

Scorpion Power System Performance Report

Motor - IM-8012-115kv

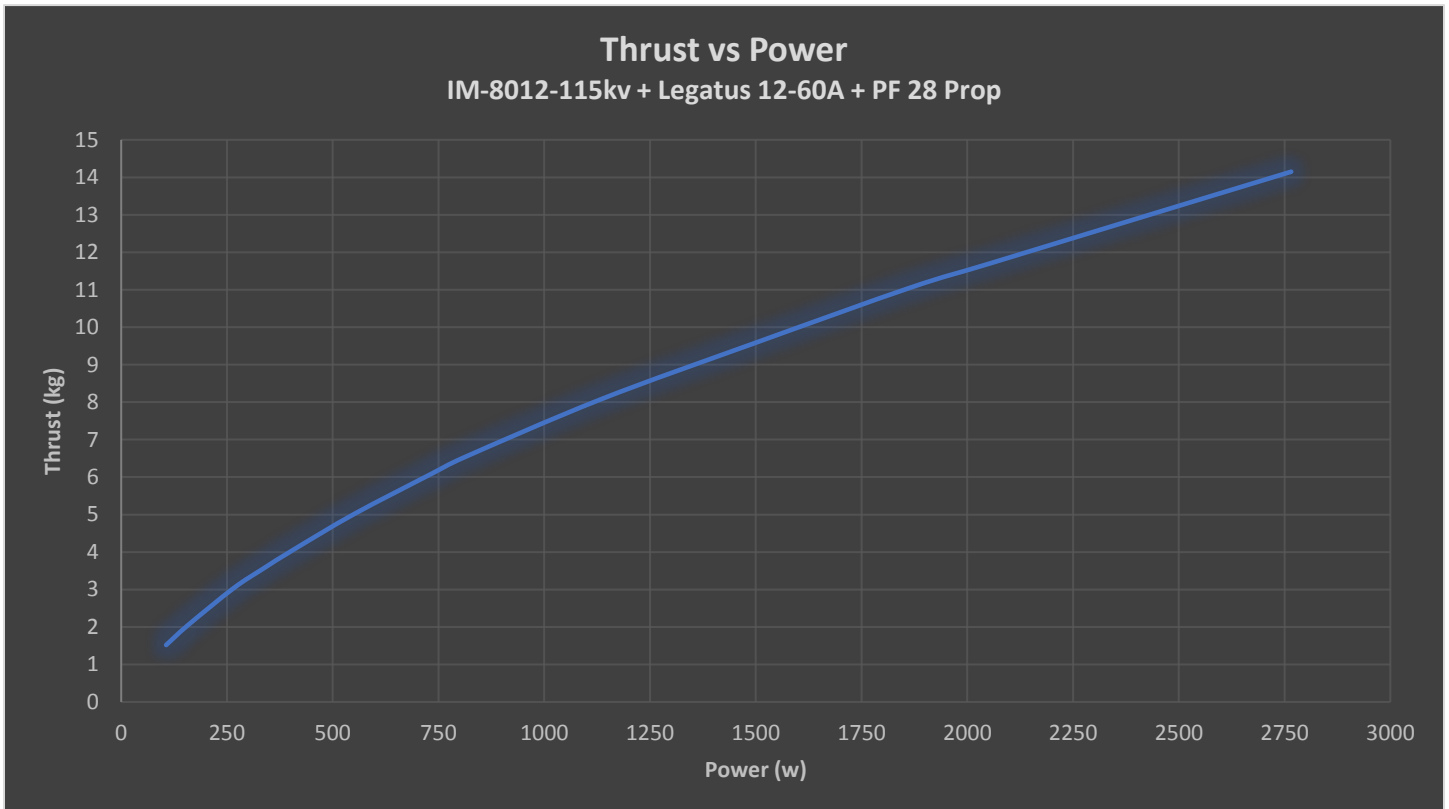
