

Tool info

Serial API: 1:1.0
Board: Custom STM32F401RE thrustBoard v2
Firmware: thrust++ : ChibiOS RT 7.1.0 : HAL 8.1.0
Commit: [0ea573c] : Sep 15 2022 - 20:11:16

Measurement info

Motor: Dualsky XM3040EG-12
KV: 1000
Magnet poles: 14
Propeler: Graupner 10x6 fold
Blade count: 2
Note: Battery 4S.

Measurement Results 1:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	136.15	15.479	331.79	2.263	3110	18.7	16.407	0.0027	1.151	0.0349	18.879	7.212
30	282.94	15.477	568.32	2.253	4137	14.3	16.344	0.0047	2.316	0.0356	37.860	7.473
40	473.40	15.476	893.02	2.362	5217	22.1	16.243	0.0044	4.236	0.0770	68.815	6.879
50	700.15	15.511	1328.86	2.569	6343	30.0	16.077	0.0087	7.411	0.0693	119.145	5.876
60	988.13	15.860	1777.95	3.164	7254	73.7	15.852	0.0125	11.427	0.0929	181.137	5.455
70	1311.38	15.807	2345.76	3.701	8267	124.3	15.562	0.0126	17.160	0.0895	267.047	4.911
80	1708.11	15.957	3071.34	8.047	9411	42.7	15.191	0.0116	24.976	0.1452	379.421	4.502
90	2053.95	16.232	3699.39	19.872	10199	43.8	14.786	0.0159	33.558	0.1974	496.185	4.139
100	2304.89	15.547	4177.36	8.342	10779	51.9	14.405	0.0164	41.858	0.1640	602.974	3.823

Measurement Results 2:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	128.88	10.717	316.97	1.177	3074	13.5	16.066	0.0048	1.120	0.0385	17.992	7.163
30	267.85	10.701	539.76	1.125	4076	16.6	16.016	0.0066	2.224	0.0383	35.627	7.518
40	450.87	10.709	853.61	1.372	5137	29.6	15.921	0.0078	4.113	0.0617	65.485	6.885
50	686.57	10.737	1276.67	1.197	6231	45.4	15.774	0.0087	7.134	0.0453	112.532	6.101
60	957.82	10.759	1707.36	2.402	7114	72.2	15.569	0.0097	11.166	0.0558	173.836	5.510
70	1252.52	11.133	2262.51	2.111	8173	110.6	15.309	0.0104	16.730	0.0947	256.119	4.890
80	1660.79	10.746	2996.74	9.987	9279	44.6	14.958	0.0132	24.764	0.1558	370.415	4.484
90	2015.93	10.931	3592.37	7.013	10142	52.5	14.608	0.0126	32.708	0.1201	477.786	4.219
100	2282.24	11.092	4103.79	11.113	10702	51.8	14.251	0.0126	41.372	0.2433	589.573	3.871

Measurement Results 3:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	142.75	3.535	306.51	0.968	3024	13.0	15.788	0.0027	1.101	0.0453	17.379	8.214
30	274.39	3.492	524.56	0.942	4020	16.9	15.737	0.0050	2.187	0.0399	34.424	7.971
40	448.62	3.498	823.34	1.428	5035	35.6	15.649	0.0064	3.963	0.0542	62.011	7.235
50	686.07	3.498	1235.62	2.317	6124	45.7	15.502	0.0067	6.941	0.0487	107.600	6.376
60	947.87	4.011	1657.83	3.637	7043	73.0	15.311	0.0119	10.872	0.0612	166.463	5.694
70	1254.56	3.548	2207.38	2.044	8020	106.5	15.044	0.0149	16.461	0.0735	247.635	5.066
80	1626.28	4.002	2903.41	2.928	9185	41.5	14.713	0.0129	23.815	0.1159	350.407	4.641
90	1942.01	3.828	3502.45	8.464	9995	39.9	14.358	0.0153	32.098	0.1107	460.867	4.214
100	2238.87	5.995	3990.05	10.745	10596	45.6	14.014	0.0118	40.132	0.2023	562.403	3.981

Measurement Results 4:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	141.97	3.430	298.05	2.139	2978	13.1	15.540	0.0036	1.078	0.0386	16.752	8.475
30	274.31	3.426	511.54	2.076	3954	22.0	15.490	0.0033	2.161	0.0475	33.482	8.193
40	445.12	3.441	802.10	2.182	4993	49.6	15.404	0.0051	3.895	0.0479	59.992	7.420
50	672.64	3.445	1198.54	2.514	6056	55.9	15.266	0.0075	6.773	0.0516	103.390	6.506
60	930.41	3.744	1614.02	5.250	6953	51.7	15.082	0.0117	10.595	0.0673	159.801	5.822
70	1232.30	4.282	2155.79	2.737	8018	119.4	14.823	0.0129	16.058	0.1167	238.038	5.177
80	1599.75	3.841	2843.62	5.057	9086	43.9	14.503	0.0118	23.471	0.1009	340.390	4.700
90	1942.63	6.179	3436.82	11.910	9899	48.7	14.169	0.0105	31.527	0.1069	446.719	4.349
100	2189.71	3.737	3929.75	8.582	10489	44.3	13.839	0.0110	39.642	0.1469	548.617	3.991

Measurement Results 5:

Output [%]	Thrust [G]		Torque [G cm]		RPM [1/min]		Voltage [V]		Current [A]		Pin [W]	ThrustEff [G/W]
	mean	std dev	mean	std dev	mean	std dev	mean	std dev	mean	std dev		
20	132.73	0.401	296.36	2.096	2937	10.7	15.298	0.0044	1.096	0.0247	16.766	7.917
30	263.61	0.439	497.74	53.745	3906	15.1	15.247	0.0046	2.135	0.0332	32.556	8.097
40	436.26	0.408	786.19	2.164	4901	26.6	15.167	0.0080	3.783	0.0518	57.373	7.604
50	645.92	0.816	1168.05	2.994	5956	38.7	15.039	0.0071	6.630	0.0621	99.702	6.479
60	896.99	1.837	1575.01	2.999	6875	44.2	14.861	0.0120	10.367	0.0655	154.052	5.823
70	1206.75	2.921	2125.36	2.743	7858	109.7	14.620	0.0127	15.861	0.0998	231.886	5.204
80	1589.87	0.742	2801.68	4.463	8999	36.7	14.324	0.0117	23.087	0.1263	330.711	4.807
90	1915.62	5.675	3380.25	10.452	9830	33.7	14.013	0.0115	30.978	0.1295	434.103	4.413
100	2165.50	1.819	3872.04	7.420	10426	46.8	13.701	0.0093	39.025	0.1359	534.668	4.050

Plots for Measurement Results:

