

X13 G2 动力套技术参数

X13 G2 Propulsion System Specification

动力套参数 All-in-One Thrust System Specification

产品名称	X13 G2	最大拉力	60kg (海平面高度)
Product name		Max Thrust	60kg (at sea level)
单轴推荐拉力	27kg (海平面高度)	推荐拉力力效	8.6g/W (MFP56x20) 8.4g/W (MFC57x20)
Recommended takeoff weight per axis	27 kg (at sea level)	Efficiency of recommended takeoff weight	
适配锂电池	18S (LiPo)	额定电压	18S-69V
Compatible lithium battery		Rated voltage	
电压范围	25~80V	适用碳管直径	D50mm
Input voltage		Tube outer diameter	
动力套重量 (含线、桨)	4185g*	线材规格	电源线: 10AWG 1355mm* 信号线: 1120 mm*
Weight (with cable and propeller)		Cable specification	Power cable: 10AWG 1355mm* Signal cable: 1120 mm*
适用环境温度	-20~50°C	防尘防水等级	IPX6
Operating temperature		Ingress Protection	
额定输入功率	3160W	额定输出功率	2700W
Rated power input		Rated power output	
线序	黑-GND, 白-PWM; 黄-GND, 灰-CH, 绿-CL		
Pinout	Black-GND, White-PWM & Yellow-GND, Gray-CH, Green-CL		

电调技术参数 ESC Specification

额定电压	18S (LiPo)	通讯方式	Cyphal (UAVCAN)
Rated voltage		Communication protocol	
最大电流 (3s)	200A	持续电流	70A
Peak current (3s)		Continuous current	
油门行程校准	不支持	双油门	PWM + CAN
Throttle range calibration	Not supported	Throttle Source	
PWM脉宽	1050-1950µs	故障存储+日志	支持
Operating pulse width		Fault storage & Log	Supported

电机技术参数 Motor Specification

KV值	45KV	槽极数	36槽42极
KV value		Slot & Pole	36N42P
定子尺寸	138*25mm	电机外直径	148mm
Stator size		Motor diameter	

桨叶参数 Propeller Specification

默认

Default

产品型号	MFP 56x20 (折叠桨)	总重量	811g*
Model	MFP 56x20 (Folding propeller)	Total Weight	
主要材质	碳纤维增强尼龙复合材料	单片桨叶重量	293g*
Material of blades	Carbon fibre-reinforced nylon composite material	Single blade weight	

选配

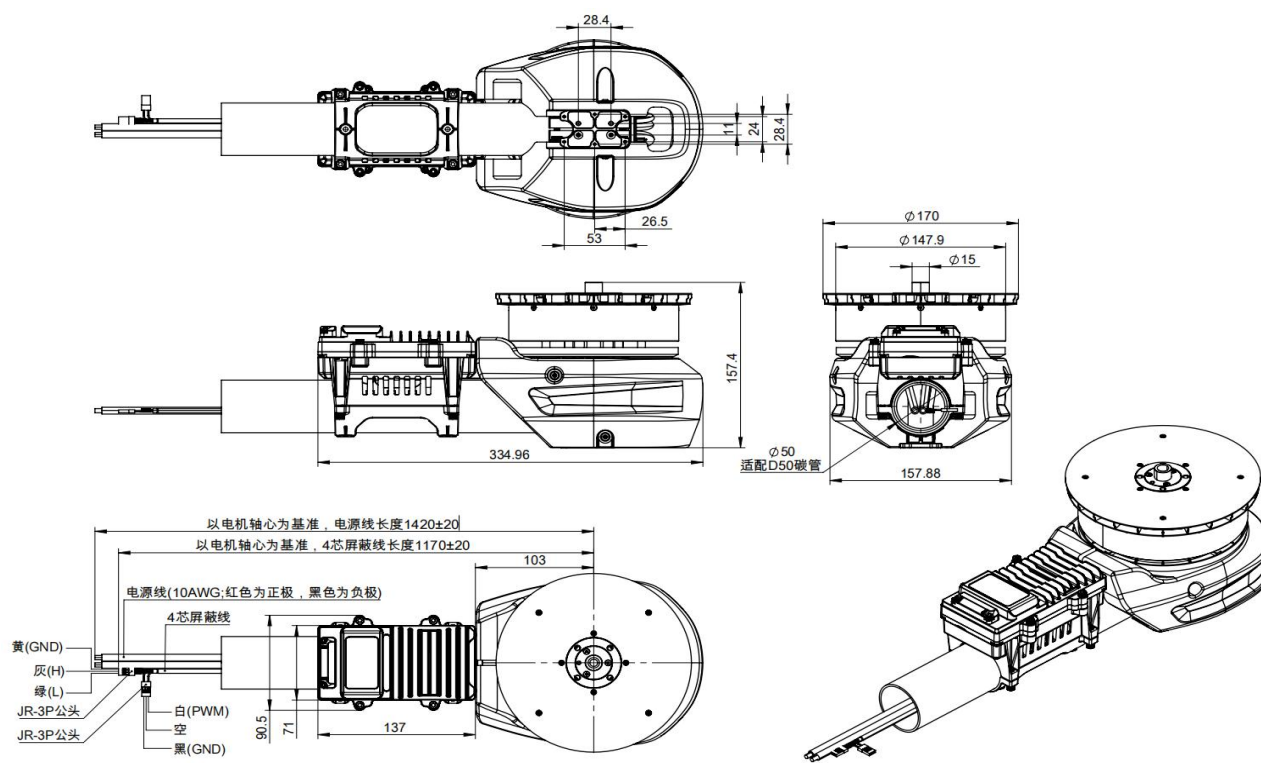
Optional

产品型号	MFC 57x20 (折叠桨)	总重量	805g*
Model	MFC 57x20 (Folding propeller)	Total Weight	
主要材质	碳纤维复合材料	单片桨叶重量	250g*
Material of blades	Carbon fibre composite material	Single blade weight	

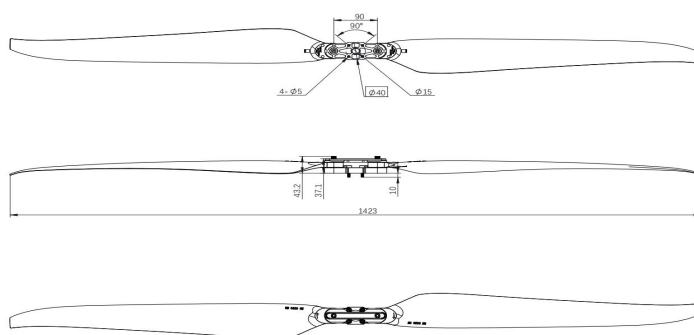
*存在误差, 以实物为准。

*Subject to the actual product.