ESC – Legatus 12-60A

Prop – Scorpion PF28

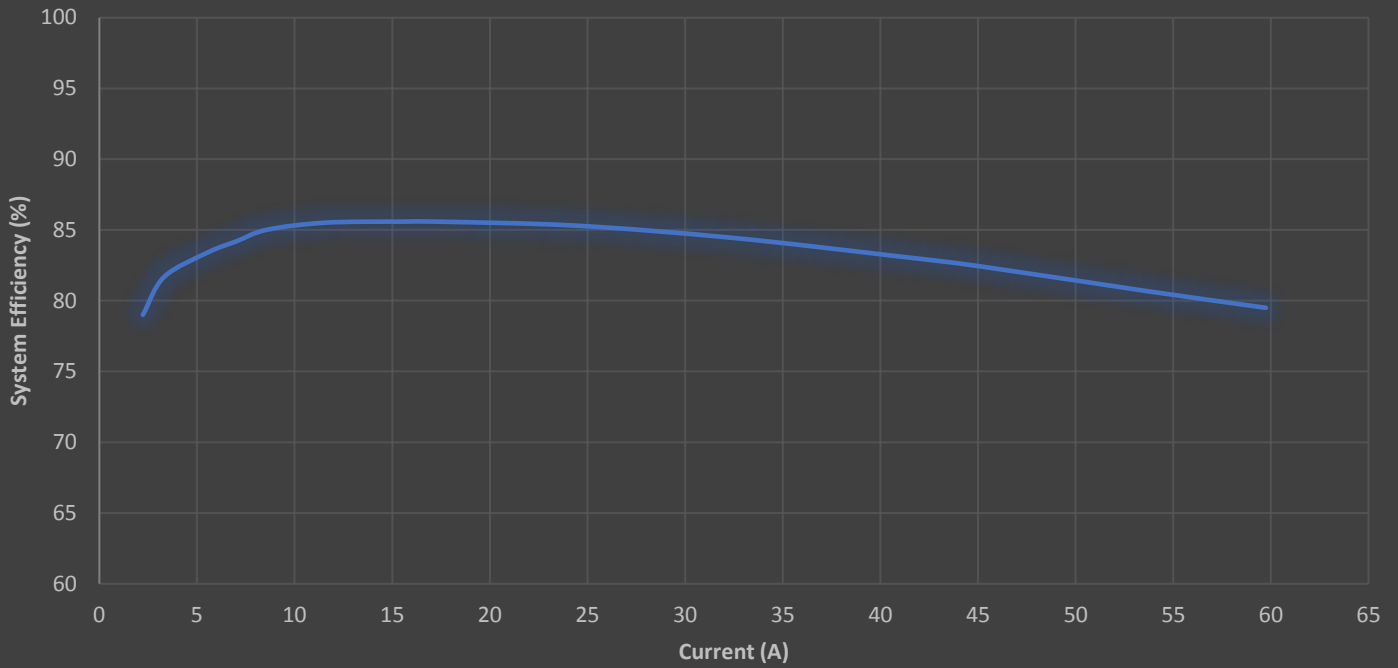
Battery - 12s (44.4V)



