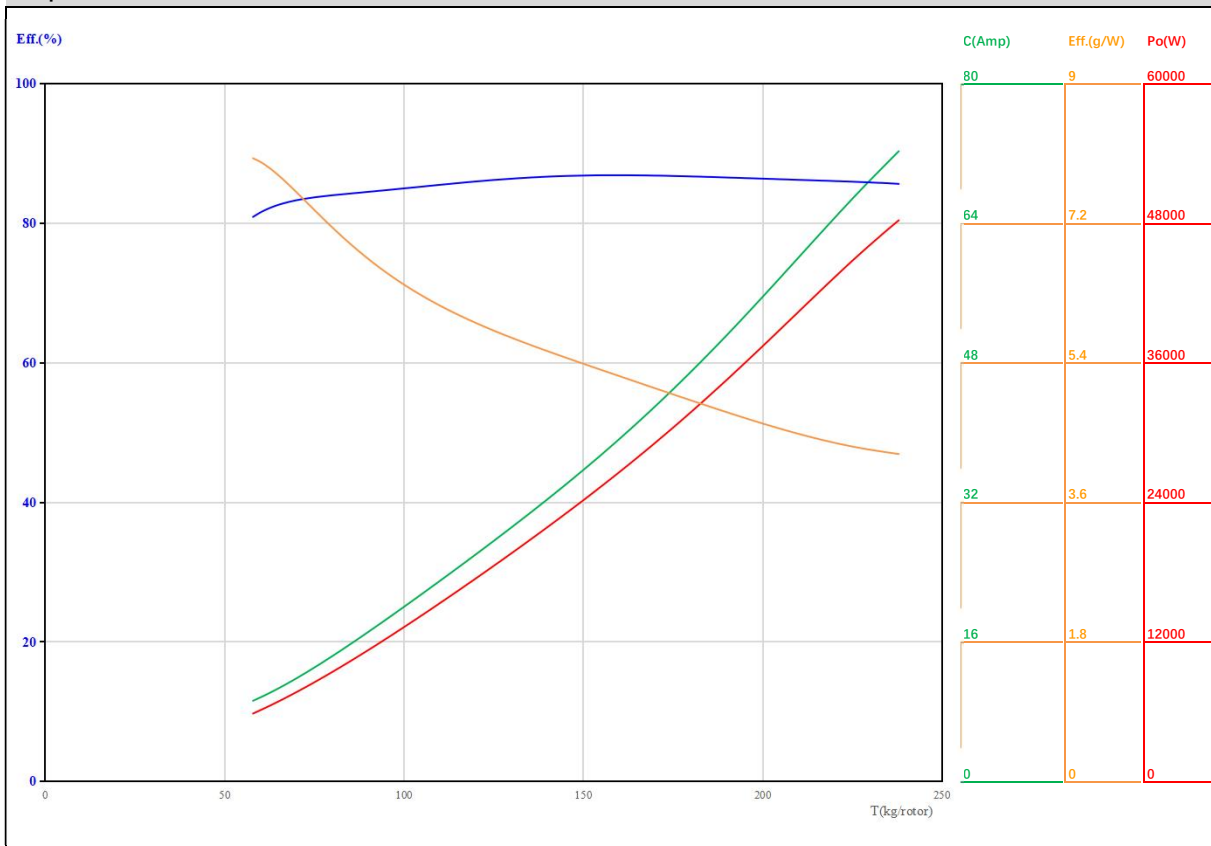
Thrust Test Data

Voltage(V)	Propeller	Throttle(%)	Thrust(kg)	Current(A)	Power Input(kW)	Efficiency(%)	Efficiency(g/W)	Power Output(kW)	Temperature(°C)
720V	MSC 73x21-P	38%	65.5	11.6	8.3	82.78	7.9	6.9	/
		40%	72.6	13.4	9.7	83.43	7.5	8.1	
		42%	79.8	15.4	11.1	83.98	7.2	9.3	
		44%	87.1	17.6	12.6	84.48	6.9	10.7	
		46%	94.6	19.8	14.2	84.95	6.6	12.1	
		48%	102.0	22.1	15.9	85.39	6.4	13.6	
		50%	109.5	24.5	17.6	85.78	6.2	15.1	
		52%	117.0	26.9	19.4	86.12	6.0	16.7	
		54%	124.5	29.4	21.1	86.40	5.9	18.3	
		56%	131.9	31.9	23.0	86.61	5.7	19.9	
		58%	139.2	34.5	24.8	86.77	5.6	21.6	
		60%	146.4	37.2	26.8	86.87	5.5	23.2	
		62%	153.6	39.9	28.7	86.92	5.4	25.0	
		64%	160.6	42.6	30.7	86.94	5.2	26.7	
		66%	167.4	45.4	32.7	86.93	5.1	28.4	
		68%	174.1	48.3	34.7	86.90	5.0	30.2	
		70%	180.6	51.1	36.8	86.85	4.9	31.9	
		72%	186.9	53.9	38.8	86.79	4.8	33.7	
		76%	198.8	59.5	42.8	86.64	4.6	37.1	
		80%	209.6	64.7	46.6	86.45	4.5	40.3	
		85%	221.2	70.4	50.7	86.14	4.4	43.6	
		100%	236.2	77.8	56.0	85.50	4.2	47.9	

*The above data was measured by HOBBYWING Laboratory at room temperature 25°C, at sea level, with varying throttle input, for reference only.