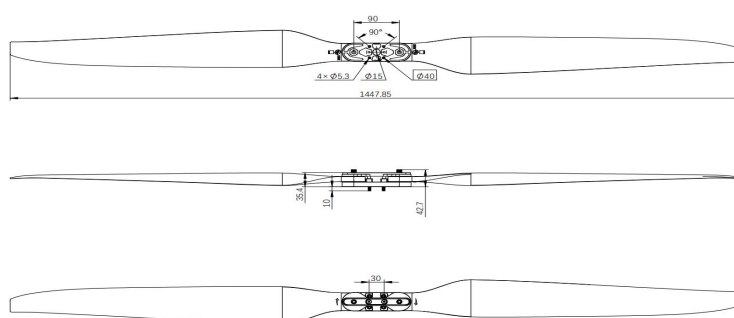
尺寸图 Dimension figure



MFP 56x20

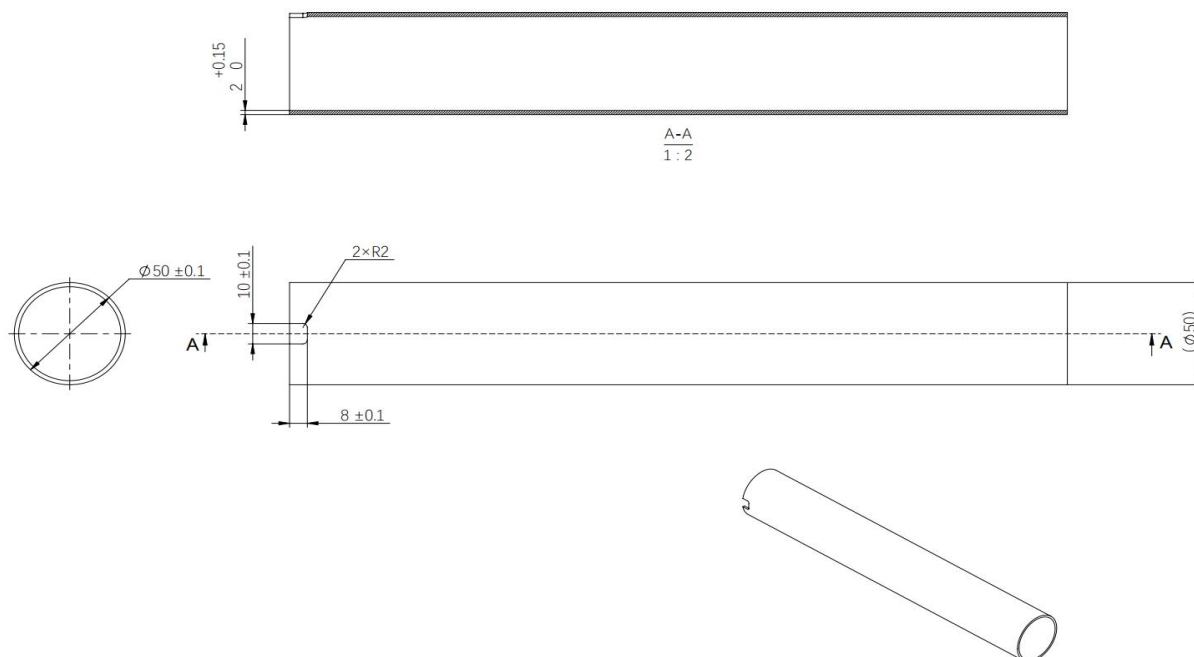


MFC 57x20

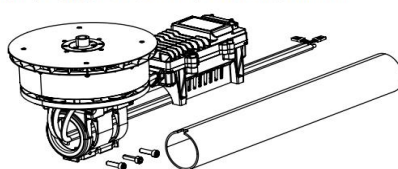
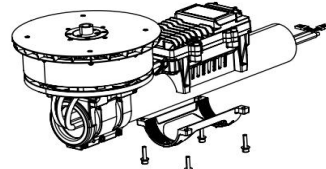
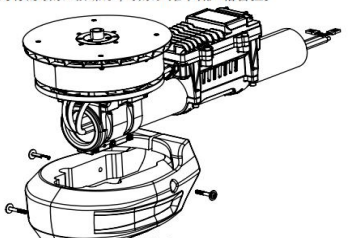
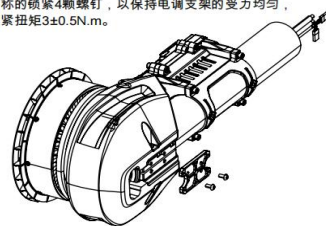
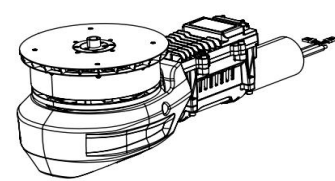