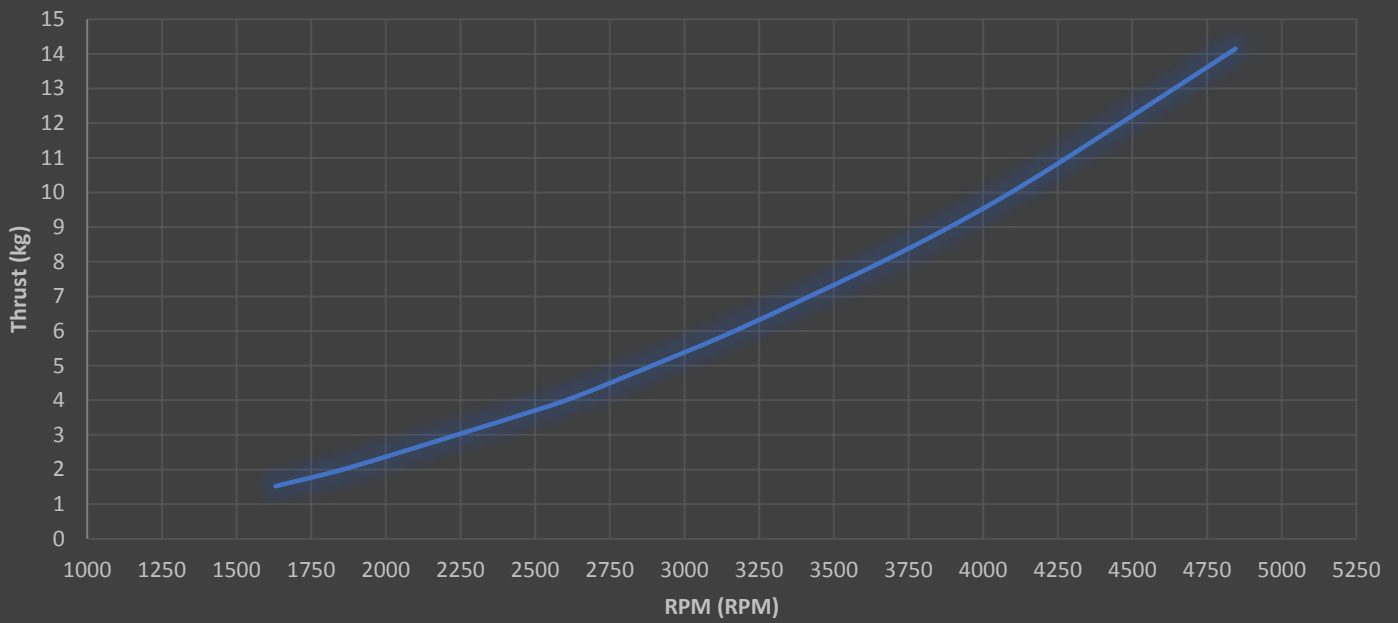
DATA CHARTS



System Efficiency vs Current
IM-8012-115kv + Legatus 12-60A + PF 28 Prop

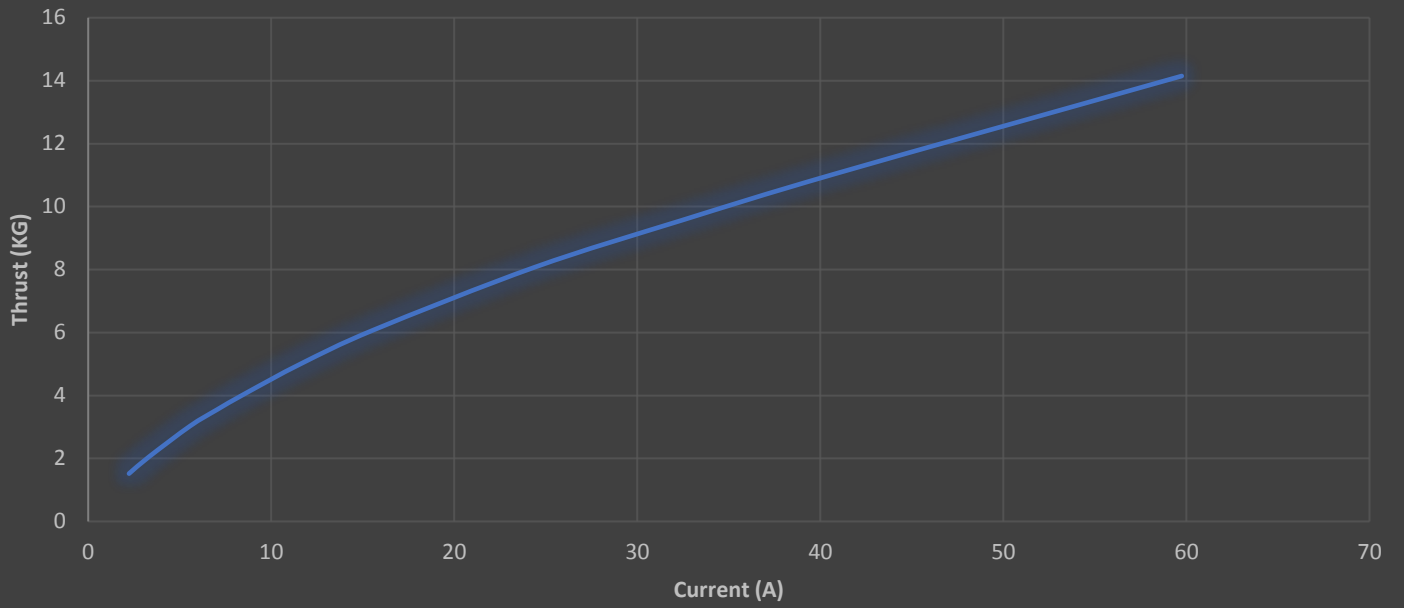


Thrust vs RPM
IM-8012-115kv + Legatus 12-60A + PF 28 Prop



Thrust vs Current

IM-8012-115kv + Legatus 12-60A + PF 28



DATA TABLE

Motor	ESC throttle (μs)	voltage (V)	current (A)	force Fz (thrust) (kg)	torque MZ (torque) (N·m)	rotation speed (rpm)	electrical power (W)	mechanical power (W)	motor & ESC efficiency (%)	propeller efficiency (gf/W)	powertrain efficiency (gf/W)
	1322.00	47.68	2.23	1.52	-0.49	1631.06	106.32	84.00	79.00	18.09	14.29
	1368.00	47.67	3.32	2.05	-0.66	1876.47	158.17	129.20	81.68	15.88	12.97
IM-8012-115kv	1402.00	47.67	4.30	2.54	-0.78	2067.26	205.08	169.10	82.46	15.03	12.39
	1437.00	47.64	5.57	3.03	-0.94	2249.30	265.29	221.31	83.42	13.70	11.43
	1475.00	47.57	7.02	3.55	-1.10	2440.07	334.06	281.28	84.20	12.60	10.61
ESC	1511.00	47.49	8.58	4.06	-1.26	2623.81	407.61	346.53	85.02	11.73	9.97
	1559.00	47.37	11.10	4.82	-1.51	2854.83	525.68	450.84	85.76	10.69	9.17
	1567.00	47.31	11.63	5.01	-1.55	2894.55	550.07	470.42	85.52	10.65	9.11
Legatus 12-60	1603.00	47.22	13.70	5.49	-1.75	3024.89	646.87	554.83	85.77	9.89	8.49