Load Performance Parameters of Coaxial (780V)

Graph



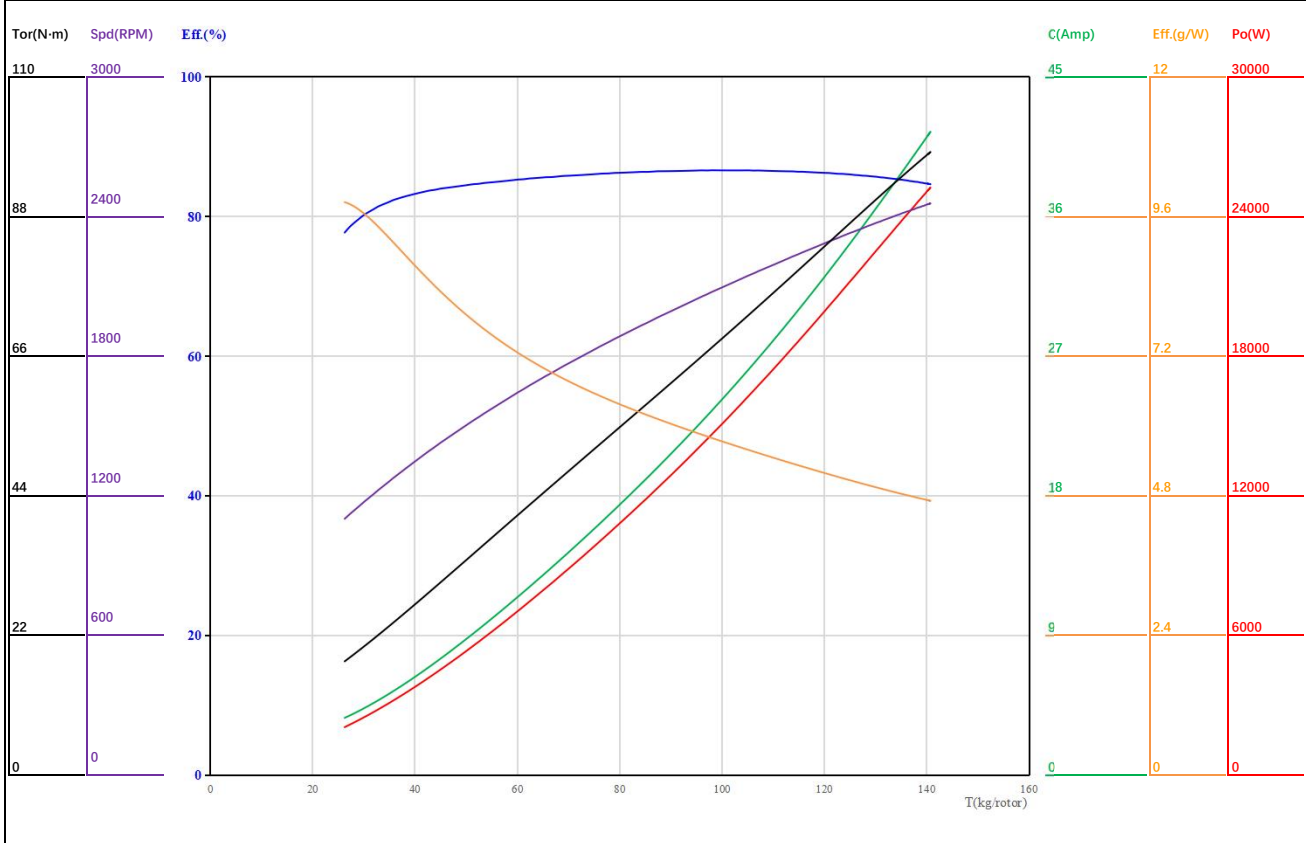
Thrust Test Data

Voltage(V)	Propeller	Throttle(%)	Thrust(kg)	Current(A)	Power Input(kW)	Efficiency(%)	Efficiency(g/W)	Power Output(kW)	Temperature(°C)
780V	MSC 73x21-P	38%	78.9	14.1	11.0	83.95	7.2	9.2	/
		40%	84.6	15.6	12.2	84.24	6.9	10.3	
		42%	90.1	17.2	13.4	84.51	6.7	11.3	
		44%	95.6	18.7	14.6	84.77	6.5	12.4	
		46%	101.0	20.3	15.8	85.05	6.4	13.5	
		48%	106.7	22.0	17.1	85.34	6.2	14.6	
		50%	112.6	23.8	18.5	85.63	6.1	15.9	
		52%	118.7	25.6	20.0	85.93	5.9	17.2	
		54%	125.2	27.6	21.5	86.21	5.8	18.6	
		56%	131.9	29.7	23.2	86.45	5.7	20.0	
		58%	138.8	32.0	24.9	86.65	5.6	21.6	
		60%	146.0	34.3	26.8	86.79	5.5	23.2	
		62%	153.3	36.8	28.7	86.87	5.3	25.0	
		64%	160.6	39.5	30.8	86.88	5.2	26.7	
		66%	168.0	42.2	32.9	86.85	5.1	28.6	
		68%	175.2	45.1	35.1	86.77	5.0	30.5	
		70%	182.3	47.9	37.4	86.68	4.9	32.4	
		72%	189.2	50.8	39.6	86.57	4.8	34.3	
		76%	201.7	56.3	43.9	86.36	4.6	37.9	
		80%	212.4	61.2	47.7	86.18	4.5	41.1	
		85%	222.6	65.7	51.3	86.00	4.3	44.1	
		100%	237.9	72.3	56.3	85.64	4.2	48.3	

*The above data was measured by HOBBYWING Laboratory at room temperature 25°C, at sea level, with varying throttle input, for reference only.