安装示意图 Dimension figure

碳管加工示意 Carbon Tube Pre-processing

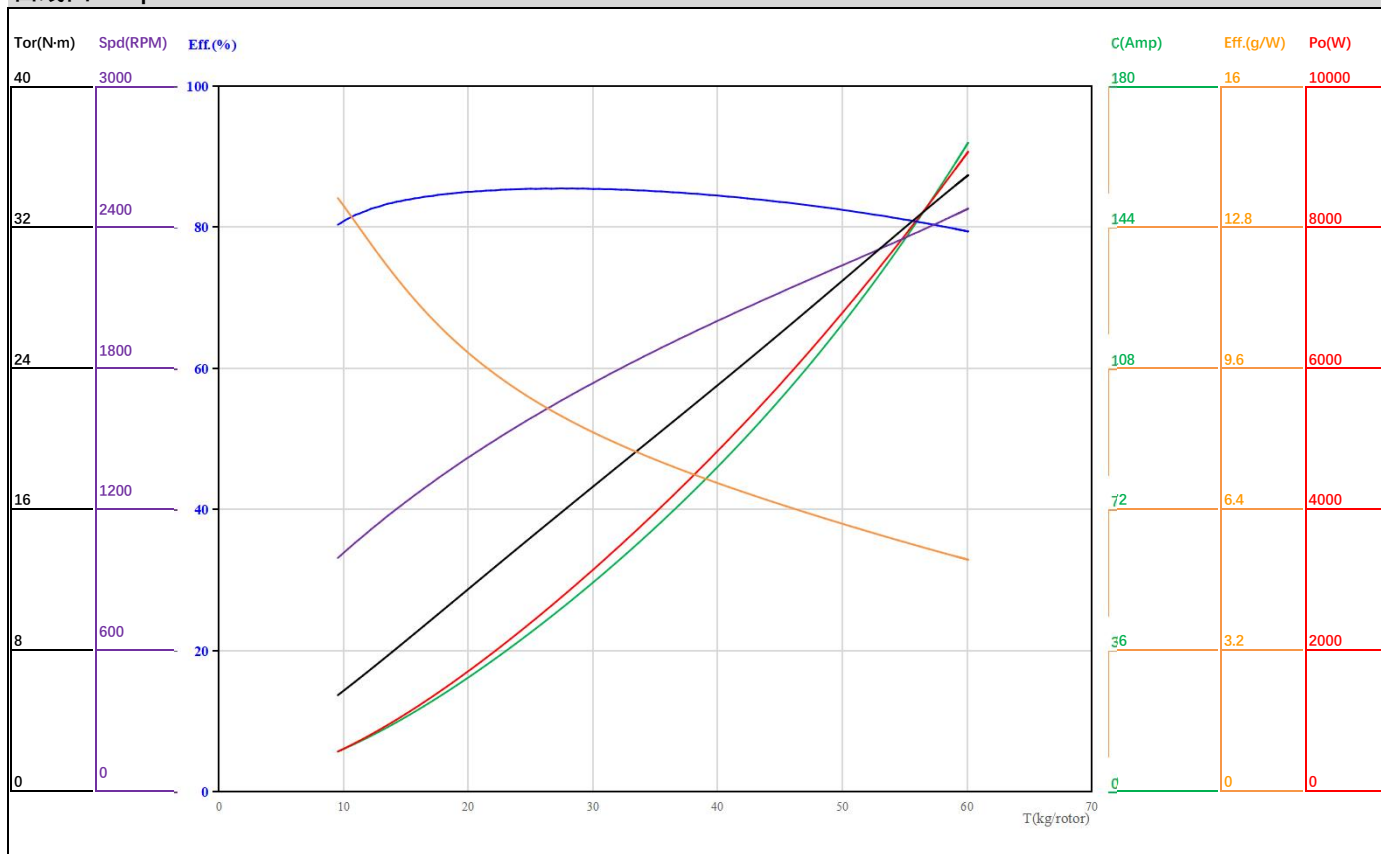


动力套装配示意 Assemble Steps

1-1、将预先装好的“电机+电调+管夹座”从包装箱中取出。 注意！！！！ 因电机三相线已提前与电调连接锁紧，取出产品时需双手同时取出电机与电调，以免损坏线缆。 1-2、将电机安装至破管末端，在此过程需把电源线穿进破管中心孔，保证管夹座上的定位块与破管的定位切口对齐后，锁紧3颗M5×18的螺钉。 注意！！！！ 3颗螺钉推荐涂中等强度螺丝胶(如：乐泰243)防松，提升安装可靠性。 均匀对称的锁紧3颗螺钉，以保持管夹座的受力均匀，建议锁紧扭矩$6\pm0.5\text{N.m}$。 	2-1、将预先装好的“电机+电调+管夹座”从包装箱中取出； 2-2、将电调上支架安装至破管，可以缓慢调整电调的位置，应保证电源线与破管外壁不产生接触干涉，避免振动磨损线缆； 2-3、将电调下支架安装至破管，保证电调下支架与电调上支架安装到位后，锁紧4颗M4×18的螺钉。 注意！！！！ 4颗螺钉推荐涂中等强度螺丝胶(如：乐泰243)防松，提升安装可靠性。 均匀对称的锁紧4颗螺钉，以保持电调支架的受力均匀，建议锁紧扭矩$3\pm0.5\text{N.m}$。 	
3、将防护罩安装至管夹座，确保与管夹座安装到位后，锁紧4颗M4×25的螺钉。 注意！！！！ 4颗螺钉推荐涂中等强度螺丝胶(如：乐泰243)防松，提升安装可靠性。 均匀对称的锁紧4颗螺钉，锁紧扭矩不做严格管控。 	4、将喷头固定座安装至电机管夹座下方，确保与管夹座安装到位后，锁紧2颗M4×8的螺钉。 注意！！！！ 2颗螺钉推荐涂中等强度螺丝胶(如：乐泰243)防松，提升安装可靠性。 均匀对称的锁紧2颗螺钉，以保持电调支架的受力均匀，建议锁紧扭矩$3\pm0.5\text{N.m}$。 	5、安装完成状态 

