Electrical Charge Requirements and Runtime Expectation

ALPR Trailer Customer Success Guide · https://vettedsecuritysolutions.com/docs/electrical-charge-requirements-and-runtime-expectation/

All trailers are powered by Solar Assistance and will have different run times based on trailer model, time of year, and area of the country being deployed to. A run time estimate can be provided upon request for each trailer type based off geographical zip code.

Sample Run time calculations are shown below:

For all AGM use 70% discharge number. For all LiPo4 use 90% discharge number

Example Custom Trailer Run Time in New York State:

Calculator *- Run-Run-Time for Given Solar/Battery*

Total Solar Wattage	340	W
Batt Capacity	600	Ah

Batt Capacity	600	Ah

Optional to change below values independently

Runtime batt/solar - all cloudy days

	Summer Mo	Avg. mo.	Winter Mo.	
Time to 30% discharge	1.40	1.31	1.22	days
Time to 50% discharge	2.33	2.19	2.03	days
Time to 70% discharge	3.27	3.07	2.84	days
Time to (80%) discharge	3.73	3.51	3.25	days
Time to (90%) discharge	4.20	3.94	3.66	days
Time to (100%) discharge	4.67	4.38	4.06	days
1 day discharge	16.4	18.9	22.3	%

Runtime batt/solar - full sun days

	Summer Mo	Avg. mo.	Winter Mo.	
Time to 30% discharge	18.78	3.67	1.79	days
Time to 50% discharge	31.29	6.12	2.98	days
Time to 70% discharge	43.81	8.57	4.18	days
Time to (80%) discharge	50.07	9.80	4.77	days
Time to (90%) discharge	56.33	11.02	5.37	days
Time to (100%) discharge	62.59	12.25	5.97	days
1 day discharge	2.2	7.6	15.7	%

Example Long Run Speed Trailer Run Time in New York State:

Calculator - *Run-Run-Time for Given Solar/Battery*

Total Solar Wattage	340	W							
Batt Capacity	400	Ah			Batt Capacity	400	Ah	Optional to change below values independently	
Runtime batt/solar - all cloudy days					*Runtime batt/solar - full sun days*				
	Summer Mo	Avg. mo.	Winter Mo.			Summer Mo	Avg. mo.	Winter Mo.	
Time to 30% discharge	1.76	1.66	1.54	days	Time to 30% discharge	13.90	4.23	2.22	days
Time to 50% discharge	2.94	2.77	2.57	days	Time to 50% discharge	23.17	7.06	3.70	days
Time to 70% discharge	4.11	3.87	3.60	days	Time to 70% discharge	32.43	9.88	5.17	days
Time to (80%) discharge	4.70	4.43	4.12	days	Time to (80%) discharge	37.07	11.29	5.91	days
Time to (90%) discharge	5.28	4.98	4.63	days	Time to (90%) discharge	41.70	12.70	6.65	days
Time to (100%) discharge	5.87	5.53	5.15	days	Time to (100%) discharge	46.33	14.12	7.39	days
1 day discharge	13.1	15.0	17.6	%	1 day discharge	2.4	6.5	12.6	%

Example Standard Message Trailer Run Time in New York State:

Calculator - *Run-Run-Time for Given Solar/Battery*

Total Solar Wattage	360	W							
Batt Capacity	400	Ah			Batt Capacity	400	Ah	Optional to change below values independently	
Runtime batt/solar - all cloudy days					*Runtime batt/solar - full sun days*				
	Summer Mo	Avg. mo.	Winter Mo.			Summer Mo	Avg. mo.	Winter Mo.	
Time to 30% discharge	1.60	1.51	1.41	days	Time to 30% discharge	9.90	3.64	1.99	days
Time to 50% discharge	2.66	2.52	2.35	days	Time to 50% discharge	16.50	6.06	3.32	days
Time to 70% discharge	3.73	3.52	3.28	days	Time to 70% discharge	23.10	8.49	4.64	days
Time to (80%) discharge	4.26	4.02	3.75	days	Time to (80%) discharge	26.40	9.70	5.31	days
Time to (90%) discharge	4.79	4.53	4.22	days	Time to (90%) discharge	29.70	10.91	5.97	days
Time to (100%) discharge	5.32	5.03	4.69	days	Time to (100%) discharge	33.00	12.13	6.64	days
1 day discharge	14.4	16.5	19.3	%	1 day discharge	3.1	7.5	14.1	%

Example Standard XL Message Trailer Run Time in New York State:

Calculator - *Run-Run-Time for Given Solar/Battery*

Total Solar Wattage	565	W
Batt Capacity	800	Ah

Batt Capacity	800	Ah

Optional to change below values independently

Runtime batt/solar - all cloudy days

	Summer Mo	Avg. mo.	Winter Mo.	
Time to 30% discharge	1.59	1.46	1.31	days
Time to 50% discharge	2.65	2.43	2.19	days
Time to 70% discharge	3.71	3.40	3.06	days
Time to (80%) discharge	4.24	3.88	3.50	days
Time to (90%) discharge	4.77	4.37	3.94	days
Time to (100%) discharge	5.30	4.85	4.38	days
1 day discharge	14.5	17.1	20.7	%

Runtime batt/solar - full sun days

	Summer Mo	Avg. mo.	Winter Mo.	
Time to 30% discharge	Infinite	12.79	2.30	days
Time to 50% discharge	Infinite	21.31	3.83	days
Time to 70% discharge	Infinite	29.84	5.36	days
Time to (80%) discharge	Infinite	34.10	6.13	days
Time to (90%) discharge	Infinite	38.36	6.89	days
Time to (100%) discharge	Infinite	42.63	7.66	days
1 day discharge	-3.2	2.9	12.4	%

- Trailers have 4 stage managed battery chargers included in each trailer. The trailer will go through a warmup/conditioning phase, full charge, cooldown, and then trickle charge.
- All batteries are considered maintenance items and only a limited hardware manufacture warranty is included.
- A best practice is to regularly cycle batteries and allow them to go through a discharge/charge cycle.
- All trailers sold with AGM batteries have a life expectancy of 2-3 years based on average usage. It is possible to upgrade to Lipo4 batteries. The life expectation increase on LiPo4 to 5-7 years with average use and battery maintenance.

- For connecting trailers to shore power, use a standard 120VAC extension cable and attach to marine grade connector located on front of trailer battery box





- Ensure only 1 trailer is plugged into each outdoor plug location. Trailer charger pulls nearly 15amp at full load.

Please Note *– Attaching two trailers to a single outdoor plug will trip the breaker and prevent trailer from charging. Do not use power strips or lightweight extension cords and check the system periodically to ensure it is properly charging.*