Load Performance Parameters of Upper Rotor of Coaxial (720V)

Graph



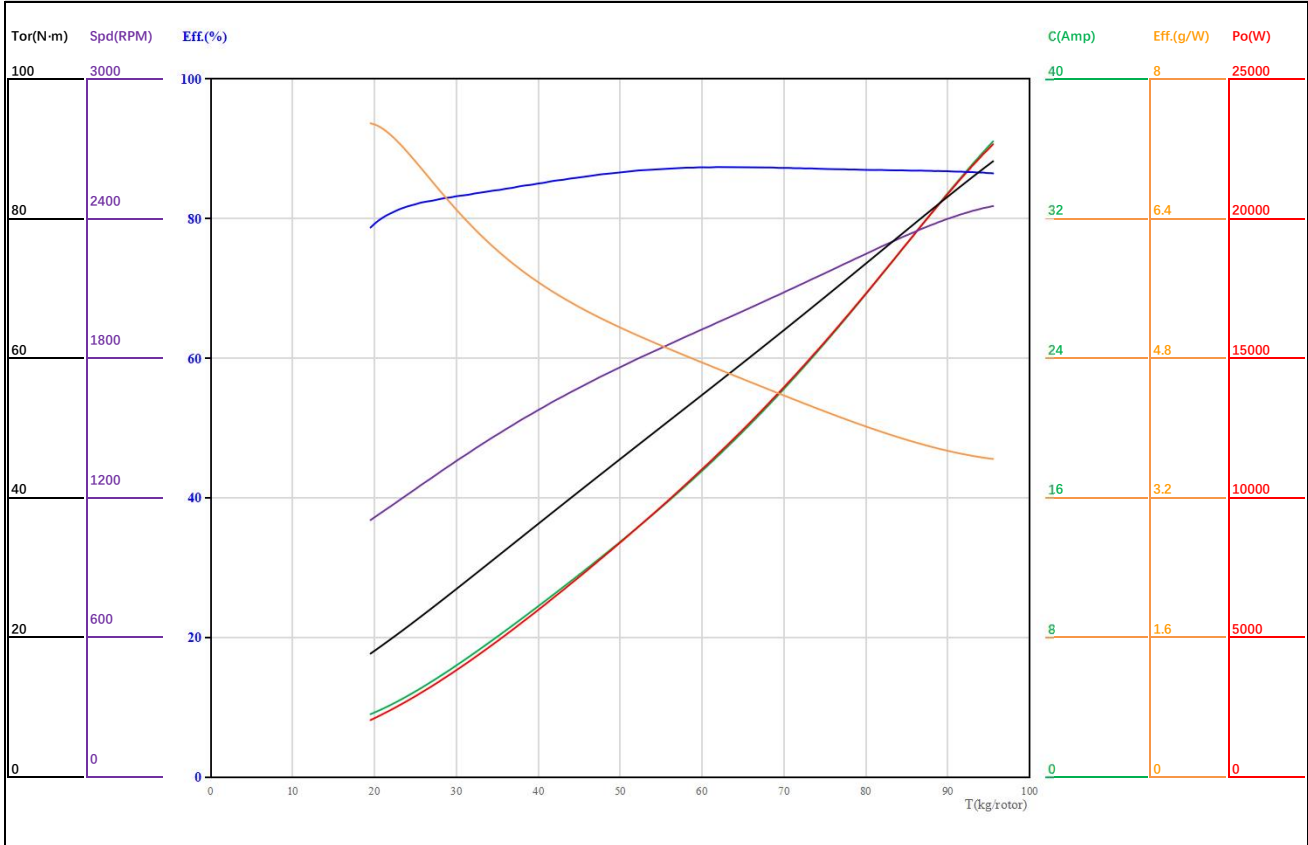
Thrust Test Data

Voltage(V)	Propeller	Throttle(%)	Thrust(Kg)	Current(A)	Power Input(kW)	Speed(RPM)	Efficiency(g/W)	Torque (N-m)	Power Output(kW)	Temperature(°C)
720V	MSC 73x21 - P	38%	37.7	5.8	4.2	1310	9.0	25.37	3.5	/
		40%	41.8	6.8	4.9	1378	8.6	28.18	4.1	
		42%	46.0	7.8	5.6	1444	8.2	31.11	4.7	
		44%	50.3	8.9	6.4	1508	7.9	34.11	5.4	
		46%	54.6	10.0	7.2	1570	7.6	37.17	6.1	
		48%	59.0	11.2	8.1	1630	7.3	40.25	6.9	
		50%	63.4	12.4	9.0	1688	7.1	43.33	7.7	
		52%	67.9	13.7	9.9	1743	6.9	46.41	8.5	
		54%	72.3	15.0	10.8	1796	6.7	49.47	9.3	
		56%	76.7	16.4	11.8	1848	6.5	52.52	10.2	
		58%	81.0	17.8	12.8	1897	6.3	55.55	11.0	
		60%	85.4	19.2	13.8	1944	6.2	58.55	11.9	
		62%	89.7	20.6	14.8	1990	6.0	61.54	12.8	
		64%	93.9	22.1	15.9	2034	5.9	64.50	13.7	
		66%	98.1	23.5	16.9	2077	5.8	67.43	14.7	
		68%	102.2	25.0	18.0	2117	5.7	70.34	15.6	
		70%	106.2	26.5	19.1	2156	5.6	73.21	16.5	
		72%	110.1	28.0	20.2	2193	5.5	76.03	17.5	
		76%	117.5	31.1	22.3	2262	5.3	81.45	19.3	
		80%	124.3	34.0	24.4	2323	5.1	86.44	21.0	
		85%	131.6	37.2	26.8	2385	4.9	91.77	22.9	
		100%	140.7	41.5	29.8	2456	4.7	98.15	25.2	

*The above data was measured by HOBBYWING Laboratory at room temperature 25°C, at sea level, with varying throttle input, for reference only.

Load Performance Parameters of Lower Rotor of Coaxial (720V)