69V+MFP 56x20 负载性能参数 Load performance parameters

曲线图 Graph



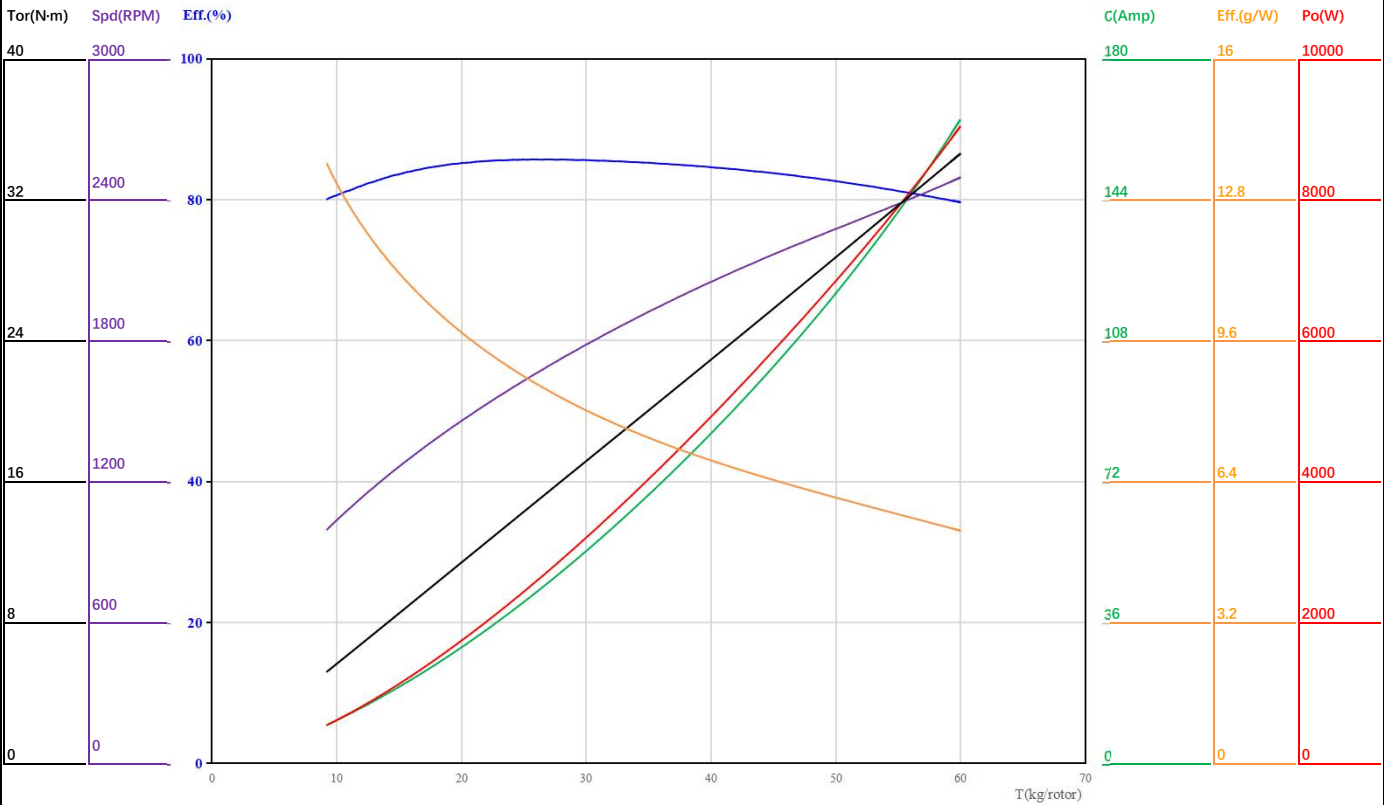
拉力数据表 Motor Propeller Pull Test Data

Voltage(V) 工作电压	Propeller 螺旋桨	Throttle(%) 油门	Thrust(g) 拉力	Current(A) 电流	Power Input(W) 输入功率	Speed(RPM) 转速	Efficiency(g/W) 力效	Torque (N-m) 扭矩	Power Output(W) 输出功率	Motor Temperature(°C) 电机温度
69V	MFP 56x20	33%	9552	10.3	709.9	994	13.5	5.48	570.2	63°C
		35%	10360	11.4	788.1	1032	13.1	5.92	639.8	
		37%	11559	13.2	912.3	1086	12.7	6.59	749.2	
		39%	12865	15.3	1058.0	1143	12.2	7.33	877.1	
		42%	14968	19.0	1313.0	1231	11.4	8.54	1100.7	
		45%	17186	23.3	1606.2	1317	10.7	9.83	1355.9	
		48%	19476	28.0	1932.1	1402	10.1	11.17	1640.4	
		51%	21819	33.2	2287.4	1483	9.5	12.55	1948.4	
		54%	24212	38.7	2671.2	1562	9.1	13.94	2280.6	
		57%	26664	44.7	3085.1	1638	8.6	15.37	2635.5	
		60%	29192	51.2	3533.2	1714	8.3	16.82	3019.3	
		63%	31812	58.3	4021.2	1788	7.9	18.33	3431.3	
		66%	34542	66.0	4556.2	1862	7.6	19.89	3878.3	
		69%	37389	74.6	5145.6	1936	7.3	21.53	4364.2	
		72%	40351	84.0	5795.8	2010	7.0	23.24	4891.7	
		75%	43409	94.4	6511.1	2084	6.7	25.03	5461.9	
		78%	46519	105.7	7289.9	2157	6.4	26.87	6069.3	
		81%	49615	117.7	8121.9	2229	6.1	28.73	6704.8	
		84%	52597	130.2	8981.9	2297	5.9	30.52	7341.6	
		87%	55332	142.4	9824.6	2362	5.6	32.17	7955.5	
		90%	57643	153.3	10579.6	2417	5.4	33.53	8486.9	
		100%	60077	165.5	11418.8	2478	5.3	34.93	9064.4	

*以上数据为好盈实验室于室温 25°C、海平面高度，变化油门输入调节测得。电机外壳温度为1.2倍额定拉力下油门运行10分钟数据，仅供参考。
 * The above data was measured by HOBBYWING Laboratory at room temperature 25°C, at sea level, with varying throttle input. The motor housing temperature is measured after running for 10 minutes at 1.2 times rated thrust, for reference only.