	1631.00	46.98	15.61	6.09	-1.88	3190.00	733.21	627.56	85.59	9.70	8.30
	1651.00	46.84	17.25	6.51	-2.02	3274.95	808.09	691.64	85.59	9.42	8.06
PROP	1695.00	46.73	20.09	7.05	-2.23	3444.40	939.09	803.62	85.57	8.78	7.51
	1717.00	46.62	22.04	7.49	-2.36	3542.02	1027.37	877.13	85.38	8.54	7.29
	1740.00	46.47	24.40	8.07	-2.51	3679.61	1133.76	967.17	85.31	8.35	7.12
Scorpion PF28	1765.00	46.40	26.27	8.33	-2.64	3756.50	1219.03	1037.04	85.07	8.03	6.83
	1794.00	46.23	29.17	8.93	-2.82	3876.78	1348.28	1142.86	84.76	7.81	6.62
	1824.00	46.10	32.44	9.57	-3.01	4006.72	1495.56	1262.87	84.44	7.58	6.40
Battery	1860.00	45.88	36.43	10.27	-3.23	4149.56	1671.21	1402.67	83.93	7.32	6.15
	1880.00	45.72	38.91	10.78	-3.33	4258.75	1779.16	1486.11	83.53	7.26	6.06
	1897.00	45.63	40.88	11.06	-3.45	4290.78	1865.42	1550.92	83.14	7.13	5.93
12s Lipo	1923.00	45.45	45.16	11.70	-3.67	4401.57	2052.53	1691.66	82.42	6.91	5.70
	1933.00	45.33	46.18	11.73	-3.73	4400.32	2093.03	1718.85	82.12	6.83	5.61
	1963.00	45.17	49.89	12.25	-3.88	4516.63	2253.75	1836.77	81.50	6.67	5.44
	2000.00	44.87	53.53	12.90	-4.02	4606.80	2401.84	1938.34	80.70	6.66	5.37
	PEAK PULL										
	2000.00	46.29	59.74	14.15	-4.41	4845.13	2765.59	2236.50	80.87	6.33	5.12