Graph



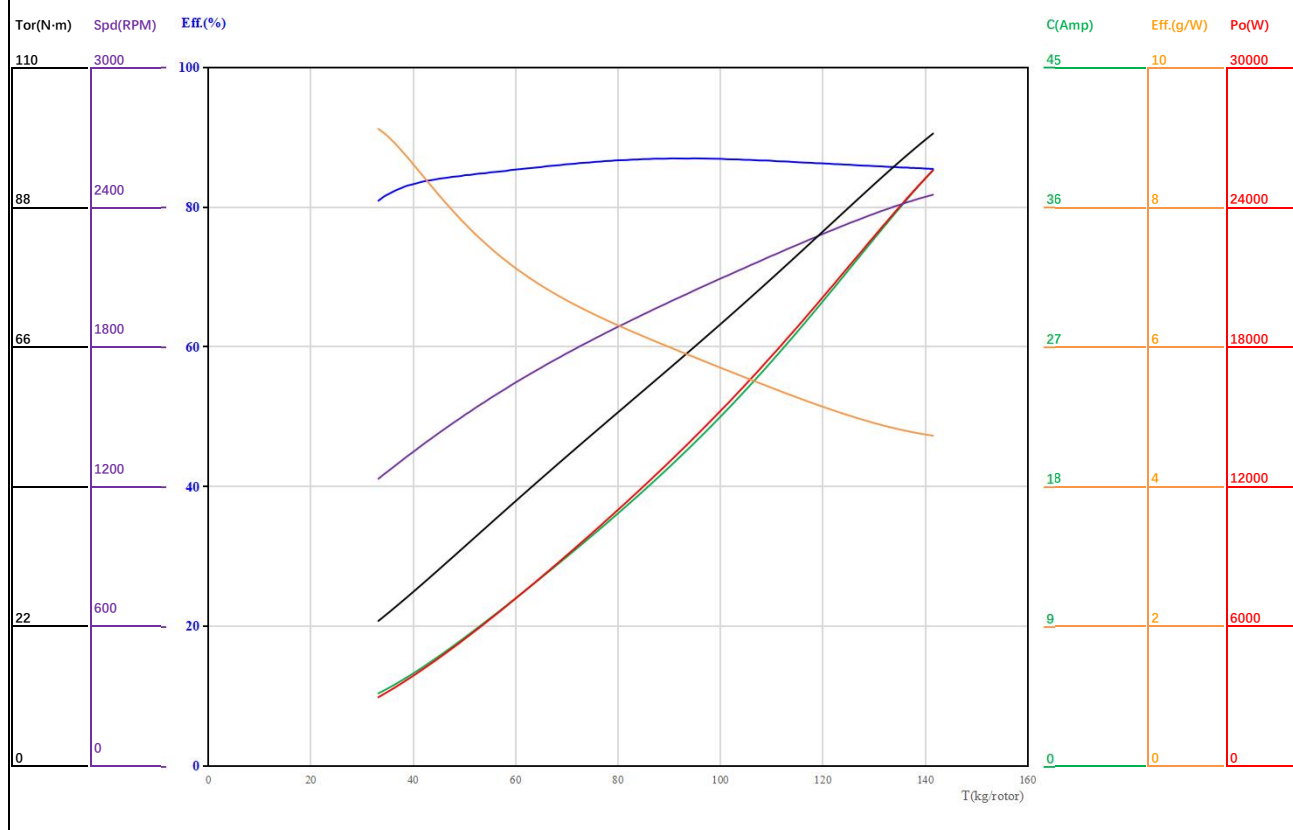
Thrust Test Data

Voltage(V)	Propeller	Throttle(%)	Thrust(kg)	Current(A)	Power Input(kW)	Speed(RPM)	Efficiency(g/W)	Torque (N-m)	Power Output(kW)	Temperature(°C)
720V	MSC 73x21-P	38%	27.8	5.7	4.1	1307	6.7	24.98	3.4	/
		40%	30.8	6.7	4.8	1377	6.4	27.69	4.0	
		42%	33.8	7.7	5.5	1446	6.1	30.50	4.6	
		44%	36.8	8.7	6.3	1512	5.9	33.35	5.3	
		46%	39.9	9.8	7.0	1576	5.7	36.22	6.0	
		48%	43.0	10.9	7.8	1636	5.5	39.10	6.7	
		50%	46.1	12.0	8.6	1693	5.3	41.96	7.4	
		52%	49.2	13.2	9.5	1747	5.2	44.79	8.2	
		54%	52.2	14.3	10.3	1799	5.1	47.58	9.0	
		56%	55.2	15.5	11.2	1847	4.9	50.34	9.7	
		58%	58.2	16.8	12.1	1895	4.8	53.05	10.5	
		60%	61.1	18.0	13.0	1940	4.7	55.71	11.3	
		62%	63.9	19.3	13.9	1985	4.6	58.33	12.1	
		64%	66.7	20.6	14.8	2029	4.5	60.90	12.9	
		66%	69.3	21.9	15.8	2072	4.4	63.40	13.8	
		68%	71.9	23.2	16.7	2115	4.3	65.85	14.6	
		70%	74.4	24.6	17.7	2156	4.2	68.23	15.4	
		72%	76.9	25.9	18.6	2196	4.1	70.52	16.2	
		76%	81.3	28.4	20.5	2270	4.0	74.83	17.8	
		80%	85.3	30.8	22.1	2333	3.9	78.68	19.2	
		85%	89.6	33.2	23.9	2393	3.8	82.70	20.7	
		100%	95.5	36.4	26.2	2453	3.6	88.20	22.7	

*The above data was measured by HOBBYWING Laboratory at room temperature 25°C, at sea level, with varying throttle input, for reference only.

Load Performance Parameters of Upper Rotor of Coaxial (780V)