69V+MFC 57x20 负载性能参数 Load performance parameters

曲线图 Graph



拉力数据表 Motor Propeller Pull Test Data

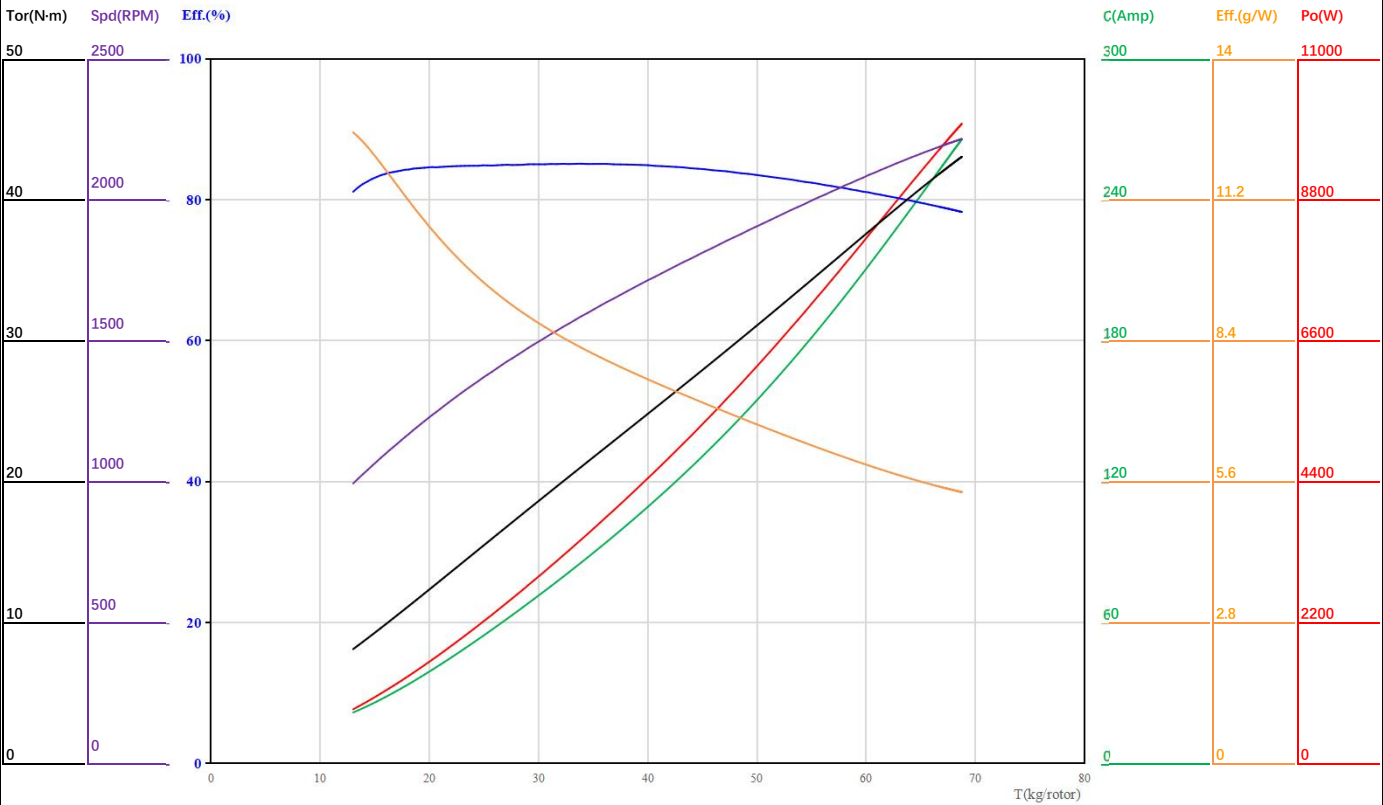
Voltage(V) 工作电压	Propeller 螺旋桨	Throttle(%) 油门	Thrust(g) 拉力	Current(A) 电流	Power Input(W) 输入功率	Speed(RPM) 转速	Efficiency(g/W) 力效	Torque (N-m) 扭矩	Power Output(W) 输出功率	Motor Temperature(°C) 电机温度
69V	MFC 57x20	33%	9215	9.8	677.1	995	13.6	5.20	542.1	/
		35%	9915	10.9	750.6	1031	13.2	5.60	604.7	
		37%	11002	12.6	869.0	1084	12.7	6.22	706.3	
		39%	12223	14.6	1007.9	1142	12.1	6.92	827.8	
		42%	14224	18.1	1249.6	1231	11.4	8.07	1040.6	
		45%	16348	22.1	1525.2	1319	10.7	9.30	1284.1	
		48%	18536	26.5	1829.4	1404	10.1	10.56	1552.5	
		51%	20759	31.3	2159.4	1485	9.6	11.84	1841.6	
		54%	23013	36.4	2514.8	1564	9.2	13.14	2152.5	
		57%	25309	42.0	2898.0	1639	8.7	14.47	2482.9	
		60%	27673	48.0	3314.0	1713	8.4	15.83	2839.1	
		63%	30134	54.6	3769.4	1787	8.0	17.24	3226.7	
		66%	32722	61.9	4272.4	1861	7.7	18.73	3650.3	
		69%	35460	70.0	4830.9	1935	7.3	20.31	4114.6	
		72%	38360	79.0	5451.9	2010	7.0	21.98	4625.6	
		75%	41414	89.0	6139.8	2084	6.7	23.74	5180.7	
		78%	44590	99.9	6894.7	2158	6.5	25.58	5780.6	
		81%	47825	111.7	7710.1	2229	6.2	27.47	6410.6	
		84%	51022	124.2	8568.9	2297	6.0	29.34	7056.2	
		87%	54039	136.8	9436.8	2361	5.7	31.11	7691.3	
		90%	56686	148.6	10253.0	2419	5.5	32.67	8275.6	
		100%	59937	164.3	11340.0	2494	5.3	34.59	9033.4	

