

Cyclone raw motor with external controller, 24v/30A (650w kit)

CW rotation
Full Throttle

Power (Drain/Brain)	Power (PowerTap)	Efficiency
95	0	0.0%
145	50	34.5%
220	110	50.0%
300	180	60.0%
380	270	71.1%
430	310	72.1%
515	380	73.8%
570	420	73.7%
630	462	73.3%
720	520	72.2%
800	565	70.6%
890	595	66.9%
950	625	65.8%
1000	644	64.4%
1130	682	60.4%



CW rotation
Half Throttle

Power (Drain/Brain)	Power (PowerTap)	Efficiency
48	0	0.0%
90	44	48.9%
140	88	62.9%
200	130	65.0%
230	150	65.2%
280	184	65.7%
350	228	65.1%
420	260	61.9%
480	280	58.3%
565	307	54.3%

CCW rotation
Full Throttle

Power (Drain/Brain)	Power (PowerTap)	Efficiency
80	0	0.0%
170	99	58.2%
220	140	63.6%
300	218	72.7%
400	295	73.8%
500	370	74.0%
630	465	73.8%
760	530	69.7%
830	565	68.1%
950	636	66.9%
1050	670	63.8%
1150	723	62.9%

CCW rotation
Half Throttle

Power (Drain/Brain)	Power (PowerTap)	Efficiency
40	0	0.0%
120	64	53.3%
190	130	68.4%
250	174	69.6%
350	246	70.3%
400	275	68.8%
450	290	64.4%
520	317	61.0%
620	334	53.9%

Cyclone raw motor w/Transmagnetics 24v/30A controller
CW rotation
Full Throttle

Power (Drain/Brain)	Power (PowerTap)	Efficiency
91	0	0.0%
130	30	23.1%
200	105	52.5%
250	155	62.0%
280	185	66.1%
320	215	67.2%
380	262	68.9%
440	308	70.0%
520	374	71.9%
580	415	71.6%
630	440	69.8%
670	462	69.0%
700	481	68.7%
750	510	68.0%
800	527	65.9%

CW rotation
Half Throttle

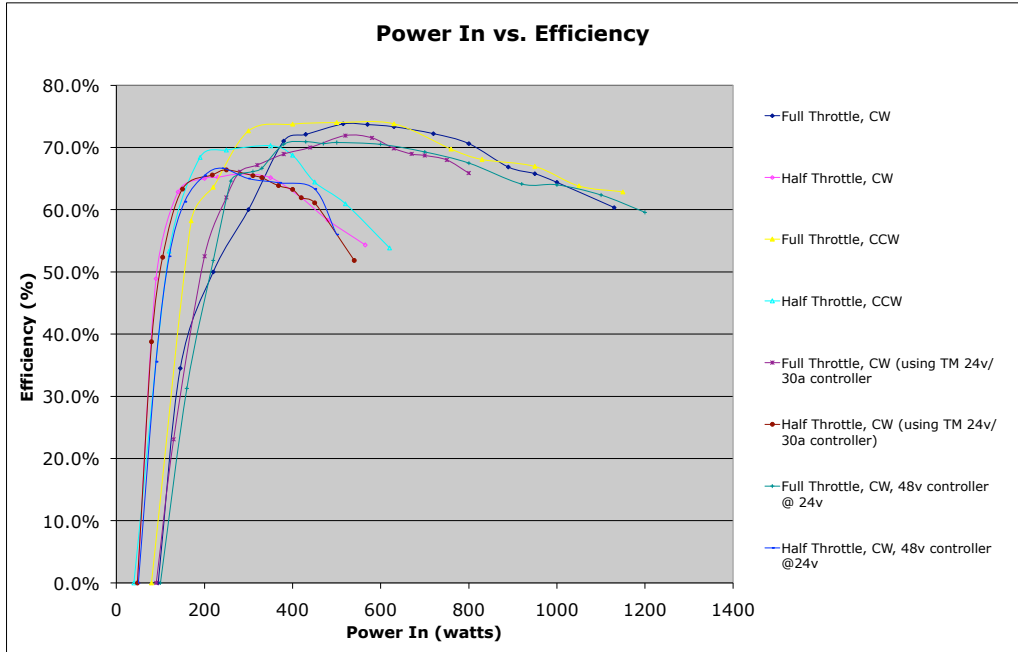
Power (Drain/Brain)	Power (PowerTap)	Efficiency
48	0	0.0%
80	31	38.8%
105	55	52.4%
150	95	63.3%
218	143	65.6%
250	166	66.4%
310	203	65.5%
330	215	65.2%
368	235	63.9%
400	253	63.3%
420	260	61.9%
450	275	61.1%
540	280	51.9%

Cyclone raw motor w/Headline 48-volt controller at 24 volts
CW rotation
Full Throttle

Power (Drain/Brain)	Power (PowerTap)	Efficiency
100	0	0.0%
160	50	31.3%
220	114	51.8%
260	168	64.6%
280	184	65.7%
310	205	66.1%
330	220	66.7%
380	268	70.5%
430	305	70.9%
470	332	70.6%
500	354	70.8%
600	423	70.5%
700	485	69.3%
800	540	67.5%
920	590	64.1%
1000	640	64.0%
1100	686	62.4%
1200	715	59.6%

CW rotation
Half Throttle

Power (Drain/Brain)	Power (PowerTap)	Efficiency
50	0	0.0%
90	32	35.6%
120	63	52.5%
155	95	61.3%
200	131	65.5%
240	160	66.7%
300	195	65.0%
370	238	64.3%
450	285	63.3%
500	280	56.0%



Notes: The curves should generally be concave downward. Variation from this is no doubt due to errors in my measurement equipment. Efficiency was measured by comparing energy drawn from the battery according to a Cycle Analyst and comparing that to energy sent to the rear wheel of the bicycle as read from a PowerTap hub. Motor power passes through a 9.33:1 planetary gearbox and a standard bicycle chain and 14t - 52t sprocket on a left crank. Torque then passes through the bottom bracket to a 31t chainring and then directly to a 34t sprocket on the rear wheel.