Graph



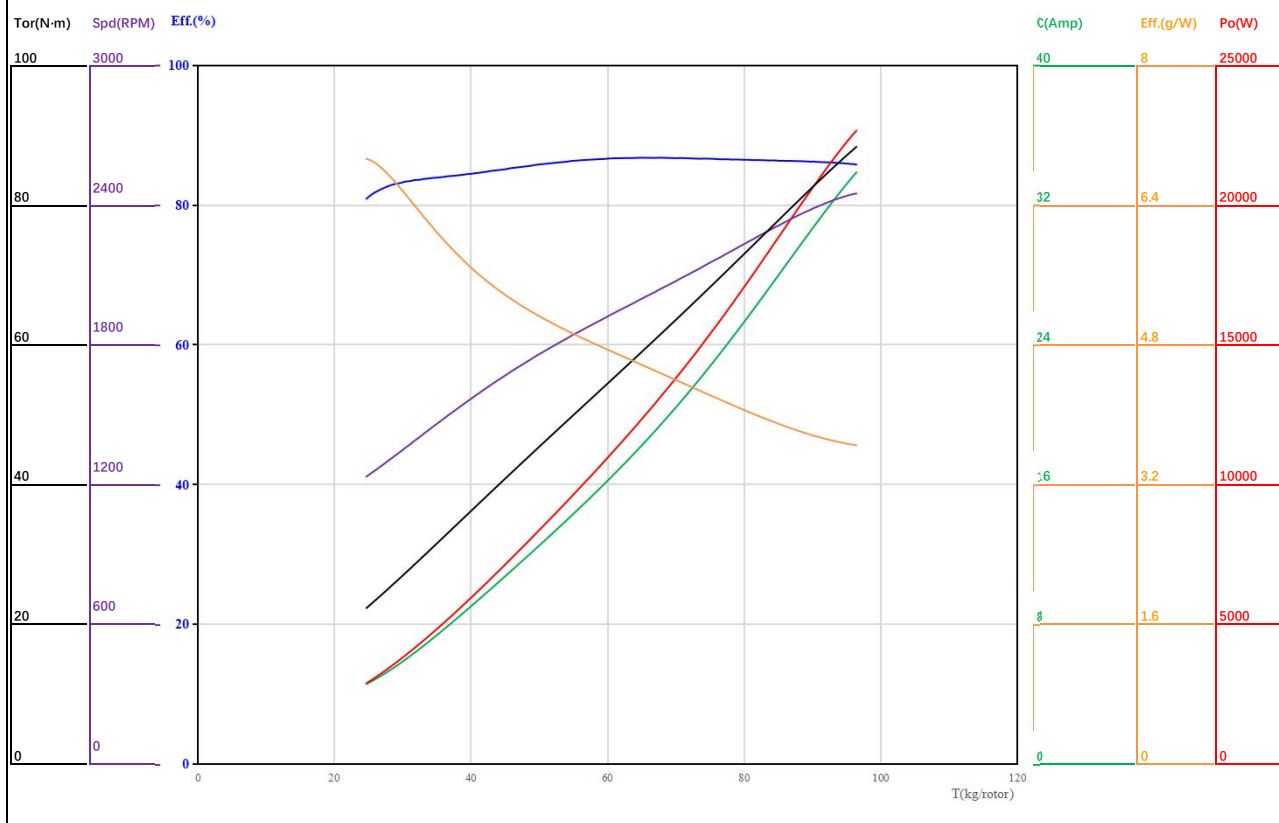
Thrust Test Data

Voltage(V)	Propeller	Throttle(%)	Thrust(Kg)	Current(A)	Power Input(kW)	Speed(RPM)	Efficiency(g/W)	Torque (N-m)	Power Output(kW)	Temperature(°C)
780V	MSC 73x21-P	38%	45.2	7.1	5.5	1433	8.2	31.08	4.7	/
		40%	48.6	7.9	6.2	1484	7.9	33.47	5.2	
		42%	51.8	8.7	6.8	1532	7.6	35.79	5.7	
		44%	55.0	9.5	7.4	1578	7.4	38.10	6.3	
		46%	58.2	10.3	8.1	1622	7.2	40.43	6.9	
		48%	61.6	11.2	8.7	1667	7.0	42.82	7.5	
		50%	65.1	12.1	9.5	1711	6.9	45.29	8.1	
		52%	68.7	13.1	10.2	1756	6.7	47.86	8.8	
		54%	72.5	14.2	11.0	1802	6.6	50.52	9.5	
		56%	76.5	15.3	11.9	1847	6.4	53.28	10.3	
		58%	80.7	16.5	12.8	1893	6.3	56.13	11.1	
		60%	84.9	17.7	13.8	1939	6.2	59.06	12.0	
		62%	89.3	19.0	14.8	1984	6.0	62.06	12.9	
		64%	93.7	20.4	15.9	2029	5.9	65.12	13.8	
		66%	98.1	21.9	17.0	2074	5.8	68.21	14.8	
		68%	102.5	23.3	18.2	2117	5.6	71.32	15.8	
		70%	106.8	24.9	19.4	2159	5.5	74.41	16.8	
		72%	110.9	26.4	20.6	2199	5.4	77.44	17.8	
		76%	118.7	29.4	22.9	2272	5.2	83.17	19.8	
		80%	125.4	32.1	25.0	2333	5.0	88.17	21.5	
		85%	132.0	34.7	27.1	2387	4.9	93.00	23.2	
		100%	141.5	38.4	29.9	2453	4.7	99.58	25.6	

*The above data was measured by HOBBYWING Laboratory at room temperature 25°C, at sea level, with varying throttle input, for reference only.

Load Performance Parameters of Lower Rotor of Coaxial (780V)