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61V+MFP 56x20 负载性能参数 Load performance parameters

曲线图 Graph



拉力数据表 Motor Propeller Pull Test Data

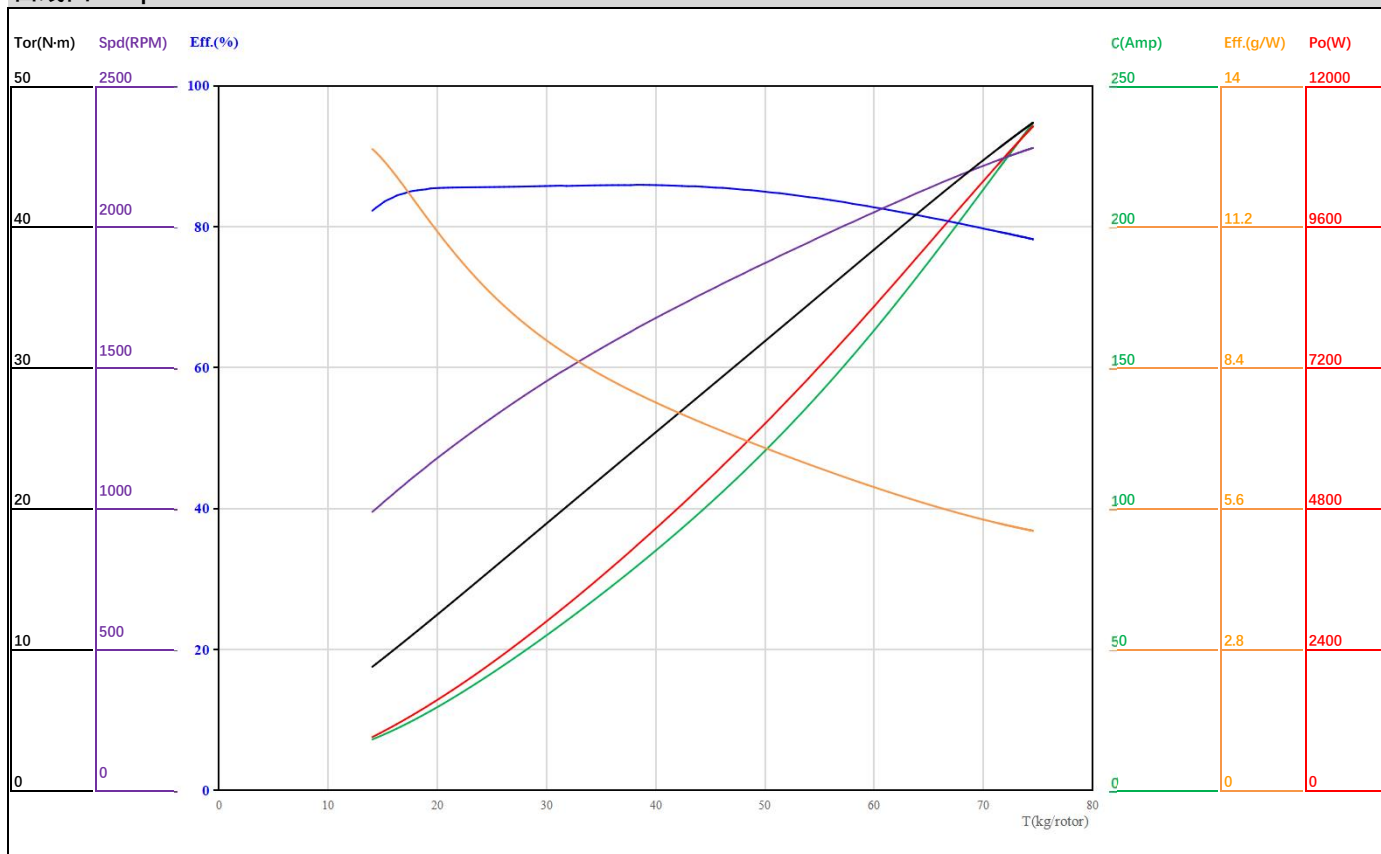
Voltage(V) 工作电压	Propeller 螺旋桨	Throttle(%) 油门	Thrust(g) 拉力	Current(A) 电流	Power Input(W) 输入功率	Speed(RPM) 转速	Efficiency(g/W) 力效	Torque (N-m) 扭矩	Power Output(W) 输出功率	Motor Temperature(°C) 电机温度
61V	MFP 56x20	33%	13019	21.6	1038.5	993	12.5	8.10	842.5	/
		35%	13916	23.5	1126.9	1026	12.3	8.62	926.5	
		37%	15557	27.2	1305.7	1084	11.9	9.60	1089.8	
		39%	17058	30.9	1485.8	1134	11.5	10.51	1248.4	
		42%	19192	36.7	1764.3	1203	10.9	11.83	1490.6	
		45%	21345	43.0	2066.9	1268	10.3	13.18	1750.1	
		48%	23652	50.2	2410.2	1334	9.8	14.63	2043.9	
		51%	26205	58.5	2808.3	1402	9.3	16.24	2383.8	
		54%	29054	68.1	3271.9	1474	8.9	18.02	2781.7	
		57%	32214	79.3	3808.1	1548	8.5	19.99	3240.0	
		60%	35667	92.1	4422.1	1624	8.1	22.12	3762.1	
		63%	39367	106.6	5118.7	1701	7.7	24.41	4347.1	
		66%	43247	122.9	5901.7	1778	7.3	26.81	4991.5	
		69%	47217	141.0	6770.4	1854	7.0	29.30	5688.4	
		72%	51176	160.7	7714.5	1927	6.6	31.83	6422.1	
		75%	55009	181.3	8707.4	1997	6.3	34.31	7175.4	
		78%	58597	202.1	9704.6	2059	6.0	36.66	7904.3	
		81%	61816	221.7	10647.4	2113	5.8	38.76	8575.7	
		84%	64547	238.9	11472.5	2156	5.6	40.50	9143.7	
		87%	66675	252.5	12123.6	2187	5.5	41.82	9576.2	
		90%	68097	261.5	12558.4	2207	5.4	42.66	9859.2	
		100%	68745	265.6	12755.7	2215	5.4	43.04	9981.9	