Graph



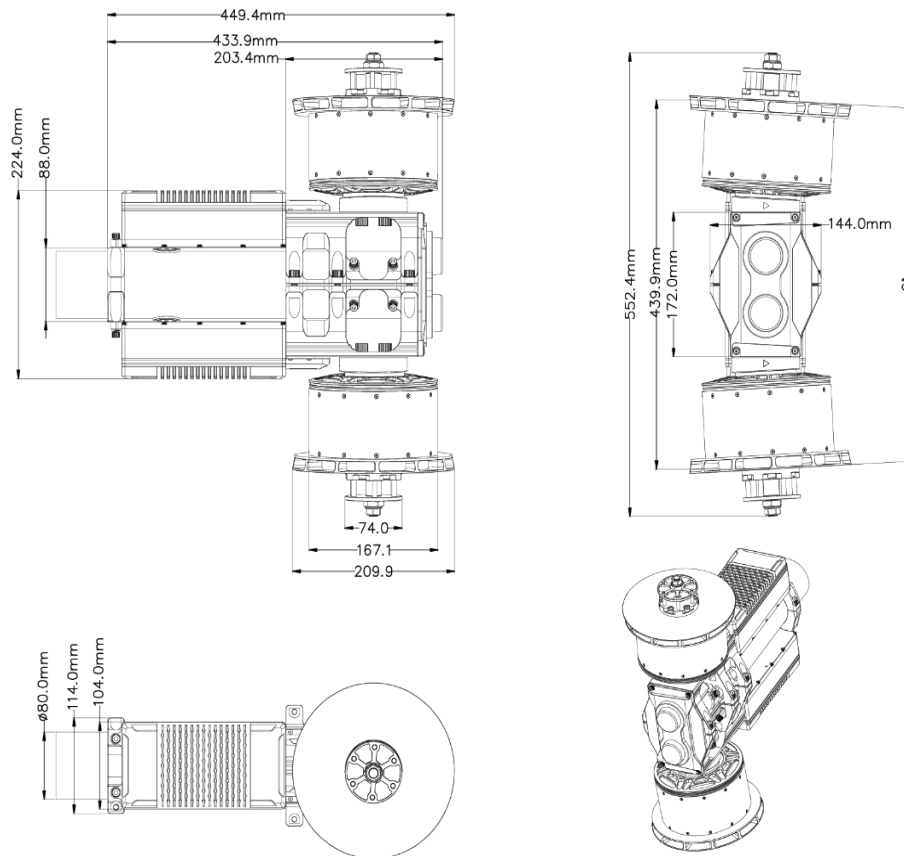
Thrust Test Data

Voltage(V)	Propeller	Throttle(%)	Thrust(Kg)	Current(A)	Power Input(kW)	Speed(RPM)	Efficiency(g/W)	Torque (N-m)	Power Output(kW)	Temperature(°C)
780V	MSC 73x21-P	38%	33.7	7.0	5.4	1431	6.2	30.32	4.5	/
		40%	36.1	7.7	6.0	1484	6.0	32.55	5.1	
		42%	38.3	8.5	6.6	1533	5.8	34.66	5.6	
		44%	40.6	9.2	7.2	1580	5.6	36.73	6.1	
		46%	42.8	10.0	7.8	1626	5.5	38.81	6.6	
		48%	45.1	10.8	8.4	1670	5.4	40.94	7.2	
		50%	47.5	11.6	9.1	1715	5.2	43.13	7.7	
		52%	50.0	12.5	9.8	1760	5.1	45.42	8.4	
		54%	52.6	13.4	10.5	1804	5.0	47.79	9.0	
		56%	55.3	14.4	11.3	1849	4.9	50.25	9.7	
		58%	58.2	15.5	12.1	1893	4.8	52.79	10.5	
		60%	61.1	16.6	13.0	1938	4.7	55.41	11.2	
		62%	64.0	17.8	13.9	1982	4.6	58.07	12.1	
		64%	66.9	19.1	14.9	2027	4.5	60.77	12.9	
		66%	69.9	20.4	15.9	2072	4.4	63.48	13.8	
		68%	72.8	21.7	16.9	2117	4.3	66.16	14.7	
		70%	75.6	23.1	18.0	2162	4.2	68.79	15.6	
		72%	78.2	24.4	19.0	2204	4.1	71.33	16.5	
		76%	83.0	26.9	21.0	2282	4.0	75.95	18.1	
		80%	87.0	29.1	22.7	2343	3.8	79.75	19.6	
		85%	90.6	31.0	24.2	2392	3.7	83.15	20.8	
		100%	96.4	33.9	26.4	2450	3.7	88.35	22.7	

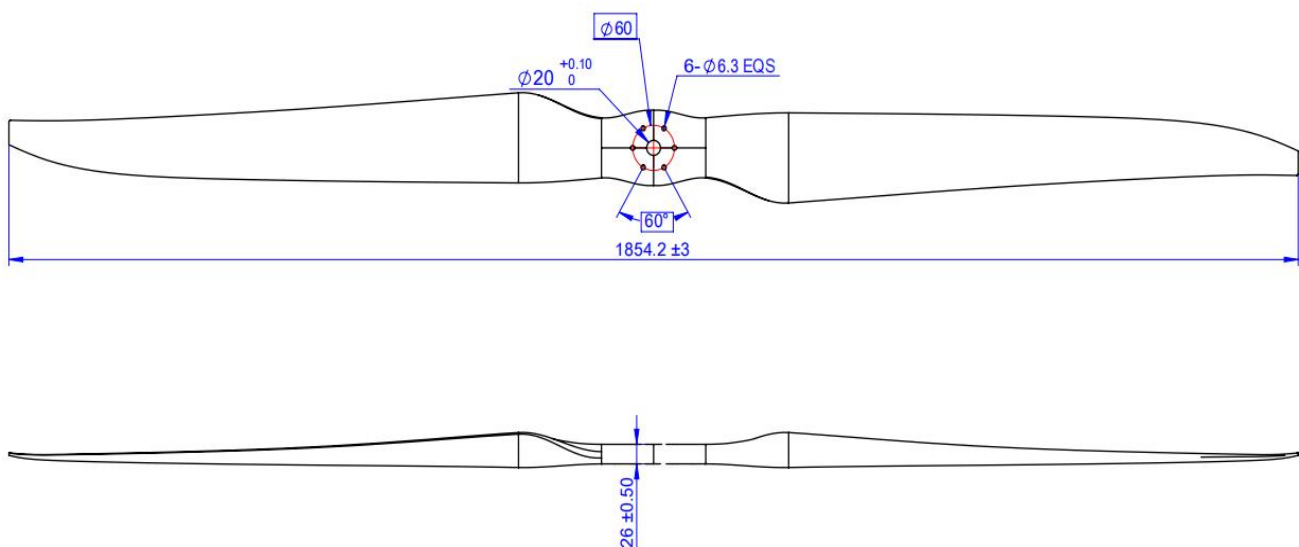
*The above data was measured by HOBBYWING Laboratory at room temperature 25°C, at sea level, with varying throttle input, for reference only.