*以上数据为好盈实验室于室温 25°C、海平面高度，变化油门输入调节测得，仅供参考。

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61V+MFC 57x20 负载性能参数 Load performance parameters

曲线图 Graph



拉力数据表 Motor Propeller Pull Test Data

Voltage(V) 工作电压	Propeller 螺旋桨	Throttle(%) 油门	Thrust(g) 拉力	Current(A) 电流	Power Input(W) 输入功率	Speed(RPM) 转速	Efficiency(g/W) 力效	Torque (N-m) 扭矩	Power Output(W) 输出功率	Motor Temperature(°C) 电机温度
61V	MFC 57x20	33%	14042	18.1	1102.1	988	12.7	8.76	906.6	/
		35%	15141	19.9	1211.6	1025	12.5	9.43	1012.2	
		37%	16642	22.6	1376.9	1074	12.1	10.36	1164.7	
		39%	18183	25.6	1563.3	1123	11.6	11.32	1331.3	
		42%	20570	30.8	1879.9	1196	10.9	12.84	1607.6	
		45%	23058	36.7	2239.3	1268	10.3	14.44	1916.6	
		48%	25666	43.3	2641.6	1340	9.7	16.12	2262.1	
		51%	28413	50.6	3088.6	1412	9.2	17.90	2647.3	
		54%	31324	58.7	3584.2	1484	8.7	19.79	3075.8	
		57%	34416	67.7	4134.0	1555	8.3	21.80	3549.4	
		60%	37703	77.8	4745.6	1627	7.9	23.93	4076.1	
		63%	41189	88.9	5428.2	1700	7.6	26.18	4659.9	
		66%	44865	101.5	6192.1	1773	7.2	28.55	5300.8	
		69%	48706	115.5	7047.1	1847	6.9	31.04	6002.8	
		72%	52667	131.0	7998.3	1920	6.6	33.61	6756.9	
		75%	56681	148.1	9040.3	1993	6.3	36.22	7558.8	
		78%	60655	166.3	10150.5	2063	6.0	38.80	8382.2	
		81%	64466	184.9	11282.7	2128	5.7	41.26	9193.2	
		84%	67959	202.6	12366.3	2185	5.5	43.46	9944.1	
		87%	70941	218.1	13312.7	2230	5.3	45.29	10575.0	
		90%	73182	229.8	14026.5	2262	5.2	46.61	11039.0	
		100%	74544	236.9	14457.0	2279	5.2	47.38	11306.2	

*以上数据为好盈实验室于室温 25°C、海平面高度，变化油门输入调节测得，仅供参考。

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