Dimension figure

Integrated thrust system

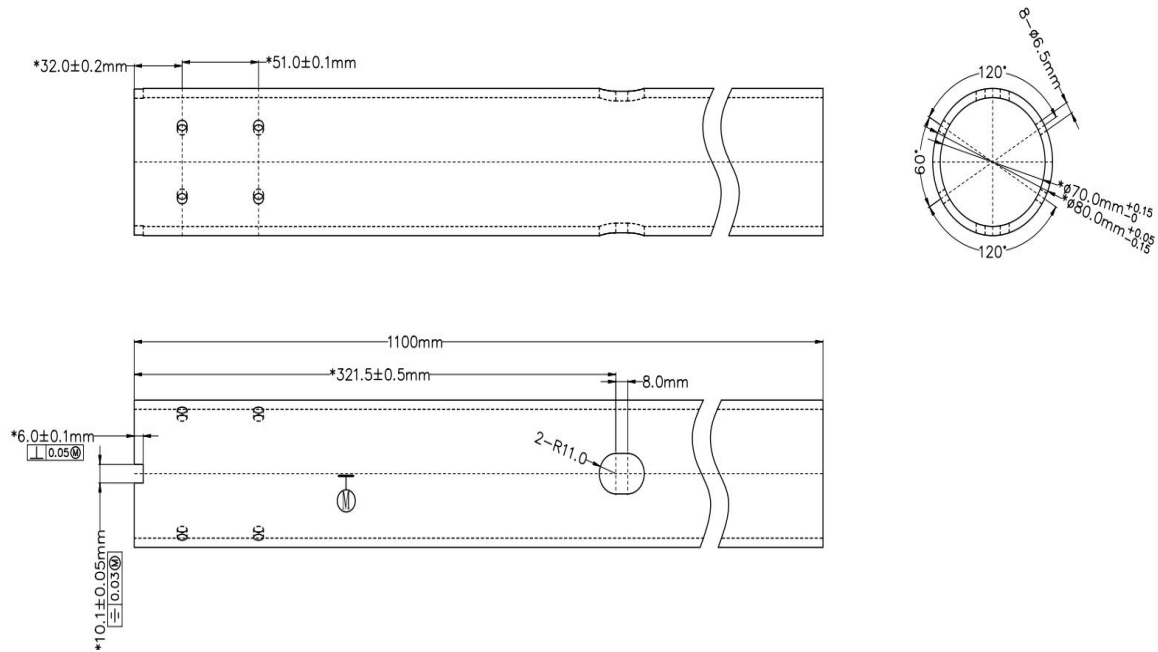


Propeller MSC 73x21-P



Installation drawing

Carbon Tube Processing Diagram



Integrated thrust system assembly Drawing

PUSM Complete Propulsion System Assembly List			
SN	Part Name	Quantity	Remarks
1	CW propulsion assembly	1	
2	CCW propulsion assembly	1	
3	Propeller	1	With (80), 8mm wall thickness carbon tube
4	ESC mounting tube clip holder	1	
5	Cable protection silicone sleeve	2	
6	Indicator light assembly	1	
7	Propeller clamp assembly	2	
8	M6 triple-combination screws	4	For locking indicator light
9	M6 triple-combination screws	12	For locking CW/CCW propulsion assembly
10	M6 screws	12	For locking propeller clamp
11	M8 screws	7	For locking CW propulsion assembly

1: Pre-tighten the M8 screw onto the ESC mounting tube clip holder without fully fastening them. Then pass the carbon tube through the entire tube clip holder. Pay attention to the orientation of the screw head to ensure a neat and uniform appearance after the complete assembly.

2: Fit the cable protection silicone sleeve over the carbon tube.

3: Fit the liner onto the carbon tube, ensuring it is fully seated into the slot.

4: Pass the power cable through the carbon tube, with the cable ends oriented toward the aircraft's center.

5: Pass the indicator light cable through the carbon tube, with the cable ends oriented toward the motor.

6: Fit the CCW propulsion assembly with the carbon tube and align the screw holes.

7: Pass the 4* M6 triple-combination screws through the tube clip holder and carbon tube, then pre-tighten them to the liner, but do not fully fasten them.

8: Pass the 2* M6 triple-combination screws through the ESC mounting ears, then use a torque wrench to fully tighten them to a torque of 9±1 N·m.

9: Pass the power cable through the carbon tube, with the cable ends oriented toward the aircraft's center.

10: Pass the indicator light cable through the carbon tube, with the cable ends oriented towards the motor.

11: Fit the CW propulsion assembly with the carbon tube and align the screw holes.

12: Pass the 4* M6 triple-combination screws through the tube clip holder and carbon tube, then pre-tighten them to the inner liner, but do not fully fasten them.

13: Pass the 2* M6 triple-combination screws through the ESC mounting ears, then use a torque wrench to fully tighten them to a torque of 9±1 N·m.

14: Apply thread locker to the 6* M8 screws, then pre-tighten them to the tube clip holder. Check the gap between the upper and lower tube clip holders is uniform. Afterwards, use a torque wrench to fully tighten all the 7* M8 screws to a torque of 10±1 N·m.

15: Use a torque wrench to fully tighten the 8* M6 triple-combination screws to a torque of 9±1 N·m.

16: Plug the indicator light connector into the indicator light board connector. Pay attention that the indicator light cable of upper propulsion assembly is connected to the upper indicator light socket, and the indicator light cable of lower propulsion assembly is connected to the lower indicator light socket.

17: Mount the indicator light socket on the tube clip holder. First, apply thread locker to the M4 triple-combination screws for the positioning, then tighten them to a torque of 3±0.5 N·m.

18: Then, tighten the M4 triple-combination screws with waist slot hole to a torque of 3±0.5 N·m.

19: Install the quick-release propeller mounting base on the motor and align it with the screw hole positions.

20: Apply medium-strength thread locker to the 12* M6 screws, then fully tighten them with a torque wrench to a torque of 9±1 N·m. No disassembly is required unless under special circumstances after assembly. This applies to both the upper and lower propulsion assembly.

21: Install the propeller onto the quick-release propeller mounting base and ensure that the propeller rotation direction is correct.

22: Align the propeller clamp cover with the locating pins and press it onto the propeller.

23: Tighten the M16 left-handed nut to a torque of 20 N·m. Thread locker is not required.

24: Tighten the M12 right-handed nut to a torque of 30 N·m. Thread locker is not required.